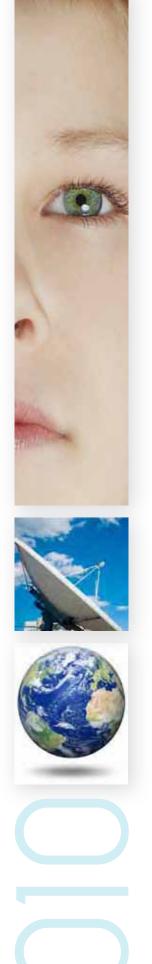
# ATLAS eHealth country profiles

Based on the findings of the second global survey on eHealth

Global Observatory for eHealth series - Volume 1





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# Acknowledgments

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Our sincere gratitude goes to over 800 eHealth experts in 114 countries worldwide who helped shape this report by sharing their knowledge through completing the survey. We are also indebted to an extensive network of eHealth professionals and WHO staff who assisted with the design and implementation of the survey. Names of contributors can be found at http://www.who.int/goe

Special thanks to the many authors and reviewers who contributed their time and ideas to this publication especially Titilola Falasinnu (Lola) who developed the template and compiled the secondary data for each participating Member State. The document was reviewed by colleagues Gael Kernen, Joan Dzenowagis and Ahmad Hosseinpoor.

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# A guide to the eHealth country profiles



### Background

This publication presents data on the 114 WHO Member States that participated in the 2009 global survey on eHealth. Intended as a reference to the state of eHealth development in Member States, the publication highlights selected indicators in the form of country profiles.

The objectives of the country profiles are to:

- describe the current status of the use of ICT for health in Member States; and
- provide information concerning the progress of eHealth applications in these countries.

Due to layout restrictions, additional information provided by Member States could not be included in these profiles. The country survey tools may be downloaded from the following web site: http://www.who.int/goe. All country profiles can be accessed at the same URL as well as the full country data sets.

### Methodological considerations

A total of 114 countries (59% of WHO Member States, representing 81% of the world's population) completed at least one section of the survey (Figure 1). The survey responses were based on self-reporting by a selected group of eHealth expert informants for each participating country. Although national survey administrators were given detailed instructions to maintain consistency, there was significant variation across participating Member States in the quality and level of detail in the responses, particularly to descriptive, open-ended questions. While survey responses were checked for consistency and accuracy, it was not possible to verify all responses to every question.

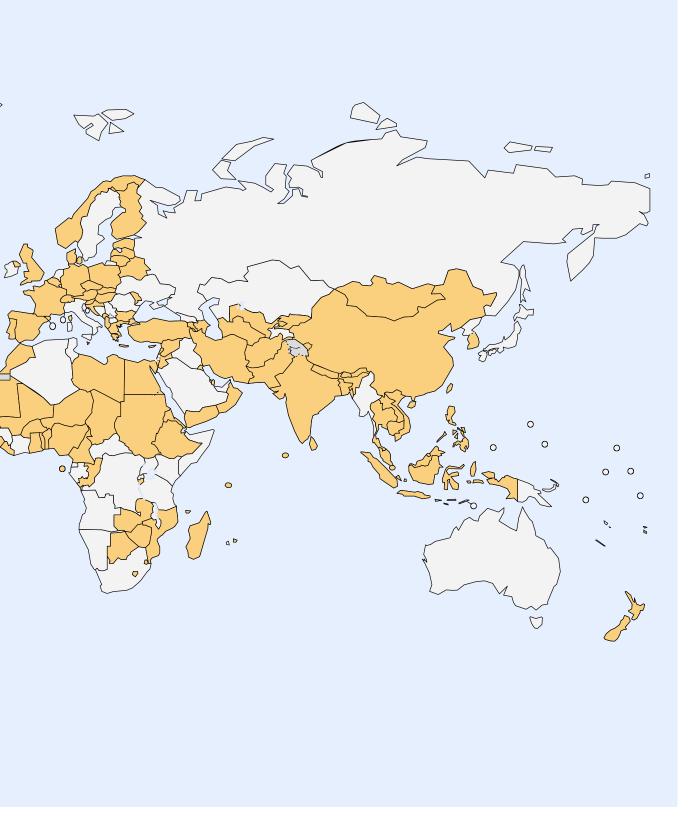
The scope of the survey was broad; survey questions covered diverse areas of eHealth, from policy issues and legal frameworks to specific types of eHealth initiatives being conducted. While every effort was made to select the best national experts to complete the instrument, it was not possible to determine whether they had the collective eHealth knowledge to answer each question. Further, there is no guarantee that national experts used the detailed instructions included with the survey when responding.

### Quality assurance

Country profiles are intended to provide a 'snapshot' of the status of eHealth in WHO Member States according to selected criteria. The Global Observatory for eHealth (GOe) implemented a range of measures to assure their quality. The questionnaires received from participating countries were reviewed for completeness. External sources of information were used for validation of the data and to resolve inconsistencies. Data were reviewed before entry and after layout for publication.







### Terminology and interpretation

The following terms and definitions were used in the survey and therefore apply to the country profiles. The terms are listed in the order they appear in the country profiles.

- National eGovernment policy: the vision and objectives for the use of information and communication technologies (ICT) to exchange information, provide services, and communicate with citizens, businesses, and other sectors.
- National eHealth policy: the vision and objectives to promote the use of ICT specifically for the health sector.
- National ICT procurement policy: the principles for the acquisition of software, hardware, and content for the health sector.
- National multiculturalism policy: the vision and objectives to promote and respect linguistic diversity, cultural identity, traditions, and religions within cultures.
- Personal identifiable data: information which can specifically identify an individual. This can include, but is not limited to, names, date of birth, addresses, telephone numbers, occupations, photographs, fingerprints – regardless of the format or medium in which it is held.
- Health-related data: information recorded about an individual including their illnesses and prescribed treatments. It generally includes details of prescribed medication, and any medical or surgical procedures undertaken as well as treatments received from other health-care providers.
- eHealth: the use of ICT for health
- Electronic Medical Records / Electronic Health Records (EMR/EHR): a real-time longitudinal electronic record of an individual patient's health information that can assist health professionals with decision-making and treatment. Terms used interchangeably in this survey.
- Internet pharmacies: Internet sites selling pharmaceuticals and related products.
- Funding: eHealth funding can come from a number of sources. *Public* funding is support through financial resources provided by government be it national, regional, or district level. *Private* funding is support through financial or in-kind resources provided by the private or commercial sector. *Donor/non-public* funding is support through financial or in-kind resources provided by development agencies, banks, foundations or other non-public funding bodies. These can be international, regional, or national bodies. *Public-private partnerships* are joint ventures between public organizations and private sector companies to work together to achieve a common goal.

- Capacity building: the development of the health work force through training. ICT skills and knowledge are key elements in developing an information society. They contribute to building capacity through their inclusion in education and training.
- ICT continuing education: courses or programmes for health professionals (not necessarily for formal accreditation) that bring participants up-to-date with ICT knowledge or skills for health settings.
- Telemedicine (or telehealth): involves the delivery of health services using ICT, specifically where distance is a barrier to health care. It falls under the rubric of eHealth.
- mHealth (or mobile health): a term for medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices.
- eLearning: the use of ICT for learning. It can be used to improve the quality of education, to increase accessibility to education (for those geographically isolated or those who have access to inadequate learning facilities), and to make new and innovative forms of education available to more people.

### Presentation of primary data

Below is a sample of a typical table found in the country profiles. Descriptions follow, which correspond to the boxed numbers.

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data                                      |                  |                                   |
| To ensure privacy of personally identifiable data                                    | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>      | No               | 30                                |
| Legislation for sharing health-related data between health care staff through EMR/EH | IR <sup>1</sup>  |                                   |
| Within the same health care facility and its network of care providers               | No               | 26                                |
| With different health care entities within the country                               | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                       | Prohibits        | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites           | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries   | No               | Allows: 6, Prohibits:12           |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                  | Yes              | 47                                |
| Security tools required by law for facilities used by children                       | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                      |                  |                                   |
| Voluntary compliance by content providers or web site owners                         | Yes              | 55                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations                                  | No               | 26                                |
| Education programmes for consumers and professionals                                 | No               | 23                                |
| Official approval through certification, accreditation, or quality seals             | No               | 16                                |

Country response is the country's answer to "Yes/No/Do not know" questions in the survey. It could also refer to the country's selection of the options presented in closed-ended questions. The country has instituted legislation to ensure privacy of personally identifiable data of individuals irrespective of whether it is in analogue or digital format. The global response is the percentage of participating Member States responding "Yes" to questions. Alternatively, it also indicates the percentage of countries selecting an option presented in closed-ended questions. Seventy per cent of participating Member States responded that they have instituted legislation to ensure privacy of personally identifiable data of individuals irrespective of whether it is in analogue or digital format.

- 2. The country has no legislation that either allows or prohibits Internet pharmacy purchases from other countries. Globally, 6% of responding countries indicated that they have legislation that allows Internet pharmacy purchases from other countries. Twelve per cent have legislation that prohibits Internet pharmacy purchases from other countries.
- 3. The options in this section are listed in the order of global importance. Based on the aggregated responses from all participating Member States, voluntary compliance was the most cited answer (55%), while official approval through certification, accreditation, or quality seals was the least cited.
- 4. The country does not utilize official approval through certification, accreditation, or quality seals as a quality assurance approach to health-related Internet content. In contrast, 16% of responding countries indicated that they have adopted official approval through certification, accreditation, or quality seals as an approach to health-related Internet content.

# Presentation of secondary data

The following socioeconomic indicators were selected for each country to complement the country profile information. Indicators and their sources are included below.

- 1. Nations Department of Economic and Social Affairs: http://esa.un.org/unpp
- Gross national income (GNI) per capita (international \$). PPP int. \$ = Purchasing Power Parity at international dollar rate (2008). World Development Indicators Database, 2009. Washington, DC, World Bank, 2009: http://www.worldbank.org/data
- World Bank income category. divided among income groups according to 2008 gross national income (GNI) per capita, calculated using the World Bank Atlas method. The groups are: low income, US\$ 975 or less; lower-middle income, US\$ 976–3855; uppermiddle income, US\$ 3856–11 905; and high income, US\$ 11 906 or more. http://www. worldbank.org
- 4. Country grouping by OECD and non-OECD membership. For more information, see the Organisation for Economic Co-operation and Development: http://www.oecd.org
- Life expectancy at birth in years (2007). WHO Global Atlas of the Health Workforce. Geneva, World Health Organization, 2009: http://www.who.int/whosis/whostat/EN\_ WHS09\_Table1.pdf
- 6. Total health expenditure (% GDP). Total expenditure on health as percentage of gross domestic product (2010). WHO National Health Accounts (NHA) Country health expenditure database. Geneva, World Health Organization: http://www.who.int/nha/country
- 7. Per capita total health expenditure (PPP international \$). PPP int. \$ = Purchasing Power Parity at international dollar rate (2010). WHO National Health Accounts (NHA) Country health expenditure database. Geneva, World Health Organization: http://www.who.int/nha/country
- Hospital bed density per 10 000 population (2008). WHO World Health Statistics. Geneva, World Health Organization, 2009: http://www.who.int/whosis/whostat/EN\_ WHS09\_Table6.pdf
- 9. Physician density per 10 000 population (2007). WHO World Health Statistics. Geneva, World Health Organization, 2009: http://www.who.int/whosis/whostat/EN\_WHS09\_Table6.pdf
- 10. Nurse density per 10 000 population (2007): WHO World Health Statistics. Geneva, World Health Organization, 2009: http://www.who.int/whosis/whostat/EN\_WHS09\_Table6.pdf
- 11. ICT Development Index 2008. International Telecommunication Union ICT Statistics: http:// www.itu.int/ITU-D/ict/publications/idi/2010/Material/MIS\_2010\_Summary\_E.pdf
- 12. ICT Development Index rank 2008. International Telecommunication Union ICT Statistics: http://www.itu.int/ITU-D/ict/publications/idi/2010/Material/MIS\_2010\_Summary\_E.pdf
- 13. Mobile cellular subscriptions per 100 population (2009). International Telecommunication Union ICT Statistics: http://www.itu.int/ITU-D/ICTEYE/Indicators/aspx#
- 14. Internet users per 100 population (2009). International Telecommunication Union ICT Statistics: http://www.itu.int/ITU-D/ICTEYE/Indicators/Indicators.aspx#
- 15. Age-standardized disability-adjusted life years (DALYs) per 100 000 population. The sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability (2004). Department of Measurement and Health Information, World Health Organization, 2008: http://www.who.int/healthinfo/global\_ burden\_disease/en/index.html

# 2 Country profiles

| Afghanista | an    |      | • | • |   | 3  |
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| Zimbabwe       |        |       |     |  | 229 |
|                |        |       |     |  |     |

# Afghanistan

| 6     | Population (000s)                | 27 208 | Total health expenditure (%GDP)                  | 7.3 | ICT Development Index                              | —      |
|-------|----------------------------------|--------|--|-----|--|--------|
| tor   | GNI per capita (PPP Int \$)      | 1 110  | Per capita total health expenditure (PPP Int \$) | 84  | ICT Development Index rank                         | —      |
| ica   | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 4   | Mobile cellular subscriptions (per 100 population) | 42.63  |
| ind C | OECD country                     | No     | Physician density (per 10 000 population)        | 2.0 | Internet users (per 100 population)                | 3.55   |
|       | Life expectancy at birth (years) | 42     | Nurse density (per 10 000 population)            | 5.0 | Disability Adjusted Life Years (DALY)              | 61 622 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                      |                    |                        |  |  |  |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|--|--|--|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |  |  |  |
| National eGovernment policy                       | No               | 85 <sup>b</sup>      | —                  | —                      |  |  |  |  |  |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |  |  |  |  |  |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |  |  |  |  |  |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |  |  |  |  |  |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |  |  |  |  |  |

| II. Legal and ethical frameworks for eHealth   | Country recordings |                                   |
|--|--------------------|-----------------------------------|
|  | Country response   | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                    |                                   |
| To ensure privacy of personally identifiable data  | Yes                | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No                 | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                    |                                   |
| Within the same health care facility and its network of care providers                             | No                 | 26                                |
| With different health care entities within the country   | No                 | 23                                |
| With health care entities in other countries   | No                 | 11                                |
| Internet pharmacies  |                    |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No                 | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No                 | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No                 | Allows: 6, Prohibits: 12          |
| Internet safety  |                    |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No                 | 47                                |
| Security tools required by law for facilities used by children                                     | No                 | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                    |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data            | 56                                |
| Technology through filters and controls  | No data            | 28                                |
| Government intervention through laws or regulations  | No data            | 26                                |
| Education programmes for consumers and professionals   | No data            | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data            | 17                                |

| Expenditure     | Public           | lic funding Private fu               |                  | funding                              | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | _                | 78                                   | _                | 37                                   | _                           | 59                                   | _                                      | 28                                   |
| Software        | —                | 76                                   | —                | 35                                   | _                           | 56                                   | —                                      | 29                                   |
| Pilot projects  | _                | 69                                   | _                | 33                                   | _                           | 51                                   | _                                      | 28                                   |
| Skills training | —                | 61                                   | —                | 26                                   | _                           | 43                                   | _                                      | 20                                   |
| Ongoing support | _                | 61                                   | —                | 19                                   | _                           | 35                                   | _                                      | 18                                   |
| Scholarships    | —                | 28                                   | <u> </u>         | 8                                    | —                           | 19                                   | _                                      | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | _                | 54                                |
| Pharmacy  | _                | 54                                |

<sup>§</sup> Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

I.

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | _                | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | Yes              | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |                  |                                   |                  |                                   |  |  |
|-------------------------------|------------------|-----------------------------------|------------------|-----------------------------------|--|--|
| Profession                    | Students         |                                   | Professionals    |                                   |  |  |
|                               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%) <sup>c§</sup> |  |  |
| Medical                       | —                | 68                                | —                | 71                                |  |  |
| Public health                 | —                | 52                                | —                | 56                                |  |  |
| Nursing                       | —                | 50                                | _                | 55                                |  |  |
| Pharmacy                      | —                | 45                                | —                | 37                                |  |  |
| Dentistry                     | —                | 39                                | —                | 37                                |  |  |
| ° n=113                       |                  |                                   |                  |                                   |  |  |

# Albania

| 6             | Population (000s)                | 3 143        | Total health expenditure (%GDP)                  | 6.8  | ICT Development Index                              | 3.12   |
|---------------|----------------------------------|--------------|--|------|--|--------|
| ntry<br>ators | GNI per capita (PPP Int \$)      | 8 170        | Per capita total health expenditure (PPP Int \$) | 536  | ICT Development Index rank                         | 83     |
| oun<br>ica    | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 29   | Mobile cellular subscriptions (per 100 population) | 131.89 |
| ind C         | OECD country                     | No           | Physician density (per 10 000 population)        | 11.5 | Internet users (per 100 population)                | 41.20  |
|               | Life expectancy at birth (years) | 73           | Nurse density (per 10 000 population)            | 40.3 | Disability Adjusted Life Years (DALY)              | 16 106 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2004                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2004                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | 2007                   |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | _                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| in orioatin experiation funding course |                     |                                      |   |                                      |                       |                                      |                     |                                      |
|--|---------------------|--------------------------------------|---|--------------------------------------|-----------------------|--------------------------------------|---------------------|--------------------------------------|
| Expenditure                            | Public              | funding                              | Private funding Donor/non-public<br>funding |                                      | nding Private funding |                                      |                     | -private<br>ps funding               |
|  | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response                         | Global<br>response (%) <sup>b§</sup> | Country response      | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment                          | Yes                 | 78                                   | _   | 37                                   | Yes                   | 59                                   | _                   | 28                                   |
| Software                               | Yes                 | 76                                   | —   | 35                                   | No                    | 56                                   | —                   | 29                                   |
| Pilot projects                         | No                  | 69                                   | _   | 33                                   | No                    | 51                                   | _                   | 28                                   |
| Skills training                        | No                  | 61                                   | _   | 26                                   | No                    | 43                                   | _                   | 20                                   |
| Ongoing support                        | No                  | 61                                   | _   | 19                                   | No                    | 35                                   | _                   | 18                                   |
| Scholarships                           | No                  | 28                                   | —   | 8                                    | No                    | 19                                   | —                   | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | No               | 73                                |
| Nursing   | No               | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   | •                |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

| Profession    | Students         |                                   | Professionals    |                       |  |
|---------------|------------------|-----------------------------------|------------------|-----------------------|--|
|               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%)°§ |  |
| Medical       | -                | 68                                | _                | 71                    |  |
| Public health | _                | 52                                | _                | 56                    |  |
| Nursing       | -                | 50                                | _                | 55                    |  |
| Pharmacy      | _                | 45                                | -                | 37                    |  |
| Dentistry     | -                | 39                                | _                | 37                    |  |

# Argentina

|                | 5                       | Population (000s)                | 39 883                                       | Total health expenditure (%GDP)                  | 9.6  | ICT Development Index                 | 4.38   |
|----------------|-------------------------|----------------------------------|--|--|--|---------------------------------------|--------|
|                | to:                     | GNI per capita (PPP Int \$)      | 14 120                                       | Per capita total health expenditure (PPP Int \$) | 1 385  | ICT Development Index rank            | 49     |
| Coun<br>indica | World Bank income group | Upper-middle                     | Hospital bed density (per 10 000 population) | 41   | Mobile cellular subscriptions (per 100 population) | 130.31                                |        |
|                | OECD country            | No                               | Physician density (per 10 000 population)    | 31.6   | Internet users (per 100 population)                | 34.00                                 |        |
|                |                         | Life expectancy at birth (years) | 76   | Nurse density (per 10 000 population)            | 4.8  | Disability Adjusted Life Years (DALY) | 15 371 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2005                   |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Prohibits Legislation that allows/prohibits Internet pharmacy operations Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Do not know Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private funding  |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | Yes              | 37                                   | Yes                         | 59                                   | Yes                                    | 28                                   |
| Software        | Yes              | 76                                   | Yes              | 35                                   | Yes                         | 56                                   | Yes                                    | 29                                   |
| Pilot projects  | Yes              | 69                                   | Yes              | 33                                   | Yes                         | 51                                   | Yes                                    | 28                                   |
| Skills training | No               | 61                                   | No               | 26                                   | No                          | 43                                   | No                                     | 20                                   |
| Ongoing support | No               | 61                                   | No               | 19                                   | No                          | 35                                   | No                                     | 18                                   |
| Scholarships    | No               | 28                                   | No               | 8                                    | No                          | 19                                   | No                                     | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | _                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%)°§ |  |  |  |
|--|------------------|-----------------------|--|--|--|
| eLearning in health sciences at the tertiary level |                  |                       |  |  |  |
| Used in teaching health sciences                   | Yes              | 72                    |  |  |  |
| Used in training health professionals              | Yes              | 69                    |  |  |  |
| Barriers to eLearning                              |                  |                       |  |  |  |
| Underdeveloped infrastructure                      | Yes              | 64                    |  |  |  |
| Lack of policy framework                           | Yes              | 63                    |  |  |  |
| Lack of skilled course developers                  | No               | 55                    |  |  |  |
| Lack of knowledge of applications                  | No               | 46                    |  |  |  |
| Perceived costs too high                           | No               | 45                    |  |  |  |
| Availability of suitable courses                   | No               | 42                    |  |  |  |
| Lack of demand                                     | Yes              | 21                    |  |  |  |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Armenia

| ountry<br>icators | Population (000s)                | 3 077        | Total health expenditure (%GDP)                  | 3.8  | ICT Development Index                              | 2.94   |
|-------------------|----------------------------------|--------------|--|------|--|--------|
|                   | GNI per capita (PPP Int \$)      | 5 420        | Per capita total health expenditure (PPP Int \$) | 228  | ICT Development Index rank                         | 88     |
|                   | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 41   | Mobile cellular subscriptions (per 100 population) | 84.98  |
| ind C             | OECD country                     | No           | Physician density (per 10 000 population)        | 37.0 | Internet users (per 100 population)                | 6.75   |
|                   | Life expectancy at birth (years) | 70           | Nurse density (per 10 000 population)            | 48.7 | Disability Adjusted Life Years (DALY)              | 18 411 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | No               | 85 <sup>b</sup>      | —                  | —                      |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | _                  | _                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | _                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data 70 Yes To protect personally identifiable data specifically in EMR or EHR1 Do not know 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Do not know 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Do not know Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Do not know 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Do not know Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

### III. eHealth expenditures and their funding source

| m. cricann experiant | in cheath expenditures and their funding source |                            |                 |                            |                             |                            |  |                            |  |  |
|----------------------|---|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|--|
| Expenditure          | Public funding                                  |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |  |
|                      | Country   | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |  |  |
|                      | response  | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |  |
| ICT equipment        | No  | 78                         | Yes             | 37                         | Yes                         | 59                         | —                                      | 28                         |  |  |
| Software             | No  | 76                         | Yes             | 35                         | Yes                         | 56                         | —                                      | 29                         |  |  |
| Pilot projects       | No  | 69                         | Yes             | 33                         | Yes                         | 51                         | —                                      | 28                         |  |  |
| Skills training      | No  | 61                         | Yes             | 26                         | Yes                         | 43                         | _                                      | 20                         |  |  |
| Ongoing support      | No  | 61                         | No              | 19                         | No                          | 35                         | _                                      | 18                         |  |  |
| Scholarships         | No  | 28                         | No              | 8                          | Yes                         | 19                         | —                                      | 4                          |  |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |  |  |  |  |  |
|---|------------------|-----------------------------------|--|--|--|--|--|
| ICT education   |                  |                                   |  |  |  |  |  |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |  |  |  |  |  |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |  |  |  |  |  |
| Professional groups offered ICT continuing education                    |                  |                                   |  |  |  |  |  |
| Medical   | —                | 73                                |  |  |  |  |  |
| Nursing   | —                | 62                                |  |  |  |  |  |
| Public health   | —                | 60                                |  |  |  |  |  |
| Dentistry   | —                | 54                                |  |  |  |  |  |
| Pharmacy  | _                | 54                                |  |  |  |  |  |

<sup>§</sup> Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | _                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 No 55 Pharmacy Yes 45 No 37 Dentistry Yes 39 No 37 <sup>a</sup> n=113

# Austria

| <b>6</b> | Population (000s)                | 8 337  | Total health expenditure (%GDP)                  | 10.1  | ICT Development Index                              | 6.72   |
|----------|----------------------------------|--------|--|-------|--|--------|
| tor      | GNI per capita (PPP Int \$)      | 38 550 | Per capita total health expenditure (PPP Int \$) | 3 836 | ICT Development Index rank                         | 17     |
| lica     | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 78    | Mobile cellular subscriptions (per 100 population) | 136.71 |
| ind      | OECD country                     | Yes    | Physician density (per 10 000 population)        | 37.9  | Internet users (per 100 population)                | 73.45  |
|          | Life expectancy at birth (years) | 80     | Nurse density (per 10 000 population)            | 66.4  | Disability Adjusted Life Years (DALY)              | 10 223 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2006                   |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2006                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | _                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | Yes              | 25°                  | Partly             | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Prohibits Legislation that allows/prohibits Internet pharmacy operations Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| in choan choman co and then runang course |                  |                                      |                  |                                      |                  |                                      |  |                                      |  |
|---|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|--|--------------------------------------|--|
| Expenditure                               | Public funding   |                                      | Private funding  |                                      |                  | on-public<br>ding                    | Public-private<br>partnerships funding |                                      |  |
|   | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |  |
| ICT equipment                             | Yes              | 78                                   | Yes              | 37                                   | No               | 59                                   | Yes                                    | 28                                   |  |
| Software                                  | Yes              | 76                                   | Yes              | 35                                   | No               | 56                                   | Yes                                    | 29                                   |  |
| Pilot projects                            | Yes              | 69                                   | Yes              | 33                                   | Yes              | 51                                   | Yes                                    | 28                                   |  |
| Skills training                           | Yes              | 61                                   | Yes              | 26                                   | No               | 43                                   | No                                     | 20                                   |  |
| Ongoing support                           | Yes              | 61                                   | Yes              | 19                                   | No               | 35                                   | No                                     | 18                                   |  |
| Scholarships                              | Yes              | 28                                   | Yes              | 8                                    | No               | 19                                   | No                                     | 4                                    |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | No               | 54                                |

<sup>§</sup> Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | Partly           | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | Yes              | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 No 71 Public health Yes 52 Yes 56 Nursing No 50 Yes 55 Pharmacy No 45 No 37 Dentistry Yes 39 No 37 <sup>a</sup> n=113

# Azerbaijan

| <i>(</i> 0 | Population (000s)                | 8 731        | Total health expenditure (%GDP)                  | 3.6  | ICT Development Index                              | 3.18   |
|------------|----------------------------------|--------------|--|------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 9 030        | Per capita total health expenditure (PPP Int \$) | 316  | ICT Development Index rank                         | 81     |
| oun<br>ica | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 79   | Mobile cellular subscriptions (per 100 population) | 87.83  |
| ind        | OECD country                     | No           | Physician density (per 10 000 population)        | 37.9 | Internet users (per 100 population)                | 27.40  |
|            | Life expectancy at birth (years) | 68           | Nurse density (per 10 000 population)            | 84.2 | Disability Adjusted Life Years (DALY)              | 21 525 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# Country response Global response (% National eGovernment policy Yes 85<sup>b</sup>

|   | Country response | Global response (%) <sup>3</sup> | Policy implemented | Year of implementation |
|---|------------------|----------------------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>                  | Partly             | 2003                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>                  | Partly             | 2005                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>                  | —                  | _                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>                  | —                  | —                      |
| National telemedicine policy                      | No               | 25°                              | _                  | _                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| in cricatil experiations and their funding source |                |                            |                                |                            |          |                            |  |                            |  |
|---|----------------|----------------------------|--------------------------------|----------------------------|----------|----------------------------|--|----------------------------|--|
| Expenditure                                       | Public funding |                            | Public funding Private funding |                            |          | on-public<br>ding          | Public-private<br>partnerships funding |                            |  |
|   | Country        | Global                     | Global Country Global          |                            | Country  | Global                     | Country                                | Global                     |  |
|   | response       | response (%) <sup>b§</sup> | response                       | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |
| ICT equipment                                     | Yes            | 78                         | —                              | 37                         | Yes      | 59                         | —                                      | 28                         |  |
| Software  | Yes            | 76                         | —                              | 35                         | Yes      | 56                         | —                                      | 29                         |  |
| Pilot projects                                    | Yes            | 69                         | —                              | 33                         | Yes      | 51                         | —                                      | 28                         |  |
| Skills training                                   | Yes            | 61                         | <u> </u>                       | 26                         | Yes      | 43                         | —                                      | 20                         |  |
| Ongoing support                                   | No             | 61                         | _                              | 19                         | No       | 35                         | _                                      | 18                         |  |
| Scholarships                                      | No             | 28                         | —                              | 8                          | No       | 19                         | —                                      | 4                          |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   | •                |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 Yes 56 Nursing No 50 No 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

| 6          | Population (000s)                | 160 000 | Total health expenditure (%GDP)                  | 3.5 | ICT Development Index                              | 1.41   |
|------------|----------------------------------|---------|--|-----|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 1 580   | Per capita total health expenditure (PPP Int \$) | 47  | ICT Development Index rank                         | 137    |
| lica       | World Bank income group          | Low     | Hospital bed density (per 10 000 population)     | 4   | Mobile cellular subscriptions (per 100 population) | 32.32  |
| ŭ <u>p</u> | OECD country                     | No      | Physician density (per 10 000 population)        | 3.0 | Internet users (per 100 population)                | 0.38   |
|            | Life expectancy at birth (years) | 65      | Nurse density (per 10 000 population)            | 2.8 | Disability Adjusted Life Years (DALY)              | 27 532 |

# eHealth foundation actions

|                        | Bangla   | desh                                  |   |                    |                                    |                    |                       |
|------------------------|--|---------------------------------------|---|--------------------|------------------------------------|--------------------|-----------------------|
| C                      | Population (000s)  | 160 000 To                            | otal health expenditure (%GDI                   | P) 3.5             | ICT Development Index              |                    | 1.41                  |
| õ                      | GNI per capita (PPP Int \$)  |                                       | er capita total health expenditu                |                    | ICT Development Index rank         |                    | 137                   |
|                        | GNI per capita (PPP Int \$)<br>GNI per capita (PPP Int \$)<br>World Bank income group<br>OECD country                                      | Low H                                 | lospital bed density (per 10 00                 | 0 population) 4    | Mobile cellular subscriptions (pe  | er 100 population) | 32.32                 |
|                        | OECD country   | No P                                  | Physician density (per 10 000 p                 | opulation) 3.0     | Internet users (per 100 popula     | ition)             | 0.38                  |
| Å                      | Life expectancy at birth (ye   | ars) 65 N                             | lurse density (per 10 000 popu                  | lation) 2.8        | Disability Adjusted Life Years (   | DALY)              | 27 532                |
|                        | Sources: See page ix   |                                       |   |                    |                                    |                    |                       |
| South-East Asia Region | <ul> <li>eHealth foundation actions<br/>policy, legal and ethical fra<br/>capacity of the health work</li> <li>Policy framework</li> </ul> | s build an enablin<br>imeworks; adequ | g environment for the<br>ate funding from vario |                    |                                    |                    |                       |
| Ш                      |  |                                       | Country response                                | Global response (9 | 6) <sup>§</sup> Policy implemented | Year of implem     | entation              |
| <u> </u>               | National eGovernment polic   | :V                                    | Yes   | 85 <sup>b</sup>    | Partly                             | 2002               |                       |
| ÷                      | National eHealth policy  | ,                                     | No  | 55 <sup>b</sup>    | _                                  | -                  |                       |
| $\supset$              | National ICT procurement po  | olicy for health sector               | r <b>No</b>                                     | 37 <sup>b</sup>    | _                                  | -                  |                       |
| 0                      | National multiculturalism po   | licy for eHealth                      | Yes   | 30 <sup>b</sup>    | Partly                             | 2007               |                       |
| S                      | National telemedicine policy   | 1                                     | No  | 25°                | —                                  | —                  |                       |
| OHW                    | II. Legal and ethical fram   | eworks for eHea                       | alth  |                    | Country response                   | Global respor      | nse (%) <sup>aş</sup> |
| $\leq$                 | Legislation on personal and he   | ealth-related data                    |   |                    | , , , , , , , , , , , , , , , , ,  |                    |                       |
| -                      | To ensure privacy of person  |                                       |   |                    | No                                 | 70                 |                       |
|                        | To protect personally identif  | No                                    | 31  |                    |                                    |                    |                       |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding      |                                      | Private funding     |                                      | Donor/non-public<br>funding |                                      |                     | private<br>ps funding                |
|-----------------|---------------------|--------------------------------------|---------------------|--------------------------------------|-----------------------------|--------------------------------------|---------------------|--------------------------------------|
|                 | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes                 | 78                                   | Yes                 | 37                                   | Yes                         | 59                                   | _                   | 28                                   |
| Software        | Yes                 | 76                                   | Yes                 | 35                                   | Yes                         | 56                                   | —                   | 29                                   |
| Pilot projects  | Yes                 | 69                                   | Yes                 | 33                                   | Yes                         | 51                                   | _                   | 28                                   |
| Skills training | Yes                 | 61                                   | Yes                 | 26                                   | Yes                         | 43                                   | —                   | 20                                   |
| Ongoing support | Yes                 | 61                                   | Yes                 | 19                                   | Yes                         | 35                                   | _                   | 18                                   |
| Scholarships    | No                  | 28                                   | No                  | 8                                    | No                          | 19                                   | —                   | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

| I. Telemedicine   |                  |                                   |  |  |  |
|---|------------------|-----------------------------------|--|--|--|
|   | Country response | Global response (%) <sup>c§</sup> |  |  |  |
| Telemedicine enabling actions   |                  |                                   |  |  |  |
| National telemedicine policy  | No               | 25                                |  |  |  |
| Implemented national telemedicine policy                                    | _                | -                                 |  |  |  |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |  |  |  |
| Barriers to implementing telemedicine solutions                             |                  |                                   |  |  |  |
| Perceived costs too high  | Yes              | 60                                |  |  |  |
| Lack of legal policies/regulation   | No               | 40                                |  |  |  |
| Organizational culture not supportive                                       | No               | 39                                |  |  |  |
| Underdeveloped infrastructure   | Yes              | 38                                |  |  |  |
| Lack of policy frameworks   | No               | 37                                |  |  |  |
| Competing priorities  | No               | 37                                |  |  |  |
| Lack of demand by health professionals                                      | No               | 31                                |  |  |  |
| Lack of nationally adopted standards  | No               | 26                                |  |  |  |
| Lack of knowledge of applications   | Yes              | 25                                |  |  |  |
| Lack of technical expertise   | Yes              | 17                                |  |  |  |
| Information most needed in country to support telemedicine development      |                  |                                   |  |  |  |
| Cost and cost effectiveness   | Yes              | 69                                |  |  |  |
| Clinical possibilities  | Yes              | 58                                |  |  |  |
| Infrastructure  | Yes              | 52                                |  |  |  |
| Evaluation  | No               | 46                                |  |  |  |
| Legal and ethical   | No               | 45                                |  |  |  |
| Effect on human resources   | No               | 40                                |  |  |  |
| Patients' perception  | Yes              | 30                                |  |  |  |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |  |    |                  |                       |  |  |
|-------------------------------|--|----|------------------|-----------------------|--|--|
| Profession                    | Students   |    | Professionals    |                       |  |  |
|                               | Country response Global response (%) <sup>c§</sup> |    | Country response | Global response (%)°§ |  |  |
| Medical                       | —  | 68 | —                | 71                    |  |  |
| Public health                 | —  | 52 | —                | 56                    |  |  |
| Nursing                       | —  | 50 | _                | 55                    |  |  |
| Pharmacy                      | —  | 45 | —                | 37                    |  |  |
| Dentistry                     | _  | 39 | _                | 37                    |  |  |
| <sup>a</sup> n=113            |  |    |                  |                       |  |  |

# Belarus

| 6          | Population (000s)                | 9 679        | Total health expenditure (%GDP)                  | 6.5   | ICT Development Index                              | 4.07   |
|------------|----------------------------------|--------------|--|-------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 12 380       | Per capita total health expenditure (PPP Int \$) | 800   | ICT Development Index rank                         | 55     |
| oun<br>ica | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 112   | Mobile cellular subscriptions (per 100 population) | 100.55 |
| ind C      | OECD country                     | No           | Physician density (per 10 000 population)        | 48.7  | Internet users (per 100 population)                | 27.43  |
|            | Life expectancy at birth (years) | 70           | Nurse density (per 10 000 population)            | 125.6 | Disability Adjusted Life Years (DALY)              | 19 388 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2003                   |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Do not know 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 No Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Do not know Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Do not know 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals 17 Yes

### III. eHealth expenditures and their funding source

| in cricatil experiatares and their funding source |                |                            |                 |                            |                             |                            |  |                            |
|---|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|
| Expenditure                                       | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |
|   | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |
| ICT equipment                                     | Yes            | 78                         | —               | 37                         | Yes                         | 59                         | —                                      | 28                         |
| Software  | Yes            | 76                         | —               | 35                         | Yes                         | 56                         | —                                      | 29                         |
| Pilot projects                                    | Yes            | 69                         | —               | 33                         | Yes                         | 51                         | —                                      | 28                         |
| Skills training                                   | Yes            | 61                         | _               | 26                         | No                          | 43                         | _                                      | 20                         |
| Ongoing support                                   | No             | 61                         | _               | 19                         | No                          | 35                         | _                                      | 18                         |
| Scholarships                                      | No             | 28                         | <u> </u>        | 8                          | No                          | 19                         | —                                      | 4                          |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Do not know      | 77                                |
| Institutions offer continuing education in ICT for health professionals | Do not know      | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | _                | 54                                |
| Pharmacy  | _                | 54                                |

<sup>§</sup> Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | _                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No               | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Belgium

| 6             | Population (000s)                | 10 590 | Total health expenditure (%GDP)                  | 9.7   | ICT Development Index                              | 6.36   |
|---------------|----------------------------------|--------|--|-------|--|--------|
| ntry<br>ators | GNI per capita (PPP Int \$)      | 36 520 | Per capita total health expenditure (PPP Int \$) | 3 392 | ICT Development Index rank                         | 23     |
| lica          | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 53    | Mobile cellular subscriptions (per 100 population) | 117.49 |
| Cou<br>indic  | OECD country                     | Yes    | Physician density (per 10 000 population)        | 42.3  | Internet users (per 100 population)                | 76.20  |
|               | Life expectancy at birth (years) | 80     | Nurse density (per 10 000 population)            | 5.3   | Disability Adjusted Life Years (DALY)              | 10 750 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2000                   |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2005                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | 2003                   |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Yes                | Before 2000            |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Prohibits Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Yes 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries **Prohibits** Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals 17 Yes

### III. eHealth expenditures and their funding source

| in crican expenditures and their funding source |                |                            |                               |                            |                             |                            |  |                            |
|---|----------------|----------------------------|-------------------------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|
| Expenditure                                     | Public funding |                            | ublic funding Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |
|   | Country        | Global                     | Country                       | Global                     | Country                     | Global                     | Country                                | Global                     |
|   | response       | response (%) <sup>b§</sup> | response                      | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |
| ICT equipment                                   | Yes            | 78                         | Yes                           | 37                         | _                           | 59                         | No                                     | 28                         |
| Software  | Yes            | 76                         | Yes                           | 35                         | _                           | 56                         | No                                     | 29                         |
| Pilot projects                                  | Yes            | 69                         | Yes                           | 33                         | _                           | 51                         | Yes                                    | 28                         |
| Skills training                                 | No             | 61                         | Yes                           | 26                         | _                           | 43                         | No                                     | 20                         |
| Ongoing support                                 | Yes            | 61                         | Yes                           | 19                         | _                           | 35                         | No                                     | 18                         |
| Scholarships                                    | No             | 28                         | No                            | 8                          | —                           | 19                         | No                                     | 4                          |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%)°§ |
|--|------------------|-----------------------|
| eLearning in health sciences at the tertiary level |                  |                       |
| Used in teaching health sciences                   | Yes              | 72                    |
| Used in training health professionals              | Yes              | 69                    |
| Barriers to eLearning                              |                  |                       |
| Underdeveloped infrastructure                      | No               | 64                    |
| Lack of policy framework                           | Yes              | 63                    |
| Lack of skilled course developers                  | No               | 55                    |
| Lack of knowledge of applications                  | Yes              | 46                    |
| Perceived costs too high                           | No               | 45                    |
| Availability of suitable courses                   | No               | 42                    |
| Lack of demand                                     | Yes              | 21                    |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 No 56 Nursing No 50 No 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Belize

| 0     | Population (000s)                | 301          | Total health expenditure (%GDP)                  | 4.0  | ICT Development Index                              | —      |
|-------|----------------------------------|--------------|--|------|--|--------|
| tors  | GNI per capita (PPP Int \$)      | 5 950        | Per capita total health expenditure (PPP Int \$) | 288  | ICT Development Index rank                         | —      |
| ica   | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 12   | Mobile cellular subscriptions (per 100 population) | 52.74  |
| ind C | OECD country                     | No           | Physician density (per 10 000 population)        | 10.5 | Internet users (per 100 population)                | 11.73  |
|       | Life expectancy at birth (years) | 72           | Nurse density (per 10 000 population)            | 12.6 | Disability Adjusted Life Years (DALY)              | 21 180 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2007                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | No                 | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data No 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Do not know 26 With different health care entities within the country Do not know 23 With health care entities in other countries Do not know 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 No data Technology through filters and controls 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

### III, eHealth expenditures and their funding source

| in cricatil expenditures and their funding source |                |                            |                 |                            |          |                            |          |                                     |
|---|----------------|----------------------------|-----------------|----------------------------|----------|----------------------------|----------|-------------------------------------|
| Expenditure                                       | Public funding |                            | Private funding |                            |          | on-public<br>ding          |          | <private<br>ps funding</private<br> |
|   | Country        | Global                     | Country         | Global                     | Country  | Global                     | Country  | Global                              |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>          |
| ICT equipment                                     | Yes            | 78                         | Yes             | 37                         | Yes      | 59                         | No       | 28                                  |
| Software  | Yes            | 76                         | Yes             | 35                         | Yes      | 56                         | Yes      | 29                                  |
| Pilot projects                                    | Yes            | 69                         | No              | 33                         | Yes      | 51                         | No       | 28                                  |
| Skills training                                   | Yes            | 61                         | Yes             | 26                         | Yes      | 43                         | No       | 20                                  |
| Ongoing support                                   | Yes            | 61                         | Yes             | 19                         | Yes      | 35                         | Yes      | 18                                  |
| Scholarships                                      | Yes            | 28                         | Yes             | 8                          | Yes      | 19                         | No       | 4                                   |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No               | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

| IIIb. eLearning target groups |                  |                                   |                  |                                   |  |
|-------------------------------|------------------|-----------------------------------|------------------|-----------------------------------|--|
| Profession                    | Students         |                                   | Profes           | sionals                           |  |
|                               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%) <sup>c§</sup> |  |
| Medical                       | _                | 68                                | Yes              | 71                                |  |
| Public health                 | —                | 52                                | Yes              | 56                                |  |
| Nursing                       | —                | 50                                | Yes              | 55                                |  |
| Pharmacy                      | —                | 45                                | No               | 37                                |  |
| Dentistry                     | —                | 39                                | No               | 37                                |  |
| ° n=113                       |                  |                                   |                  |                                   |  |

# Benir

| S           | Population (000s)                | 8 662 | Total health expenditure (%GDP)                  | 4.8 | ICT Development Index                              | 1.35   |
|-------------|----------------------------------|-------|--|-----|--|--------|
| ton         | GNI per capita (PPP Int \$)      | 1 510 | Per capita total health expenditure (PPP Int \$) | 72  | ICT Development Index rank                         | 141    |
| oun<br>lica | World Bank income group          | Low   | Hospital bed density (per 10 000 population)     | 5   | Mobile cellular subscriptions (per 100 population) | 56.33  |
| ind C       | OECD country                     | No    | Physician density (per 10 000 population)        | 0.6 | Internet users (per 100 population)                | 2.24   |
|             | Life expectancy at birth (years) | 57    | Nurse density (per 10 000 population)            | 7.7 | Disability Adjusted Life Years (DALY)              | 37 601 |

Sources: See page ix

# eHealth foundation actions

II. Legal and ethical frameworks for eHealth

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|--|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2003                   |  |  |  |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |  |  |  |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2000                   |  |  |  |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |  |  |  |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |  |  |  |

### **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data No To protect personally identifiable data specifically in EMR or EHR1 No Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No With different health care entities within the country No With health care entities in other countries No Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No Security tools required by law for facilities used by children No Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data Technology through filters and controls No data Government intervention through laws or regulations No data

Education programmes for consumers and professionals Official approval through certification, accreditation, or quality seals

### III. eHealth expenditures and their funding source

| Expenditure     | Public           | funding                              | Private funding  |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | Yes              | 37                                   | Yes                         | 59                                   | Yes                                    | 28                                   |
| Software        | Yes              | 76                                   | Yes              | 35                                   | Yes                         | 56                                   | Yes                                    | 29                                   |
| Pilot projects  | No               | 69                                   | No               | 33                                   | No                          | 51                                   | No                                     | 28                                   |
| Skills training | No               | 61                                   | No               | 26                                   | Yes                         | 43                                   | No                                     | 20                                   |
| Ongoing support | No               | 61                                   | No               | 19                                   | No                          | 35                                   | No                                     | 18                                   |
| Scholarships    | No               | 28                                   | No               | 8                                    | No                          | 19                                   | No                                     | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |  |  |  |
|---|------------------|-----------------------------------|--|--|--|
| ICT education   |                  |                                   |  |  |  |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |  |  |  |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |  |  |  |
| Professional groups offered ICT continuing education                    |                  |                                   |  |  |  |
| Medical   | Yes              | 73                                |  |  |  |
| Nursing   | No               | 62                                |  |  |  |
| Public health   | Yes              | 60                                |  |  |  |
| Dentistry   | No               | 54                                |  |  |  |
| Pharmacy  | No               | 54                                |  |  |  |

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

No data

No data

70

31

26

23

11

7

47

22

56

28

26

23

17

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No               | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |                  |                       |                   |                       |  |
|-------------------------------|------------------|-----------------------|-------------------|-----------------------|--|
| Profession                    | Stuc             | lents                 | nts Professionals |                       |  |
|                               | Country response | Global response (%)°§ | Country response  | Global response (%)°§ |  |
| Medical                       | _                | 68                    | _                 | 71                    |  |
| Public health                 | —                | 52                    | —                 | 56                    |  |
| Nursing                       | —                | 50                    | _                 | 55                    |  |
| Pharmacy                      | —                | 45                    | —                 | 37                    |  |
| Dentistry                     | —                | 39                    | —                 | 37                    |  |
| <sup>a</sup> n=113            |                  |                       |                   |                       |  |

| 6                           | Population (000s)                | 687          | Total health expenditure (%GDP)                  | 3.9  | ICT Development Index                              | 1.62   |
|-----------------------------|----------------------------------|--------------|--|------|--|--------|
| tor                         | GNI per capita (PPP Int \$)      | 5 300        | Per capita total health expenditure (PPP Int \$) | 193  | ICT Development Index rank                         | 123    |
| Coun <sup>.</sup><br>Idicat | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 17   | Mobile cellular subscriptions (per 100 population) | 48.60  |
| ind                         | OECD country                     | No           | Physician density (per 10 000 population)        | <0.5 | <0.5 Internet users (per 100 population)           |        |
|                             | Life expectancy at birth (years) | 63           | Nurse density (per 10 000 population)            | 2.4  | Disability Adjusted Life Years (DALY)              | 25 734 |

# eHealth foundation actions

|                        | Bł   | nutan  |  |  |                      |  |                                   |  |           |
|------------------------|--|--|--|--|----------------------|--|-----------------------------------|--|-----------|
| C                      |  | Population (000s)  | 687  | Total health expenditure (%GDF                           | <b>)</b>             | 3.9  | ICT Development Index             |  | 1.62      |
| ō                      | try  | GNI per capita (PPP Int \$)  | 5 300  | Per capita total health expenditu                        | re (PPP Int \$)      | 193  | ICT Development Index rank        |  | 123       |
|                        | Country<br>indicators                              | World Bank income group  | Lower-middle   | Hospital bed density (per 10 00                          | 0 population)        | 17   | Mobile cellular subscriptions (pe | er 100 population)                         | 48.60     |
|                        | ind  | OECD country   | No   | Physician density (per 10 000 p                          | opulation)           | <0.5   | Internet users (per 100 popula    | tion)                                      | 7.17      |
| Å                      |  | Life expectancy at birth (years)   | 63   | Nurse density (per 10 000 popu                           | llation)             | 2.4  | Disability Adjusted Life Years (  | DALY)                                      | 25 734    |
|                        | Source   | es: See page ix  |  |  |                      |  |                                   |  |           |
| ast As                 | eHealt<br>policy,<br>capaci                        | Health found<br>h foundation actions buil<br>legal and ethical framew<br>ty of the health work force   | ld an enabli<br>vorks; adeq                                      | ng environment for the<br>uate funding from vario        |                      |  |                                   |  |           |
|                        | I. Poli  | cy framework   | oo unougin i   | raining.   |                      |  |                                   |  | 5         |
| ш                      | I. Poli  | cy framework   |  |  | Global res           | ponse (%)  | Policy implemented                |  |           |
| Ц<br>Ц                 |  |  |  | Country response<br>Yes                                  | Global res           |  | Policy implemented<br>Partly      | Year of implen 2004                        | nentation |
| th-E(                  | Natio  | cy framework<br>onal eGovernment policy<br>onal eHealth policy   |  | Country response   | 8                    |  |                                   | Year of implen                             | nentation |
| Uth-E                  | Natio<br>Natio                                     | onal eGovernment policy  |  | Country response<br>Yes<br>No                            | 8:<br>5:             | 5 <sup>b</sup>   |                                   | Year of implen                             | nentation |
| outh-E                 | Natio<br>Natio<br>Natio                            | onal eGovernment policy<br>onal eHealth policy   | or health sect   | Country response<br>Yes<br>No                            | 8:<br>5:             | 5 <sup>b</sup><br>5 <sup>b</sup><br>7 <sup>b</sup>                   | Partly<br>–                       | Year of implen                             | nentation |
| South-East Asia Region | Natio<br>Natio<br>Natio                            | onal eGovernment policy<br>onal eHealth policy<br>onal ICT procurement policy for  | or health sect   | Country response<br>Yes<br>No<br>or No                   | 84<br>55<br>31<br>30 | 5 <sup>b</sup><br>5 <sup>b</sup><br>7 <sup>b</sup>                   | Partly<br>—<br>—                  | Year of implen<br>2004<br>—                | nentation |
|                        | Natio<br>Natio<br>Natio<br>Natio                   | onal eGovernment policy<br>onal eHealth policy<br>onal ICT procurement policy fo<br>onal multiculturalism policy fo  | or health sect<br>or eHealth                                     | Country response<br>Yes<br>No<br>or No<br>No<br>No<br>No | 84<br>55<br>31<br>30 | 5 <sup>b</sup><br>5 <sup>b</sup><br>7 <sup>b</sup><br>0 <sup>b</sup> | Partly<br>—<br>—                  | Year of implen<br>2004<br>—                | nentation |
| WHO South-Ea           | Natio<br>Natio<br>Natio<br>Natio                   | onal eGovernment policy<br>onal eHealth policy<br>onal ICT procurement policy fr<br>onal multiculturalism policy fo<br>onal telemedicine policy                            | or health sect<br>or eHealth                                     | Country response<br>Yes<br>No<br>or No<br>No<br>No<br>No | 84<br>55<br>31<br>30 | 5 <sup>b</sup><br>5 <sup>b</sup><br>7 <sup>b</sup><br>0 <sup>b</sup> | Partly<br>—<br>—<br>—<br>—<br>—   | Year of implem<br>2004<br>—<br>—<br>—<br>— | nentation |
|                        | Natio<br>Natio<br>Natio<br>Natio<br><b>II. Leg</b> | onal eGovernment policy<br>onal eHealth policy<br>onal ICT procurement policy fo<br>onal multiculturalism policy fo<br>onal telemedicine policy<br>gal and ethical framewo | or health sect<br>or eHealth<br>orks for eHearth<br>related data | Country response Yes No No No No No No No                | 84<br>55<br>31<br>30 | 5 <sup>b</sup><br>5 <sup>b</sup><br>7 <sup>b</sup><br>0 <sup>b</sup> | Partly<br>—<br>—<br>—<br>—<br>—   | Year of implem<br>2004<br>—<br>—<br>—<br>— | nentation |

|  | Country response                      | Global response (%) <sup>a§</sup> |
|--|---------------------------------------|-----------------------------------|
| Legislation on personal and health-related data  |                                       |                                   |
| To ensure privacy of personally identifiable data  | No                                    | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No                                    | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> | · · · · · · · · · · · · · · · · · · · |                                   |
| Within the same health care facility and its network of care providers                             | No                                    | 26                                |
| With different health care entities within the country   | No                                    | 23                                |
| With health care entities in other countries   | No                                    | 11                                |
| Internet pharmacies  |                                       |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No                                    | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No                                    | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No                                    | Allows: 6, Prohibits: 12          |
| Internet safety  |                                       |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes                                   | 47                                |
| Security tools required by law for facilities used by children                                     | No                                    | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                                       |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes                                   | 56                                |
| Technology through filters and controls  | No                                    | 28                                |
| Government intervention through laws or regulations  | No                                    | 26                                |
| Education programmes for consumers and professionals   | No                                    | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No                                    | 17                                |

## III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private funding  |                                      | Donor/non-public<br>funding |                                      |                  | <ul> <li>private</li> <li>ps funding</li> </ul> |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|------------------|---|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup>            |
| ICT equipment   | Yes              | 78                                   | _                | 37                                   | Yes                         | 59                                   | _                | 28  |
| Software        | Yes              | 76                                   | —                | 35                                   | Yes                         | 56                                   | —                | 29  |
| Pilot projects  | Yes              | 69                                   | _                | 33                                   | Yes                         | 51                                   | _                | 28  |
| Skills training | Yes              | 61                                   | _                | 26                                   | Yes                         | 43                                   | _                | 20  |
| Ongoing support | Yes              | 61                                   | _                | 19                                   | No                          | 35                                   | _                | 18  |
| Scholarships    | Yes              | 28                                   | —                | 8                                    | Yes                         | 19                                   | <u> </u>         | 4   |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical No 68 No 71 Public health Yes 52 No 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113 <sup>b</sup> n=112

° n=114

# Botswana

| 6             | Population (000s)                | 1 921        | Total health expenditure (%GDP)                  | 5.6  | ICT Development Index                              | 2.30   |
|---------------|----------------------------------|--------------|--|------|--|--------|
| ntry<br>ators | GNI per capita (PPP Int \$)      | 12 860       | Per capita total health expenditure (PPP Int \$) | 779  | ICT Development Index rank                         | 109    |
| Coun          | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 18   | Mobile cellular subscriptions (per 100 population) | 96.12  |
| ind C         | OECD country                     | No           | Physician density (per 10 000 population)        | 4.0  | Internet users (per 100 population)                | 6.15   |
|               | Life expectancy at birth (years) | 61           | Nurse density (per 10 000 population)            | 26.5 | Disability Adjusted Life Years (DALY)              | 53 389 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|                                |                       | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |
|--------------------------------|-----------------------|------------------|----------------------|--------------------|------------------------|--|--|
| National eGovernment policy    | ,                     | Yes              | 85 <sup>⊳</sup>      | Partly             | 2007                   |  |  |
| National eHealth policy        |                       | Yes              | 55 <sup>⊳</sup>      | Partly             | 2003                   |  |  |
| National ICT procurement po    | icy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | Before 2000            |  |  |
| National multiculturalism poli | cy for eHealth        | Yes              | 30 <sup>b</sup>      | Partly             | 2009                   |  |  |
| National telemedicine policy   |                       | Yes              | 25°                  | Partly             | —                      |  |  |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data 70 Yes To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> Do not know 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Do not know 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

## III. eHealth expenditures and their funding source

| in cricatil experiations and their funding source |                |                            |                 |                            |                             |                            |  |                            |  |  |
|---|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|--|
| Expenditure                                       | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |  |
|   | Country Global |                            | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |  |  |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |  |
| ICT equipment                                     | Yes            | 78                         | Yes             | 37                         | Yes                         | 59                         | Yes                                    | 28                         |  |  |
| Software  | Yes            | 76                         | Yes             | 35                         | Yes                         | 56                         | Yes                                    | 29                         |  |  |
| Pilot projects                                    | No             | 69                         | Yes             | 33                         | Yes                         | 51                         | No                                     | 28                         |  |  |
| Skills training                                   | Yes            | 61                         | Yes             | 26                         | Yes                         | 43                         | Yes                                    | 20                         |  |  |
| Ongoing support                                   | Yes            | 61                         | Yes             | 19                         | Yes                         | 35                         | Yes                                    | 18                         |  |  |
| Scholarships                                      | Yes            | 28                         | No              | 8                          | Yes                         | 19                         | Yes                                    | 4                          |  |  |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   | •                |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | Partly           | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

# IIIb. eLearning target groups

| Profession    | Stud             | dents                 | Professionals    |                       |  |
|---------------|------------------|-----------------------|------------------|-----------------------|--|
|               | Country response | Global response (%)°§ | Country response | Global response (%)°§ |  |
| Medical       | No               | 68                    | Yes              | 71                    |  |
| Public health | No               | 52                    | Yes              | 56                    |  |
| Nursing       | Yes              | 50                    | Yes              | 55                    |  |
| Pharmacy      | Yes              | 45                    | Yes              | 37                    |  |
| Dentistry     | Yes              | 39                    | Yes              | 37                    |  |
| a n-113       |                  |                       |                  |                       |  |

# Brazil

1.

| <b>(</b> ) | Population (000s)                | 191 972      | Total health expenditure (%GDP)                  | 8.4  | ICT Development Index                              | 3.81   |
|------------|----------------------------------|--------------|--|------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 10 260       | Per capita total health expenditure (PPP Int \$) | 904  | ICT Development Index rank                         | 60     |
| oun<br>ica | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 24   | Mobile cellular subscriptions (per 100 population) | 89.79  |
| ind        | OECD country                     | No           | Physician density (per 10 000 population)        | 16.9 | Internet users (per 100 population)                | 39.22  |
|            | Life expectancy at birth (years) | 73           | Nurse density (per 10 000 population)            | 29.1 | Disability Adjusted Life Years (DALY)              | 20 112 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|--|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | 2005                   |  |  |  |
| National eHealth policy                           | Do not know      | 55 <sup>b</sup>      | —                  | —                      |  |  |  |
| National ICT procurement policy for health sector | Do not know      | 37 <sup>b</sup>      | —                  | _                      |  |  |  |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | Do not know            |  |  |  |
| National telemedicine policy                      | Yes              | 25°                  | Yes                | —                      |  |  |  |

| II. Legal and ethical frameworks for effeatth  |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | Yes              | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | Do not know      | 26                                |
| With different health care entities within the country   | Do not know      | 23                                |
| With health care entities in other countries   | Do not know      | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | Do not know      | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | Do not know      | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | Do not know      | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | Yes              | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | ng Private funding |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|--------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response   | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | _                  | 37                                   | _                           | 59                                   | _                                      | 28                                   |
| Software        | Yes              | 76                                   | —                  | 35                                   | _                           | 56                                   | —                                      | 29                                   |
| Pilot projects  | No               | 69                                   | _                  | 33                                   | _                           | 51                                   | —                                      | 28                                   |
| Skills training | Yes              | 61                                   | _                  | 26                                   | _                           | 43                                   | —                                      | 20                                   |
| Ongoing support | Yes              | 61                                   | _                  | 19                                   | _                           | 35                                   | _                                      | 18                                   |
| Scholarships    | No               | 28                                   | —                  | 8                                    | —                           | 19                                   | —                                      | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | Yes              | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No data          | 60                                |
| Lack of legal policies/regulation   | No data          | 40                                |
| Organizational culture not supportive                                       | No data          | 39                                |
| Underdeveloped infrastructure   | No data          | 38                                |
| Lack of policy frameworks   | No data          | 37                                |
| Competing priorities  | No data          | 37                                |
| Lack of demand by health professionals                                      | No data          | 31                                |
| Lack of nationally adopted standards  | No data          | 26                                |
| Lack of knowledge of applications   | No data          | 25                                |
| Lack of technical expertise   | No data          | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

# Illa. eLearning

|  | Country response | Global response (%)°§ |
|--|------------------|-----------------------|
| eLearning in health sciences at the tertiary level |                  |                       |
| Used in teaching health sciences                   | Yes              | 72                    |
| Used in training health professionals              | Yes              | 69                    |
| Barriers to eLearning                              |                  |                       |
| Underdeveloped infrastructure                      | Yes              | 64                    |
| Lack of policy framework                           | No               | 63                    |
| Lack of skilled course developers                  | No               | 55                    |
| Lack of knowledge of applications                  | No               | 46                    |
| Perceived costs too high                           | Yes              | 45                    |
| Availability of suitable courses                   | No               | 42                    |
| Lack of demand                                     | No               | 21                    |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 No 37 Dentistry Yes 39 No 37 <sup>a</sup> n=113

# Brunei Darussalam

| S              | Population (000s)                | 392    | Total health expenditure (%GDP)                  | 2.4   | ICT Development Index                             |
|----------------|----------------------------------|--------|--|-------|---|
| itry<br>tors   | GNI per capita (PPP Int \$)      | 50 920 | Per capita total health expenditure (PPP Int \$) | 1 194 | ICT Development Index rank                        |
| Coun<br>Idicat | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 26    | Mobile cellular subscriptions (per 100 population |
| U C            | OECD country                     | No     | Physician density (per 10 000 population)        | 11.4  | Internet users (per 100 population)               |
|                | Life expectancy at birth (years) | 76     | Nurse density (per 10 000 population)            | 60.6  | Disability Adjusted Life Years (DALY)             |
| -              |                                  |        |  |       |   |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

| in ronoy namonork                                 |                  |                      |                    |                        |
|---|------------------|----------------------|--------------------|------------------------|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
| National eGovernment policy                       | Yes              | 85 <sup>⊳</sup>      | Partly             | 2000                   |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2001                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | 2000                   |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data 70 To ensure privacy of personally identifiable data No To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

# III, eHealth expenditures and their funding source

| in cricatil experiations and their randing source |          |   |          |                            |          |                            |          |                                     |
|---|----------|---|----------|----------------------------|----------|----------------------------|----------|-------------------------------------|
| Expenditure                                       | Public   | Public funding Private funding Donor/non-pu |          | Private funding            |          |                            |          | <private<br>ps funding</private<br> |
|   | Country  | Global                                      | Country  | Global                     | Country  | Global                     | Country  | Global                              |
|   | response | response (%) <sup>b§</sup>                  | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>          |
| ICT equipment                                     | Yes      | 78  | _        | 37                         | Yes      | 59                         | _        | 28                                  |
| Software  | Yes      | 76  | —        | 35                         | No       | 56                         | —        | 29                                  |
| Pilot projects                                    | Yes      | 69  | _        | 33                         | No       | 51                         | _        | 28                                  |
| Skills training                                   | Yes      | 61  | _        | 26                         | No       | 43                         | _        | 20                                  |
| Ongoing support                                   | Yes      | 61  | _        | 19                         | No       | 35                         | _        | 18                                  |
| Scholarships                                      | Yes      | 28  | <u> </u> | 8                          | No       | 19                         | _        | 4                                   |

# **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Do not know      | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

5.07 42 103.30 78.78 13 132

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Do not know      | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No data          | 64                                |
| Lack of policy framework                           | No data          | 63                                |
| Lack of skilled course developers                  | No data          | 55                                |
| Lack of knowledge of applications                  | No data          | 46                                |
| Perceived costs too high                           | No data          | 45                                |
| Availability of suitable courses                   | No data          | 42                                |
| Lack of demand                                     | No data          | 21                                |

| IIIb. eLearning target groups |                  |                       |                  |                       |  |
|-------------------------------|------------------|-----------------------|------------------|-----------------------|--|
| Profession                    | Students         |                       | Professionals    |                       |  |
|                               | Country response | Global response (%)°§ | Country response | Global response (%)°§ |  |
| Medical                       | —                | 68                    | _                | 71                    |  |
| Public health                 | —                | 52                    | —                | 56                    |  |
| Nursing                       | —                | 50                    | _                | 55                    |  |
| Pharmacy                      | —                | 45                    | —                | 37                    |  |
| Dentistry                     | _                | 39                    | _                | 37                    |  |
| <sup>a</sup> n=113            |                  |                       |                  |                       |  |

| <b>(</b> )          | Population (000s)                | 7 593        | Total health expenditure (%GDP)                  | 7.3  | ICT Development Index                              | 4.87   |
|---------------------|----------------------------------|--------------|--|------|--|--------|
| tor                 | GNI per capita (PPP Int \$)      | 12 290       | Per capita total health expenditure (PPP Int \$) | 910  | ICT Development Index rank                         | 43     |
| Country<br>dicators | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 64   | Mobile cellular subscriptions (per 100 population) | 140.18 |
| ind                 | OECD country                     | No           | Physician density (per 10 000 population)        | 36.7 | Internet users (per 100 population)                | 45.00  |
|                     | Life expectancy at birth (years) | 73           | Nurse density (per 10 000 population)            | 46.8 | Disability Adjusted Life Years (DALY)              | 15 218 |

# eHealth foundation actions

|          | Bulgaria   | l            |                                   |                 |                |                                   |                    |          |
|----------|--|--------------|-----------------------------------|-----------------|----------------|-----------------------------------|--------------------|----------|
| C        | Population (000s)  | 7 593        | Total health expenditure (%GDI    | <sup>o</sup> )  | 7.3            | ICT Development Index             |                    | 4.87     |
| 0        | GNI per capita (PPP Int \$)  | 12 290       | Per capita total health expenditu | re (PPP Int \$) | 910            | ICT Development Index rank        |                    | 43       |
| Regior   | GNI per capita (PPP Int \$)<br>World Bank income group<br>OECD country   | Upper-middle | Hospital bed density (per 10 00   | 0 population)   | 64             | Mobile cellular subscriptions (pe | er 100 population) | 140.18   |
| رن<br>م  | OECD country   | No           | Physician density (per 10 000 p   | opulation)      | 36.7           | Internet users (per 100 populat   | tion)              | 45.00    |
| Ř        | Life expectancy at birth (years)   | 73           | Nurse density (per 10 000 popu    | llation)        | 46.8           | Disability Adjusted Life Years (I | DALY)              | 15 218   |
|          | Sources: See page ix   |              |                                   |                 |                |                                   |                    |          |
| Europear | <ul> <li>eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.</li> </ul> |              |                                   |                 |                |                                   |                    |          |
|          | I. Policy framework  |              |                                   |                 |                |                                   |                    |          |
| ш        |  |              | Country response                  | Global resp     | oonse (%)      | Policy implemented                | Year of implem     | entation |
|          | National eGovernment policy  |              | Yes                               | 85              | 5 <sup>b</sup> | Partly                            | 2002               |          |
| MHO      | National eHealth policy  |              | Yes                               | 55              |                | Partly                            | 2006               |          |
|          | National ICT procurement policy for health sector  |              | or <b>No</b>                      | 37              | <b>7</b> b     | -                                 | _                  |          |
| $\geq$   | National multiculturalism policy for eHealth   |              | No                                | 30              | ) <sup>b</sup> | -                                 | —                  |          |
|          | National telemedicine policy   |              | Yes                               | 25              | 5°             | No data                           | —                  |          |
|          |  |              |                                   |                 |                |                                   |                    |          |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Prohibits Legislation that allows/prohibits Internet pharmacy operations Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries **Prohibits** Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals 17 Yes

# III, eHealth expenditures and their funding source

| in chediti experiatares and their funding source |                |                            |                 |                            |                             |                            |  |                            |  |  |
|--|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|--|
| Expenditure                                      | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |  |
|  | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |  |  |
|  | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |  |
| ICT equipment                                    | Yes            | 78                         | Yes             | 37                         | Yes                         | 59                         | Yes                                    | 28                         |  |  |
| Software   | Yes            | 76                         | Yes             | 35                         | Yes                         | 56                         | Yes                                    | 29                         |  |  |
| Pilot projects                                   | Yes            | 69                         | Yes             | 33                         | Yes                         | 51                         | Yes                                    | 28                         |  |  |
| Skills training                                  | Yes            | 61                         | Yes             | 26                         | No                          | 43                         | Yes                                    | 20                         |  |  |
| Ongoing support                                  | Yes            | 61                         | Yes             | 19                         | Yes                         | 35                         | No                                     | 18                         |  |  |
| Scholarships                                     | Yes            | 28                         | Yes             | 8                          | No                          | 19                         | No                                     | 4                          |  |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | No data          | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No               | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# 📕 Burkina Faso

| <sup>o</sup> | Population (000s)                | 15 234 | Total health expenditure (%GDP)                  | 5.6 | ICT Development Index                              | 0.98   |
|--------------|----------------------------------|--------|--|-----|--|--------|
| tor          | GNI per capita (PPP Int \$)      | 1 170  | Per capita total health expenditure (PPP Int \$) | 69  | ICT Development Index rank                         | 155    |
| Jun          | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 9   | Mobile cellular subscriptions (per 100 population) | 24.27  |
| ind          | OECD country                     | No     | Physician density (per 10 000 population)        | 0.6 | Internet users (per 100 population)                | 1.13   |
|              | Life expectancy at birth (years) | 51     | Nurse density (per 10 000 population)            | 7.3 | Disability Adjusted Life Years (DALY)              | 45 867 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

| in ronoy namonork                                 |                  |                      |                    |                        |
|---|------------------|----------------------|--------------------|------------------------|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | 2006                   |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2007                   |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No data 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

### III, eHealth expenditures and their funding source

| in chedia experiatares and their funding source |                |                            |                 |                            |                             |                            |  |                            |  |  |
|---|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|--|
| Expenditure                                     | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |  |
|   | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |  |  |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |  |
| ICT equipment                                   | Yes            | 78                         | _               | 37                         | Yes                         | 59                         | _                                      | 28                         |  |  |
| Software  | Yes            | 76                         | —               | 35                         | Yes                         | 56                         | —                                      | 29                         |  |  |
| Pilot projects                                  | Yes            | 69                         | —               | 33                         | Yes                         | 51                         | _                                      | 28                         |  |  |
| Skills training                                 | Yes            | 61                         | —               | 26                         | Yes                         | 43                         | _                                      | 20                         |  |  |
| Ongoing support                                 | Yes            | 61                         | _               | 19                         | Yes                         | 35                         | _                                      | 18                         |  |  |
| Scholarships                                    | Yes            | 28                         | <u> </u>        | 8                          | No                          | 19                         | _                                      | 4                          |  |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ **Country response Country response** Medical Yes 68 Public health Yes 52 — Nursing Yes 50 \_ Pharmacy Yes 45 \_ Dentistry Yes 39

Global response (%)c§

71

56

55

37

37

|                      | , s                         | Population (000s)                | 8 074  | Total health expenditure (%GDP)       | 13.6   | ICT Development Index                 | —      |
|----------------------|-----------------------------|----------------------------------|--|---------------------------------------|--|---------------------------------------|--------|
| Country<br>indicator | GNI per capita (PPP Int \$) | 390                              | Per capita total health expenditure (PPP Int \$) | 52                                    | ICT Development Index rank                         | —                                     |        |
|                      | World Bank income group     | Low                              | Hospital bed density (per 10 000 population)     | 7                                     | Mobile cellular subscriptions (per 100 population) | 10.10                                 |        |
|                      | OECD country                | No                               | Physician density (per 10 000 population)        | <0.5                                  | Internet users (per 100 population)                | 1.90                                  |        |
|                      |                             | Life expectancy at birth (years) | 50   | Nurse density (per 10 000 population) | 1.9  | Disability Adjusted Life Years (DALY) | 54 480 |

# eHealth foundation actions

|         | Βι   | Jrundi                           |           |                                    |                |                        |                                   |                   |          |
|---------|--|----------------------------------|-----------|------------------------------------|----------------|------------------------|-----------------------------------|-------------------|----------|
| C       | S  | Population (000s)                | 8 074     | Total health expenditure (%GDF     | <b>)</b>       | 13.6                   | ICT Development Index             |                   | —        |
| Regior  | Country<br>ndicators   | GNI per capita (PPP Int \$)      | 390       | Per capita total health expenditur | e (PPP Int \$) | 52                     | ICT Development Index rank        |                   | -        |
| j       | lica   | World Bank income group          | Low       | Hospital bed density (per 10 000   | D population)  | 7                      | Mobile cellular subscriptions (pe | r 100 population) | 10.10    |
|         | ind C  | OECD country                     | No        | Physician density (per 10 000 p    | opulation)     | <0.5                   | Internet users (per 100 populat   | ion)              | 1.90     |
| 3       |  | Life expectancy at birth (years) | 50        | Nurse density (per 10 000 popu     | lation)        | 1.9                    | Disability Adjusted Life Years (I | DALY)             | 54 480   |
| -       | Source   | s: See page ix                   |           |                                    |                |                        |                                   |                   |          |
| African | <ul> <li>eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.</li> </ul> |                                  |           |                                    |                |                        |                                   |                   |          |
| 4       | I. Poli  | cy framework                     |           |                                    |                |                        |                                   |                   |          |
| 0       |  |                                  |           | Country response                   | Global res     | oonse (%) <sup>§</sup> | <sup>§</sup> Policy implemented   | Year of implem    | entation |
| МНО     | Natio  | onal eGovernment policy          |           | Yes                                | 85             | 5 <sup>b</sup>         | Partly                            | 2007              |          |
| $\geq$  |  | onal eHealth policy              |           | Yes                                | 55             | -                      | Partly                            | 2007              |          |
|         |  | onal ICT procurement policy f    |           | or Yes                             | 37             | <b>7</b> b             | Partly                            | 2007              |          |
|         | Natio  | onal multiculturalism policy fo  | r eHealth | No                                 | 30             | ) <sup>b</sup>         | —                                 | _                 |          |
|         | Natio  | onal telemedicine policy         |           | No                                 | 25             | 5°                     | _                                 | _                 |          |

# II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

# III, eHealth expenditures and their funding source

| in criterin experiations and their randing source |                |                            |                 |                            |          |                            |  |                            |  |  |
|---|----------------|----------------------------|-----------------|----------------------------|----------|----------------------------|--|----------------------------|--|--|
| Expenditure                                       | Public funding |                            | Private funding |                            |          | on-public<br>ding          | Public-private<br>partnerships funding |                            |  |  |
|   | Country        | Global                     | Country         | Global                     | Country  | Global                     | Country                                | Global                     |  |  |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |  |
| ICT equipment                                     | No             | 78                         | _               | 37                         | Yes      | 59                         | —                                      | 28                         |  |  |
| Software  | No             | 76                         | —               | 35                         | Yes      | 56                         | —                                      | 29                         |  |  |
| Pilot projects                                    | Yes            | 69                         | _               | 33                         | Yes      | 51                         | —                                      | 28                         |  |  |
| Skills training                                   | No             | 61                         | _               | 26                         | Yes      | 43                         | —                                      | 20                         |  |  |
| Ongoing support                                   | No             | 61                         | _               | 19                         | Yes      | 35                         | _                                      | 18                         |  |  |
| Scholarships                                      | No             | 28                         | <u> </u>        | 8                          | No       | 19                         | —                                      | 4                          |  |  |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | —                | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

# IIIb. eLearning target groups

| Profession    | Stud             | dents  | Professionals |                       |
|---------------|------------------|--|---------------|-----------------------|
|               | Country response | Country response Global response (%) <sup>c§</sup> |               | Global response (%)°§ |
| Medical       | Yes              | 68   | No            | 71                    |
| Public health | No               | 52   | No            | 56                    |
| Nursing       | No               | 50   | No            | 55                    |
| Pharmacy      | No               | 45   | No            | 37                    |
| Dentistry     | No               | 39   | No            | 37                    |
| a n-113       |                  |  |               |                       |

| Country<br>indicators | Population (000s)                | 14 562 | Total health expenditure (%GDP)                  | 6.6 | ICT Development Index                              | 1.70   |
|-----------------------|----------------------------------|--------|--|-----|--|--------|
|                       | GNI per capita (PPP Int \$)      | 1 850  | Per capita total health expenditure (PPP Int \$) | 138 | ICT Development Index rank                         | 120    |
|                       | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | —   | Mobile cellular subscriptions (per 100 population) | 42.34  |
|                       | OECD country                     | No     | Physician density (per 10 000 population)        | 1.6 | Internet users (per 100 population)                | 0.53   |
|                       | Life expectancy at birth (years) | 62     | Nurse density (per 10 000 population)            | 8.5 | Disability Adjusted Life Years (DALY)              | 36 720 |

# eHealth foundation actions

|                         | Сс   | ambodi  | Q                            |   |                 |                       |                                   |                   |          |
|-------------------------|--|---|------------------------------|---|-----------------|-----------------------|-----------------------------------|-------------------|----------|
| C                       |  | Population (000s)   | 14 562 T                     | fotal health expenditure (%GDI                    | P)              | 6.6                   | ICT Development Index             |                   | 1.70     |
| ō                       | try  | GNI per capita (PPP Int \$)   | 1 850 F                      | Per capita total health expenditu                 | re (PPP Int \$) | 138                   | ICT Development Index rank        |                   | 120      |
|                         | uni<br>icat  | World Bank income group   | Low H                        | lospital bed density (per 10 00                   | 0 population)   | _                     | Mobile cellular subscriptions (pe | r 100 population) | 42.34    |
|                         | Country<br>indicators  | OECD country  | No F                         | Physician density (per 10 000 p                   | opulation)      | 1.6                   | Internet users (per 100 populat   | tion)             | 0.53     |
| $\overset{\odot}{\sim}$ |  | Life expectancy at birth (years)  | 62                           | Nurse density (per 10 000 popu                    | llation)        | 8.5                   | Disability Adjusted Life Years (I | DALY)             | 36 720   |
|                         | Source   | s: See page ix  |                              |   |                 |                       |                                   |                   |          |
| n Pacific Region        | eHealt<br>policy,<br>capaci  | Health found<br>h foundation actions buil<br>legal and ethical framew<br>ty of the health work forc<br>cy framework | d an enablir<br>/orks; adequ | ng environment for the<br>late funding from vario |                 |                       |                                   |                   |          |
| Western                 |  |   |                              | Country response                                  | Global resp     | oonse (%)             | Policy implemented                | Year of implem    | entation |
| <b>a</b>                | Natio  | onal eGovernment policy   |                              | Do not know                                       | 85              |                       | _                                 | _                 |          |
| t e                     |  | onal eHealth policy   |                              | No  | 55              | 5 <sup>b</sup>        | _                                 | _                 |          |
|                         | Natio  | onal ICT procurement policy for   | or health secto              | r Do not know                                     | 37              | <b>7</b> <sup>b</sup> | _                                 | _                 |          |
| X                       | Natio  | onal multiculturalism policy fo   | r eHealth                    | No  | 30              | ) <sub>p</sub>        | -                                 | _                 |          |
| >                       | Natio  | onal telemedicine policy  |                              | No  | 25              | 5°                    | —                                 | —                 |          |
| OHW                     | II. Legal and ethical frameworks for eHealth         Country response         Global response (%)*         Legislation on personal and health-related data |   |                              |   |                 |                       |                                   |                   |          |
| _                       |  | nsure privacy of personally id  |                              |   |                 |                       | Do not know                       | 70                |          |
|                         |  | rotect personally identifiable of   |                              |   |                 |                       | Do not know                       | 31                |          |
|                         |  |   |                              |   |                 |                       |                                   |                   |          |

| II. Legal and ethical frameworks for enealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Do not know      | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | Do not know      | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Do not know      | 47                                |
| Security tools required by law for facilities used by children                                     | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No               | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations  | Yes              | 26                                |
| Education programmes for consumers and professionals   | Yes              | 23                                |
| Official approval through certification, accreditation, or quality seals                           | Yes              | 17                                |

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | ublic funding Private funding |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|-------------------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response              | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | _                | 78                                   | _                             | 37                                   | _                           | 59                                   | _                                      | 28                                   |
| Software        | _                | 76                                   | —                             | 35                                   | _                           | 56                                   | —                                      | 29                                   |
| Pilot projects  | _                | 69                                   | _                             | 33                                   | _                           | 51                                   | —                                      | 28                                   |
| Skills training | _                | 61                                   | _                             | 26                                   | _                           | 43                                   | —                                      | 20                                   |
| Ongoing support | _                | 61                                   | _                             | 19                                   | _                           | 35                                   | _                                      | 18                                   |
| Scholarships    |                  | 28                                   | —                             | 8                                    | —                           | 19                                   | —                                      | 4                                    |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   | •                |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

| Profession    | Students         |                                   | Professionals    |                                   |
|---------------|------------------|-----------------------------------|------------------|-----------------------------------|
|               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%) <sup>c§</sup> |
| Medical       | -                | 68                                | _                | 71                                |
| Public health | -                | 52                                | —                | 56                                |
| Nursing       | -                | 50                                | —                | 55                                |
| Pharmacy      | -                | 45                                | —                | 37                                |
| Dentistry     | _                | 39                                | _                | 37                                |

# Cameroon

| 6          | Population (000s)                | 19 088       | Total health expenditure (%GDP)                  | 5.5  | ICT Development Index                              | 1.40   |
|------------|----------------------------------|--------------|--|------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 2 200        | Per capita total health expenditure (PPP Int \$) | 121  | ICT Development Index rank                         | 138    |
| oun<br>ica | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 15   | Mobile cellular subscriptions (per 100 population) | 41.00  |
| ind C      | OECD country                     | No           | Physician density (per 10 000 population)        | 1.9  | Internet users (per 100 population)                | 3.84   |
|            | Life expectancy at birth (years) | 53           | Nurse density (per 10 000 population)            | 16.0 | Disability Adjusted Life Years (DALY)              | 42 856 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response  | Global response (%)§  | Policy implemented | Year of implementation |
|---|-------------------|-----------------------|--------------------|------------------------|
|   | obuility response | ciobal response (70)* | r oncy implemented | real of implementation |
| National eGovernment policy                       | Yes               | 85 <sup>b</sup>       | Partly             | 2009                   |
| National eHealth policy                           | No                | 55 <sup>b</sup>       | —                  | —                      |
| National ICT procurement policy for health sector | No                | 37 <sup>b</sup>       | _                  | _                      |
| National multiculturalism policy for eHealth      | Yes               | 30 <sup>b</sup>       | Yes                | 2005                   |
| National telemedicine policy                      | No                | 25°                   | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data No 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| In chedral experiances and their randing source |                |                            |                                |                            |                             |                            |  |                            |
|---|----------------|----------------------------|--------------------------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|
| Expenditure                                     | Public funding |                            | Public funding Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |
|   | Country        | Global                     | Country                        | Global                     | Country                     | Global                     | Country                                | Global                     |
|   | response       | response (%) <sup>b§</sup> | response                       | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |
| ICT equipment                                   | _              | 78                         | —                              | 37                         | Yes                         | 59                         | Yes                                    | 28                         |
| Software  | —              | 76                         | —                              | 35                         | Yes                         | 56                         | No                                     | 29                         |
| Pilot projects                                  | _              | 69                         | —                              | 33                         | Yes                         | 51                         | Yes                                    | 28                         |
| Skills training                                 | —              | 61                         | _                              | 26                         | Yes                         | 43                         | No                                     | 20                         |
| Ongoing support                                 | _              | 61                         | _                              | 19                         | Yes                         | 35                         | No                                     | 18                         |
| Scholarships                                    | _              | 28                         | <u> </u>                       | 8                          | Yes                         | 19                         | No                                     | 4                          |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |  |  |
|---|------------------|-----------------------------------|--|--|
|   | Country response | Global response (%) <sup>c§</sup> |  |  |
| Telemedicine enabling actions   |                  |                                   |  |  |
| National telemedicine policy  | No               | 25                                |  |  |
| Implemented national telemedicine policy                                    | —                | —                                 |  |  |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |  |  |
| Barriers to implementing telemedicine solutions                             |                  |                                   |  |  |
| Perceived costs too high  | Yes              | 60                                |  |  |
| Lack of legal policies/regulation   | No               | 40                                |  |  |
| Organizational culture not supportive                                       | Yes              | 39                                |  |  |
| Underdeveloped infrastructure   | Yes              | 38                                |  |  |
| Lack of policy frameworks   | No               | 37                                |  |  |
| Competing priorities  | No               | 37                                |  |  |
| Lack of demand by health professionals                                      | No               | 31                                |  |  |
| Lack of nationally adopted standards  | No               | 26                                |  |  |
| Lack of knowledge of applications   | Yes              | 25                                |  |  |
| Lack of technical expertise   | No               | 17                                |  |  |
| Information most needed in country to support telemedicine development      |                  |                                   |  |  |
| Cost and cost effectiveness   | Yes              | 69                                |  |  |
| Clinical possibilities  | No               | 58                                |  |  |
| Infrastructure  | Yes              | 52                                |  |  |
| Evaluation  | No               | 46                                |  |  |
| Legal and ethical   | Yes              | 45                                |  |  |
| Effect on human resources   | Yes              | 40                                |  |  |
| Patients' perception  | No               | 30                                |  |  |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

# IIIb. eLearning target groups

| Profession         | Stud             | dents                             | Professionals    |                                   |  |
|--------------------|------------------|-----------------------------------|------------------|-----------------------------------|--|
|                    | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%) <sup>c§</sup> |  |
| Medical            | Yes              | 68                                | Yes              | 71                                |  |
| Public health      | Yes              | 52                                | No               | 56                                |  |
| Nursing            | No               | 50                                | No               | 55                                |  |
| Pharmacy           | No               | 45                                | No               | 37                                |  |
| Dentistry          | No               | 39                                | No               | 37                                |  |
| <sup>a</sup> n=113 |                  |                                   |                  |                                   |  |

# l Canada

| GNI pe | Population (000s)                | 33 259 | Total health expenditure (%GDP)                  | 10.3  | ICT Development Index                              | 6.49   |
|--------|----------------------------------|--------|--|-------|--|--------|
|        | GNI per capita (PPP Int \$)      | 37 590 | Per capita total health expenditure (PPP Int \$) | 4 095 | ICT Development Index rank                         | 21     |
|        | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 34    | Mobile cellular subscriptions (per 100 population) | 70.92  |
| in C   | OECD country                     | Yes    | Physician density (per 10 000 population)        | 19.1  | Internet users (per 100 population)                | 80.30  |
|        | Life expectancy at birth (years) | 81     | Nurse density (per 10 000 population)            | 100.5 | Disability Adjusted Life Years (DALY)              | 10 321 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | Before 2000            |
| National eHealth policy                           | Yes              | 55⁵                  | Partly             | Before 2000            |
| National ICT procurement policy for health sector | No               | 37 <sup>⊳</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | _                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Yes 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals No 17

## III. eHealth expenditures and their funding source

| in onoann oxponant | in orioutil experiate to and their randing obtailed |                                      |  |                                      |                             |                                      |  |                                      |  |  |
|--------------------|---|--------------------------------------|--|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|--|--|
| Expenditure        | Public funding                                      |                                      | Expenditure Public funding Private funding |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |  |  |
|                    | Country<br>response                                 | Global<br>response (%) <sup>b§</sup> | Country<br>response                        | Global<br>response (%) <sup>b§</sup> | Country<br>response         | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |  |  |
| ICT equipment      | Yes   | 78                                   | Yes  | 37                                   | Yes                         | 59                                   | _                                      | 28                                   |  |  |
| Software           | Yes   | 76                                   | Yes  | 35                                   | Yes                         | 56                                   | —                                      | 29                                   |  |  |
| Pilot projects     | Yes   | 69                                   | Yes  | 33                                   | Yes                         | 51                                   | _                                      | 28                                   |  |  |
| Skills training    | Yes   | 61                                   | No   | 26                                   | No                          | 43                                   | _                                      | 20                                   |  |  |
| Ongoing support    | Yes   | 61                                   | No   | 19                                   | No                          | 35                                   | _                                      | 18                                   |  |  |
| Scholarships       | No  | 28                                   | No   | 8                                    | No                          | 19                                   | _                                      | 4                                    |  |  |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy No 45 Yes 37 Dentistry No 39 Yes 37 <sup>a</sup> n=113

# Cape Verde

II. Legal and ethical frameworks for eHealth

| try<br>tors | Population (000s)                | 499          | Total health expenditure (%GDP)                  | 4.3  | ICT Development Index                              | 2.62   |
|-------------|----------------------------------|--------------|--|------|--|--------|
|             | GNI per capita (PPP Int \$)      | 3 530        | Per capita total health expenditure (PPP Int \$) | 151  | ICT Development Index rank                         | 102    |
| oun<br>ica  | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 21   | Mobile cellular subscriptions (per 100 population) | 57.48  |
| ind         | OECD country                     | No           | Physician density (per 10 000 population)        | 5.7  | Internet users (per 100 population)                | 29.67  |
|             | Life expectancy at birth (years) | 71           | Nurse density (per 10 000 population)            | 13.2 | Disability Adjusted Life Years (DALY)              | 18 788 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2005                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2005                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Yes                | 2005                   |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data Yes 70 To ensure privacy of personally identifiable data To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

### III eHealth expenditures and their funding source

| In enealth expenditures and their funding source |                |                            |                 |                            |                             |                            |  |                            |
|--|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|
| Expenditure                                      | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |
|  | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |
|  | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |
| ICT equipment                                    | Yes            | 78                         | _               | 37                         | Yes                         | 59                         | Yes                                    | 28                         |
| Software   | Yes            | 76                         | —               | 35                         | Yes                         | 56                         | Yes                                    | 29                         |
| Pilot projects                                   | Yes            | 69                         | _               | 33                         | Yes                         | 51                         | Yes                                    | 28                         |
| Skills training                                  | Yes            | 61                         | —               | 26                         | Yes                         | 43                         | Yes                                    | 20                         |
| Ongoing support                                  | Yes            | 61                         | _               | 19                         | Yes                         | 35                         | Yes                                    | 18                         |
| Scholarships                                     | No             | 28                         | <u> </u>        | 8                          | No                          | 19                         | No                                     | 4                          |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No data          | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%)°§ |
|--|------------------|-----------------------|
| eLearning in health sciences at the tertiary level |                  |                       |
| Used in teaching health sciences                   | Yes              | 72                    |
| Used in training health professionals              | No               | 69                    |
| Barriers to eLearning                              |                  |                       |
| Underdeveloped infrastructure                      | Yes              | 64                    |
| Lack of policy framework                           | No               | 63                    |
| Lack of skilled course developers                  | Yes              | 55                    |
| Lack of knowledge of applications                  | No               | 46                    |
| Perceived costs too high                           | Yes              | 45                    |
| Availability of suitable courses                   | Yes              | 42                    |
| Lack of demand                                     | No               | 21                    |

# IIIb. eLearning target groups

|  | Professionals |                       |  |
|--|---------------|-----------------------|--|
| Country response Global response (%) 6 |               | Global response (%)°§ |  |
| 68                                     | Yes           | 71                    |  |
| 52                                     | No            | 56                    |  |
| 50                                     | No            | 55                    |  |
| 45                                     | No            | 37                    |  |
| 39                                     | No            | 37                    |  |
|  | 39            | 39 <b>No</b>          |  |

# Chad

| 6     | Population (000s)                | 10 914 | Total health expenditure (%GDP)                  | 4.9  | ICT Development Index                              | 0.79   |
|-------|----------------------------------|--------|--|------|--|--------|
| tor   | GNI per capita (PPP Int \$)      | 1 230  | Per capita total health expenditure (PPP Int \$) | 72   | ICT Development Index rank                         | 159    |
| Jun   | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 4    | Mobile cellular subscriptions (per 100 population) | 20.36  |
| ind C | OECD country                     | No     | Physician density (per 10 000 population)        | <0.5 | Internet users (per 100 population)                | 1.50   |
|       | Life expectancy at birth (years) | 46     | Nurse density (per 10 000 population)            | 2.8  | Disability Adjusted Life Years (DALY)              | 49 265 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | No               | 85 <sup>b</sup>      | —                  | —                      |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | Before 2000            |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data 70 Yes To protect personally identifiable data specifically in EMR or EHR1 Do not know 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Do not know 26 With different health care entities within the country Do not know 23 With health care entities in other countries Do not know 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Do not know Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls No 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals 17 Yes

## III. eHealth expenditures and their funding source

| m. cricann experiant | in cheatin experiateles and their funding source |                            |                 |                            |                               |                            |          |                                     |
|----------------------|--|----------------------------|-----------------|----------------------------|-------------------------------|----------------------------|----------|-------------------------------------|
| Expenditure          | Public funding                                   |                            | Private funding |                            | g Donor/non-public<br>funding |                            |          | <private<br>ps funding</private<br> |
|                      | Country  | Global                     | Country         | Global                     | Country                       | Global                     | Country  | Global                              |
|                      | response   | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                      | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>          |
| ICT equipment        | _  | 78                         | —               | 37                         | _                             | 59                         | —        | 28                                  |
| Software             | _  | 76                         | —               | 35                         | _                             | 56                         | —        | 29                                  |
| Pilot projects       | _  | 69                         | —               | 33                         | _                             | 51                         | —        | 28                                  |
| Skills training      | _  | 61                         | <u> </u>        | 26                         | _                             | 43                         | —        | 20                                  |
| Ongoing support      | _  | 61                         | _               | 19                         | _                             | 35                         | _        | 18                                  |
| Scholarships         | _  | 28                         | <u> </u>        | 8                          | —                             | 19                         | —        | 4                                   |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

# Illa. eLearning

|  | Country response | Global response (%)c§ |
|--|------------------|-----------------------|
| eLearning in health sciences at the tertiary level |                  |                       |
| Used in teaching health sciences                   | Yes              | 72                    |
| Used in training health professionals              | Do not know      | 69                    |
| Barriers to eLearning                              |                  |                       |
| Underdeveloped infrastructure                      | Yes              | 64                    |
| Lack of policy framework                           | Yes              | 63                    |
| Lack of skilled course developers                  | Yes              | 55                    |
| Lack of knowledge of applications                  | No               | 46                    |
| Perceived costs too high                           | Yes              | 45                    |
| Availability of suitable courses                   | No               | 42                    |
| Lack of demand                                     | No               | 21                    |

# IIIb. eLearning target groups

| Country response Global response (%) <sup>c§</sup> C |                  | Country response   | Global response (%) <sup>c§</sup>   |
|--|------------------|--|---|
| Yes  | 68               | Yes  | 71  |
| Yes  | 52               | Yes  | 56  |
| No   | 50               | Yes  | 55  |
| Yes  | 45               | No   | 37  |
| No   | 39               | No   | 37  |
|  | Yes<br>No<br>Yes | Yes         68           Yes         52           No         50           Yes         45 | Yes         68         Yes           Yes         52         Yes           No         50         Yes           Yes         45         No |

# China

1.

| Country<br>indicators | Population (000s)                | 1 344 920    | Total health expenditure (%GDP)                  | 4.3  | ICT Development Index                              | 3.23   |
|-----------------------|----------------------------------|--------------|--|------|--|--------|
|                       | GNI per capita (PPP Int \$)      | 6 770        | Per capita total health expenditure (PPP Int \$) | 259  | ICT Development Index rank                         | 79     |
|                       | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 30   | Mobile cellular subscriptions (per 100 population) | 55.52  |
|                       | OECD country                     | No           | Physician density (per 10 000 population)        | 14.2 | Internet users (per 100 population)                | 28.90  |
|                       | Life expectancy at birth (years) | 74           | Nurse density (per 10 000 population)            | 9.6  | Disability Adjusted Life Years (DALY)              | 15 750 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2005                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2003                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | 2004                   |
| National telemedicine policy                      | Yes              | 25°                  | Partly             | —                      |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data                                      | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>        | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR1 |                  |                                   |
| Within the same health care facility and its network of care providers                 | No               | 26                                |
| With different health care entities within the country                                 | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                         | Allows           | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites             | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries     | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                    | Yes              | 47                                |
| Security tools required by law for facilities used by children                         | Yes              | 22                                |
| Quality assurance approaches to health-related Internet content                        |                  |                                   |
| Voluntary compliance by content providers or web site owners                           | No               | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations                                    | Yes              | 26                                |
| Education programmes for consumers and professionals                                   | Yes              | 23                                |
| Official approval through certification, accreditation, or quality seals               | Yes              | 17                                |

# III. eHealth expenditures and their funding source

| in criterin experiances and their randing source |                |                            |          |                            |          |                            |          |                                     |  |
|--|----------------|----------------------------|----------|----------------------------|----------|----------------------------|----------|-------------------------------------|--|
| Expenditure                                      | Public funding |                            | Private  | funding                    |          | on-public<br>ding          |          | <private<br>ps funding</private<br> |  |
|  | Country        | Global                     | Country  | Global                     | Country  | Global                     | Country  | Global                              |  |
|  | response       | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>          |  |
| ICT equipment                                    | Yes            | 78                         | _        | 37                         | _        | 59                         | No       | 28                                  |  |
| Software   | Yes            | 76                         | —        | 35                         | _        | 56                         | Yes      | 29                                  |  |
| Pilot projects                                   | Yes            | 69                         | _        | 33                         | _        | 51                         | Yes      | 28                                  |  |
| Skills training                                  | No             | 61                         | _        | 26                         | _        | 43                         | No       | 20                                  |  |
| Ongoing support                                  | No             | 61                         | _        | 19                         | _        | 35                         | No       | 18                                  |  |
| Scholarships                                     | No             | 28                         | <u> </u> | 8                          | —        | 19                         | No       | 4                                   |  |

# **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   | •                |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | Partly           | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 No 56 Nursing No 50 No 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Colombia

| Country<br>indicators | Population (000s)                | 45 012       | Total health expenditure (%GDP)                  | 5.9  | ICT Development Index                              | 3.65   |
|-----------------------|----------------------------------|--------------|--|------|--|--------|
|                       | GNI per capita (PPP Int \$)      | 8 500        | Per capita total health expenditure (PPP Int \$) | 518  | ICT Development Index rank                         | 63     |
|                       | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 10   | Mobile cellular subscriptions (per 100 population) | 92.33  |
|                       | OECD country                     | No           | Physician density (per 10 000 population)        | 13.5 | Internet users (per 100 population)                | 49.36  |
|                       | Life expectancy at birth (years) | 75           | Nurse density (per 10 000 population)            | 5.5  | Disability Adjusted Life Years (DALY)              | 19 816 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2000                   |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

### III. eHealth expenditures and their funding source

| in cricatil experiations and their randing source |          |                            |          |   |          |                            |          |                            |
|---|----------|----------------------------|----------|---|----------|----------------------------|----------|----------------------------|
| Expenditure                                       | Public   | funding                    | Private  | Private funding Donor/non-public<br>funding |          |                            |          |                            |
|   | Country  | Global                     | Country  | Global                                      | Country  | Global                     | Country  | Global                     |
|   | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>                  | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> |
| ICT equipment                                     | Yes      | 78                         | _        | 37  | Yes      | 59                         | Yes      | 28                         |
| Software  | Yes      | 76                         | —        | 35  | Yes      | 56                         | Yes      | 29                         |
| Pilot projects                                    | Yes      | 69                         | _        | 33  | Yes      | 51                         | Yes      | 28                         |
| Skills training                                   | No       | 61                         | —        | 26  | No       | 43                         | Yes      | 20                         |
| Ongoing support                                   | Yes      | 61                         | _        | 19  | No       | 35                         | No       | 18                         |
| Scholarships                                      | No       | 28                         | <u> </u> | 8   | No       | 19                         | No       | 4                          |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | _                | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 No 56 Nursing No 50 No 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

| 6     | Population (000s)                | 661   | Total health expenditure (%GDP)                  | 3.3 | ICT Development Index                              | 1.46   |
|-------|----------------------------------|-------|--|-----|--|--------|
| tors  | GNI per capita (PPP Int \$)      | 1 300 | Per capita total health expenditure (PPP Int \$) | 38  | ICT Development Index rank                         | 134    |
| jun   | World Bank income group          | Low   | Hospital bed density (per 10 000 population)     | 22  | Mobile cellular subscriptions (per 100 population) | 18.49  |
| ind C | OECD country                     | No    | Physician density (per 10 000 population)        | 1.5 | Internet users (per 100 population)                | 3.59   |
|       | Life expectancy at birth (years) | 60    | Nurse density (per 10 000 population)            | 7.4 | Disability Adjusted Life Years (DALY)              | 24 622 |

# eHealth foundation actions

|         | Сс   | omoros                          | )         |  |                           |                        |                                 |                |          |
|---------|--|---------------------------------|-----------|--|---------------------------|------------------------|---------------------------------|----------------|----------|
| C       | S  | Population (000s)               | 661       | Total health expenditure (%GDF   | °)                        | 3.3 I                  | CT Development Index            |                | 1.46     |
| Regior  | Country<br>indicators  | GNI per capita (PPP Int \$)     | 1 300     | Per capita total health expenditur   | re (PPP Int \$)           | 38 I                   | ICT Development Index rank      |                | 134      |
| 0       | Dun  | World Bank income group         | Low       | Low Hospital bed density (per 10 000 population) 22 Mobile cellular subscriptions (per 100 population) |                           |                        |                                 |                | 18.49    |
|         | in C   | OECD country                    | No        | Physician density (per 10 000 p  | opulation)                | 1.5 I                  | Internet users (per 100 populat | ion)           | 3.59     |
| Ř       | Life expectancy at birth (years) 60 Nurse density (per 10 000 population) 7.4 Disability Adjusted Life Years (DALY) 24 622   |                                 |           |  |                           |                        |                                 | 24 622         |          |
| African | <ul> <li>eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.</li> </ul> |                                 |           |  |                           |                        |                                 |                |          |
| 4       | I. Pol   | icy framework                   |           |  |                           |                        |                                 |                |          |
| МНО     |  |                                 |           | Country response   | Global res                | ponse (%) <sup>§</sup> | Policy implemented              | Year of implem | entation |
| Ť       | Nati   | onal eGovernment policy         |           | Yes  | 85                        | 5 <sup>b</sup>         | No                              | _              |          |
| $\geq$  | Nati   | onal eHealth policy             |           | No   | <b>No</b> 55 <sup>b</sup> |                        | —                               | _              |          |
|         |  | onal ICT procurement policy for |           | or <b>No</b>   | 37 <sup>b</sup>           |                        | _                               | _              |          |
|         | Nati   | onal multiculturalism policy fo | r eHealth | No   | 30                        | ) <sub>p</sub>         | —                               | _              |          |
|         | Nati   | onal telemedicine policy        |           | No   | 25                        | 5°                     | -                               | —              |          |

# II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No data          | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

# III, eHealth expenditures and their funding source

| in cricatil experiations and their randing source |          |                            |          |                            |                             |                            |          |  |  |
|---|----------|----------------------------|----------|----------------------------|-----------------------------|----------------------------|----------|--|--|
| Expenditure                                       | Public   | funding                    | Private  | funding                    | Donor/non-public<br>funding |                            |          | Public-private<br>partnerships funding |  |
|   | Country  | Global                     | Country  | Global                     | Country                     | Global                     | Country  | Global                                 |  |
|   | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>             |  |
| ICT equipment                                     | —        | 78                         | —        | 37                         | Yes                         | 59                         | _        | 28                                     |  |
| Software  | —        | 76                         | —        | 35                         | Yes                         | 56                         | —        | 29                                     |  |
| Pilot projects                                    | _        | 69                         | —        | 33                         | No                          | 51                         | _        | 28                                     |  |
| Skills training                                   | _        | 61                         | _        | 26                         | Yes                         | 43                         | _        | 20                                     |  |
| Ongoing support                                   | _        | 61                         | _        | 19                         | No                          | 35                         | _        | 18                                     |  |
| Scholarships                                      | —        | 28                         | <u> </u> | 8                          | No                          | 19                         | _        | 4                                      |  |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | _                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No               | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |                  |                       |                  |                       |  |  |
|-------------------------------|------------------|-----------------------|------------------|-----------------------|--|--|
| Profession                    | Stuc             | lents                 | Professionals    |                       |  |  |
|                               | Country response | Global response (%)°§ | Country response | Global response (%)°§ |  |  |
| Medical                       | _                | 68                    | _                | 71                    |  |  |
| Public health                 | —                | 52                    | —                | 56                    |  |  |
| Nursing                       | —                | 50                    | _                | 55                    |  |  |
| Pharmacy                      | —                | 45                    | —                | 37                    |  |  |
| Dentistry                     | —                | 39                    | _                | 37                    |  |  |
| <sup>a</sup> n=113            |                  |                       |                  |                       |  |  |

# Congo

| <i>(</i> 0 | Population (000s)                | 3 615        | Total health expenditure (%GDP)                  | 1.8 | ICT Development Index                              | 1.48   |
|------------|----------------------------------|--------------|--|-----|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 2 940        | Per capita total health expenditure (PPP Int \$) | 70  | ICT Development Index rank                         | 132    |
| oun<br>ica | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 16  | Mobile cellular subscriptions (per 100 population) | 58.94  |
| ind        | OECD country                     | No           | Physician density (per 10 000 population)        | 0.9 | Internet users (per 100 population)                | 6.66   |
|            | Life expectancy at birth (years) | 54           | Nurse density (per 10 000 population)            | 8.2 | Disability Adjusted Life Years (DALY)              | 35 954 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|            |   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |
|------------|---|------------------|----------------------|--------------------|------------------------|--|--|
| National e | eGovernment policy                      | No               | 85 <sup>b</sup>      | —                  | _                      |  |  |
| National e | Health policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |  |  |
| National I | CT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |  |  |
| National r | nulticulturalism policy for eHealth     | No               | 30 <sup>b</sup>      | _                  | _                      |  |  |
| National t | elemedicine policy                      | No               | 25°                  | —                  | _                      |  |  |

# II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

# III. eHealth expenditures and their funding source

| in cricatil experiateres and their funding source |          |                            |          |   |          |                            |          |                            |
|---|----------|----------------------------|----------|---|----------|----------------------------|----------|----------------------------|
| Expenditure                                       | Public   | funding Privat             |          | Private funding Donor/non-public<br>funding |          |                            |          | -private<br>ps funding     |
|   | Country  | Global                     | Country  | Global                                      | Country  | Global                     | Country  | Global                     |
|   | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>                  | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> |
| ICT equipment                                     | No       | 78                         | —        | 37  | _        | 59                         | No       | 28                         |
| Software  | No       | 76                         | —        | 35  | _        | 56                         | No       | 29                         |
| Pilot projects                                    | Yes      | 69                         | —        | 33  | _        | 51                         | No       | 28                         |
| Skills training                                   | No       | 61                         | <u> </u> | 26  | _        | 43                         | No       | 20                         |
| Ongoing support                                   | No       | 61                         | _        | 19  | _        | 35                         | No       | 18                         |
| Scholarships                                      | No       | 28                         | —        | 8   | —        | 19                         | No       | 4                          |

# **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | _                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | _                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

# Illa. eLearning

|  | Country response | Global response (%)°§ |
|--|------------------|-----------------------|
| eLearning in health sciences at the tertiary level |                  |                       |
| Used in teaching health sciences                   | No               | 72                    |
| Used in training health professionals              | No               | 69                    |
| Barriers to eLearning                              |                  |                       |
| Underdeveloped infrastructure                      | Yes              | 64                    |
| Lack of policy framework                           | Yes              | 63                    |
| Lack of skilled course developers                  | No               | 55                    |
| Lack of knowledge of applications                  | No               | 46                    |
| Perceived costs too high                           | Yes              | 45                    |
| Availability of suitable courses                   | Yes              | 42                    |
| Lack of demand                                     | No               | 21                    |

| Profession    | Students         |                                   | Professionals    |                        |
|---------------|------------------|-----------------------------------|------------------|------------------------|
|               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%) c§ |
| Medical       | _                | 68                                | _                | 71                     |
| Public health | _                | 52                                | _                | 56                     |
| Nursing       | -                | 50                                | _                | 55                     |
| Pharmacy      | -                | 45                                | -                | 37                     |
| Dentistry     | -                | 39                                | _                | 37                     |

# Croatia

| <b>6</b>    | Population (000s)                | 4 423  | Total health expenditure (%GDP)                  | 7.8   | ICT Development Index                              | 5.53   |
|-------------|----------------------------------|--------|--|-------|--|--------|
| ton         | GNI per capita (PPP Int \$)      | 19 170 | Per capita total health expenditure (PPP Int \$) | 1 496 | ICT Development Index rank                         | 36     |
| oun<br>lica | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 53    | Mobile cellular subscriptions (per 100 population) | 136.66 |
| ind C       | OECD country                     | No     | Physician density (per 10 000 population)        | 25.9  | Internet users (per 100 population)                | 50.58  |
|             | Life expectancy at birth (years) | 76     | Nurse density (per 10 000 population)            | 55.8  | Disability Adjusted Life Years (DALY)              | 13 176 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>⊳</sup>      | Partly             | 2009                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2006                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | _                  | _                      |
| National telemedicine policy                      | Yes              | 25°                  | Partly             | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Prohibits Legislation that allows/prohibits Internet pharmacy operations Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries **Prohibits** Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals 17 Yes

## III. eHealth expenditures and their funding source

| Expenditure     | Public funding      |                                      | Private funding     |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|---------------------|--------------------------------------|---------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response         | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes                 | 78                                   | _                   | 37                                   | _                           | 59                                   | _                                      | 28                                   |
| Software        | Yes                 | 76                                   | —                   | 35                                   | _                           | 56                                   | —                                      | 29                                   |
| Pilot projects  | Yes                 | 69                                   | _                   | 33                                   | _                           | 51                                   | —                                      | 28                                   |
| Skills training | Yes                 | 61                                   | _                   | 26                                   | _                           | 43                                   | —                                      | 20                                   |
| Ongoing support | No                  | 61                                   | _                   | 19                                   | _                           | 35                                   | _                                      | 18                                   |
| Scholarships    | Yes                 | 28                                   | _                   | 8                                    | —                           | 19                                   | —                                      | 4                                    |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | Partly           | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 No 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 No 37 Dentistry Yes 39 No 37 <sup>a</sup> n=113

# Cyprus

| 6    | Population (000s)                | 862    | Total health expenditure (%GDP)                  | 6.7   | ICT Development Index                              | 5.37   |
|------|----------------------------------|--------|--|-------|--|--------|
| tors | GNI per capita (PPP Int \$)      | 28 050 | Per capita total health expenditure (PPP Int \$) | 3 312 | ICT Development Index rank                         | 39     |
| lica | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 37    | Mobile cellular subscriptions (per 100 population) | 122.02 |
| indi | OECD country                     | No     | Physician density (per 10 000 population)        | 23.0  | Internet users (per 100 population)                | 49.81  |
|      | Life expectancy at birth (years) | 80     | Nurse density (per 10 000 population)            | 39.8  | Disability Adjusted Life Years (DALY)              | 11 812 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2001                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2005                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2009                   |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Do not know        | _                      |
| National telemedicine policy                      | No               | 25°                  | _                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Prohibits Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Do not know 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

### III. eHealth expenditures and their funding source

| in cricatii experiatares and their funding source |                |                            |                 |                            |                             |                            |  |                            |
|---|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|
| Expenditure                                       | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |
|   | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |
| ICT equipment                                     | Yes            | 78                         | —               | 37                         | —                           | 59                         | _                                      | 28                         |
| Software  | Yes            | 76                         | —               | 35                         | —                           | 56                         | _                                      | 29                         |
| Pilot projects                                    | Yes            | 69                         | —               | 33                         | —                           | 51                         | _                                      | 28                         |
| Skills training                                   | Yes            | 61                         | _               | 26                         | —                           | 43                         | _                                      | 20                         |
| Ongoing support                                   | Yes            | 61                         | _               | 19                         | _                           | 35                         | _                                      | 18                         |
| Scholarships                                      | No             | 28                         | <u> </u>        | 8                          | <u> </u>                    | 19                         | _                                      | 4                          |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 71 Public health No 52 56 — Nursing Yes 50 \_ 55 Pharmacy No 45 \_ 37 Dentistry No 39 37 <sup>a</sup> n=113

# Czech Republic

| \$          | Population (000s)                | 10 319 | Total health expenditure (%GDP)                  | 6.8   | ICT Development Index                              |  |
|-------------|----------------------------------|--------|--|-------|--|--|
| to ti       | GNI per capita (PPP Int \$)      | 23 610 | Per capita total health expenditure (PPP Int \$) | 1 684 | ICT Development Index rank                         |  |
| Juntry      | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 81    | Mobile cellular subscriptions (per 100 population) |  |
| <u>j pi</u> | OECD country                     | Yes    | Physician density (per 10 000 population)        | 36.1  | Internet users (per 100 population)                |  |
|             | Life expectancy at birth (years) | 77     | Nurse density (per 10 000 population)            | 89.5  | Disability Adjusted Life Years (DALY)              |  |

5.45 37 137.51 64.43 57 468

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>⊳</sup>      | Partly             | Before 2000            |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2008                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | _                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data 70 Yes To ensure privacy of personally identifiable data To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 No Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Yes 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Allows Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Allows Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Yes 56 Voluntary compliance by content providers or web site owners Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

# III. eHealth expenditures and their funding source

| in cricatil experiatares and their funding source |                |                            |  |                            |                             |                            |  |                            |  |
|---|----------------|----------------------------|--|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|
| Expenditure                                       | Public funding |                            | Expenditure Public funding Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |
|   | Country        | Global                     | Country                                    | Global                     | Country                     | Global                     | Country                                | Global                     |  |
|   | response       | response (%) <sup>b§</sup> | response                                   | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |
| ICT equipment                                     | Yes            | 78                         | Yes  | 37                         | No                          | 59                         | Yes                                    | 28                         |  |
| Software  | Yes            | 76                         | No   | 35                         | Yes                         | 56                         | Yes                                    | 29                         |  |
| Pilot projects                                    | Yes            | 69                         | Yes  | 33                         | Yes                         | 51                         | Yes                                    | 28                         |  |
| Skills training                                   | No             | 61                         | No   | 26                         | Yes                         | 43                         | No                                     | 20                         |  |
| Ongoing support                                   | No             | 61                         | No   | 19                         | No                          | 35                         | No                                     | 18                         |  |
| Scholarships                                      | No             | 28                         | No   | 8                          | No                          | 19                         | No                                     | 4                          |  |

# **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

<sup>§</sup> Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

# N P C P

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Denmark

| , s          | Population (000s)                | 5 458  | Total health expenditure (%GDP)                  | 9.9   | ICT Development Index                              | 7.53   |
|--------------|----------------------------------|--------|--|-------|--|--------|
| tor          | GNI per capita (PPP Int \$)      | 37 720 | Per capita total health expenditure (PPP Int \$) | 3 630 | ICT Development Index rank                         | 4      |
| oun<br>dicat | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 35    | Mobile cellular subscriptions (per 100 population) | 124.97 |
| in C         | OECD country                     | Yes    | Physician density (per 10 000 population)        | 31.6  | Internet users (per 100 population)                | 86.84  |
|              | Life expectancy at birth (years) | 79     | Nurse density (per 10 000 population)            | 97.6  | Disability Adjusted Life Years (DALY)              | 11 286 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2007                   |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2008                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | _                  | _                      |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | 2008                   |
| National telemedicine policy                      | Yes              | 25°                  | Partly             | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No data 47 Security tools required by law for facilities used by children No data 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls No 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

# III. eHealth expenditures and their funding source

| in cricatil experiations and their funding source |          |                            |                 |                            |                             |                            |  |                            |
|---|----------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|
| Expenditure                                       | Public   | funding                    | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |
|   | Country  | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |
|   | response | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |
| ICT equipment                                     | No       | 78                         | _               | 37                         | _                           | 59                         | —                                      | 28                         |
| Software  | No       | 76                         | —               | 35                         | —                           | 56                         | —                                      | 29                         |
| Pilot projects                                    | No       | 69                         | _               | 33                         | _                           | 51                         | —                                      | 28                         |
| Skills training                                   | Yes      | 61                         | _               | 26                         | _                           | 43                         | —                                      | 20                         |
| Ongoing support                                   | Yes      | 61                         | _               | 19                         | _                           | 35                         | _                                      | 18                         |
| Scholarships                                      | No       | 28                         | <u> </u>        | 8                          | —                           | 19                         | —                                      | 4                          |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   | •                |                       |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | Partly           | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No data          | 60                    |
| Lack of legal policies/regulation   | No data          | 40                    |
| Organizational culture not supportive                                       | No data          | 39                    |
| Underdeveloped infrastructure   | No data          | 38                    |
| Lack of policy frameworks   | No data          | 37                    |
| Competing priorities  | No data          | 37                    |
| Lack of demand by health professionals                                      | No data          | 31                    |
| Lack of nationally adopted standards  | No data          | 26                    |
| Lack of knowledge of applications   | No data          | 25                    |
| Lack of technical expertise   | No data          | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No data          | 69                    |
| Clinical possibilities  | No data          | 58                    |
| Infrastructure  | No data          | 52                    |
| Evaluation  | No data          | 46                    |
| Legal and ethical   | No data          | 45                    |
| Effect on human resources   | No data          | 40                    |
| Patients' perception  | No data          | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical No 68 No 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Dominican Republic

Upper-middle

9 953 Tota

8 100 Per

> No Phy

73

| 6      | Population (000s)           |
|--------|-----------------------------|
| to r   | GNI per capita (PPP Int \$) |
| icai   | World Bank income group     |
| ا تا ر | OECD country                |
|        |                             |

| Total health expenditure (%GDP)                  | 5.5  | ICT Development Index                              |
|--|------|--|
| Per capita total health expenditure (PPP Int \$) | 446  | ICT Development Index rank                         |
| Hospital bed density (per 10 000 population)     | 10   | Mobile cellular subscriptions (per 100 population) |
| Physician density (per 10 000 population)        | 18.8 | Internet users (per 100 population)                |
| Nurse density (per 10 000 population)            | 18.4 | Disability Adjusted Life Years (DALY)              |

2.91

85.53

26.77

22 595

89

Life expectancy at birth (years) Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>⊳</sup>      | Yes                | 2004                   |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | 2008                   |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | Yes              | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | Yes              | 26                                |
| With different health care entities within the country   | Yes              | 23                                |
| With health care entities in other countries   | Yes              | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | Yes              | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

# III, eHealth expenditures and their funding source

| in criterin experiences and men randing source |          |                            |                 |                            |                             |                            |  |                            |
|--|----------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|
| Expenditure                                    | Public   | funding                    | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |
|  | Country  | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |
|  | response | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |
| ICT equipment                                  | Yes      | 78                         | _               | 37                         | Yes                         | 59                         | Yes                                    | 28                         |
| Software                                       | Yes      | 76                         | —               | 35                         | Yes                         | 56                         | Yes                                    | 29                         |
| Pilot projects                                 | Yes      | 69                         | _               | 33                         | No                          | 51                         | No                                     | 28                         |
| Skills training                                | Yes      | 61                         | _               | 26                         | Yes                         | 43                         | Yes                                    | 20                         |
| Ongoing support                                | Yes      | 61                         | _               | 19                         | No                          | 35                         | No                                     | 18                         |
| Scholarships                                   | Yes      | 28                         | <u> </u>        | 8                          | Yes                         | 19                         | No                                     | 4                          |

# **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%)°§ |
|--|------------------|-----------------------|
| eLearning in health sciences at the tertiary level |                  |                       |
| Used in teaching health sciences                   | Yes              | 72                    |
| Used in training health professionals              | Yes              | 69                    |
| Barriers to eLearning                              |                  |                       |
| Underdeveloped infrastructure                      | Yes              | 64                    |
| Lack of policy framework                           | Yes              | 63                    |
| Lack of skilled course developers                  | No               | 55                    |
| Lack of knowledge of applications                  | No               | 46                    |
| Perceived costs too high                           | No               | 45                    |
| Availability of suitable courses                   | Yes              | 42                    |
| Lack of demand                                     | No               | 21                    |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing No 50 Yes 55 Pharmacy No 45 No 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Egypt

| 6    | Population (000s)                | 81 527       | Total health expenditure (%GDP)                  | 6.4  | ICT Development Index                              | 2.70   |
|------|----------------------------------|--------------|--|------|--|--------|
| tor  | GNI per capita (PPP Int \$)      | 5 690        | Per capita total health expenditure (PPP Int \$) | 333  | ICT Development Index rank                         | 96     |
| ical | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 21   | Mobile cellular subscriptions (per 100 population) | 66.69  |
| ind  | OECD country                     | No           | Physician density (per 10 000 population)        | 24.3 | Internet users (per 100 population)                | 24.26  |
|      | Life expectancy at birth (years) | 69           | Nurse density (per 10 000 population)            | 33.5 | Disability Adjusted Life Years (DALY)              | 20 261 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                        |                    |                        |  |  |
|---|------------------|------------------------|--------------------|------------------------|--|--|
|   | Country response | Global response (%)§   | Policy implemented | Year of implementation |  |  |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>        | Partly             | 2006                   |  |  |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>        | Partly             | 2006                   |  |  |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>        | Partly             | Do not know            |  |  |
| National multiculturalism policy for eHealth      | No data          | <b>30</b> <sup>b</sup> | No data            | No data                |  |  |
| National telemedicine policy                      | No               | 25°                    | —                  | —                      |  |  |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | Yes              | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | Yes              | 26                                |
| With different health care entities within the country   | Yes              | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | Do not know      | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | Yes              | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | Yes              | 26                                |
| Education programmes for consumers and professionals   | Yes              | 23                                |
| Official approval through certification, accreditation, or quality seals                           | Yes              | 17                                |

| III. eHealth expenditu | ares and their funding source |
|------------------------|-------------------------------|
|                        |                               |

| Expenditure     | Public funding   |                                      | Private          | funding                              |                  | on-public<br>ding                    |                  | <ul> <li>private</li> <li>ps funding</li> </ul> |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|---|
|                 | Country response | Global<br>response (%) <sup>b§</sup>            |
| ICT equipment   | Yes              | 78                                   | _                | 37                                   | Yes              | 59                                   | No               | 28  |
| Software        | Yes              | 76                                   | —                | 35                                   | No               | 56                                   | No               | 29  |
| Pilot projects  | Yes              | 69                                   | _                | 33                                   | Yes              | 51                                   | Yes              | 28  |
| Skills training | Yes              | 61                                   | —                | 26                                   | No               | 43                                   | Yes              | 20  |
| Ongoing support | Yes              | 61                                   | _                | 19                                   | No               | 35                                   | Yes              | 18  |
| Scholarships    | Yes              | 28                                   | <u> </u>         | 8                                    | No               | 19                                   | No               | 4   |

# **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No data          | 77                                |
| Institutions offer continuing education in ICT for health professionals | No data          | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | No data          | 73                                |
| Nursing   | No data          | 62                                |
| Public health   | No data          | 60                                |
| Dentistry   | No data          | 54                                |
| Pharmacy  | No data          | 54                                |

<sup>§</sup> Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

I.

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

# IIIb. eLearning target groups

| Profession    | Stuc   | lents | Professionals    |                       |  |  |  |
|---------------|--|-------|------------------|-----------------------|--|--|--|
|               | Country response Global response (%) <sup>c§</sup> |       | Country response | Global response (%)°§ |  |  |  |
| Medical       | Yes  | 68    | Yes              | 71                    |  |  |  |
| Public health | Yes  | 52    | No               | 56                    |  |  |  |
| Nursing       | Yes  | 50    | Yes              | 55                    |  |  |  |
| Pharmacy      | Yes  | 45    | No               | 37                    |  |  |  |
| Dentistry     | Yes  | 39    | No               | 37                    |  |  |  |
| a n=113       | an-113   |       |                  |                       |  |  |  |

# El Salvador

1.

| S     | Population (000s)                | 6 134        | Total health expenditure (%GDP)                  |      | ICT Development Index                              | 2.61   |
|-------|----------------------------------|--------------|--|------|--|--------|
| try   | GNI per capita (PPP Int \$)      | 6 360        | Per capita total health expenditure (PPP Int \$) | 410  | ICT Development Index rank                         | 103    |
| ical  | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 8    | Mobile cellular subscriptions (per 100 population) | 122.77 |
| ind C | OECD country                     | No           | Physician density (per 10 000 population)        | 12.4 | Internet users (per 100 population)                | 12.11  |
|       | Life expectancy at birth (years) | 72           | Nurse density (per 10 000 population)            | 8.0  | Disability Adjusted Life Years (DALY)              | 19 590 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Do not know      | 85 <sup>b</sup>      | —                  | —                      |
| National eHealth policy                           | Do not know      | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | Do not know      | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | Do not know      | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | Do not know      | 25°                  | _                  | _                      |

| II. Legal and ethical frameworks for effeatin  |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | Do not know      | 26                                |
| With different health care entities within the country   | Do not know      | 23                                |
| With health care entities in other countries   | Do not know      | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | Do not know      | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | Do not know      | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Public funding Private funding |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|--------------------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response               | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | _                | 78                                   | _                              | 37                                   | _                           | 59                                   | _                                      | 28                                   |
| Software        | —                | 76                                   | —                              | 35                                   | _                           | 56                                   | —                                      | 29                                   |
| Pilot projects  | _                | 69                                   | —                              | 33                                   | _                           | 51                                   | _                                      | 28                                   |
| Skills training | —                | 61                                   | _                              | 26                                   | _                           | 43                                   | _                                      | 20                                   |
| Ongoing support | _                | 61                                   | _                              | 19                                   | _                           | 35                                   | _                                      | 18                                   |
| Scholarships    | —                | 28                                   | —                              | 8                                    | —                           | 19                                   | _                                      | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | Do not know      | 25                    |
| Implemented national telemedicine policy                                    | —                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Do not know      | 72                                |
| Used in training health professionals              | Do not know      | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |                  |                                   |                  |                                   |  |
|-------------------------------|------------------|-----------------------------------|------------------|-----------------------------------|--|
| Profession                    | Students         |                                   | Professionals    |                                   |  |
|                               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%) <sup>c§</sup> |  |
| Medical                       | —                | 68                                | _                | 71                                |  |
| Public health                 | —                | 52                                | —                | 56                                |  |
| Nursing                       | —                | 50                                | _                | 55                                |  |
| Pharmacy                      | —                | 45                                | —                | 37                                |  |
| Dentistry                     | —                | 39                                | —                | 37                                |  |
| ° n=113                       |                  |                                   |                  |                                   |  |

# Eritrea

| Country<br>indicators | Population (000s)                | 4 927 | Total health expenditure (%GDP)                  | 3.1 | ICT Development Index                              | 1.08   |
|-----------------------|----------------------------------|-------|--|-----|--|--------|
|                       | GNI per capita (PPP Int \$)      | 640   | Per capita total health expenditure (PPP Int \$) | 19  | ICT Development Index rank                         | 152    |
|                       | World Bank income group          | Low   | Hospital bed density (per 10 000 population)     | 12  | Mobile cellular subscriptions (per 100 population) | 2.78   |
|                       | OECD country                     | No    | Physician density (per 10 000 population)        | 0.5 | Internet users (per 100 population)                | —      |
|                       | Life expectancy at birth (years) | 65    | Nurse density (per 10 000 population)            | 5.8 | Disability Adjusted Life Years (DALY)              | 26 878 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | No               | 85 <sup>b</sup>      | —                  | —                      |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |

# II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

### III. eHealth expenditures and their funding source

| in orioatin experiate et a tren ranang eeu ee |                  |                                      |                  |                                      |                   |                                      |                  |                                      |  |                        |
|---|------------------|--------------------------------------|------------------|--------------------------------------|-------------------|--------------------------------------|------------------|--------------------------------------|--|------------------------|
| Expenditure                                   | Public funding   |                                      | Private tunding  |                                      | Private funding ' |                                      | -                |                                      |  | -private<br>ps funding |
|   | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response  | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> |  |                        |
| ICT equipment                                 | Yes              | 78                                   | -                | 37                                   | Yes               | 59                                   | -                | 28                                   |  |                        |
| Software                                      | Yes              | 76                                   | _                | 35                                   | Yes               | 56                                   | _                | 29                                   |  |                        |
| Pilot projects                                | Yes              | 69                                   | _                | 33                                   | Yes               | 51                                   | _                | 28                                   |  |                        |
| Skills training                               | Yes              | 61                                   | _                | 26                                   | Yes               | 43                                   | _                | 20                                   |  |                        |
| Ongoing support                               | Yes              | 61                                   | _                | 19                                   | Yes               | 35                                   | _                | 18                                   |  |                        |
| Scholarships                                  | Yes              | 28                                   | _                | 8                                    | Yes               | 19                                   | _                | 4                                    |  |                        |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No data          | 60                                |
| Lack of legal policies/regulation   | No data          | 40                                |
| Organizational culture not supportive                                       | No data          | 39                                |
| Underdeveloped infrastructure   | No data          | 38                                |
| Lack of policy frameworks   | No data          | 37                                |
| Competing priorities  | No data          | 37                                |
| Lack of demand by health professionals                                      | No data          | 31                                |
| Lack of nationally adopted standards  | No data          | 26                                |
| Lack of knowledge of applications   | No data          | 25                                |
| Lack of technical expertise   | No data          | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No data          | 69                                |
| Clinical possibilities  | No data          | 58                                |
| Infrastructure  | No data          | 52                                |
| Evaluation  | No data          | 46                                |
| Legal and ethical   | No data          | 45                                |
| Effect on human resources   | No data          | 40                                |
| Patients' perception  | No data          | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | No data          | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

# IIIb. eLearning target groups

| Profession    | Stud             | dents                                  | Professionals |                                   |  |
|---------------|------------------|--|---------------|-----------------------------------|--|
|               | Country response | Country response Global response (%) 6 |               | Global response (%) <sup>c§</sup> |  |
| Medical       | Yes              | 68                                     | No data       | 71                                |  |
| Public health | Yes              | 52                                     | No data       | 56                                |  |
| Nursing       | Yes              | 50                                     | No data       | 55                                |  |
| Pharmacy      | Yes              | 45                                     | No data       | 37                                |  |
| Dentistry     | Yes              | 39                                     | No data       | 37                                |  |
| a n-113       | 1                |  |               |                                   |  |

# Estonia

| S     | Population (000s)                | 1 341  | Total health expenditure (%GDP)                  | 5.3   | ICT Development Index                              | 6.41   |
|-------|----------------------------------|--------|--|-------|--|--------|
| ton   | GNI per capita (PPP Int \$)      | 18 890 | Per capita total health expenditure (PPP Int \$) | 1 103 | ICT Development Index rank                         | 22     |
| lica  | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 56    | Mobile cellular subscriptions (per 100 population) | 202.99 |
| ind C | OECD country                     | No     | Physician density (per 10 000 population)        | 33.3  | Internet users (per 100 population)                | 72.50  |
|       | Life expectancy at birth (years) | 74     | Nurse density (per 10 000 population)            | 69.8  | Disability Adjusted Life Years (DALY)              | 16 212 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | Before 2000            |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Yes                | 2003                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | Yes              | 25°                  | Yes                | _                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Yes 11 Internet pharmacies Prohibits Legislation that allows/prohibits Internet pharmacy operations Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries **Prohibits** Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals No 17

# III. eHealth expenditures and their funding source

| in orioatti experiatti eo ana tren ranang eouroo |                     |                                      |                     |                                      |                             |                                      |                     |                                      |
|--|---------------------|--------------------------------------|---------------------|--------------------------------------|-----------------------------|--------------------------------------|---------------------|--------------------------------------|
| Expenditure                                      | Public funding      |                                      | Private funding     |                                      | Donor/non-public<br>funding |                                      |                     | <private<br>ps funding</private<br>  |
|  | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response         | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment                                    | Yes                 | 78                                   | Yes                 | 37                                   | Yes                         | 59                                   | No                  | 28                                   |
| Software   | Yes                 | 76                                   | Yes                 | 35                                   | Yes                         | 56                                   | Yes                 | 29                                   |
| Pilot projects                                   | Yes                 | 69                                   | Yes                 | 33                                   | Yes                         | 51                                   | Yes                 | 28                                   |
| Skills training                                  | Yes                 | 61                                   | Yes                 | 26                                   | Yes                         | 43                                   | Yes                 | 20                                   |
| Ongoing support                                  | Yes                 | 61                                   | Yes                 | 19                                   | Yes                         | 35                                   | No                  | 18                                   |
| Scholarships                                     | Yes                 | 28                                   | No                  | 8                                    | No                          | 19                                   | No                  | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | Yes              | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%)°§ |
|--|------------------|-----------------------|
| eLearning in health sciences at the tertiary level |                  |                       |
| Used in teaching health sciences                   | Yes              | 72                    |
| Used in training health professionals              | Yes              | 69                    |
| Barriers to eLearning                              |                  |                       |
| Underdeveloped infrastructure                      | No               | 64                    |
| Lack of policy framework                           | No               | 63                    |
| Lack of skilled course developers                  | Yes              | 55                    |
| Lack of knowledge of applications                  | Yes              | 46                    |
| Perceived costs too high                           | No               | 45                    |
| Availability of suitable courses                   | Yes              | 42                    |
| Lack of demand                                     | No               | 21                    |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Ethiopia

| S           | Population (000s)                | 80 713 | Total health expenditure (%GDP)                  | 3.4  | ICT Development Index                              | 1.03   |
|-------------|----------------------------------|--------|--|------|--|--------|
| ton         | GNI per capita (PPP Int \$)      | 930    | Per capita total health expenditure (PPP Int \$) | 30   | ICT Development Index rank                         | 154    |
| oun<br>lica | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 2    | Mobile cellular subscriptions (per 100 population) | 4.89   |
| in C        | OECD country                     | No     | Physician density (per 10 000 population)        | <0.5 | Internet users (per 100 population)                | 0.54   |
|             | Life expectancy at birth (years) | 58     | Nurse density (per 10 000 population)            | 2.4  | Disability Adjusted Life Years (DALY)              | 42 306 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|--|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2009                   |  |  |  |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |  |  |  |
| National ICT procurement policy for health sector | Do not know      | 37 <sup>b</sup>      | —                  | —                      |  |  |  |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Yes                | 2004                   |  |  |  |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |  |  |  |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data No 70 To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding |                            | iture Public funding Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |
|-----------------|----------------|----------------------------|--------------------------------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|
|                 | Country        | Global                     | Country                              | Global                     | Country                     | Global                     | Country                                | Global                     |  |
|                 | response       | response (%) <sup>b§</sup> | response                             | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |
| ICT equipment   | Yes            | 78                         | _                                    | 37                         | Yes                         | 59                         | Yes                                    | 28                         |  |
| Software        | Yes            | 76                         | —                                    | 35                         | Yes                         | 56                         | Yes                                    | 29                         |  |
| Pilot projects  | No             | 69                         | _                                    | 33                         | Yes                         | 51                         | No                                     | 28                         |  |
| Skills training | Yes            | 61                         | —                                    | 26                         | Yes                         | 43                         | Yes                                    | 20                         |  |
| Ongoing support | Yes            | 61                         | _                                    | 19                         | Yes                         | 35                         | No                                     | 18                         |  |
| Scholarships    | No             | 28                         | <u> </u>                             | 8                          | No                          | 19                         | No                                     | 4                          |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

# IIIb. eLearning target groups

| Profession    | Stud             | dents                             | Professionals    |                       |  |
|---------------|------------------|-----------------------------------|------------------|-----------------------|--|
|               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%)°§ |  |
| Medical       | Yes              | 68                                | Yes              | 71                    |  |
| Public health | No               | 52                                | Yes              | 56                    |  |
| Nursing       | No               | 50                                | No               | 55                    |  |
| Pharmacy      | No               | 45                                | No               | 37                    |  |
| Dentistry     | No               | 39                                | No               | 37                    |  |
| a n-113       |                  |                                   |                  |                       |  |

| 6             | Population (000s)                | 844          | Total health expenditure (%GDP)                  | 3.8  | ICT Development Index                              | 2.81   |
|---------------|----------------------------------|--------------|--|------|--|--------|
| ntry<br>ators | GNI per capita (PPP Int \$)      | 4 570        | Per capita total health expenditure (PPP Int \$) | 166  | ICT Development Index rank                         | 91     |
| ica           | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 21   | Mobile cellular subscriptions (per 100 population) | 75.36  |
| Cou<br>indic  | OECD country                     | No           | Physician density (per 10 000 population)        | 4.5  | Internet users (per 100 population)                | 13.45  |
|               | Life expectancy at birth (years) | 70           | Nurse density (per 10 000 population)            | 19.8 | Disability Adjusted Life Years (DALY)              | 19 655 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|--|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2006                   |  |  |  |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |  |  |  |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2007                   |  |  |  |
| National multiculturalism policy for eHealth      | Do not know      | 30 <sup>b</sup>      | —                  | —                      |  |  |  |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |  |  |  |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data No 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Do not know Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding      |                                      | Public funding Private funding |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|---------------------|--------------------------------------|--------------------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response            | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes                 | 78                                   | Yes                            | 37                                   | Yes                         | 59                                   | _                                      | 28                                   |
| Software        | Yes                 | 76                                   | Yes                            | 35                                   | Yes                         | 56                                   | —                                      | 29                                   |
| Pilot projects  | Yes                 | 69                                   | Yes                            | 33                                   | Yes                         | 51                                   | —                                      | 28                                   |
| Skills training | No                  | 61                                   | Yes                            | 26                                   | Yes                         | 43                                   | —                                      | 20                                   |
| Ongoing support | Yes                 | 61                                   | No                             | 19                                   | Yes                         | 35                                   | _                                      | 18                                   |
| Scholarships    | No                  | 28                                   | No                             | 8                                    | No                          | 19                                   | —                                      | 4                                    |

### IV. Capacity building

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | _                | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 No 37 Dentistry Yes 39 No 37 <sup>a</sup> n=113

# Finland

| ountry<br>icators | Population (000s)                | 5 304  | Total health expenditure (%GDP)                  | 8.4   | ICT Development Index                              | 7.02   |
|-------------------|----------------------------------|--------|--|-------|--|--------|
|                   | GNI per capita (PPP Int \$)      | 34 430 | Per capita total health expenditure (PPP Int \$) | 2 979 | ICT Development Index rank                         | 12     |
|                   | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 68    | Mobile cellular subscriptions (per 100 population) | 144.59 |
| ind               | OECD country                     | Yes    | Physician density (per 10 000 population)        | 33.2  | Internet users (per 100 population)                | 82.49  |
|                   | Life expectancy at birth (years) | 80     | Nurse density (per 10 000 population)            | 89.2  | Disability Adjusted Life Years (DALY)              | 11 347 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | Before 2000            |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | Before 2000            |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | Before 2000            |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Allows Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Yes 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Allows Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals 17 Yes

### III eHealth expenditures and their funding source

| in orioatti experiatti eo ana tren ranang eouroo |                     |                                      |  |                                      |                             |                                      |  |                                      |
|--|---------------------|--------------------------------------|--|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
| Expenditure                                      | Public funding      |                                      | Expenditure Public funding Private funding |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|  | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country response                           | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment                                    | Yes                 | 78                                   | No   | 37                                   | _                           | 59                                   | _                                      | 28                                   |
| Software   | Yes                 | 76                                   | Yes  | 35                                   | _                           | 56                                   | —                                      | 29                                   |
| Pilot projects                                   | Yes                 | 69                                   | Yes  | 33                                   | _                           | 51                                   | _                                      | 28                                   |
| Skills training                                  | Yes                 | 61                                   | No   | 26                                   | _                           | 43                                   | _                                      | 20                                   |
| Ongoing support                                  | Yes                 | 61                                   | Yes  | 19                                   | _                           | 35                                   | _                                      | 18                                   |
| Scholarships                                     | No                  | 28                                   | No   | 8                                    | _                           | 19                                   | _                                      | 4                                    |

### IV. Capacity building

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No               | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# France

| Country<br>indicators | Population (000s)                | 62 036 | Total health expenditure (%GDP)                  | 11.1  | ICT Development Index                              | 6.55   |
|-----------------------|----------------------------------|--------|--|-------|--|--------|
|                       | GNI per capita (PPP Int \$)      | 33 980 | Per capita total health expenditure (PPP Int \$) | 3 778 | ICT Development Index rank                         | 18     |
|                       | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 72    | Mobile cellular subscriptions (per 100 population) | 95.51  |
|                       | OECD country                     | Yes    | Physician density (per 10 000 population)        | 37.4  | Internet users (per 100 population)                | 71.58  |
|                       | Life expectancy at birth (years) | 81     | Nurse density (per 10 000 population)            | 80.9  | Disability Adjusted Life Years (DALY)              | 10 644 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2008                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2002                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | _                  | _                      |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | No data                |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Yes 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals 17 Yes

# III. eHealth expenditures and their funding source

| in cricati experiatares and their randing source |          |                            |                  |                            |   |                            |          |                            |
|--|----------|----------------------------|------------------|----------------------------|---|----------------------------|----------|----------------------------|
| Expenditure                                      | Public   | funding                    | Inding Private f |                            | Private funding Donor/non-public<br>funding |                            |          | private<br>ps funding      |
|  | Country  | Global                     | Country          | Global                     | Country                                     | Global                     | Country  | Global                     |
|  | response | response (%) <sup>b§</sup> | response         | response (%) <sup>b§</sup> | response                                    | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> |
| ICT equipment                                    | No       | 78                         | _                | 37                         | _   | 59                         | —        | 28                         |
| Software   | Yes      | 76                         | —                | 35                         | _   | 56                         | —        | 29                         |
| Pilot projects                                   | Yes      | 69                         | _                | 33                         | _   | 51                         | —        | 28                         |
| Skills training                                  | No       | 61                         | _                | 26                         | _   | 43                         | —        | 20                         |
| Ongoing support                                  | Yes      | 61                         | _                | 19                         | _   | 35                         | _        | 18                         |
| Scholarships                                     | No       | 28                         | —                | 8                          | —   | 19                         | —        | 4                          |

# **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Do not know      | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 No 56 Nursing No 50 No 55 Pharmacy Yes 45 Yes 37 Dentistry No 39 Yes 37 <sup>a</sup> n=113

# Gambia

| <b>(</b> ) | Population (000s)                | 1 660 | Total health expenditure (%GDP)                  | 5.3  | ICT Development Index                              | 1.62   |
|------------|----------------------------------|-------|--|------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 1 330 | Per capita total health expenditure (PPP Int \$) | 73   | ICT Development Index rank                         | 124    |
| lica       | World Bank income group          | Low   | Hospital bed density (per 10 000 population)     | 11   | Mobile cellular subscriptions (per 100 population) | 84.04  |
| ind        | OECD country                     | No    | Physician density (per 10 000 population)        | <0.5 | Internet users (per 100 population)                | 7.63   |
|            | Life expectancy at birth (years) | 59    | Nurse density (per 10 000 population)            | 5.7  | Disability Adjusted Life Years (DALY)              | 32 765 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

| in ronoy namonon                                  |                  |                      |                    |                        |
|---|------------------|----------------------|--------------------|------------------------|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2006                   |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |

# II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

## III. eHealth expenditures and their funding source

| in cricatil experiations and their randing source |                |                            |              |                            |   |                            |          |                                     |
|---|----------------|----------------------------|--------------|----------------------------|---|----------------------------|----------|-------------------------------------|
| Expenditure                                       | Public funding |                            | ding Private |                            | Private funding Donor/non-public<br>funding |                            |          | <private<br>ps funding</private<br> |
|   | Country        | Global                     | Country      | Global                     | Country                                     | Global                     | Country  | Global                              |
|   | response       | response (%) <sup>b§</sup> | response     | response (%) <sup>b§</sup> | response                                    | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>          |
| ICT equipment                                     | —              | 78                         | _            | 37                         | Yes   | 59                         | —        | 28                                  |
| Software  | —              | 76                         | —            | 35                         | Yes   | 56                         | —        | 29                                  |
| Pilot projects                                    | _              | 69                         | _            | 33                         | Yes   | 51                         | —        | 28                                  |
| Skills training                                   | _              | 61                         | _            | 26                         | Yes   | 43                         | —        | 20                                  |
| Ongoing support                                   | _              | 61                         | _            | 19                         | Yes   | 35                         | _        | 18                                  |
| Scholarships                                      | —              | 28                         | —            | 8                          | No  | 19                         | —        | 4                                   |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

# IIIb. eLearning target groups

| Profession    | Stud             | Students                               |     | sionals               |
|---------------|------------------|--|-----|-----------------------|
|               | Country response | Country response Global response (%) C |     | Global response (%)°§ |
| Medical       | Yes              | 68                                     | Yes | 71                    |
| Public health | Yes              | 52                                     | Yes | 56                    |
| Nursing       | No               | 50                                     | No  | 55                    |
| Pharmacy      | No               | 45                                     | No  | 37                    |
| Dentistry     | No               | 39                                     | No  | 37                    |
| a n–113       |                  |  |     |                       |

# Germany

| 6          | Population (000s)                | 82 264 | Total health expenditure (%GDP)                  | 10.4  | ICT Development Index                              | 6.95   |
|------------|----------------------------------|--------|--|-------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 36 960 | Per capita total health expenditure (PPP Int \$) | 3 692 | ICT Development Index rank                         | 13     |
| oun<br>ica | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 83    | Mobile cellular subscriptions (per 100 population) | 127.79 |
| ind C      | OECD country                     | Yes    | Physician density (per 10 000 population)        | 34.8  | Internet users (per 100 population)                | 79.26  |
|            | Life expectancy at birth (years) | 80     | Nurse density (per 10 000 population)            | 79.9  | Disability Adjusted Life Years (DALY)              | 10 081 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | Before 2000            |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2003                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | Before 2000            |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Allows Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Yes 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Allows Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

# III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      |                  |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | No               | 78                                   | Yes              | 37                                   | _                           | 59                                   | No                                     | 28                                   |
| Software        | No               | 76                                   | Yes              | 35                                   | _                           | 56                                   | No                                     | 29                                   |
| Pilot projects  | Yes              | 69                                   | Yes              | 33                                   | _                           | 51                                   | Yes                                    | 28                                   |
| Skills training | No               | 61                                   | No               | 26                                   | _                           | 43                                   | No                                     | 20                                   |
| Ongoing support | Yes              | 61                                   | Yes              | 19                                   | _                           | 35                                   | Yes                                    | 18                                   |
| Scholarships    | No               | 28                                   | No               | 8                                    | —                           | 19                                   | No                                     | 4                                    |

# **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 Yes 56 Nursing No 50 Yes 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# **Ghana**

1.

| ators | Population (000s)                | 23 351 | Total health expenditure (%GDP)                  | 7.8 | ICT Development Index                              | 1.75   |
|-------|----------------------------------|--------|--|-----|--|--------|
|       | GNI per capita (PPP Int \$)      | 1 480  | Per capita total health expenditure (PPP Int \$) | 113 | ICT Development Index rank                         | 116    |
|       | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 9   | Mobile cellular subscriptions (per 100 population) | 63.38  |
| ind   | OECD country                     | No     | Physician density (per 10 000 population)        | 1.1 | Internet users (per 100 population)                | 5.44   |
|       | Life expectancy at birth (years) | 62     | Nurse density (per 10 000 population)            | 9.8 | Disability Adjusted Life Years (DALY)              | 33 285 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|--|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2003                   |  |  |  |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2003                   |  |  |  |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |  |  |  |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |  |  |  |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |  |  |  |

# II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No data          | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

## III. eHealth expenditures and their funding source

| in critatin experiations and their funding source |                |                            |                 |                            |                             |                            |          |                            |
|---|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|----------|----------------------------|
| Expenditure                                       | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            |          | -private<br>ps funding     |
|   | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country  | Global                     |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> |
| ICT equipment                                     | Yes            | 78                         | _               | 37                         | Yes                         | 59                         | No       | 28                         |
| Software  | Yes            | 76                         | —               | 35                         | Yes                         | 56                         | No       | 29                         |
| Pilot projects                                    | Yes            | 69                         | _               | 33                         | Yes                         | 51                         | Yes      | 28                         |
| Skills training                                   | Yes            | 61                         | —               | 26                         | Yes                         | 43                         | No       | 20                         |
| Ongoing support                                   | Yes            | 61                         | _               | 19                         | Yes                         | 35                         | No       | 18                         |
| Scholarships                                      | Yes            | 28                         | —               | 8                          | Yes                         | 19                         | No       | 4                          |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | _                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No data          | 60                                |
| Lack of legal policies/regulation   | No data          | 40                                |
| Organizational culture not supportive                                       | No data          | 39                                |
| Underdeveloped infrastructure   | No data          | 38                                |
| Lack of policy frameworks   | No data          | 37                                |
| Competing priorities  | No data          | 37                                |
| Lack of demand by health professionals                                      | No data          | 31                                |
| Lack of nationally adopted standards  | No data          | 26                                |
| Lack of knowledge of applications   | No data          | 25                                |
| Lack of technical expertise   | No data          | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No data          | 69                                |
| Clinical possibilities  | No data          | 58                                |
| Infrastructure  | No data          | 52                                |
| Evaluation  | No data          | 46                                |
| Legal and ethical   | No data          | 45                                |
| Effect on human resources   | No data          | 40                                |
| Patients' perception  | No data          | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

# IIIb. eLearning target groups

| Profession         | Stu              | dents  | Professionals |                                   |  |
|--------------------|------------------|--|---------------|-----------------------------------|--|
|                    | Country response | Country response Global response (%) <sup>c§</sup> |               | Global response (%) <sup>c§</sup> |  |
| Medical            | Yes              | 68   | Yes           | 71                                |  |
| Public health      | Yes              | 52   | Yes           | 56                                |  |
| Nursing            | Yes              | 50   | No            | 55                                |  |
| Pharmacy           | Yes              | 45   | No            | 37                                |  |
| Dentistry          | Yes              | 39   | Yes           | 37                                |  |
| <sup>a</sup> n=113 |                  |  |               |                                   |  |

# Greece

| 6             | Population (000s)                | 11 137 | Total health expenditure (%GDP)                       | 9.7  | ICT Development Index                              | 6.03   |
|---------------|----------------------------------|--------|---|------|--|--------|
| tor           | GNI per capita (PPP Int \$)      | 28 440 | Per capita total health expenditure (PPP Int \$) 2852 |      | ICT Development Index rank                         | 30     |
| oun'<br>licat | World Bank income group          | High   | Hospital bed density (per 10 000 population)          | 48   | Mobile cellular subscriptions (per 100 population) | 119.12 |
| ind C         | OECD country                     | Yes    | Physician density (per 10 000 population)             | 53.5 | Internet users (per 100 population)                | 44.54  |
|               | Life expectancy at birth (years) | 80     | Nurse density (per 10 000 population)                 | 34.8 | Disability Adjusted Life Years (DALY)              | 9 605  |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2006                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2007                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2008                   |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Yes                | Before 2000            |
| National telemedicine policy                      | Yes              | 25°                  | Partly             | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Yes 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Prohibits Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Yes 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Allows Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals No 17

# III. eHealth expenditures and their funding source

| in chican cypenant | and and the    | in running 50              |                 |                            |                             |                            |          |                            |
|--------------------|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|----------|----------------------------|
| Expenditure        | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            |          | private<br>ps funding      |
|                    | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country  | Global                     |
|                    | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> |
| ICT equipment      | Yes            | 78                         | Yes             | 37                         | _                           | 59                         | —        | 28                         |
| Software           | Yes            | 76                         | Yes             | 35                         | _                           | 56                         | —        | 29                         |
| Pilot projects     | Yes            | 69                         | Yes             | 33                         | _                           | 51                         | —        | 28                         |
| Skills training    | Yes            | 61                         | Yes             | 26                         | _                           | 43                         | _        | 20                         |
| Ongoing support    | Yes            | 61                         | Yes             | 19                         | _                           | 35                         | _        | 18                         |
| Scholarships       | Yes            | 28                         | No              | 8                          | —                           | 19                         | —        | 4                          |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | Partly           | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Guinea-Bissau

| <b>(</b> )   | Population (000s)                | 1 575 | Total health expenditure (%GDP)                  | 5.8  | ICT Development Index                              | 0.97   |
|--------------|----------------------------------|-------|--|------|--|--------|
| itry<br>tors | GNI per capita (PPP Int \$)      | 1 060 | Per capita total health expenditure (PPP Int \$) | 32   | ICT Development Index rank                         | 156    |
| ica          | World Bank income group          | Low   | Hospital bed density (per 10 000 population)     | 10   | Mobile cellular subscriptions (per 100 population) | 34.79  |
| ind          | OECD country                     | No    | Physician density (per 10 000 population)        | <0.5 | Internet users (per 100 population)                | 2.30   |
|              | Life expectancy at birth (years) | 49    | Nurse density (per 10 000 population)            | 5.5  | Disability Adjusted Life Years (DALY)              | 47 596 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

| in toney numework                                 |                  |                      |                    |                        |  |
|---|------------------|----------------------|--------------------|------------------------|--|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |
| National eGovernment policy                       | No               | 85 <sup>b</sup>      | —                  | —                      |  |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |  |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |  |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |  |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |  |

### II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

## III. eHealth expenditures and their funding source

| in creatin experiations and their funding source |                |                            |                 |                            |          |                            |          |                                     |
|--|----------------|----------------------------|-----------------|----------------------------|----------|----------------------------|----------|-------------------------------------|
| Expenditure                                      | Public funding |                            | Private funding |                            |          | on-public<br>ding          |          | <private<br>ps funding</private<br> |
|  | Country        | Global                     | Country         | Global                     | Country  | Global                     | Country  | Global                              |
|  | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>          |
| ICT equipment                                    | _              | 78                         | _               | 37                         | Yes      | 59                         | _        | 28                                  |
| Software   | —              | 76                         | —               | 35                         | Yes      | 56                         | —        | 29                                  |
| Pilot projects                                   | _              | 69                         | —               | 33                         | Yes      | 51                         | —        | 28                                  |
| Skills training                                  | _              | 61                         | <u> </u>        | 26                         | No       | 43                         | —        | 20                                  |
| Ongoing support                                  | _              | 61                         | _               | 19                         | No       | 35                         | _        | 18                                  |
| Scholarships                                     | —              | 28                         | <u> </u>        | 8                          | No       | 19                         | —        | 4                                   |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No               | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

# Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |                  |                       |                  |                       |        |         |
|-------------------------------|------------------|-----------------------|------------------|-----------------------|--------|---------|
| Profession                    | Students         |                       | sion Students    |                       | Profes | sionals |
|                               | Country response | Global response (%)°§ | Country response | Global response (%)°§ |        |         |
| Medical                       | _                | 68                    | _                | 71                    |        |         |
| Public health                 | —                | 52                    | —                | 56                    |        |         |
| Nursing                       | —                | 50                    | _                | 55                    |        |         |
| Pharmacy                      | —                | 45                    | —                | 37                    |        |         |
| Dentistry                     | —                | 39                    | _                | 37                    |        |         |
| <sup>a</sup> n=113            |                  |                       |                  |                       |        |         |

# Hungar

| puntry<br>icators | Population (000s)                | 10 012 | Total health expenditure (%GDP)                  | 7.4   | ICT Development Index                              | 5.64   |
|-------------------|----------------------------------|--------|--|-------|--|--------|
|                   | GNI per capita (PPP Int \$)      | 18 570 | Per capita total health expenditure (PPP Int \$) | 1 419 | ICT Development Index rank                         | 34     |
|                   | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 71    | Mobile cellular subscriptions (per 100 population) | 118.01 |
| ind C             | OECD country                     | Yes    | Physician density (per 10 000 population)        | 27.8  | Internet users (per 100 population)                | 61.81  |
|                   | Life expectancy at birth (years) | 74     | Nurse density (per 10 000 population)            | 92.1  | Disability Adjusted Life Years (DALY)              | 15 002 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | 2007                   |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2007                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country Do not know 23 With health care entities in other countries No 11 Internet pharmacies Prohibits Legislation that allows/prohibits Internet pharmacy operations Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Do not know 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

# III, eHealth expenditures and their funding source

| in cheann expenditures and their running source |                |                            |                 |                            |                             |                            |  |                            |
|---|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|
| Expenditure                                     | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |
|   | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |
| ICT equipment                                   | Yes            | 78                         | Yes             | 37                         | _                           | 59                         | No                                     | 28                         |
| Software  | Yes            | 76                         | Yes             | 35                         | _                           | 56                         | No                                     | 29                         |
| Pilot projects                                  | Yes            | 69                         | No              | 33                         | _                           | 51                         | Yes                                    | 28                         |
| Skills training                                 | No             | 61                         | Yes             | 26                         | _                           | 43                         | No                                     | 20                         |
| Ongoing support                                 | Yes            | 61                         | No              | 19                         | _                           | 35                         | No                                     | 18                         |
| Scholarships                                    | No             | 28                         | No              | 8                          | —                           | 19                         | No                                     | 4                          |

### IV. Capacity building

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Do not know      | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 No 56 Nursing No 50 Yes 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Iceland

| 6          | Population (000s)                | 315    | Total health expenditure (%GDP)                  | 11.8  | ICT Development Index                              | 7.23   |
|------------|----------------------------------|--------|--|-------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 33 390 | Per capita total health expenditure (PPP Int \$) | 4 310 | ICT Development Index rank                         | 6      |
| oun<br>ica | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 75    | Mobile cellular subscriptions (per 100 population) | 105.28 |
| ind C      | OECD country                     | Yes    | Physician density (per 10 000 population)        | 37.7  | Internet users (per 100 population)                | 93.46  |
|            | Life expectancy at birth (years) | 82     | Nurse density (per 10 000 population)            | 101.4 | Disability Adjusted Life Years (DALY)              | 9 042  |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | Before 2000            |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | Before 2000            |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2001                   |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | _                  | _                      |
| National telemedicine policy                      | Yes              | 25°                  | No                 | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Yes 11 Internet pharmacies Prohibits Legislation that allows/prohibits Internet pharmacy operations Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals No 17

# III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private funding  |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | _                | 37                                   | _                           | 59                                   | Yes                                    | 28                                   |
| Software        | Yes              | 76                                   | —                | 35                                   | _                           | 56                                   | Yes                                    | 29                                   |
| Pilot projects  | Yes              | 69                                   | _                | 33                                   | _                           | 51                                   | Yes                                    | 28                                   |
| Skills training | Yes              | 61                                   | —                | 26                                   | _                           | 43                                   | No                                     | 20                                   |
| Ongoing support | Yes              | 61                                   | —                | 19                                   | _                           | 35                                   | Yes                                    | 18                                   |
| Scholarships    | No               | 28                                   | <u> </u>         | 8                                    | —                           | 19                                   | No                                     | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | No               | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%)°§ |
|--|------------------|-----------------------|
| eLearning in health sciences at the tertiary level |                  |                       |
| Used in teaching health sciences                   | Yes              | 72                    |
| Used in training health professionals              | Yes              | 69                    |
| Barriers to eLearning                              |                  |                       |
| Underdeveloped infrastructure                      | No               | 64                    |
| Lack of policy framework                           | Yes              | 63                    |
| Lack of skilled course developers                  | No               | 55                    |
| Lack of knowledge of applications                  | No               | 46                    |
| Perceived costs too high                           | Yes              | 45                    |
| Availability of suitable courses                   | Yes              | 42                    |
| Lack of demand                                     | Yes              | 21                    |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical No 68 No 71 Public health Yes 52 No 56 Nursing Yes 50 Yes 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

| 6              | Population (000s)                | 1 181 412    | Total health expenditure (%GDP)                  | 4.0  | ICT Development Index                              | 1.75   |
|----------------|----------------------------------|--------------|--|------|--|--------|
| tor            | GNI per capita (PPP Int \$)      | 3 260        | Per capita total health expenditure (PPP Int \$) | 116  | ICT Development Index rank                         | 117    |
| Coun<br>ndical | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 9    | Mobile cellular subscriptions (per 100 population) | 43.83  |
| ind            | OECD country                     | No           | Physician density (per 10 000 population)        | 5.8  | Internet users (per 100 population)                | 5.12   |
|                | Life expectancy at birth (years) | 64           | Nurse density (per 10 000 population)            | 12.7 | Disability Adjusted Life Years (DALY)              | 27 825 |

# eHealth foundation actions

|                        |  | dia   |                               |   |                     |                                   |                    |            |
|------------------------|--|---|-------------------------------|---|---------------------|-----------------------------------|--------------------|------------|
| C                      |  | Population (000s)   | 1 181 412                     | Total health expenditure (%GDI                    | <sup>D</sup> ) 4.0  | ICT Development Index             |                    | 1.75       |
| ō                      | try  | GNI per capita (PPP Int \$)   | 3 260                         | Per capita total health expenditu                 | re (PPP Int \$) 116 | ICT Development Index rank        |                    | 117        |
| <u> </u>               | Country<br>indicators                        | World Bank income group   | Lower-middle                  | Hospital bed density (per 10 00                   | 0 population) 9     | Mobile cellular subscriptions (pe | er 100 population) | 43.83      |
|                        | ind Co                                       | OECD country  | No                            | Physician density (per 10 000 p                   | opulation) 5.8      | Internet users (per 100 popula    | tion)              | 5.12       |
| Å                      |  | Life expectancy at birth (years)  | 64                            | Nurse density (per 10 000 popu                    | lation) 12.7        | Disability Adjusted Life Years (  | DALY)              | 27 825     |
|                        | Source                                       | s: See page ix  |                               |   |                     |                                   |                    |            |
| South-East Asia Regior | eHealt<br>policy,<br>capaci                  | Health found<br>h foundation actions buil<br>legal and ethical framew<br>ty of the health work forc<br>cy framework | ld an enablii<br>/orks; adequ | ng environment for the<br>uate funding from vario |                     |                                   |                    |            |
| Ш                      |  |   |                               | Country response                                  | Global response (%  | ) <sup>§</sup> Policy implemented | Year of implem     | nentation  |
| <u> </u>               | Natio  | onal eGovernment policy   |                               | Yes   | 85 <sup>b</sup>     | Partly                            | 2006               |            |
| <u>+</u>               |  | onal eHealth policy   |                               | Yes   | 55 <sup>b</sup>     | Partly                            | 2006               |            |
| $\supset$              |  | onal ICT procurement policy for   | or health secto               | or Yes  | 37 <sup>b</sup>     | Partly                            | 2006               |            |
| 0                      | National multiculturalism policy for eHealth |   |                               | No  | 30 <sup>b</sup>     | -                                 | -                  |            |
| S                      | Natio  | onal telemedicine policy  |                               | Yes   | 25°                 | Partly                            | —                  |            |
| ОНМ                    | II. Leg                                      | gal and ethical framewo   | rks for eHe                   | alth  |                     | Country response                  | Global respor      | 150 (%)a§  |
| $\geq$                 | Logisla                                      | ation on personal and health-i  | related data                  |   |                     | oountry response                  | Ciobal Tespoi      | 130 (76) * |
|                        |  | nsure privacy of personally id  |                               | 9   |                     | Yes                               | 70                 |            |
|                        |  | rotect personally identifiable of   |                               |   |                     | Yes                               | 31                 |            |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | Yes              | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | Yes              | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private          | funding                              |                  | on-public<br>ding                    |                  | -private<br>ps funding               |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | Yes              | 37                                   | Yes              | 59                                   | Yes              | 28                                   |
| Software        | Yes              | 76                                   | Yes              | 35                                   | Yes              | 56                                   | Yes              | 29                                   |
| Pilot projects  | Yes              | 69                                   | Yes              | 33                                   | Yes              | 51                                   | Yes              | 28                                   |
| Skills training | Yes              | 61                                   | Yes              | 26                                   | Yes              | 43                                   | Yes              | 20                                   |
| Ongoing support | Yes              | 61                                   | Yes              | 19                                   | Yes              | 35                                   | Yes              | 18                                   |
| Scholarships    | No               | 28                                   | No               | 8                                    | Yes              | 19                                   | No               | 4                                    |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | Partly           | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No               | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%) c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Indonesia

1.

|                 | 6                | Population (000s)                | 227 345      | Total health expenditure (%GDP)                  | 2.0 | ICT Development Index                              | 2.46   |
|-----------------|------------------|----------------------------------|--------------|--|-----|--|--------|
|                 | tor              | GNI per capita (PPP Int \$)      | 4 060        | Per capita total health expenditure (PPP Int \$) | 82  | ICT Development Index rank                         | 107    |
| Coun<br>indicat | ica <sup>-</sup> | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 6   | Mobile cellular subscriptions (per 100 population) | 69.25  |
|                 | ŭ p              | OECD country                     | No           | Physician density (per 10 000 population)        | 1.3 | Internet users (per 100 population)                | 8.70   |
|                 |                  | Life expectancy at birth (years) | 67           | Nurse density (per 10 000 population)            | 8.2 | Disability Adjusted Life Years (DALY)              | 25 103 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                        |                    |                        |  |  |  |  |
|---|------------------|------------------------|--------------------|------------------------|--|--|--|--|
|   | Country response | Global response (%)§   | Policy implemented | Year of implementation |  |  |  |  |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>        | Partly             | 2003                   |  |  |  |  |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>        | Yes                | 2007                   |  |  |  |  |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>        | —                  | —                      |  |  |  |  |
| National multiculturalism policy for eHealth      | Yes              | <b>30</b> <sup>b</sup> | Partly             | No data                |  |  |  |  |
| National telemedicine policy                      | No               | 25°                    | _                  | _                      |  |  |  |  |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations  | Yes              | 26                                |
| Education programmes for consumers and professionals   | Yes              | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

## III. eHealth expenditures and their funding source

| Expenditure     | Public              | funding                              | Private funding  |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|---------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes                 | 78                                   | No               | 37                                   | Yes                         | 59                                   | _                                      | 28                                   |
| Software        | Yes                 | 76                                   | No               | 35                                   | Yes                         | 56                                   | —                                      | 29                                   |
| Pilot projects  | Yes                 | 69                                   | Yes              | 33                                   | Yes                         | 51                                   | _                                      | 28                                   |
| Skills training | Yes                 | 61                                   | No               | 26                                   | Yes                         | 43                                   | _                                      | 20                                   |
| Ongoing support | Yes                 | 61                                   | No               | 19                                   | Yes                         | 35                                   | _                                      | 18                                   |
| Scholarships    | Yes                 | 28                                   | No               | 8                                    | Yes                         | 19                                   | _                                      | 4                                    |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | _                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%) c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Iran (Islamic Republic of)

73 312 Total h

11 490

Lower-middle

|      | Population (000s)           |
|------|-----------------------------|
| ton  | GNI per capita (PPP Int \$) |
| lica | World Bank income group     |
| ŭ pi | OECD country                |
|      |                             |

| 312   | Total health expenditure (%GDP)                  | 6.3  | ICT Development Index                              | 3.08   |
|-------|--|------|--|--------|
| 490   | Per capita total health expenditure (PPP Int \$) | 722  | ICT Development Index rank                         | 84     |
| iddle | Hospital bed density (per 10 000 population)     | 14   | Mobile cellular subscriptions (per 100 population) | 70.83  |
| No    | Physician density (per 10 000 population)        | 8.9  | Internet users (per 100 population)                | 11.07  |
| 72    | Nurse density (per 10 000 population)            | 14.1 | Disability Adjusted Life Years (DALY)              | 19 432 |

Life expectancy at birth (years) Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | Do not know            |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2007                   |
| National ICT procurement policy for health sector | No data          | 37 <sup>b</sup>      | No data            | No data                |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | 2006                   |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth Country response Global response (%)<sup>a§</sup> Legislation on personal and health-related data 70 To ensure privacy of personally identifiable data Yes To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

## III eHealth expenditures and their funding source

| Expenditure     | Expenditure Public funding Private funding D |                                      |                     | Donor/non-public<br>funding          |                     | Public-private<br>partnerships funding |                     |                                      |
|-----------------|--|--------------------------------------|---------------------|--------------------------------------|---------------------|--|---------------------|--------------------------------------|
|                 | Country<br>response                          | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup>   | Country<br>response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes  | 78                                   | No                  | 37                                   | _                   | 59                                     | No                  | 28                                   |
| Software        | Yes  | 76                                   | No                  | 35                                   | _                   | 56                                     | Yes                 | 29                                   |
| Pilot projects  | Yes  | 69                                   | No                  | 33                                   | _                   | 51                                     | Yes                 | 28                                   |
| Skills training | Yes  | 61                                   | Yes                 | 26                                   | _                   | 43                                     | No                  | 20                                   |
| Ongoing support | Yes  | 61                                   | No                  | 19                                   | _                   | 35                                     | No                  | 18                                   |
| Scholarships    | Yes  | 28                                   | No                  | 8                                    | _                   | 19                                     | No                  | 4                                    |

## IV. Capacity building

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                       |  |  |  |  |
|---|------------------|-----------------------|--|--|--|--|
|   | Country response | Global response (%)°§ |  |  |  |  |
| elemedicine enabling actions  |                  |                       |  |  |  |  |
| National telemedicine policy  | No               | 25                    |  |  |  |  |
| Implemented national telemedicine policy                                    | -                | -                     |  |  |  |  |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                    |  |  |  |  |
| Barriers to implementing telemedicine solutions                             |                  |                       |  |  |  |  |
| Perceived costs too high  | Yes              | 60                    |  |  |  |  |
| Lack of legal policies/regulation   | No               | 40                    |  |  |  |  |
| Organizational culture not supportive                                       | No               | 39                    |  |  |  |  |
| Underdeveloped infrastructure   | Yes              | 38                    |  |  |  |  |
| Lack of policy frameworks   | Yes              | 37                    |  |  |  |  |
| Competing priorities  | Yes              | 37                    |  |  |  |  |
| Lack of demand by health professionals                                      | No               | 31                    |  |  |  |  |
| Lack of nationally adopted standards  | No               | 26                    |  |  |  |  |
| Lack of knowledge of applications   | No               | 25                    |  |  |  |  |
| Lack of technical expertise   | No               | 17                    |  |  |  |  |
| Information most needed in country to support telemedicine development      |                  |                       |  |  |  |  |
| Cost and cost effectiveness   | Yes              | 69                    |  |  |  |  |
| Clinical possibilities  | No               | 58                    |  |  |  |  |
| Infrastructure  | Yes              | 52                    |  |  |  |  |
| Evaluation  | Yes              | 46                    |  |  |  |  |
| Legal and ethical   | No               | 45                    |  |  |  |  |
| Effect on human resources   | Yes              | 40                    |  |  |  |  |
| Patients' perception  | No               | 30                    |  |  |  |  |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |                  |                                   |                  |                                   |  |
|-------------------------------|------------------|-----------------------------------|------------------|-----------------------------------|--|
| Profession                    | Students         |                                   | Professionals    |                                   |  |
|                               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%) <sup>c§</sup> |  |
| Medical                       | _                | 68                                | Yes              | 71                                |  |
| Public health                 | —                | 52                                | Yes              | 56                                |  |
| Nursing                       | —                | 50                                | No               | 55                                |  |
| Pharmacy                      | —                | 45                                | No               | 37                                |  |
| Dentistry                     | —                | 39                                | Yes              | 37                                |  |
| ° n=113                       |                  |                                   |                  |                                   |  |

# Israel

| Country<br>indicators | Population (000s)                | 7 051  | Total health expenditure (%GDP)                  | 8.0   | ICT Development Index                              | 6.19   |
|-----------------------|----------------------------------|--------|--|-------|--|--------|
|                       | GNI per capita (PPP Int \$)      | 27 040 | Per capita total health expenditure (PPP Int \$) | 2 288 | ICT Development Index rank                         | 27     |
|                       | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 58    | Mobile cellular subscriptions (per 100 population) | 125.84 |
|                       | OECD country                     | Yes    | Physician density (per 10 000 population)        | 36.3  | Internet users (per 100 population)                | 63.12  |
|                       | Life expectancy at birth (years) | 81     | Nurse density (per 10 000 population)            | 61.5  | Disability Adjusted Life Years (DALY)              | 9 822  |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | 2004                   |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | 2003                   |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Yes 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals 17 Yes

## III. eHealth expenditures and their funding source

| in criterin experienteres and their randing source |                |                            |  |                            |                             |                            |  |                            |  |
|--|----------------|----------------------------|--|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|
| Expenditure  | Public funding |                            | Expenditure Public funding Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |
|  | Country        | Global                     | Country                                    | Global                     | Country                     | Global                     | Country                                | Global                     |  |
|  | response       | response (%) <sup>b§</sup> | response                                   | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |
| ICT equipment                                      | Yes            | 78                         | —  | 37                         | _                           | 59                         | _                                      | 28                         |  |
| Software   | Yes            | 76                         | —  | 35                         | _                           | 56                         | —                                      | 29                         |  |
| Pilot projects                                     | Yes            | 69                         | —  | 33                         | _                           | 51                         | _                                      | 28                         |  |
| Skills training                                    | Yes            | 61                         | _  | 26                         | _                           | 43                         | _                                      | 20                         |  |
| Ongoing support                                    | Yes            | 61                         | _  | 19                         | _                           | 35                         | _                                      | 18                         |  |
| Scholarships                                       | No             | 28                         | —  | 8                          | —                           | 19                         | —                                      | 4                          |  |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                       |  |  |  |
|---|------------------|-----------------------|--|--|--|
|   | Country response | Global response (%)c§ |  |  |  |
| Telemedicine enabling actions   |                  |                       |  |  |  |
| National telemedicine policy  | No               | 25                    |  |  |  |
| Implemented national telemedicine policy                                    | —                | -                     |  |  |  |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |  |  |  |
| Barriers to implementing telemedicine solutions                             |                  |                       |  |  |  |
| Perceived costs too high  | Yes              | 60                    |  |  |  |
| Lack of legal policies/regulation   | Yes              | 40                    |  |  |  |
| Organizational culture not supportive                                       | Yes              | 39                    |  |  |  |
| Underdeveloped infrastructure   | No               | 38                    |  |  |  |
| Lack of policy frameworks   | Yes              | 37                    |  |  |  |
| Competing priorities  | Yes              | 37                    |  |  |  |
| Lack of demand by health professionals                                      | No               | 31                    |  |  |  |
| Lack of nationally adopted standards  | Yes              | 26                    |  |  |  |
| Lack of knowledge of applications   | No               | 25                    |  |  |  |
| Lack of technical expertise   | No               | 17                    |  |  |  |
| Information most needed in country to support telemedicine development      |                  |                       |  |  |  |
| Cost and cost effectiveness   | Yes              | 69                    |  |  |  |
| Clinical possibilities  | Yes              | 58                    |  |  |  |
| Infrastructure  | No               | 52                    |  |  |  |
| Evaluation  | Yes              | 46                    |  |  |  |
| Legal and ethical   | Yes              | 45                    |  |  |  |
| Effect on human resources   | Yes              | 40                    |  |  |  |
| Patients' perception  | No               | 30                    |  |  |  |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 No 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 No 37 Dentistry Yes 39 No 37 <sup>a</sup> n=113

# Jordan

1.

| Country<br>indicators | Population (000s)                | 6 136        | Total health expenditure (%GDP)                  | 8.5  | ICT Development Index                              | 3.33   |
|-----------------------|----------------------------------|--------------|--|------|--|--------|
|                       | GNI per capita (PPP Int \$)      | 5 840        | Per capita total health expenditure (PPP Int \$) | 432  | ICT Development Index rank                         | 74     |
|                       | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 18   | Mobile cellular subscriptions (per 100 population) | 95.22  |
|                       | OECD country                     | No           | Physician density (per 10 000 population)        | 25.6 | Internet users (per 100 population)                | 26.00  |
|                       | Life expectancy at birth (years) | 72           | Nurse density (per 10 000 population)            | 31.8 | Disability Adjusted Life Years (DALY)              | 17 042 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                      |                    |                        |  |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|--|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |  |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2007                   |  |  |  |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |  |  |  |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |  |  |  |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |  |  |  |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |  |  |  |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | Prohibits        | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | Prohibits        | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | Yes              | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

## III, eHealth expenditures and their funding source

| in crican expenditures and their funding source |                |                            |  |                            |          |                            |  |                            |  |
|---|----------------|----------------------------|--|----------------------------|----------|----------------------------|--|----------------------------|--|
| Expenditure                                     | Public funding |                            | Expenditure Public funding Private funding |                            |          | on-public<br>ding          | Public-private<br>partnerships funding |                            |  |
|   | Country        | Global                     | Country                                    | Global                     | Country  | Global                     | Country                                | Global                     |  |
|   | response       | response (%) <sup>b§</sup> | response                                   | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |
| ICT equipment                                   | Yes            | 78                         | _  | 37                         | Yes      | 59                         | _                                      | 28                         |  |
| Software  | Yes            | 76                         | —  | 35                         | Yes      | 56                         | _                                      | 29                         |  |
| Pilot projects                                  | Yes            | 69                         | _  | 33                         | No       | 51                         | _                                      | 28                         |  |
| Skills training                                 | Yes            | 61                         | _  | 26                         | Yes      | 43                         | _                                      | 20                         |  |
| Ongoing support                                 | No             | 61                         | _  | 19                         | No       | 35                         | _                                      | 18                         |  |
| Scholarships                                    | No             | 28                         | <u> </u>                                   | 8                          | No       | 19                         | _                                      | 4                          |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  | •                     |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No data          | 60                    |
| Lack of legal policies/regulation   | No data          | 40                    |
| Organizational culture not supportive                                       | No data          | 39                    |
| Underdeveloped infrastructure   | No data          | 38                    |
| Lack of policy frameworks   | No data          | 37                    |
| Competing priorities  | No data          | 37                    |
| Lack of demand by health professionals                                      | No data          | 31                    |
| Lack of nationally adopted standards  | No data          | 26                    |
| Lack of knowledge of applications   | No data          | 25                    |
| Lack of technical expertise   | No data          | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No data          | 69                    |
| Clinical possibilities  | No data          | 58                    |
| Infrastructure  | No data          | 52                    |
| Evaluation  | No data          | 46                    |
| Legal and ethical   | No data          | 45                    |
| Effect on human resources   | No data          | 40                    |
| Patients' perception  | No data          | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |   |         |                  |                                   |  |
|-------------------------------|---|---------|------------------|-----------------------------------|--|
| Profession                    | Students                                |         | Professionals    |                                   |  |
|                               | Country response Global response (%) c§ |         | Country response | Global response (%) <sup>c§</sup> |  |
| Medical                       | _                                       | 68      | Yes              | 71                                |  |
| Public health                 | —                                       | 52      | No               | 56                                |  |
| Nursing                       | —                                       | 50      | No               | 55                                |  |
| Pharmacy                      | —                                       | 45      | No               | 37                                |  |
| Dentistry                     | —                                       | — 39 No |                  | 37                                |  |
| ° n=113                       |   |         |                  |                                   |  |

# **K**uwait

1.

| 6           | Population (000s)                | 2 919  | Total health expenditure (%GDP)                  | 2.0  | ICT Development Index                              | 3.64   |
|-------------|----------------------------------|--------|--|------|--|--------|
| try<br>tors | GNI per capita (PPP Int \$)      | 53 590 | Per capita total health expenditure (PPP Int \$) | 795  | ICT Development Index rank                         | 65     |
| oun<br>lica | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 18   | Mobile cellular subscriptions (per 100 population) | 129.85 |
| ind         | OECD country                     | No     | Physician density (per 10 000 population)        | 18.0 | Internet users (per 100 population)                | 36.85  |
|             | Life expectancy at birth (years) | 78     | Nurse density (per 10 000 population)            | 37.0 | Disability Adjusted Life Years (DALY)              | 11 659 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                        |                    |                        |  |  |  |
|---|------------------|------------------------|--------------------|------------------------|--|--|--|
|   | Country response | Global response (%)§   | Policy implemented | Year of implementation |  |  |  |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>        | Partly             | 2006                   |  |  |  |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>        | Partly             | Before 2000            |  |  |  |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>        | Partly             | 2000                   |  |  |  |
| National multiculturalism policy for eHealth      | Yes              | <b>30</b> <sup>b</sup> | Yes                | No data                |  |  |  |
| National telemedicine policy                      | Yes              | 25°                    | No                 | —                      |  |  |  |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | Do not know      | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

## III. eHealth expenditures and their funding source

| in cricatil experiatares and their funding source |          |                            |                  |                            |                             |                            |  |                            |  |
|---|----------|----------------------------|------------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|
| Expenditure                                       | Public   | funding                    | g Private fundin |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |
|   | Country  | Global                     | Country          | Global                     | Country                     | Global                     | Country                                | Global                     |  |
|   | response | response (%) <sup>b§</sup> | response         | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |
| ICT equipment                                     | Yes      | 78                         | _                | 37                         | _                           | 59                         | _                                      | 28                         |  |
| Software  | Yes      | 76                         | —                | 35                         | _                           | 56                         | _                                      | 29                         |  |
| Pilot projects                                    | Yes      | 69                         | —                | 33                         | _                           | 51                         | _                                      | 28                         |  |
| Skills training                                   | Yes      | 61                         | _                | 26                         | _                           | 43                         | _                                      | 20                         |  |
| Ongoing support                                   | Yes      | 61                         | _                | 19                         | _                           | 35                         | _                                      | 18                         |  |
| Scholarships                                      | Yes      | 28                         | —                | 8                          | —                           | 19                         | —                                      | 4                          |  |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | No               | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No               | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

# IIIb. eLearning target groups

| Profession    | Students         |                       | Profes           | sionals               |
|---------------|------------------|-----------------------|------------------|-----------------------|
|               | Country response | Global response (%)°§ | Country response | Global response (%)°§ |
| Medical       | Yes              | 68                    | Yes              | 71                    |
| Public health | No               | 52                    | No               | 56                    |
| Nursing       | Yes              | 50                    | Yes              | 55                    |
| Pharmacy      | No               | 45                    | Yes              | 37                    |
| Dentistry     | Yes              | 39                    | Yes              | 37                    |
| a n-113       |                  |                       |                  |                       |

# Kyrgyzstan

| Population (000s)                | 5 414 | Total health expenditure (%GDP)                  | 6.6  | ICT Development Index                              | 2.65   |
|----------------------------------|-------|--|------|--|--------|
| GNI per capita (PPP Int \$)      | 2 200 | Per capita total health expenditure (PPP Int \$) | 161  | ICT Development Index rank                         | 99     |
| World Bank income group          | Low   | Hospital bed density (per 10 000 population)     | 51   | Mobile cellular subscriptions (per 100 population) | 81.85  |
| OECD country                     | No    | Physician density (per 10 000 population)        | 23.0 | Internet users (per 100 population)                | 40.03  |
| Life expectancy at birth (years) | 66    | Nurse density (per 10 000 population)            | 56.6 | Disability Adjusted Life Years (DALY)              | 25 257 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2002                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2002                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | _                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content No data 56 Voluntary compliance by content providers or web site owners Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

## III, eHealth expenditures and their funding source

| in cricarii experiatares and their funding source |                |                            |                 |                            |                             |                            |          |                                     |
|---|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|----------|-------------------------------------|
| Expenditure                                       | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            |          | <private<br>ps funding</private<br> |
|   | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country  | Global                              |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>          |
| ICT equipment                                     | Yes            | 78                         | —               | 37                         | Yes                         | 59                         | —        | 28                                  |
| Software  | No             | 76                         | —               | 35                         | Yes                         | 56                         | —        | 29                                  |
| Pilot projects                                    | Yes            | 69                         | —               | 33                         | Yes                         | 51                         | —        | 28                                  |
| Skills training                                   | No             | 61                         | _               | 26                         | Yes                         | 43                         | —        | 20                                  |
| Ongoing support                                   | No             | 61                         | _               | 19                         | No                          | 35                         | _        | 18                                  |
| Scholarships                                      | No             | 28                         | <u> </u>        | 8                          | No                          | 19                         | —        | 4                                   |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

## Illa. eLearning

|  | Country response | Global response (%)°§ |
|--|------------------|-----------------------|
| eLearning in health sciences at the tertiary level |                  |                       |
| Used in teaching health sciences                   | Yes              | 72                    |
| Used in training health professionals              | Yes              | 69                    |
| Barriers to eLearning                              |                  |                       |
| Underdeveloped infrastructure                      | Yes              | 64                    |
| Lack of policy framework                           | Yes              | 63                    |
| Lack of skilled course developers                  | Yes              | 55                    |
| Lack of knowledge of applications                  | No               | 46                    |
| Perceived costs too high                           | Yes              | 45                    |
| Availability of suitable courses                   | No               | 42                    |
| Lack of demand                                     | No               | 21                    |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 No 56 Nursing Yes 50 Yes 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Lao People's Democratic Republic

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| Population (000s) |                      | 6 205                            | Total health expenditure (%GDP) | 4.0  | ICT Deve |            |
|-------------------|----------------------|----------------------------------|---------------------------------|--|----------|------------|
|                   | tor                  | GNI per capita (PPP Int \$)      | 2 210                           | Per capita total health expenditure (PPP Int \$) | 85       | ICT Deve   |
|                   | Country<br>Idicators | World Bank income group          | Low                             | Hospital bed density (per 10 000 population)     | 12       | Mobile ce  |
|                   | ind C                | OECD country                     | No                              | Physician density (per 10 000 population)        | 3.5      | Internet u |
|                   |                      | Life expectancy at birth (years) | 62                              | Nurse density (per 10 000 population)            | 97       | Disability |

| 4.0 | ICT Development Index                              | 1.74   |
|-----|--|--------|
| 85  | ICT Development Index rank                         | 118    |
| 12  | Mobile cellular subscriptions (per 100 population) | 51.18  |
| 3.5 | Internet users (per 100 population)                | 4.75   |
| 9.7 | Disability Adjusted Life Years (DALY)              | 31 175 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|--|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2008                   |  |  |  |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |  |  |  |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | No                 | —                      |  |  |  |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |  |  |  |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |  |  |  |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data No 70 To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

## III. eHealth expenditures and their funding source

| in cheann expenditures and their funding source |          |                            |          |                            |          |                             |          |  |  |  |
|---|----------|----------------------------|----------|----------------------------|----------|-----------------------------|----------|--|--|--|
| Expenditure                                     | Public   | Public funding             |          | Private funding            |          | Donor/non-public<br>funding |          | Public-private<br>partnerships funding |  |  |
|   | Country  | Global                     | Country  | Global                     | Country  | Global                      | Country  | Global                                 |  |  |
|   | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>  | response | response (%) <sup>b§</sup>             |  |  |
| ICT equipment                                   | _        | 78                         | _        | 37                         | Yes      | 59                          | No data  | 28                                     |  |  |
| Software  | —        | 76                         | —        | 35                         | Yes      | 56                          | No data  | 29                                     |  |  |
| Pilot projects                                  | _        | 69                         | _        | 33                         | Yes      | 51                          | No data  | 28                                     |  |  |
| Skills training                                 | _        | 61                         | _        | 26                         | Yes      | 43                          | No data  | 20                                     |  |  |
| Ongoing support                                 | _        | 61                         | _        | 19                         | No       | 35                          | No data  | 18                                     |  |  |
| Scholarships                                    | —        | 28                         | —        | 8                          | No       | 19                          | No data  | 4                                      |  |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | Yes              | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |                  |                       |                  |                       |  |  |
|-------------------------------|------------------|-----------------------|------------------|-----------------------|--|--|
| Profession                    | Stuc             | Students              |                  | sionals               |  |  |
|                               | Country response | Global response (%)°§ | Country response | Global response (%)°§ |  |  |
| Medical                       | —                | 68                    | —                | 71                    |  |  |
| Public health                 | —                | 52                    | —                | 56                    |  |  |
| Nursing                       | —                | 50                    | _                | 55                    |  |  |
| Pharmacy                      | —                | 45                    | —                | 37                    |  |  |
| Dentistry                     | _                | 39                    | _                | 37                    |  |  |
| <sup>a</sup> n=113            |                  |                       |                  |                       |  |  |

# **L**atvia

| <b>6</b>   | Population (000s)                | 2 259        | Total health expenditure (%GDP)                  | 6.5   | ICT Development Index                              | 5.28   |
|------------|----------------------------------|--------------|--|-------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 16 510       | Per capita total health expenditure (PPP Int \$) | 1 112 | ICT Development Index rank                         | 41     |
| oun<br>ica | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 76    | Mobile cellular subscriptions (per 100 population) | 105.40 |
| ind        | OECD country                     | No           | Physician density (per 10 000 population)        | 30.4  | Internet users (per 100 population)                | 66.84  |
|            | Life expectancy at birth (years) | 71           | Nurse density (per 10 000 population)            | 56.5  | Disability Adjusted Life Years (DALY)              | 16 822 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2005                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2007                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2008                   |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | Yes              | 25°                  | No                 | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country Yes 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Allows Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Yes 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Do not know Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

## III. eHealth expenditures and their funding source

| Expenditure     | Public           | funding                              | Private funding  |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | _                | 37                                   | _                           | 59                                   | _                                      | 28                                   |
| Software        | Yes              | 76                                   | —                | 35                                   | _                           | 56                                   | —                                      | 29                                   |
| Pilot projects  | Yes              | 69                                   | _                | 33                                   | _                           | 51                                   | —                                      | 28                                   |
| Skills training | Yes              | 61                                   | _                | 26                                   | _                           | 43                                   | —                                      | 20                                   |
| Ongoing support | Yes              | 61                                   | _                | 19                                   | _                           | 35                                   | _                                      | 18                                   |
| Scholarships    | No               | 28                                   | <u> </u>         | 8                                    | —                           | 19                                   | <u> </u>                               | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | No               | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%)°§ |  |  |  |  |
|--|------------------|-----------------------|--|--|--|--|
| eLearning in health sciences at the tertiary level |                  |                       |  |  |  |  |
| Used in teaching health sciences                   | No               | 72                    |  |  |  |  |
| Used in training health professionals              | No data          | 69                    |  |  |  |  |
| Barriers to eLearning                              |                  |                       |  |  |  |  |
| Underdeveloped infrastructure                      | No               | 64                    |  |  |  |  |
| Lack of policy framework                           | No               | 63                    |  |  |  |  |
| Lack of skilled course developers                  | Yes              | 55                    |  |  |  |  |
| Lack of knowledge of applications                  | Yes              | 46                    |  |  |  |  |
| Perceived costs too high                           | Yes              | 45                    |  |  |  |  |
| Availability of suitable courses                   | Yes              | 42                    |  |  |  |  |
| Lack of demand                                     | No               | 21                    |  |  |  |  |

| Students         |                                   | Professionals   |  |
|------------------|-----------------------------------|---|--|
| Country response | Global response (%) <sup>c§</sup> | Country response  | Global response (%) <sup>c§</sup>  |
| _                | 68                                | No data   | 71   |
| -                | 52                                | No data   | 56   |
| _                | 50                                | No data   | 55   |
| —                | 45                                | No data   | 37   |
| _                | 39                                | No data   | 37   |
|                  |                                   | Country response         Global response (%)⁰           -         68           -         52           -         50           -         45 | Country responseGlobal response (%)°\$Country response-68No data-52No data-50No data-45No data |

# Lebanon

| (A)          | Population (000s)                | 4 194        | Total health expenditure (%GDP)                  | 8.8   | ICT Development Index                              | 3.17   |
|--------------|----------------------------------|--------------|--|-------|--|--------|
| itry<br>tors | GNI per capita (PPP Int \$)      | 13 230       | Per capita total health expenditure (PPP Int \$) | 1 000 | ICT Development Index rank                         | 82     |
| jun          | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 34    | Mobile cellular subscriptions (per 100 population) | 56.59  |
| ind          | OECD country                     | No           | Physician density (per 10 000 population)        | 32.5  | Internet users (per 100 population)                | 23.68  |
|              | Life expectancy at birth (years) | 72           | Nurse density (per 10 000 population)            | 13.2  | Disability Adjusted Life Years (DALY)              | 18 881 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                      |                    |                        |
|---|------------------|----------------------|--------------------|------------------------|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | No data                |
| National eHealth policy                           | No               | 55 <sup>⊳</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | Do not know      | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | Yes              | 26                                |
| With different health care entities within the country   | Do not know      | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | Prohibits        | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | Prohibits        | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No               | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | Yes              | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

| n oortinoution, t | abor culturion, or   | quality scals  |  |   | 110   |  | 17  |
|-------------------|--|--|--|---|---|--|---|
|                   |  |  |  |   |   |  |   |
| ires and thei     | ir funding so  | urce   |  |   |   |  |   |
| Public            | funding  | Private  | funding  |   |   |  | <pre> private ps fundir </pre>  |
| Country           | Global   | Country  | Global   | Country   | Global  | Country  | Glob  |
| response          | response (%) <sup>b§</sup>   | response   | response (%) <sup>b§</sup>   | response  | response (%) <sup>b§</sup>  | response   | response  |
| Yes               | 78   | _  | 37   | Yes   | 59  | No   | 28  |
| Yes               | 76   | —  | 35   | Yes   | 56  | No   | 29  |
| Yes               | 69   | _  | 33   | Yes   | 51  | No   | 28  |
| Yes               | 61   | _  | 26   | Yes   | 43  | No   | 20  |
| Yes               | 61   | _  | 19   | Yes   | 35  | No   | 18  |
|                   | res and the<br>Public<br>Country<br>response<br>Yes<br>Yes<br>Yes<br>Yes | Ires and their funding soPublic fundingCountry<br>responseGlobal<br>response (%)b§Yes78Yes76Yes69Yes61 | Country<br>responseGlobal<br>response (%)**Country<br>responseYes78-Yes76-Yes69-Yes61- | Private funding sourcePublic fundingPrivate fundingCountry<br>responseGlobal<br>response (%)b§Country<br>responseGlobal<br>response (%)b§Yes78-37Yes76-35Yes69-33Yes61-26 | ures and their funding sourcePublic fundingPrivate fundingDonor/ng<br>fundingCountry<br>responseGlobal<br>response (%)b8Country<br>responseCountry<br>response (%)b8Country<br>response (%)b8Yes78-37YesYes76-35YesYes69-33YesYes61-26Yes | ures and their funding sourcePublic fundingPrivate fundingDonor/no-public fundingCountry<br>responseGlobal<br>response (%)b8Country<br>response (%)b8Global<br>response (%)b8Country<br>response (%)b8Yes78-37Yes59Yes76-35Yes56Yes69-33Yes51Yes61-26Yes43 | ures and their funding source         Public funding       Private funding       Donor/no-public funding       Public funding         Country       Global       Country       Global       Country       Global       Country       Global       Country       Global       Country       Global       Country       Country       Global       Country       Country       Global       Country       Country       Global       Country       response       Yes       59       No         Yes       76       -       35       Yes       56       No         Yes       69       -       33       Yes       51       No         Yes       61       -       26       Yes       43       No |

## **IV. Capacity building**

No

28

Scholarships

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | _                | 54                                |
| Pharmacy  | _                | 54                                |

8

No

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

19

No

ps funding Global response (%)<sup>b§</sup> 28 29 28 20 18

4

I.

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

39

### IIIb. eLearning target groups Students Profession Global response (%)c§ **Country response Country response** Medical Yes 68 Public health No 52 Nursing Yes 50 Pharmacy Yes 45

Yes

**Professionals** 

Yes

No

Yes

No

Yes

Global response (%)c§

71

56

55

37

37

Dentistry

# Lesotho

| 6           | Population (000s)                  | 2 049 | Total health expenditure (%GDP)                  | 6.4 | ICT Development Index                              | 1.46   |
|-------------|------------------------------------|-------|--|-----|--|--------|
| ton         | GNI per capita (PPP Int \$)        | 1 950 | Per capita total health expenditure (PPP Int \$) | 100 | ICT Development Index rank                         | 133    |
| bun<br>lica | World Bank income group Lower-midd |       | Hospital bed density (per 10 000 population)     | 13  | Mobile cellular subscriptions (per 100 population) | 31.98  |
| ind C       | OECD country                       | No    | Physician density (per 10 000 population)        | 0.5 | Internet users (per 100 population)                | 3.72   |
|             | Life expectancy at birth (years)   | 47    | Nurse density (per 10 000 population)            | 6.2 | Disability Adjusted Life Years (DALY)              | 49 452 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|--|
| National eGovernment policy                       | No               | 85 <sup>b</sup>      | —                  | —                      |  |  |  |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |  |  |  |
| National ICT procurement policy for health sector | No data          | 37 <sup>b</sup>      | No data            | No data                |  |  |  |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |  |  |  |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |  |  |  |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data No 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No data 23 With health care entities in other countries No data 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

## III. eHealth expenditures and their funding source

| Expenditure     | Public           | Public funding                       |                  | funding                              |                  | on-public<br>ding                    |                  | -private<br>ps funding               |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | No data          | 37                                   | Yes              | 59                                   | No data          | 28                                   |
| Software        | Yes              | 76                                   | No data          | 35                                   | Yes              | 56                                   | No data          | 29                                   |
| Pilot projects  | No               | 69                                   | No data          | 33                                   | No               | 51                                   | No data          | 28                                   |
| Skills training | Yes              | 61                                   | No data          | 26                                   | Yes              | 43                                   | No data          | 20                                   |
| Ongoing support | No               | 61                                   | No data          | 19                                   | No               | 35                                   | No data          | 18                                   |
| Scholarships    | No               | 28                                   | No data          | 8                                    | No               | 19                                   | No data          | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No data          | 77                                |
| Institutions offer continuing education in ICT for health professionals | No data          | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | No data          | 73                                |
| Nursing   | No data          | 62                                |
| Public health   | No data          | 60                                |
| Dentistry   | No data          | 54                                |
| Pharmacy  | No data          | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | Yes              | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

| IIIb. eLearning target groups |                  |                       |                  |                       |  |
|-------------------------------|------------------|-----------------------|------------------|-----------------------|--|
| Profession                    | Students         |                       | Professionals    |                       |  |
|                               | Country response | Global response (%)°§ | Country response | Global response (%)°§ |  |
| Medical                       | _                | 68                    | _                | 71                    |  |
| Public health                 | —                | 52                    | —                | 56                    |  |
| Nursing                       | —                | 50                    | _                | 55                    |  |
| Pharmacy                      | —                | 45                    | —                | 37                    |  |
| Dentistry                     | —                | 39                    | _                | 37                    |  |
| <sup>a</sup> n=113            |                  |                       |                  |                       |  |

# Liberia

| S           | Population (000s)                | 3 793 | Total health expenditure (%GDP)                  | 11.7 | ICT Development Index                              | —      |
|-------------|----------------------------------|-------|--|------|--|--------|
| ton         | GNI per capita (PPP Int \$)      | 290   | Per capita total health expenditure (PPP Int \$) | 45   | ICT Development Index rank                         |        |
| oun<br>lica | World Bank income group          | Low   | Hospital bed density (per 10 000 population)     | 7    | Mobile cellular subscriptions (per 100 population) | 21.29  |
| ind C       | OECD country                     | No    | Physician density (per 10 000 population)        | <0.5 | Internet users (per 100 population)                | 0.51   |
|             | Life expectancy at birth (years) | 54    | Nurse density (per 10 000 population)            | 2.7  | Disability Adjusted Life Years (DALY)              | 56 189 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|
| National eGovernment policy                       | No               | 85 <sup>b</sup>      | —                  | —                      |  |  |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |  |  |
| National ICT procurement policy for health sector | Do not know      | 37 <sup>b</sup>      | —                  | —                      |  |  |
| National multiculturalism policy for eHealth      | Do not know      | 30 <sup>b</sup>      | —                  | —                      |  |  |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |  |  |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Do not know 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> Do not know 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Do not know 26 With different health care entities within the country Do not know 23 With health care entities in other countries Do not know 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Do not know Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Do not know 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Do not know Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Do not know 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls No 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

## III. eHealth expenditures and their funding source

| Expenditure     |                  | funding                              |                  | funding                              | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | _                | 78                                   | _                | 37                                   | _                           | 59                                   | _                                      | 28                                   |
| Software        | _                | 76                                   | _                | 35                                   | _                           | 56                                   | _                                      | 29                                   |
| Pilot projects  | _                | 69                                   | _                | 33                                   | _                           | 51                                   | _                                      | 28                                   |
| Skills training | —                | 61                                   | _                | 26                                   | _                           | 43                                   | _                                      | 20                                   |
| Ongoing support | _                | 61                                   | _                | 19                                   | _                           | 35                                   | _                                      | 18                                   |
| Scholarships    | —                | 28                                   | —                | 8                                    | —                           | 19                                   | _                                      | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Do not know      | 77                                |
| Institutions offer continuing education in ICT for health professionals | Do not know      | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No data          | 60                                |
| Lack of legal policies/regulation   | No data          | 40                                |
| Organizational culture not supportive                                       | No data          | 39                                |
| Underdeveloped infrastructure   | No data          | 38                                |
| Lack of policy frameworks   | No data          | 37                                |
| Competing priorities  | No data          | 37                                |
| Lack of demand by health professionals                                      | No data          | 31                                |
| Lack of nationally adopted standards  | No data          | 26                                |
| Lack of knowledge of applications   | No data          | 25                                |
| Lack of technical expertise   | No data          | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No data          | 69                                |
| Clinical possibilities  | No data          | 58                                |
| Infrastructure  | No data          | 52                                |
| Evaluation  | No data          | 46                                |
| Legal and ethical   | No data          | 45                                |
| Effect on human resources   | No data          | 40                                |
| Patients' perception  | No data          | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) c§ |
|--|------------------|------------------------|
| eLearning in health sciences at the tertiary level |                  |                        |
| Used in teaching health sciences                   | No               | 72                     |
| Used in training health professionals              | Do not know      | 69                     |
| Barriers to eLearning                              |                  |                        |
| Underdeveloped infrastructure                      | Yes              | 64                     |
| Lack of policy framework                           | No               | 63                     |
| Lack of skilled course developers                  | Yes              | 55                     |
| Lack of knowledge of applications                  | No               | 46                     |
| Perceived costs too high                           | Yes              | 45                     |
| Availability of suitable courses                   | No               | 42                     |
| Lack of demand                                     | No               | 21                     |

| Profession    | Students         |  | Professionals |                        |
|---------------|------------------|--|---------------|------------------------|
|               | Country response | esponse Global response (%) <sup>c§</sup> Country response C |               | Global response (%) c§ |
| Medical       | _                | 68   | _             | 71                     |
| Public health | —                | 52   | —             | 56                     |
| Nursing       | _                | 50   | _             | 55                     |
| Pharmacy      | —                | 45   | —             | 37                     |
| Dentistry     | -                | 39   | _             | 37                     |

# \_ibyan Arab Jamahiriya

6 294 Total health expenditure (%

16 430 Upper-middle

No

Per capita total health expe

Hospital bed density (per 1

Physician density (per 10 0

73 Nurse density (per 10 000

| Ś   | Population (000s)                |
|-----|----------------------------------|
| to  | GNI per capita (PPP Int \$)      |
| ica | World Bank income group          |
| ind | OECD country                     |
|     | Life expectancy at birth (years) |

| %GDP)                 | 2.8  | ICT Development Index                              | 3.24   |
|-----------------------|------|--|--------|
| enditure (PPP Int \$) | 401  | ICT Development Index rank                         | 78     |
| 10 000 population)    | 37   | Mobile cellular subscriptions (per 100 population) | 77.94  |
| 000 population)       | 12.5 | Internet users (per 100 population)                | 5.51   |
| ) population)         | 48.0 | Disability Adjusted Life Vears (DALV)              | 16 177 |

Sources: See page ix

Country

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework **Policy implemented Country response** Global response (%)§ Year of implementation National eGovernment policy No 85<sup>b</sup> \_ \_ 55<sup>b</sup> National eHealth policy No \_ \_ National ICT procurement policy for health sector No 37<sup>b</sup> \_ \_ National multiculturalism policy for eHealth No 30<sup>b</sup> \_ \_ National telemedicine policy No 25° \_ \_

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

## III. eHealth expenditures and their funding source

| in cricatil experiations and their randing source |          |                            |          |                            |                             |                            |  |                            |
|---|----------|----------------------------|----------|----------------------------|-----------------------------|----------------------------|--|----------------------------|
| Expenditure                                       | Public   | funding                    | Private  | funding                    | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |
|   | Country  | Global                     | Country  | Global                     | Country                     | Global                     | Country                                | Global                     |
|   | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |
| ICT equipment                                     | Yes      | 78                         | _        | 37                         | _                           | 59                         | _                                      | 28                         |
| Software  | Yes      | 76                         | —        | 35                         | _                           | 56                         | —                                      | 29                         |
| Pilot projects                                    | No       | 69                         | —        | 33                         | _                           | 51                         | _                                      | 28                         |
| Skills training                                   | Yes      | 61                         | _        | 26                         | _                           | 43                         | _                                      | 20                         |
| Ongoing support                                   | No       | 61                         | _        | 19                         | _                           | 35                         | _                                      | 18                         |
| Scholarships                                      | No       | 28                         | <u> </u> | 8                          | —                           | 19                         | _                                      | 4                          |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Do not know      | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical 68 71 Public health 52 — 56 — Nursing 50 \_ 55 Pharmacy \_ 45 \_ 37 Dentistry 39 37 <sup>a</sup> n=113

# 📕 Lithuania

| 6          | Population (000s)                | 3 321        | Total health expenditure (%GDP)                  | 6.2   | ICT Development Index                              | 5.55   |
|------------|----------------------------------|--------------|--|-------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 16 740       | Per capita total health expenditure (PPP Int \$) | 1 178 | ICT Development Index rank                         | 35     |
| oun<br>ica | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 81    | Mobile cellular subscriptions (per 100 population) | 150.96 |
| ind C      | OECD country                     | No           | Physician density (per 10 000 population)        | 40.3  | Internet users (per 100 population)                | 59.76  |
|            | Life expectancy at birth (years) | 72           | Nurse density (per 10 000 population)            | 75.7  | Disability Adjusted Life Years (DALY)              | 16 454 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

II. Legal and ethical frameworks for eHealth

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>⊳</sup>      | Partly             | 2002                   |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2007                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations **Prohibits** Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries **Prohibits** Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23

Official approval through certification, accreditation, or quality seals

## III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Expenditure Public funding Private funding |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|--|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response                           | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | _  | 37                                   | _                           | 59                                   | _                                      | 28                                   |
| Software        | Yes              | 76                                   | —  | 35                                   | —                           | 56                                   | —                                      | 29                                   |
| Pilot projects  | Yes              | 69                                   | —  | 33                                   | —                           | 51                                   | —                                      | 28                                   |
| Skills training | No               | 61                                   | —  | 26                                   | —                           | 43                                   | —                                      | 20                                   |
| Ongoing support | Yes              | 61                                   | —  | 19                                   | _                           | 35                                   | _                                      | 18                                   |
| Scholarships    | No               | 28                                   | <u> </u>                                   | 8                                    | —                           | 19                                   | —                                      | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

No

17

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Do not know      | 72                                |
| Used in training health professionals              | Do not know      | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

| Profession    | Stuc             | lents                             | Professionals    |                        |  |
|---------------|------------------|-----------------------------------|------------------|------------------------|--|
|               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%) c§ |  |
| Medical       | _                | 68                                | _                | 71                     |  |
| Public health | —                | 52                                | —                | 56                     |  |
| Nursing       | —                | 50                                | —                | 55                     |  |
| Pharmacy      | —                | 45                                | —                | 37                     |  |
| Dentistry     | - 39             |                                   | _                | 37                     |  |

| 6          | Population (000s)                | 19 111 | Total health expenditure (%GDP)                  | 4.5 | ICT Development Index                              | 1.31   |
|------------|----------------------------------|--------|--|-----|--|--------|
| itor       | GNI per capita (PPP Int \$)      | 1 050  | Per capita total health expenditure (PPP Int \$) | 48  | ICT Development Index rank                         | 144    |
| oun<br>ica | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 10  | Mobile cellular subscriptions (per 100 population) | 32.02  |
| ind C      | OECD country                     | No     | Physician density (per 10 000 population)        | 1.6 | Internet users (per 100 population)                | 1.63   |
|            | Life expectancy at birth (years) | 60     | Nurse density (per 10 000 population)            | 3.2 | Disability Adjusted Life Years (DALY)              | 31 960 |

## eHealth foundation actions

|                       | Madagas  | sca            | ſ  |                |                |                                   |                   |          |
|-----------------------|--|----------------|--|----------------|----------------|-----------------------------------|-------------------|----------|
| $\subset$             | Population (000s)  | 19 111 T       | otal health expenditure (%GDF  | <b>)</b>       | 4.5 I          | ICT Development Index             |                   | 1.31     |
| Regior                | GNI per capita (PPP Int \$)<br>World Bank income group<br>OECD country   | 1 050 F        | Per capita total health expenditur   | e (PPP Int \$) | 48 I           | ICT Development Index rank        |                   | 144      |
| <u> </u>              | World Bank income group  | Low H          | lospital bed density (per 10 000   | D population)  | 10 I           | Mobile cellular subscriptions (pe | r 100 population) | 32.02    |
|                       | OECD country   | No F           | Physician density (per 10 000 p  | opulation)     | 1.6 I          | Internet users (per 100 populat   | ion)              | 1.63     |
| $\tilde{\mathcal{C}}$ | Life expectancy at birth (years)   | 60 N           | 60 Nurse density (per 10 000 population) 3.2 Disability Adjusted Life Years (DALY) |                |                | DALY)                             | 31 960            |          |
|                       | Sources: See page ix   |                |  |                |                |                                   |                   |          |
| African               | <ul> <li>eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.</li> </ul> |                |  |                |                |                                   |                   |          |
| 4                     | I. Policy framework  |                |  |                |                |                                   |                   |          |
| ОНМ                   |  |                | Country response   | Global res     | oonse (%)§     | Policy implemented                | Year of implem    | entation |
| Ť                     | National eGovernment policy  |                | Yes  | 85             | 5 <sup>b</sup> | Yes                               | 2007              |          |
| $\geq$                | National eHealth policy  |                | No 55 <sup>b</sup> —   |                | _              |                                   |                   |          |
| $\geq$                | National ICT procurement policy fo   | r health secto | r <b>No</b>  | 37             | <b>7</b> b     | -                                 |                   |          |
|                       | National multiculturalism policy for   | eHealth        | No   | 30             | ) <sup>b</sup> | —                                 | _                 |          |
|                       | National telemedicine policy   |                | Yes  | 25             | 5°             | No                                | _                 |          |

## II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

## III, eHealth expenditures and their funding source

| in crican expenditures and their funding source |          |                            |   |                            |          |                            |          |                            |  |
|---|----------|----------------------------|---|----------------------------|----------|----------------------------|----------|----------------------------|--|
| Expenditure                                     | Public   | funding                    | Private funding Donor/non-public Public-p<br>funding partnerships |                            |          |                            |          |                            |  |
|   | Country  | Global                     | Country   | Global                     | Country  | Global                     | Country  | Global                     |  |
|   | response | response (%) <sup>b§</sup> | response  | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> |  |
| ICT equipment                                   | _        | 78                         | _   | 37                         | _        | 59                         | —        | 28                         |  |
| Software  | —        | 76                         | —   | 35                         | _        | 56                         | —        | 29                         |  |
| Pilot projects                                  | _        | 69                         | _   | 33                         | _        | 51                         | —        | 28                         |  |
| Skills training                                 | —        | 61                         | _   | 26                         | _        | 43                         | —        | 20                         |  |
| Ongoing support                                 | _        | 61                         | _   | 19                         | _        | 35                         | _        | 18                         |  |
| Scholarships                                    | —        | 28                         | <u> </u>  | 8                          | —        | 19                         | —        | 4                          |  |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | No               | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

## IIIb. eLearning target groups

| Profession    | Students         |   | Professionals |                       |  |
|---------------|------------------|---|---------------|-----------------------|--|
|               | Country response | Country response Global response (%)% C |               | Global response (%)°§ |  |
| Medical       | Yes              | 68                                      | Yes           | 71                    |  |
| Public health | No               | 52                                      | No            | 56                    |  |
| Nursing       | No               | 50                                      | No            | 55                    |  |
| Pharmacy      | No               | 45                                      | No            | 37                    |  |
| Dentistry     | No               | 39                                      | No            | 37                    |  |
| n–113         |                  |   |               |                       |  |

# Malaysia

| \$          | Population (000s)                | 27 014       | Total health expenditure (%GDP)                  | 4.3  | ICT Development Index                              | 3.96   |  |
|-------------|----------------------------------|--------------|--|------|--|--------|--|
| t tr        | GNI per capita (PPP Int \$)      | 13 530       | Per capita total health expenditure (PPP Int \$) | 620  | 620 ICT Development Index rank                     |        |  |
| oun<br>dica | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 18   | Mobile cellular subscriptions (per 100 population) | 109.74 |  |
| ŭ p         | OECD country                     | No           | Physician density (per 10 000 population)        | 7.1  | Internet users (per 100 population)                | 55.90  |  |
|             | Life expectancy at birth (years) | 73           | Nurse density (per 10 000 population)            | 18.1 | Disability Adjusted Life Years (DALY)              | 16 638 |  |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | Before 2000            |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Yes                | Before 2000            |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | 2006                   |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Yes                | Before 2000            |
| National telemedicine policy                      | Yes              | 25°                  | Yes                | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data No 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> Yes 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Prohibits Legislation that allows/prohibits Internet pharmacy operations Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private funding  |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | Yes              | 37                                   | _                           | 59                                   | No                                     | 28                                   |
| Software        | Yes              | 76                                   | Yes              | 35                                   | _                           | 56                                   | Yes                                    | 29                                   |
| Pilot projects  | No               | 69                                   | Yes              | 33                                   | _                           | 51                                   | No                                     | 28                                   |
| Skills training | Yes              | 61                                   | Yes              | 26                                   | _                           | 43                                   | Yes                                    | 20                                   |
| Ongoing support | Yes              | 61                                   | No               | 19                                   | _                           | 35                                   | Yes                                    | 18                                   |
| Scholarships    | No               | 28                                   | No               | 8                                    | —                           | 19                                   | No                                     | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | Yes              | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No data          | 69                    |
| Clinical possibilities  | No data          | 58                    |
| Infrastructure  | No data          | 52                    |
| Evaluation  | No data          | 46                    |
| Legal and ethical   | No data          | 45                    |
| Effect on human resources   | No data          | 40                    |
| Patients' perception  | No data          | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)°§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

<sup>b</sup> n=112 ° n=114

| 6          | Population (000s)                | 305          | Total health expenditure (%GDP)                  | 11.2 | ICT Development Index                              | 3.54   |
|------------|----------------------------------|--------------|--|------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 5 230        | Per capita total health expenditure (PPP Int \$) | 626  | ICT Development Index rank                         | 68     |
| oun<br>ica | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 26   | Mobile cellular subscriptions (per 100 population) | 147.94 |
| ind C      | OECD country                     | No           | Physician density (per 10 000 population)        | 9.2  | Internet users (per 100 population)                | 27.93  |
|            | Life expectancy at birth (years) | 74           | Nurse density (per 10 000 population)            | 27.0 | Disability Adjusted Life Years (DALY)              | 23 507 |

# eHealth foundation actions

|                        | Maldives   |                               |   |                   |           |                                   |                    |                       |
|------------------------|--|-------------------------------|---|-------------------|-----------|-----------------------------------|--------------------|-----------------------|
| C                      | Population (000s)  | 305 T                         | Total health expenditure (%GDF                    | <sup>&gt;</sup> ) | 11.2 I    | ICT Development Index             |                    | 3.54                  |
| 0                      | GNI per capita (PPP Int \$)  | 5 230 F                       | Per capita total health expenditur                | re (PPP Int \$)   | 626 I     | ICT Development Index rank        |                    | 68                    |
| <u> </u>               | Store of the second sec | Lower-middle H                | lospital bed density (per 10 00                   | 0 population)     | 26 I      | Mobile cellular subscriptions (pe | er 100 population) | 147.94                |
|                        | OECD country   | No F                          | Physician density (per 10 000 p                   | opulation)        | 9.2 I     | Internet users (per 100 populat   | tion)              | 27.93                 |
| Ř                      | Life expectancy at birth (years)   | 74 N                          | Nurse density (per 10 000 popu                    | llation)          | 27.0 I    | Disability Adjusted Life Years (I | DALY)              | 23 507                |
| South-East Asia Regior | I. eHealth found<br>eHealth foundation actions buil<br>policy, legal and ethical framew<br>capacity of the health work ford<br>I. Policy framework   | ld an enablir<br>vorks; adequ | ng environment for the<br>late funding from vario |                   |           |                                   |                    |                       |
| LL L                   |  |                               | Country response                                  | Global respo      | onse (%)§ | <sup>§</sup> Policy implemented   | Year of implem     | entation              |
| , -                    | National eGovernment policy  |                               | Yes   | 85 <sup>b</sup>   |           | Partly                            | 2009               |                       |
| Jtl                    | National eHealth policy  |                               | No  | 55 <sup>⊳</sup>   |           | -                                 | —                  |                       |
|                        | National ICT procurement policy f  |                               |   | 37 <sup>b</sup>   |           | -                                 | _                  |                       |
|                        | National multiculturalism policy fo  | or eHealth                    | No  | 30 <sup>b</sup>   |           | -                                 | —                  |                       |
| 07                     | National telemedicine policy   |                               | No  | 25°               |           | -                                 | _                  |                       |
| $\bigcirc$             | II. Legal and ethical framewo  | rks for eHe                   | alth  |                   |           |                                   |                    |                       |
| ОНМ                    |  |                               |   |                   |           | Country response                  | Global respor      | 1Se (%) <sup>a§</sup> |
| $\leq$                 | Legislation on personal and health-  | related data                  |   |                   |           |                                   |                    |                       |
|                        | To ensure privacy of personally ic   | lentifiable data              | l   |                   |           | No                                | 70                 |                       |
|                        | To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>  |                               |   |                   |           | No                                | 31                 |                       |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | Yes              | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

## III. eHealth expenditures and their funding source

| in onoun oxpondit | in one and their randing bear of |                                      |                     |                                      |                     |                                      |                     |                                      |  |  |
|-------------------|----------------------------------|--------------------------------------|---------------------|--------------------------------------|---------------------|--------------------------------------|---------------------|--------------------------------------|--|--|
| Expenditure       | Public funding                   |                                      | Private funding     |                                      |                     | on-public<br>ding                    |                     | -private<br>ps funding               |  |  |
|                   | Country<br>response              | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> |  |  |
| ICT equipment     | Yes                              | 78                                   | Yes                 | 37                                   | Yes                 | 59                                   | _                   | 28                                   |  |  |
| Software          | Yes                              | 76                                   | No                  | 35                                   | Yes                 | 56                                   | —                   | 29                                   |  |  |
| Pilot projects    | Yes                              | 69                                   | Yes                 | 33                                   | Yes                 | 51                                   | _                   | 28                                   |  |  |
| Skills training   | Yes                              | 61                                   | Yes                 | 26                                   | Yes                 | 43                                   | _                   | 20                                   |  |  |
| Ongoing support   | Yes                              | 61                                   | No                  | 19                                   | Yes                 | 35                                   | _                   | 18                                   |  |  |
| Scholarships      | Yes                              | 28                                   | Yes                 | 8                                    | Yes                 | 19                                   | _                   | 4                                    |  |  |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | Yes              | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students **Professionals** Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical No 68 Yes 71 Public health Yes 52 No 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Mali

| S             | Population (000s)                | 12 706 | Total health expenditure (%GDP)                  | 5.5 | ICT Development Index                              | 1.19   |
|---------------|----------------------------------|--------|--|-----|--|--------|
| ntry<br>ators | GNI per capita (PPP Int \$)      | 1 190  | Per capita total health expenditure (PPP Int \$) | 62  | ICT Development Index rank                         | 147    |
| oun<br>dica   | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 6   | Mobile cellular subscriptions (per 100 population) | 34.17  |
| ind           | OECD country                     | No     | Physician density (per 10 000 population)        | 0.7 | Internet users (per 100 population)                | 1.92   |
|               | Life expectancy at birth (years) | 49     | Nurse density (per 10 000 population)            | 2.0 | Disability Adjusted Life Years (DALY)              | 50 378 |

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | 2005                   |  |  |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | No data                |  |  |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |  |  |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |  |  |
| National telemedicine policy                      | Yes              | 25°                  | Yes                | _                      |  |  |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III, eHealth expenditures and their funding source

| in chediti expenditures and their randing source |                |                            |                 |                            |                             |                            |  |                            |  |  |
|--|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|--|
| Expenditure                                      | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |  |
|  | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |  |  |
|  | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |  |
| ICT equipment                                    | Yes            | 78                         | Yes             | 37                         | Yes                         | 59                         | No                                     | 28                         |  |  |
| Software   | Yes            | 76                         | Yes             | 35                         | Yes                         | 56                         | No                                     | 29                         |  |  |
| Pilot projects                                   | Yes            | 69                         | Yes             | 33                         | Yes                         | 51                         | No                                     | 28                         |  |  |
| Skills training                                  | Yes            | 61                         | Yes             | 26                         | No                          | 43                         | No                                     | 20                         |  |  |
| Ongoing support                                  | Yes            | 61                         | Yes             | 19                         | Yes                         | 35                         | Yes                                    | 18                         |  |  |
| Scholarships                                     | Yes            | 28                         | Yes             | 8                          | No                          | 19                         | No                                     | 4                          |  |  |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |  |  |  |  |  |
|---|------------------|-----------------------------------|--|--|--|--|--|
| ICT education   |                  |                                   |  |  |  |  |  |
| ICT training for students in health sciences at tertiary institutions   | No data          | 77                                |  |  |  |  |  |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |  |  |  |  |  |
| Professional groups offered ICT continuing education                    |                  |                                   |  |  |  |  |  |
| Medical   | Yes              | 73                                |  |  |  |  |  |
| Nursing   | Yes              | 62                                |  |  |  |  |  |
| Public health   | Yes              | 60                                |  |  |  |  |  |
| Dentistry   | No               | 54                                |  |  |  |  |  |
| Pharmacy  | Yes              | 54                                |  |  |  |  |  |

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | Yes              | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

## IIIb. eLearning target groups

| Profession    | Stud             | dents  | Professionals |                                   |  |
|---------------|------------------|--|---------------|-----------------------------------|--|
|               | Country response | Country response Global response (%) <sup>c§</sup> |               | Global response (%) <sup>c§</sup> |  |
| Medical       | Yes              | 68   | Yes           | 71                                |  |
| Public health | Yes              | 52   | Yes           | 56                                |  |
| Nursing       | Yes              | 50   | Yes           | 55                                |  |
| Pharmacy      | Yes              | 45   | Yes           | 37                                |  |
| Dentistry     | No               | 39   | Yes           | 37                                |  |
| n-113         |                  |  | -             |                                   |  |

# Malta

| S     | Population (000s)                | 407    | Total health expenditure (%GDP)                  | 7.5   | ICT Development Index                              | 5.82   |
|-------|----------------------------------|--------|--|-------|--|--------|
| ton   | GNI per capita (PPP Int \$)      | 22 640 | Per capita total health expenditure (PPP Int \$) | 4 039 | ICT Development Index rank                         | 31     |
| lica  | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 78    | Mobile cellular subscriptions (per 100 population) | 103.27 |
| ind C | OECD country                     | No     | Physician density (per 10 000 population)        | 33.5  | Internet users (per 100 population)                | 58.86  |
|       | Life expectancy at birth (years) | 80     | Nurse density (per 10 000 population)            | 62.7  | Disability Adjusted Life Years (DALY)              | 9 657  |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | No data                |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | No                 | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| Expenditure Public funding Private funding |                     | Public funding                       |                  | funding                              |                  | on-public<br>ding                    |                  | <ul> <li>private</li> <li>ps funding</li> </ul> |
|--|---------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|---|
|  | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup>            |
| ICT equipment                              | Yes                 | 78                                   | _                | 37                                   | _                | 59                                   | _                | 28  |
| Software                                   | Yes                 | 76                                   | —                | 35                                   | _                | 56                                   | —                | 29  |
| Pilot projects                             | Yes                 | 69                                   | _                | 33                                   | _                | 51                                   | —                | 28  |
| Skills training                            | Yes                 | 61                                   | _                | 26                                   | _                | 43                                   | —                | 20  |
| Ongoing support                            | Yes                 | 61                                   | _                | 19                                   | _                | 35                                   | _                | 18  |
| Scholarships                               | No                  | 28                                   | _                | 8                                    | —                | 19                                   | —                | 4   |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | _                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

| S                     | Population (000s)                | 3 215 | Total health expenditure (%GDP)                  | 2.6 | ICT Development Index                              | 1.57   |
|-----------------------|----------------------------------|-------|--|-----|--|--------|
| Country<br>indicatory | GNI per capita (PPP Int \$)      | 1 960 | Per capita total health expenditure (PPP Int \$) | 53  | ICT Development Index rank                         | 126    |
|                       | World Bank income group          | Low   | Hospital bed density (per 10 000 population)     | 4   | Mobile cellular subscriptions (per 100 population) | 66.32  |
|                       | OECD country                     | No    | Physician density (per 10 000 population)        | 1.3 | Internet users (per 100 population)                | 2.28   |
|                       | Life expectancy at birth (years) | 58    | Nurse density (per 10 000 population)            | 6.7 | Disability Adjusted Life Years (DALY)              | 32 749 |

# eHealth foundation actions

|            | M   | auritar                          | nia       |                                    |                |            |  |                |          |
|------------|---|----------------------------------|-----------|------------------------------------|----------------|------------|--|----------------|----------|
| C          | 10  | Population (000s)                | 3 215     | Total health expenditure (%GDF     | P)             | 2.6        | CT Development Index                               |                | 1.57     |
| Ō          | tors  | GNI per capita (PPP Int \$)      | 1 960     | Per capita total health expenditur | e (PPP Int \$) | 53 1       | CT Development Index rank                          |                | 126      |
| Region     | Country<br>indicators   | World Bank income group          | Low       | Hospital bed density (per 10 00    | D population)  | 4 N        | Mobile cellular subscriptions (per 100 population) |                | 66.32    |
|            | ind C   | OECD country                     | No        | Physician density (per 10 000 p    | opulation)     | 1.3 li     | nternet users (per 100 populat                     | ion)           | 2.28     |
| Å          |   | Life expectancy at birth (years) | 58        | Nurse density (per 10 000 popu     | lation)        | 6.7 E      | Disability Adjusted Life Years (E                  | DALY)          | 32 749   |
| African    | <ul> <li>Sources: See page ix</li> <li>I. eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.</li> </ul> |                                  |           |                                    |                |            |  |                |          |
| 4          | I. Poli   | icy framework                    |           |                                    |                |            |  |                |          |
| $\bigcirc$ |   |                                  |           | Country response                   | Global res     | ponse (%)§ | Policy implemented                                 | Year of implem | entation |
| МНО        | Natio   | onal eGovernment policy          | Yes       | 85                                 | 5 <sup>b</sup> | Partly     | 2002   |                |          |
| $\geq$     | National eHealth policy   |                                  | No        | 55                                 |                | -          | —  |                |          |
|            |   | onal ICT procurement policy f    |           |                                    | 37             |            | Partly   | 2002           |          |
|            |   | onal multiculturalism policy fo  | r eHealth | No                                 | 30             |            | -  | —              |          |
|            | Natio   | onal telemedicine policy         |           | Yes                                | 25             | 5°         | No   | —              |          |

### II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding      |                                      | Private funding     |                                      |                     | on-public<br>ding                    | Public-private<br>partnerships funding |                                      |
|-----------------|---------------------|--------------------------------------|---------------------|--------------------------------------|---------------------|--------------------------------------|--|--------------------------------------|
|                 | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes                 | 78                                   | _                   | 37                                   | Yes                 | 59                                   | _                                      | 28                                   |
| Software        | Yes                 | 76                                   | —                   | 35                                   | Yes                 | 56                                   | —                                      | 29                                   |
| Pilot projects  | Yes                 | 69                                   | _                   | 33                                   | Yes                 | 51                                   | —                                      | 28                                   |
| Skills training | Yes                 | 61                                   | _                   | 26                                   | Yes                 | 43                                   | —                                      | 20                                   |
| Ongoing support | No                  | 61                                   | _                   | 19                                   | Yes                 | 35                                   | _                                      | 18                                   |
| Scholarships    | No                  | 28                                   | _                   | 8                                    | Yes                 | 19                                   | <u> </u>                               | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | No               | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | Yes              | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

| Profession    | Stud                                   | lents | Professionals    |                     |  |
|---------------|--|-------|------------------|---------------------|--|
|               | Country response Global response (%)°§ |       | Country response | Global response (%) |  |
| Medical       | _                                      | 68    | Yes              | 71                  |  |
| Public health | _                                      | 52    | Yes              | 56                  |  |
| Nursing       | _                                      | 50    | No               | 55                  |  |
| Pharmacy      | —                                      | 45    | Yes              | 37                  |  |
| Dentistry     | -                                      | 39    | No               | 37                  |  |

| 6           | Population (000s)                | 1 280        | Total health expenditure (%GDP)                  | 4.2  | ICT Development Index                              | 3.44   |
|-------------|----------------------------------|--------------|--|------|--|--------|
| try<br>tors | GNI per capita (PPP Int \$)      | 13 270       | Per capita total health expenditure (PPP Int \$) | 531  | ICT Development Index rank                         | 72     |
| oun<br>ica  | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 33   | Mobile cellular subscriptions (per 100 population) | 84.36  |
| ind         | OECD country                     | No           | Physician density (per 10 000 population)        | 10.6 | Internet users (per 100 population)                | 22.51  |
|             | Life expectancy at birth (years) | 73           | Nurse density (per 10 000 population)            | 37.3 | Disability Adjusted Life Years (DALY)              | 17 288 |

# eHealth foundation actions

|            | M  | auritiu  | S            |                                    |                 |                |                                   |                   |          |
|------------|--|--|--------------|------------------------------------|-----------------|----------------|-----------------------------------|-------------------|----------|
| C          | 6  | Population (000s)                                  | 1 280        | Total health expenditure (%GDF     | <sup>o</sup> )  | 4.2 I          | CT Development Index              |                   | 3.44     |
| Region     | Country<br>indicators  | GNI per capita (PPP Int \$)                        | 13 270       | Per capita total health expenditur | re (PPP Int \$) | 531 I          | CT Development Index rank         |                   | 72       |
| <u> </u>   | Jun  | World Bank income group                            | Upper-middle | Hospital bed density (per 10 00    | 0 population)   | 33 1           | Nobile cellular subscriptions (pe | r 100 population) | 84.36    |
|            | ind C  | OECD country                                       | No           | Physician density (per 10 000 p    | opulation)      | 10.6 I         | nternet users (per 100 populat    | ion)              | 22.51    |
| Ř          |  | Life expectancy at birth (years)<br>s: See page ix | 73           | Nurse density (per 10 000 popu     | lation)         | 37.3           | Disability Adjusted Life Years (I | DALY)             | 17 288   |
| African    | <ul> <li>eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.</li> </ul> |  |              |                                    |                 |                |                                   |                   |          |
| 4          | I. Poli  | cy framework                                       |              |                                    |                 |                |                                   |                   |          |
| $\bigcirc$ |  |  |              | Country response                   | Global res      | ponse (%)§     | Policy implemented                | Year of implem    | entation |
| МНО        | Natio  | onal eGovernment policy                            |              | Yes                                | 85              | 5 <sup>b</sup> | Partly                            | 2007              |          |
| $\geq$     | National eHealth policy  |  | Yes          | 55                                 | -               | Partly         | 2007                              |                   |          |
|            |  | onal ICT procurement policy f                      |              |                                    | 37              |                | -                                 | _                 |          |
|            |  | onal multiculturalism policy fo                    | or eHealth   | No                                 | 30              | -              | -                                 | _                 |          |
|            | Natio  | onal telemedicine policy                           |              | No                                 | 25              | 5°             | _                                 | _                 |          |

### II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | Do not know      | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No data          | 26                                |
| With different health care entities within the country   | No data          | 23                                |
| With health care entities in other countries   | No data          | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No data          | 47                                |
| Security tools required by law for facilities used by children                                     | No data          | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

### III. eHealth expenditures and their funding source

| in orioani experiaturee and their failung eeuree |                     |                                      |                     |                                      |                     |                                      |  |                                      |  |
|--|---------------------|--------------------------------------|---------------------|--------------------------------------|---------------------|--------------------------------------|--|--------------------------------------|--|
| Expenditure                                      | Public funding      |                                      | Private funding     |                                      |                     | on-public<br>ding                    | Public-private<br>partnerships funding |                                      |  |
|  | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |  |
| ICT equipment                                    | Yes                 | 78                                   | Yes                 | 37                                   | Yes                 | 59                                   | Yes                                    | 28                                   |  |
| Software   | Yes                 | 76                                   | Yes                 | 35                                   | Yes                 | 56                                   | Yes                                    | 29                                   |  |
| Pilot projects                                   | Yes                 | 69                                   | Yes                 | 33                                   | Yes                 | 51                                   | No                                     | 28                                   |  |
| Skills training                                  | Yes                 | 61                                   | Yes                 | 26                                   | No                  | 43                                   | No                                     | 20                                   |  |
| Ongoing support                                  | Yes                 | 61                                   | Yes                 | 19                                   | Yes                 | 35                                   | No                                     | 18                                   |  |
| Scholarships                                     | No                  | 28                                   | No                  | 8                                    | No                  | 19                                   | No                                     | 4                                    |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |  |  |
|---|------------------|-----------------------------------|--|--|
|   | Country response | Global response (%) <sup>c§</sup> |  |  |
| Telemedicine enabling actions   |                  |                                   |  |  |
| National telemedicine policy  | No               | 25                                |  |  |
| Implemented national telemedicine policy                                    | —                | —                                 |  |  |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |  |  |
| Barriers to implementing telemedicine solutions                             |                  |                                   |  |  |
| Perceived costs too high  | No               | 60                                |  |  |
| Lack of legal policies/regulation   | No               | 40                                |  |  |
| Organizational culture not supportive                                       | Yes              | 39                                |  |  |
| Underdeveloped infrastructure   | No               | 38                                |  |  |
| Lack of policy frameworks   | No               | 37                                |  |  |
| Competing priorities  | Yes              | 37                                |  |  |
| Lack of demand by health professionals                                      | Yes              | 31                                |  |  |
| Lack of nationally adopted standards  | No               | 26                                |  |  |
| Lack of knowledge of applications   | No               | 25                                |  |  |
| Lack of technical expertise   | No               | 17                                |  |  |
| Information most needed in country to support telemedicine development      |                  |                                   |  |  |
| Cost and cost effectiveness   | No               | 69                                |  |  |
| Clinical possibilities  | Yes              | 58                                |  |  |
| Infrastructure  | No               | 52                                |  |  |
| Evaluation  | No               | 46                                |  |  |
| Legal and ethical   | No               | 45                                |  |  |
| Effect on human resources   | Yes              | 40                                |  |  |
| Patients' perception  | Yes              | 30                                |  |  |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | Yes              | 21                                |

## IIIb. eLearning target groups

| Profession    | Students Professionals |   | sionals |                       |  |  |
|---------------|------------------------|---|---------|-----------------------|--|--|
|               | Country response       | Country response Global response (%) Co |         | Global response (%)c§ |  |  |
| Medical       | Yes                    | 68                                      | Yes     | 71                    |  |  |
| Public health | Yes                    | 52                                      | Yes     | 56                    |  |  |
| Nursing       | Yes                    | 50                                      | Yes     | 55                    |  |  |
| Pharmacy      | Yes                    | 45                                      | Yes     | 37                    |  |  |
| Dentistry     | No                     | 39                                      | Yes     | 37                    |  |  |
| an-113        |                        |   |         |                       |  |  |

# Mexico

11 1 0

| 6          | Population (000s)                | 108 555      | Total health expenditure (%GDP)                  | 5.9  | ICT Development Index                              | 3.25   |
|------------|----------------------------------|--------------|--|------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 14 110       | Per capita total health expenditure (PPP Int \$) | 890  | ICT Development Index rank                         | 77     |
| oun<br>ica | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 17   | Mobile cellular subscriptions (per 100 population) | 76.20  |
| ind C      | OECD country                     | Yes          | Physician density (per 10 000 population)        | 28.9 | Internet users (per 100 population)                | 28.30  |
|            | Life expectancy at birth (years) | 76           | Nurse density (per 10 000 population)            | 39.8 | Disability Adjusted Life Years (DALY)              | 15 430 |

Sources: See page ix

# eHealth foundation actions

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eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | No               | 85 <sup>b</sup>      | —                  | _                      |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | 2006                   |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Yes                | 2004                   |
| National telemedicine policy                      | Yes              | 25°                  | Yes                | _                      |

| II. Legal and ethical frameworks for enealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | Yes              | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private funding  |                                      | Donor/non-public<br>funding |                                      |                  | <ul> <li>private</li> <li>ps funding</li> </ul> |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|------------------|---|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup>            |
| ICT equipment   | _                | 78                                   | _                | 37                                   | _                           | 59                                   | _                | 28  |
| Software        | _                | 76                                   | —                | 35                                   | _                           | 56                                   | —                | 29  |
| Pilot projects  | _                | 69                                   | _                | 33                                   | _                           | 51                                   | —                | 28  |
| Skills training | _                | 61                                   | _                | 26                                   | _                           | 43                                   | —                | 20  |
| Ongoing support | _                | 61                                   | _                | 19                                   | _                           | 35                                   | _                | 18  |
| Scholarships    |                  | 28                                   | <u> </u>         | 8                                    | —                           | 19                                   | —                | 4   |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Do not know      | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | No               | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  | •                     |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | Yes              | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

| 6          | Population (000s)                | 2 641        | Total health expenditure (%GDP)                  | 3.8  | ICT Development Index                              | 2.71   |
|------------|----------------------------------|--------------|--|------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 3 330        | Per capita total health expenditure (PPP Int \$) | 136  | ICT Development Index rank                         | 95     |
| oun<br>ica | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 60   | Mobile cellular subscriptions (per 100 population) | 84.20  |
| ind C      | OECD country                     | No           | Physician density (per 10 000 population)        | 26.3 | Internet users (per 100 population)                | —      |
|            | Life expectancy at birth (years) | 68           | Nurse density (per 10 000 population)            | 34.5 | Disability Adjusted Life Years (DALY)              | 23 523 |

# eHealth foundation actions

|                  | M   | ongolic   | 2            |                                   |                 |                |                                   |                    |                       |
|------------------|---|---|--------------|-----------------------------------|-----------------|----------------|-----------------------------------|--------------------|-----------------------|
| C                | 10  | Population (000s)   | 2 641        | Total health expenditure (%GDI    | P)              | 3.8            | ICT Development Index             |                    | 2.71                  |
| ō                | try<br>fors   | GNI per capita (PPP Int \$)   | 3 330        | Per capita total health expenditu | re (PPP Int \$) | 136            | ICT Development Index rank        |                    | 95                    |
| <u> </u>         | Country<br>indicators   | World Bank income group   | Lower-middle | Hospital bed density (per 10 00   | 0 population)   | 60             | Mobile cellular subscriptions (pe | er 100 population) | 84.20                 |
|                  | ind C   | OECD country  | No           | Physician density (per 10 000 p   | opulation)      | 26.3           | Internet users (per 100 populat   | tion)              | —                     |
| Ř                |   | Life expectancy at birth (years)<br>s: See page ix  | 68           | Nurse density (per 10 000 popu    | llation)        | 34.5           | Disability Adjusted Life Years (I | DALY)              | 23 523                |
| n Pacific Regior | policy,<br>capaci   | h foundation actions buil<br>legal and ethical framew<br>ty of the health work forc<br>cy framework | vorks; adequ | uate funding from vario           |                 |                |                                   |                    |                       |
| Western          |   |   |              | Country response                  | Global resp     | oonse (%)      | § Policy implemented              | Year of implem     | nentation             |
| Ū                | Natio   | onal eGovernment policy   |              | Yes                               | 85              | 5 <sup>b</sup> | Yes                               | 2006               |                       |
| St               | Natio   | onal eHealth policy   |              | No                                | 55              | 5 <sup>b</sup> | _                                 | _                  |                       |
| Ū                |   | onal ICT procurement policy for   |              |                                   | 37              |                | Yes                               | 2008               |                       |
| $\geq$           |   | onal multiculturalism policy fo   | r eHealth    | No                                | 30              |                | -                                 | -                  |                       |
| _                | Natio   | onal telemedicine policy  |              | No                                | 25              | 5°             | —                                 | —                  |                       |
| МНО              | II. Leg   | al and ethical framewo  | rks for eHe  | alth                              |                 |                | Country response                  | Global respon      | 1Se (%) <sup>a§</sup> |
| $\leq$           | -   | tion on personal and health-r   |              |                                   |                 |                | -                                 |                    |                       |
|                  |   | nsure privacy of personally id  |              |                                   |                 |                | Yes                               | 70                 |                       |
|                  | To protect personally identifiable data specifically in EMR or EHR <sup>1</sup> |   |              |                                   |                 |                | Yes                               | 31                 |                       |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III, eHealth expenditures and their funding source

| in cricatil experiate s and their funding source |                |                            |                 |                            |                             |                            |  |                            |  |  |
|--|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|--|
| Expenditure                                      | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |  |
|  | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |  |  |
|  | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |  |
| ICT equipment                                    | Yes            | 78                         | —               | 37                         | Yes                         | 59                         | _                                      | 28                         |  |  |
| Software   | Yes            | 76                         | —               | 35                         | Yes                         | 56                         | —                                      | 29                         |  |  |
| Pilot projects                                   | No             | 69                         | —               | 33                         | Yes                         | 51                         | _                                      | 28                         |  |  |
| Skills training                                  | No             | 61                         | _               | 26                         | Yes                         | 43                         | _                                      | 20                         |  |  |
| Ongoing support                                  | No             | 61                         | _               | 19                         | No                          | 35                         | _                                      | 18                         |  |  |
| Scholarships                                     | No             | 28                         | <u> </u>        | 8                          | No                          | 19                         | _                                      | 4                          |  |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | No               | 73                                |
| Nursing   | No               | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                       |  |  |  |
|---|------------------|-----------------------|--|--|--|
|   | Country response | Global response (%)°§ |  |  |  |
| Telemedicine enabling actions   |                  |                       |  |  |  |
| National telemedicine policy  | No               | 25                    |  |  |  |
| Implemented national telemedicine policy                                    | -                | -                     |  |  |  |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |  |  |  |
| Barriers to implementing telemedicine solutions                             |                  |                       |  |  |  |
| Perceived costs too high  | Yes              | 60                    |  |  |  |
| Lack of legal policies/regulation   | No               | 40                    |  |  |  |
| Organizational culture not supportive                                       | No               | 39                    |  |  |  |
| Underdeveloped infrastructure   | Yes              | 38                    |  |  |  |
| Lack of policy frameworks   | No               | 37                    |  |  |  |
| Competing priorities  | No               | 37                    |  |  |  |
| Lack of demand by health professionals                                      | No               | 31                    |  |  |  |
| Lack of nationally adopted standards  | Yes              | 26                    |  |  |  |
| Lack of knowledge of applications   | No               | 25                    |  |  |  |
| Lack of technical expertise   | No               | 17                    |  |  |  |
| Information most needed in country to support telemedicine development      |                  |                       |  |  |  |
| Cost and cost effectiveness   | Yes              | 69                    |  |  |  |
| Clinical possibilities  | Yes              | 58                    |  |  |  |
| Infrastructure  | No               | 52                    |  |  |  |
| Evaluation  | Yes              | 46                    |  |  |  |
| Legal and ethical   | Yes              | 45                    |  |  |  |
| Effect on human resources   | No               | 40                    |  |  |  |
| Patients' perception  | No               | 30                    |  |  |  |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |                  |                                   |                  |                                   |  |
|-------------------------------|------------------|-----------------------------------|------------------|-----------------------------------|--|
| Profession                    | Stuc             | lents                             | Professionals    |                                   |  |
|                               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%) <sup>c§</sup> |  |
| Medical                       | _                | 68                                | Yes              | 71                                |  |
| Public health                 | —                | 52                                | Yes              | 56                                |  |
| Nursing                       | —                | 50                                | Yes              | 55                                |  |
| Pharmacy                      | —                | 45                                | Yes              | 37                                |  |
| Dentistry                     | _                | 39                                | Yes              | 37                                |  |
| <sup>a</sup> n=113            |                  |                                   |                  |                                   |  |

| 6          | Population (000s)                | 622          | Total health expenditure (%GDP)                  | 9.5   | ICT Development Index                              | 4.57   |
|------------|----------------------------------|--------------|--|-------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 13 130       | Per capita total health expenditure (PPP Int \$) | 1 319 | I 319 ICT Development Index rank                   |        |
| oun<br>ica | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 40    | Mobile cellular subscriptions (per 100 population) | 207.33 |
| ind        | OECD country                     | No           | Physician density (per 10 000 population)        | 19.9  | Internet users (per 100 population)                | 44.86  |
|            | Life expectancy at birth (years) | 74           | Nurse density (per 10 000 population)            | 55.4  | Disability Adjusted Life Years (DALY)              | -      |

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### Montenegoro **Country response** Global response (%)§ **Policy implemented** Year of implementation Partly 2009 Yes 85<sup>b</sup> 55<sup>b</sup> 2009 Partly Yes No 37<sup>b</sup> \_ \_ No 30<sup>b</sup> \_ \_ National telemedicine policy No 25° \_ \_

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III, eHealth expenditures and their funding source

| Expenditure     | Public funding      |                                      | Private funding     |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |  |  |
|-----------------|---------------------|--------------------------------------|---------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|--|--|
|                 | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response         | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |  |  |
| ICT equipment   | Yes                 | 78                                   |                     | 37                                   | _                           | 59                                   | _                                      | 28                                   |  |  |
| Software        | Yes                 | 76                                   | <u> </u>            | 35                                   | —                           | 56                                   | _                                      | 29                                   |  |  |
| Pilot projects  | Yes                 | 69                                   | —                   | 33                                   | _                           | 51                                   | _                                      | 28                                   |  |  |
| Skills training | Yes                 | 61                                   | —                   | 26                                   | —                           | 43                                   | _                                      | 20                                   |  |  |
| Ongoing support | Yes                 | 61                                   | —                   | 19                                   | _                           | 35                                   | _                                      | 18                                   |  |  |
| Scholarships    | No                  | 28                                   | —                   | 8                                    | —                           | 19                                   | —                                      | 4                                    |  |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |  |    |                  |                       |  |
|-------------------------------|--|----|------------------|-----------------------|--|
| Profession                    | Students   |    | Profes           | sionals               |  |
|                               | Country response Global response (%) <sup>c§</sup> |    | Country response | Global response (%)°§ |  |
| Medical                       | _  | 68 | _                | 71                    |  |
| Public health                 | —  | 52 | —                | 56                    |  |
| Nursing                       | —  | 50 | _                | 55                    |  |
| Pharmacy                      | —  | 45 | —                | 37                    |  |
| Dentistry                     | — 39   |    | _                | 37                    |  |
| <sup>a</sup> n=113            |  |    |                  |                       |  |

# Morocco

| <b>(</b> ) | Population (000s)                | 31 606       | Total health expenditure (%GDP)   | 5.3 | ICT Development Index                              | 2.68   |
|------------|----------------------------------|--------------|---|-----|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 4 450        | Per capita total health expenditure (PPP Int \$) 229 ICT Development Index rank |     | 97   |        |
| oun<br>ica | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population) 11 Mobile cellular su              |     | Mobile cellular subscriptions (per 100 population) | 79.11  |
| ind        | OECD country                     | No           | Physician density (per 10 000 population)                                       | 5.6 | Internet users (per 100 population)                | 41.30  |
|            | Life expectancy at birth (years) | 72           | Nurse density (per 10 000 population)   | 7.8 | Disability Adjusted Life Years (DALY)              | 17 780 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                      |                    |                        |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | 2001                   |  |  |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2004                   |  |  |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2003                   |  |  |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Yes                | Before 2000            |  |  |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |  |  |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | Prohibits        | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | Prohibits        | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

### III. eHealth expenditures and their funding source

| Expenditure     | Public              | funding                              | Private funding     |                                      | Donor/non-public<br>funding |                                      |                     | <pre> private ps funding </pre>      |
|-----------------|---------------------|--------------------------------------|---------------------|--------------------------------------|-----------------------------|--------------------------------------|---------------------|--------------------------------------|
|                 | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response         | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes                 | 78                                   | _                   | 37                                   | Yes                         | 59                                   | _                   | 28                                   |
| Software        | Yes                 | 76                                   | —                   | 35                                   | Yes                         | 56                                   | —                   | 29                                   |
| Pilot projects  | Yes                 | 69                                   | _                   | 33                                   | Yes                         | 51                                   | _                   | 28                                   |
| Skills training | Yes                 | 61                                   | _                   | 26                                   | Yes                         | 43                                   | _                   | 20                                   |
| Ongoing support | Yes                 | 61                                   | _                   | 19                                   | Yes                         | 35                                   | _                   | 18                                   |
| Scholarships    | No                  | 28                                   | _                   | 8                                    | No                          | 19                                   | _                   | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   | •                |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | _                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical No 68 No 71 Public health No 52 No 56 Nursing Yes 50 Yes 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Mozambique

| S     | Population (000s)                | 22 383 | Total health expenditure (%GDP)                  | 5.6  | ICT Development Index                              | 1.0   |
|-------|----------------------------------|--------|--|------|--|-------|
| to t  | GNI per capita (PPP Int \$)      | 880    | Per capita total health expenditure (PPP Int \$) | 47   | ICT Development Index rank                         | 15    |
| ica   | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 8    | Mobile cellular subscriptions (per 100 population) | 26.0  |
| ind C | OECD country                     | No     | Physician density (per 10 000 population)        | <0.5 | Internet users (per 100 population)                | 2.6   |
|       | Life expectancy at birth (years) | 51     | Nurse density (per 10 000 population)            | 3.1  | Disability Adjusted Life Years (DALY)              | 44 40 |

.05 53 .08 .68

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

| a roncy namework                                  |                  |                      |                    |                        |  |  |  |
|---|------------------|----------------------|--------------------|------------------------|--|--|--|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |  |  |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | 2000                   |  |  |  |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |  |  |  |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |  |  |  |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |  |  |  |
| National telemedicine policy                      | Do not know      | 25°                  | _                  | _                      |  |  |  |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data Yes 70 To ensure privacy of personally identifiable data To protect personally identifiable data specifically in EMR or EHR1 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No data 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content No data 56 Voluntary compliance by content providers or web site owners Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

### III. eHealth expenditures and their funding source

| in. criculti experiant | in cricatil expenditures and their funding source |                            |                 |                            |                             |                            |  |                            |  |  |  |
|------------------------|---|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|--|--|
| Expenditure            | Public funding                                    |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |  |  |
|                        | Country   | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |  |  |  |
|                        | response  | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |  |  |
| ICT equipment          | _   | 78                         | _               | 37                         | Yes                         | 59                         | _                                      | 28                         |  |  |  |
| Software               | —   | 76                         | —               | 35                         | Yes                         | 56                         | —                                      | 29                         |  |  |  |
| Pilot projects         | _   | 69                         | _               | 33                         | Yes                         | 51                         | _                                      | 28                         |  |  |  |
| Skills training        | _   | 61                         | —               | 26                         | Yes                         | 43                         | _                                      | 20                         |  |  |  |
| Ongoing support        | _   | 61                         | _               | 19                         | Yes                         | 35                         | _                                      | 18                         |  |  |  |
| Scholarships           | —   | 28                         | —               | 8                          | No                          | 19                         | —                                      | 4                          |  |  |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | Do not know      | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |                  |                       |                  |                       |  |  |
|-------------------------------|------------------|-----------------------|------------------|-----------------------|--|--|
| Profession                    | Stuc             | lents                 | Professionals    |                       |  |  |
|                               | Country response | Global response (%)°§ | Country response | Global response (%)°§ |  |  |
| Medical                       | _                | 68                    | _                | 71                    |  |  |
| Public health                 | —                | 52                    | —                | 56                    |  |  |
| Nursing                       | —                | 50                    | _                | 55                    |  |  |
| Pharmacy                      | —                | 45                    | —                | 37                    |  |  |
| Dentistry                     | —                | 39                    | _                | 37                    |  |  |
| <sup>a</sup> n=113            |                  |                       |                  |                       |  |  |

|     | S    | Population (000s)                | 28 810 | Total health expenditure (%GDP)                  | 4.9 | ICT Development Index                              | 1.34   |
|-----|------|----------------------------------|--------|--|-----|--|--------|
| try | ğ    | GNI per capita (PPP Int \$)      | 1 180  | Per capita total health expenditure (PPP Int \$) | 54  | ICT Development Index rank                         | 142    |
| unt | 0    | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 50  | Mobile cellular subscriptions (per 100 population) | 19.09  |
| Ŭ   | ipdi | OECD country                     | No     | Physician density (per 10 000 population)        | 2.1 | Internet users (per 100 population)                | 1.97   |
|     |      | Life expectancy at birth (years) | 63     | Nurse density (per 10 000 population)            | 4.6 | Disability Adjusted Life Years (DALY)              | 30 799 |

# eHealth foundation actions

|                        | Ne   | epal  |                  |                                   |                 |          |                                   |                    |                       |
|------------------------|--|---|------------------|-----------------------------------|-----------------|----------|-----------------------------------|--------------------|-----------------------|
| $\subset$              | 6  | Population (000s)   | 28 810 1         | Total health expenditure (%GD     | P)              | 4.9      | ICT Development Index             |                    | 1.34                  |
| 0                      | tor  | GNI per capita (PPP Int \$)   | 1 180 F          | Per capita total health expenditu | re (PPP Int \$) | 54       | ICT Development Index rank        |                    | 142                   |
| <u> </u>               | Country<br>indicators  | World Bank income group   | Low H            | Hospital bed density (per 10 00   | 0 population)   | 50       | Mobile cellular subscriptions (pe | er 100 population) | 19.09                 |
|                        | ind  | OECD country  | No F             | Physician density (per 10 000 p   | opulation)      | 2.1      | Internet users (per 100 populat   | tion)              | 1.97                  |
| Ř                      |  | Life expectancy at birth (years)<br>s: See page ix                              | 63 N             | Nurse density (per 10 000 popu    | ulation)        | 4.6      | Disability Adjusted Life Years (I | DALY)              | 30 799                |
| South-East Asia Region | <ul> <li>eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.</li> <li>Policy framework</li> </ul> |   |                  |                                   |                 |          |                                   |                    |                       |
|                        |  |   |                  | Country response                  | Global resp     | onse (%) | § Policy implemented              | Year of implem     | entation              |
| Ċ                      | Natio  | onal eGovernment policy   |                  | Yes                               | 85              | þ        | Partly                            | 2007               |                       |
| Ŧ                      |  | onal eHealth policy   |                  | No                                | 55              |          | -                                 | —                  |                       |
|                        |  | onal ICT procurement policy f   |                  |                                   | 37              |          | _                                 | _                  |                       |
|                        |  | onal multiculturalism policy fo   | or eHealth       | Yes                               | 30              |          | Partly                            | 2008               |                       |
|                        | Natio  | onal telemedicine policy  |                  | No                                | 25              | le<br>I  | —                                 | —                  |                       |
| ОНМ                    | II. Leg  | al and ethical framewo  | orks for eHe     | alth                              |                 |          |                                   |                    |                       |
| 4                      |  |   |                  |                                   |                 |          | Country response                  | Global respon      | nse (%) <sup>a§</sup> |
| $\leq$                 | Legisla  | tion on personal and health-  | related data     |                                   |                 |          |                                   |                    |                       |
|                        | To e   | nsure privacy of personally id  | lentifiable data | 1                                 |                 |          | Yes                               | 70                 |                       |
|                        | Ton  | To protect personally identifiable data specifically in EMR or EHR <sup>1</sup> |                  |                                   |                 | No       | 31                                |                    |                       |

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  | •                                 |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | Allows           | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III. eHealth expenditures and their funding source

| in orioatin experiate to and their randing obtailed |                     |                                      |                     |                                      |                     |                                      |                     |                                      |
|---|---------------------|--------------------------------------|---------------------|--------------------------------------|---------------------|--------------------------------------|---------------------|--------------------------------------|
| Expenditure   | Public              | Public funding                       |                     | Private funding                      |                     | Donor/non-public<br>funding          |                     | <pre> private ps funding </pre>      |
|   | Country<br>response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment                                       | Yes                 | 78                                   | Yes                 | 37                                   | Yes                 | 59                                   | Yes                 | 28                                   |
| Software  | Yes                 | 76                                   | Yes                 | 35                                   | Yes                 | 56                                   | Yes                 | 29                                   |
| Pilot projects                                      | No                  | 69                                   | Yes                 | 33                                   | Yes                 | 51                                   | Yes                 | 28                                   |
| Skills training                                     | Yes                 | 61                                   | No                  | 26                                   | Yes                 | 43                                   | Yes                 | 20                                   |
| Ongoing support                                     | Yes                 | 61                                   | No                  | 19                                   | Yes                 | 35                                   | Yes                 | 18                                   |
| Scholarships  | No                  | 28                                   | No                  | 8                                    | No                  | 19                                   | No                  | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  | •                     |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing No 50 Yes 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# New Zealand

| \$             | Population (000s)                | 4 230  | Total health expenditure (%GDP)                  | 9.0   | ICT Development Index                              | 6.81   |
|----------------|----------------------------------|--------|--|-------|--|--------|
| itry<br>tors   | GNI per capita (PPP Int \$)      | 26 430 | Per capita total health expenditure (PPP Int \$) | 2 465 | ICT Development Index rank                         | 16     |
| Coun<br>ndicat | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 62    | Mobile cellular subscriptions (per 100 population) | 110.16 |
| ŭ <u>E</u>     | OECD country                     | Yes    | Physician density (per 10 000 population)        | 21.3  | Internet users (per 100 population)                | 79.70  |
|                | Life expectancy at birth (years) | 81     | Nurse density (per 10 000 population)            | 87.2  | Disability Adjusted Life Years (DALY)              | 10 642 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2001                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2005                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | 2005                   |
| National multiculturalism policy for eHealth      | Do not know      | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Yes 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries **Prohibits** Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private funding  |                                      | Donor/non-public<br>funding |                                      |                  | <ul> <li>private</li> <li>ps funding</li> </ul> |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|------------------|---|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup>            |
| ICT equipment   | Yes              | 78                                   | Yes              | 37                                   | _                           | 59                                   | Yes              | 28  |
| Software        | Yes              | 76                                   | Yes              | 35                                   | _                           | 56                                   | Yes              | 29  |
| Pilot projects  | Yes              | 69                                   | Yes              | 33                                   | _                           | 51                                   | Yes              | 28  |
| Skills training | Yes              | 61                                   | Yes              | 26                                   | _                           | 43                                   | No               | 20  |
| Ongoing support | Yes              | 61                                   | Yes              | 19                                   | _                           | 35                                   | Yes              | 18  |
| Scholarships    | No               | 28                                   | No               | 8                                    | —                           | 19                                   | No               | 4   |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 No 56 Nursing No 50 Yes 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

| 6   | Population (000s)                | 14 704 | Total health expenditure (%GDP)                  | 5.0  | ICT Development Index                              | 0.90   |
|-----|----------------------------------|--------|--|------|--|--------|
| tor | GNI per capita (PPP Int \$)      | 660    | Per capita total health expenditure (PPP Int \$) | 40   | ICT Development Index rank                         | 158    |
| bun | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 3    | Mobile cellular subscriptions (per 100 population) | 17.00  |
| ind | OECD country                     | No     | Physician density (per 10 000 population)        | <0.5 | Internet users (per 100 population)                | 0.76   |
|     | Life expectancy at birth (years) | 52     | Nurse density (per 10 000 population)            | 1.4  | Disability Adjusted Life Years (DALY)              | 59 261 |

# eHealth foundation actions

### I. Policy framework

|                       | Ni   | ger                              |                 |                                    |                |                |                                   |                    |          |
|-----------------------|--|----------------------------------|-----------------|------------------------------------|----------------|----------------|-----------------------------------|--------------------|----------|
| C                     | S  | Population (000s)                | 14 704          | Total health expenditure (%GDF     | <b>)</b>       | 5.0            | ICT Development Index             |                    | 0.90     |
| Region                | Country<br>indicators  | GNI per capita (PPP Int \$)      | 660             | Per capita total health expenditur | e (PPP Int \$) | 40             | ICT Development Index rank        |                    | 158      |
| <u> </u>              | lica   | World Bank income group          | Low             | Hospital bed density (per 10 000   | ) population)  | 3              | Mobile cellular subscriptions (pe | er 100 population) | 17.00    |
|                       | ind C  | OECD country                     | No              | Physician density (per 10 000 p    | opulation)     | <0.5           | Internet users (per 100 populat   | tion)              | 0.76     |
| $\tilde{\mathcal{C}}$ |  | Life expectancy at birth (years) | 52              | Nurse density (per 10 000 popu     | lation)        | 1.4            | Disability Adjusted Life Years (I | DALY)              | 59 261   |
| African               | <ul> <li>eHealth foundation actions</li> <li>eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.</li> </ul> |                                  |                 |                                    |                |                |                                   |                    |          |
| Å                     | I. Poli  | cy framework                     |                 |                                    |                |                |                                   |                    |          |
| $\bigcirc$            |  |                                  |                 | Country response                   | Global res     | ponse (%)§     | <sup>3</sup> Policy implemented   | Year of implem     | entation |
| МНО                   | National eGovernment policy Yes 85 <sup>b</sup> Partly 2004  |                                  |                 |                                    |                |                |                                   |                    |          |
| $\geq$                | Natio  | onal eHealth policy              |                 | No                                 | 55             | 5 <sup>b</sup> | _                                 | _                  |          |
|                       | Natio  | onal ICT procurement policy for  | or health secto | or <b>No</b>                       | 37             | 7 <sup>b</sup> | -                                 | _                  |          |
|                       | Natio  | onal multiculturalism policy fo  | r eHealth       | No                                 | 30             | D₽             | -                                 | —                  |          |
|                       | Natio  | onal telemedicine policy         |                 | No                                 | 25             | 5°             | -                                 | —                  |          |

### II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | Yes              | 17                                |

### III, eHealth expenditures and their funding source

| in cheath expenditures and their randing source |                |                            |                 |                            |                             |                            |  |                            |  |
|---|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|
| Expenditure                                     | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |
|   | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |  |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |
| ICT equipment                                   | No             | 78                         | —               | 37                         | Yes                         | 59                         | Yes                                    | 28                         |  |
| Software  | No             | 76                         | —               | 35                         | Yes                         | 56                         | Yes                                    | 29                         |  |
| Pilot projects                                  | No             | 69                         | _               | 33                         | Yes                         | 51                         | No                                     | 28                         |  |
| Skills training                                 | No             | 61                         | <u> </u>        | 26                         | Yes                         | 43                         | Yes                                    | 20                         |  |
| Ongoing support                                 | No             | 61                         | _               | 19                         | No                          | 35                         | No                                     | 18                         |  |
| Scholarships                                    | No             | 28                         | —               | 8                          | No                          | 19                         | No                                     | 4                          |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

## IIIb. eLearning target groups

| Profession    | Stud             | dents                 | Professionals    |                       |  |
|---------------|------------------|-----------------------|------------------|-----------------------|--|
|               | Country response | Global response (%)°§ | Country response | Global response (%)°§ |  |
| Medical       | Yes              | 68                    | Yes              | 71                    |  |
| Public health | No               | 52                    | Yes              | 56                    |  |
| Nursing       | Yes              | 50                    | Yes              | 55                    |  |
| Pharmacy      | No               | 45                    | No               | 37                    |  |
| Dentistry     | No               | 39                    | No               | 37                    |  |
| a n=113       |                  |                       |                  |                       |  |

<sup>b</sup> n=112 ° n=114

| 6    | Population (000s)                | 151 212      | Total health expenditure (%GDP)                  | 6.8  | ICT Development Index                              | 1.65   |
|------|----------------------------------|--------------|--|------|--|--------|
| tor  | GNI per capita (PPP Int \$)      | 1 980        | Per capita total health expenditure (PPP Int \$) | 134  | ICT Development Index rank                         | 122    |
| ica  | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 5    | Mobile cellular subscriptions (per 100 population) | 48.16  |
| in C | OECD country                     | No           | Physician density (per 10 000 population)        | 4.0  | Internet users (per 100 population)                | 28.43  |
|      | Life expectancy at birth (years) | 49           | Nurse density (per 10 000 population)            | 16.1 | Disability Adjusted Life Years (DALY)              | 48 578 |

# eHealth foundation actions

|                           | Ni   | geria  |              |                                    |                 |            |                                   |                    |          |
|---------------------------|--|--|--------------|------------------------------------|-----------------|------------|-----------------------------------|--------------------|----------|
| C                         | 6  | Population (000s)                                  | 151 212      | Total health expenditure (%GDF     | <sup>o</sup> )  | 6.8 I      | ICT Development Index             |                    | 1.65     |
| 0                         | tor  | GNI per capita (PPP Int \$)                        | 1 980        | Per capita total health expenditur | re (PPP Int \$) | 134 I      | ICT Development Index rank        |                    | 122      |
| Region                    | Country<br>indicators  | World Bank income group                            | Lower-middle | Hospital bed density (per 10 00    | 0 population)   | 5 1        | Mobile cellular subscriptions (pe | er 100 population) | 48.16    |
|                           | ind C  | OECD country                                       | No           | Physician density (per 10 000 p    | opulation)      | 4.0 I      | Internet users (per 100 populat   | tion)              | 28.43    |
| $\widetilde{\mathcal{C}}$ |  | Life expectancy at birth (years)<br>s: See page ix | 49           | Nurse density (per 10 000 popu     | lation)         | 16.1 I     | Disability Adjusted Life Years (I | DALY)              | 48 578   |
| African                   | <ul> <li>eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.</li> </ul> |  |              |                                    |                 |            |                                   |                    |          |
| 4                         | I. Poli  | cy framework                                       |              |                                    |                 |            |                                   |                    |          |
| $\bigcirc$                |  |  |              | Country response                   | Global res      | ponse (%)§ | Policy implemented                | Year of implem     | entation |
| МНО                       | National eGovernment policy Yes 85 <sup>b</sup>  |  |              | 5 <sup>b</sup>                     | Partly          | 2001       |                                   |                    |          |
| $\geq$                    | Natio  | onal eHealth policy                                |              | No                                 | 55              | -          | -                                 | _                  |          |
|                           |  | onal ICT procurement policy for                    |              |                                    | 37              | -          | -                                 | _                  |          |
|                           |  | onal multiculturalism policy fo                    | r eHealth    | No                                 | 30              |            | -                                 | _                  |          |
|                           | Natio  | onal telemedicine policy                           |              | No                                 | 25              | 5°         | -                                 | —                  |          |

### II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Do not know      | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III, eHealth expenditures and their funding source

| in critatil experiatives and their funding source |                |                            |                 |                            |                             |                            |          |                            |
|---|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|----------|----------------------------|
| Expenditure                                       | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            |          | private<br>ps funding      |
|   | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country  | Global                     |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> |
| ICT equipment                                     | Yes            | 78                         | Yes             | 37                         | Yes                         | 59                         | Yes      | 28                         |
| Software  | Yes            | 76                         | Yes             | 35                         | Yes                         | 56                         | Yes      | 29                         |
| Pilot projects                                    | Yes            | 69                         | Yes             | 33                         | Yes                         | 51                         | Yes      | 28                         |
| Skills training                                   | Yes            | 61                         | Yes             | 26                         | Yes                         | 43                         | Yes      | 20                         |
| Ongoing support                                   | Yes            | 61                         | Yes             | 19                         | Yes                         | 35                         | Yes      | 18                         |
| Scholarships                                      | No             | 28                         | No              | 8                          | No                          | 19                         | No       | 4                          |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | No               | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No data          | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups

| Profession    | Stuc             | lents                             | Professionals    |                       |  |
|---------------|------------------|-----------------------------------|------------------|-----------------------|--|
|               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%)°§ |  |
| Medical       | Yes              | 68                                | Yes              | 71                    |  |
| Public health | Yes              | 52                                | Yes              | 56                    |  |
| Nursing       | Yes              | 50                                | No               | 55                    |  |
| Pharmacy      | Yes              | 45                                | Yes              | 37                    |  |
| Dentistry     | Yes              | 39                                | Yes              | 37                    |  |

# Norway

| S    | Population (000s)                | 4 767  | Total health expenditure (%GDP)                  | 8.6   | ICT Development Index                              | 7.11   |
|------|----------------------------------|--------|--|-------|--|--------|
| ton  | GNI per capita (PPP Int \$)      | 56 050 | Per capita total health expenditure (PPP Int \$) | 4 989 | ICT Development Index rank                         | 9      |
| Jun  | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 39    | Mobile cellular subscriptions (per 100 population) | 111.38 |
| in C | OECD country                     | Yes    | Physician density (per 10 000 population)        | 38.9  | Internet users (per 100 population)                | 92.08  |
|      | Life expectancy at birth (years) | 81     | Nurse density (per 10 000 population)            | 163.3 | Disability Adjusted Life Years (DALY)              | 10 351 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2007                   |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2007                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | _                  | _                      |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | 2005                   |
| National telemedicine policy                      | Yes              | 25°                  | Partly             | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Prohibits Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Allows Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| in creatil experiations and their randing source |          |                            |                 |                            |                             |                            |          |                                     |
|--|----------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|----------|-------------------------------------|
| Expenditure                                      | Public   | funding                    | Private funding |                            | Donor/non-public<br>funding |                            |          | <private<br>ps funding</private<br> |
|  | Country  | Global                     | Country         | Global                     | Country                     | Global                     | Country  | Global                              |
|  | response | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>          |
| ICT equipment                                    | Yes      | 78                         | No              | 37                         | _                           | 59                         | —        | 28                                  |
| Software   | Yes      | 76                         | No              | 35                         | _                           | 56                         | —        | 29                                  |
| Pilot projects                                   | Yes      | 69                         | Yes             | 33                         | _                           | 51                         | —        | 28                                  |
| Skills training                                  | Yes      | 61                         | No              | 26                         | _                           | 43                         | _        | 20                                  |
| Ongoing support                                  | Yes      | 61                         | No              | 19                         | _                           | 35                         | _        | 18                                  |
| Scholarships                                     | Yes      | 28                         | No              | 8                          | —                           | 19                         | —        | 4                                   |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | Partly           | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Oman

| \$    | Population (000s)                | 2 785  | Total health expenditure (%GDP)                  | 2.4  | ICT Development Index                              | 3.45   |
|-------|----------------------------------|--------|--|------|--|--------|
| tor   | GNI per capita (PPP Int \$)      | 24 370 | Per capita total health expenditure (PPP Int \$) | 592  | ICT Development Index rank                         | 71     |
| ica   | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 20   | Mobile cellular subscriptions (per 100 population) | 139.54 |
| ind C | OECD country                     | No     | Physician density (per 10 000 population)        | 18.4 | Internet users (per 100 population)                | 51.50  |
|       | Life expectancy at birth (years) | 74     | Nurse density (per 10 000 population)            | 39.0 | Disability Adjusted Life Years (DALY)              | 14 459 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                        |                    |                        |
|---|------------------|------------------------|--------------------|------------------------|
|   | Country response | Global response (%)§   | Policy implemented | Year of implementation |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>        | Partly             | No data                |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>        | Partly             | Before 2000            |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>        | —                  | —                      |
| National multiculturalism policy for eHealth      | Yes              | <b>30</b> <sup>b</sup> | Yes                | Before 2000            |
| National telemedicine policy                      | No               | 25°                    | _                  | _                      |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | Yes              | 26                                |
| With different health care entities within the country   | Yes              | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | Do not know      | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | Do not know      | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No               | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations  | Yes              | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

| III. eHealth expenditu | res and their funding source |
|------------------------|------------------------------|
|                        |                              |

| Expenditure     | Public              | Public funding Private funding Donor/not |                     |                                      | Public-private<br>partnerships funding |                                      |                     |                                      |
|-----------------|---------------------|--|---------------------|--------------------------------------|--|--------------------------------------|---------------------|--------------------------------------|
|                 | Country<br>response | Global<br>response (%) <sup>b§</sup>     | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes                 | 78                                       | _                   | 37                                   | _                                      | 59                                   | _                   | 28                                   |
| Software        | Yes                 | 76                                       | —                   | 35                                   | _                                      | 56                                   | —                   | 29                                   |
| Pilot projects  | Yes                 | 69                                       | _                   | 33                                   | _                                      | 51                                   | —                   | 28                                   |
| Skills training | Yes                 | 61                                       | _                   | 26                                   | _                                      | 43                                   | —                   | 20                                   |
| Ongoing support | Yes                 | 61                                       | _                   | 19                                   | _                                      | 35                                   | _                   | 18                                   |
| Scholarships    | Yes                 | 28                                       | —                   | 8                                    | _                                      | 19                                   | —                   | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

I.

Oman 159

| I. Telemedicine   |                  |                                   |  |  |  |  |
|---|------------------|-----------------------------------|--|--|--|--|
|   | Country response | Global response (%) <sup>c§</sup> |  |  |  |  |
| Telemedicine enabling actions   |                  |                                   |  |  |  |  |
| National telemedicine policy  | No               | 25                                |  |  |  |  |
| Implemented national telemedicine policy                                    | —                | —                                 |  |  |  |  |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |  |  |  |  |
| Barriers to implementing telemedicine solutions                             |                  |                                   |  |  |  |  |
| Perceived costs too high  | Yes              | 60                                |  |  |  |  |
| Lack of legal policies/regulation   | Yes              | 40                                |  |  |  |  |
| Organizational culture not supportive                                       | No               | 39                                |  |  |  |  |
| Underdeveloped infrastructure   | Yes              | 38                                |  |  |  |  |
| Lack of policy frameworks   | No               | 37                                |  |  |  |  |
| Competing priorities  | Yes              | 37                                |  |  |  |  |
| Lack of demand by health professionals                                      | No               | 31                                |  |  |  |  |
| Lack of nationally adopted standards  | No               | 26                                |  |  |  |  |
| Lack of knowledge of applications   | No               | 25                                |  |  |  |  |
| Lack of technical expertise   | Yes              | 17                                |  |  |  |  |
| Information most needed in country to support telemedicine development      |                  |                                   |  |  |  |  |
| Cost and cost effectiveness   | No               | 69                                |  |  |  |  |
| Clinical possibilities  | No               | 58                                |  |  |  |  |
| Infrastructure  | Yes              | 52                                |  |  |  |  |
| Evaluation  | No               | 46                                |  |  |  |  |
| Legal and ethical   | No               | 45                                |  |  |  |  |
| Effect on human resources   | No               | 40                                |  |  |  |  |
| Patients' perception  | No               | 30                                |  |  |  |  |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Do not know      | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

## IIIb. eLearning target groups

| Profession         | Students         |                       | Professionals    |                       |
|--------------------|------------------|-----------------------|------------------|-----------------------|
|                    | Country response | Global response (%)°§ | Country response | Global response (%)°§ |
| Medical            | Yes              | 68                    | Yes              | 71                    |
| Public health      | No               | 52                    | Yes              | 56                    |
| Nursing            | Yes              | 50                    | Yes              | 55                    |
| Pharmacy           | No               | 45                    | Yes              | 37                    |
| Dentistry          | Yes              | 39                    | Yes              | 37                    |
| <sup>a</sup> n–113 |                  |                       |                  |                       |

# Pakistan

| Country<br>indicators | Population (000s)                | 176 952      | Total health expenditure (%GDP)                  | 2.9 | ICT Development Index                              | 1.54   |
|-----------------------|----------------------------------|--------------|--|-----|--|--------|
|                       | GNI per capita (PPP Int \$)      | 2 710        | Per capita total health expenditure (PPP Int \$) | 71  | ICT Development Index rank                         | 128    |
|                       | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 6   | Mobile cellular subscriptions (per 100 population) | 52.18  |
|                       | OECD country                     | No           | Physician density (per 10 000 population)        | 7.8 | Internet users (per 100 population)                | 11.30  |
|                       | Life expectancy at birth (years) | 63           | Nurse density (per 10 000 population)            | 3.8 | Disability Adjusted Life Years (DALY)              | 26 693 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                        |                    |                        |
|---|------------------|------------------------|--------------------|------------------------|
|   | Country response | Global response (%)§   | Policy implemented | Year of implementation |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>        | Partly             | Do not know            |
| National eHealth policy                           | No               | 55 <sup>⊳</sup>        | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>        | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | <b>30</b> <sup>b</sup> | —                  | —                      |
| National telemedicine policy                      | No               | 25°                    | _                  | _                      |

| II. Legal and ethical frameworks for ehealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Do not know      | 47                                |
| Security tools required by law for facilities used by children                                     | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | enditure Public funding Private funding |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|---|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response                        | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | Yes                                     | 37                                   | Yes                         | 59                                   | Yes                                    | 28                                   |
| Software        | Yes              | 76                                   | Yes                                     | 35                                   | Yes                         | 56                                   | Yes                                    | 29                                   |
| Pilot projects  | Yes              | 69                                   | Yes                                     | 33                                   | Yes                         | 51                                   | Yes                                    | 28                                   |
| Skills training | Yes              | 61                                   | Yes                                     | 26                                   | Yes                         | 43                                   | Yes                                    | 20                                   |
| Ongoing support | Yes              | 61                                   | Yes                                     | 19                                   | Yes                         | 35                                   | Yes                                    | 18                                   |
| Scholarships    | No               | 28                                   | No                                      | 8                                    | No                          | 19                                   | No                                     | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   | •                |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | -                | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | Yes              | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

## IIIb. eLearning target groups

| Profession    | Stud   | dents | Professionals    |                       |  |
|---------------|--|-------|------------------|-----------------------|--|
|               | Country response Global response (%) <sup>c§</sup> |       | Country response | Global response (%)°§ |  |
| Medical       | Yes  | 68    | Yes              | 71                    |  |
| Public health | Yes  | 52    | Yes              | 56                    |  |
| Nursing       | Yes  | 50    | Yes              | 55                    |  |
| Pharmacy      | Yes  | 45    | Yes              | 37                    |  |
| Dentistry     | Yes  | 39    | Yes              | 37                    |  |
| a n–113       |  |       |                  |                       |  |

# Panama

| 6     | Population (000s)                | 3 399        | Total health expenditure (%GDP)                  | 7.2  | ICT Development Index                              | 3.66   |
|-------|----------------------------------|--------------|--|------|--|--------|
| tor   | GNI per capita (PPP Int \$)      | 12 530       | Per capita total health expenditure (PPP Int \$) | 907  | ICT Development Index rank                         | 62     |
| icat  | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 22   | Mobile cellular subscriptions (per 100 population) | 164.37 |
| ind C | OECD country                     | No           | Physician density (per 10 000 population)        | 15.0 | Internet users (per 100 population)                | 27.79  |
|       | Life expectancy at birth (years) | 76           | Nurse density (per 10 000 population)            | 27.7 | Disability Adjusted Life Years (DALY)              | 15 008 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | 2007                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2008                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | 2008                   |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | 2008                   |
| National telemedicine policy                      | Yes              | 25°                  | Partly             | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Yes 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| m. cricann experiant | in cheatin experiations and their funding source |                            |                 |                            |                             |                            |  |                            |  |
|----------------------|--|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|--|
| Expenditure          | Public funding                                   |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |  |
|                      | Country  | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |  |
|                      | response   | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |
| ICT equipment        | Yes  | 78                         | _               | 37                         | _                           | 59                         | Yes                                    | 28                         |  |
| Software             | Yes  | 76                         | —               | 35                         | _                           | 56                         | Yes                                    | 29                         |  |
| Pilot projects       | Yes  | 69                         | _               | 33                         | _                           | 51                         | No                                     | 28                         |  |
| Skills training      | Yes  | 61                         | _               | 26                         | _                           | 43                         | Yes                                    | 20                         |  |
| Ongoing support      | Yes  | 61                         | _               | 19                         | _                           | 35                         | No                                     | 18                         |  |
| Scholarships         | No   | 28                         | <u> </u>        | 8                          | —                           | 19                         | No                                     | 4                          |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   | •                |                       |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | Partly           | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy No 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

<sup>b</sup> n=112 ° n=114

# Paraguay

|            | Population (000s)                | 6 238        | Total health expenditure (%GDP)                  | 6.3  | ICT Development Index                              | 2.75   |
|------------|----------------------------------|--------------|--|------|--|--------|
| tor        | GNI per capita (PPP Int \$)      | 4 430        | Per capita total health expenditure (PPP Int \$) | 297  | ICT Development Index rank                         | 94     |
| oun<br>ica | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 13   | Mobile cellular subscriptions (per 100 population) | 88.50  |
| ind C      | OECD country                     | No           | Physician density (per 10 000 population)        | 11.1 | Internet users (per 100 population)                | 17.40  |
|            | Life expectancy at birth (years) | 74           | Nurse density (per 10 000 population)            | 17.9 | Disability Adjusted Life Years (DALY)              | 17 782 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2007                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2008                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | 2008                   |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | _                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Prohibits Legislation that allows/prohibits Internet pharmacy operations Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Public funding Private funding |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|--------------------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response               | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | Yes                            | 37                                   | Yes                         | 59                                   | Yes                                    | 28                                   |
| Software        | Yes              | 76                                   | Yes                            | 35                                   | Yes                         | 56                                   | Yes                                    | 29                                   |
| Pilot projects  | Yes              | 69                                   | Yes                            | 33                                   | Yes                         | 51                                   | Yes                                    | 28                                   |
| Skills training | Yes              | 61                                   | Yes                            | 26                                   | Yes                         | 43                                   | Yes                                    | 20                                   |
| Ongoing support | Yes              | 61                                   | Yes                            | 19                                   | Yes                         | 35                                   | No                                     | 18                                   |
| Scholarships    | Yes              | 28                                   | No                             | 8                                    | Yes                         | 19                                   | No                                     | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

# IIIb. eLearning target groups

| Profession    | Students         |                       | Profes           | sionals                           |
|---------------|------------------|-----------------------|------------------|-----------------------------------|
|               | Country response | Global response (%)°§ | Country response | Global response (%) <sup>c§</sup> |
| Medical       | Yes              | 68                    | Yes              | 71                                |
| Public health | Yes              | 52                    | Yes              | 56                                |
| Nursing       | Yes              | 50                    | Yes              | 55                                |
| Pharmacy      | Yes              | 45                    | Yes              | 37                                |
| Dentistry     | Yes              | 39                    | Yes              | 37                                |
| a n-113       |                  |                       |                  |                                   |

# Deru

| <b>6</b> | Population (000s)                | 28 837       | Total health expenditure (%GDP)                  | 4.5 | ICT Development Index                              | 3.27   |
|----------|----------------------------------|--------------|--|-----|--|--------|
| ton      | GNI per capita (PPP Int \$)      | 8 140        | Per capita total health expenditure (PPP Int \$) | 385 | ICT Development Index rank                         | 75     |
| lica     | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 15  | Mobile cellular subscriptions (per 100 population) | 84.69  |
| ind C    | OECD country                     | No           | Physician density (per 10 000 population)        | —   | Internet users (per 100 population)                | 31.40  |
|          | Life expectancy at birth (years) | 76           | Nurse density (per 10 000 population)            | -   | Disability Adjusted Life Years (DALY)              | 18 552 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|                                      | Country            | response Global respon    | nse (%)§ Policy implemented | Year of implementation |  |  |
|--------------------------------------|--------------------|---------------------------|-----------------------------|------------------------|--|--|
| National eGovernment policy          | Ye                 | <b>es</b> 85 <sup>b</sup> | Partly                      | 2006                   |  |  |
| National eHealth policy              | Ye                 | <b>es</b> 55 <sup>b</sup> | Partly                      | 2005                   |  |  |
| National ICT procurement policy f    | or health sector N | o 37 <sup>b</sup>         | -                           | -                      |  |  |
| National multiculturalism policy for | or eHealth N       | <b>o</b> 30 <sup>b</sup>  | —                           | -                      |  |  |
| National telemedicine policy         | Ye                 | <b>es</b> 25°             | Partly                      | _                      |  |  |

### II. Legal and ethical frameworks for eHealth Global response (%)<sup>a§</sup> **Country response** Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

|                 | Ŭ                        | Private funding                      |                  | Donor/non-public<br>funding          |                  | Public-private<br>partnerships funding |                  |                                      |
|-----------------|--------------------------|--------------------------------------|------------------|--------------------------------------|------------------|--|------------------|--------------------------------------|
| Expenditure     | penditure Public funding |                                      |                  |                                      |                  |  |                  |                                      |
|                 | Country response         | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup>   | Country response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes                      | 78                                   | Yes              | 37                                   | Yes              | 59                                     | Yes              | 28                                   |
| Software        | Yes                      | 76                                   | Yes              | 35                                   | Yes              | 56                                     | No               | 29                                   |
| Pilot projects  | Yes                      | 69                                   | No               | 33                                   | No               | 51                                     | No               | 28                                   |
| Skills training | Yes                      | 61                                   | No               | 26                                   | No               | 43                                     | No               | 20                                   |
| Ongoing support | No                       | 61                                   | No               | 19                                   | Yes              | 35                                     | Yes              | 18                                   |
| Scholarships    | No                       | 28                                   | Yes              | 8                                    | No               | 19                                     | No               | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |  |  |  |
|---|------------------|-----------------------------------|--|--|--|
| ICT education   |                  |                                   |  |  |  |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |  |  |  |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |  |  |  |
| Professional groups offered ICT continuing education                    |                  |                                   |  |  |  |
| Medical   | Yes              | 73                                |  |  |  |
| Nursing   | No               | 62                                |  |  |  |
| Public health   | No               | 60                                |  |  |  |
| Dentistry   | Yes              | 54                                |  |  |  |
| Pharmacy  | No               | 54                                |  |  |  |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | Partly           | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | Yes              | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | Yes              | 21                                |

#### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Philippines

|     | Population (000s)                | 90 348       | Total health expenditure (%GDP)                  | 3.8  | ICT Development Index                              | 2.87   |
|-----|----------------------------------|--------------|--|------|--|--------|
| try | GNI per capita (PPP Int \$)      | 3 540        | Per capita total health expenditure (PPP Int \$) | 135  | ICT Development Index rank                         | 90     |
| nnc | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 5    | Mobile cellular subscriptions (per 100 population) | 100.26 |
|     | OECD country                     | No           | Physician density (per 10 000 population)        | 11.5 | Internet users (per 100 population)                | 9.00   |
|     | Life expectancy at birth (years) | 70           | Nurse density (per 10 000 population)            | 61.2 | Disability Adjusted Life Years (DALY)              | 21 603 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Yes                | 2006                   |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2000                   |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No data 47 Security tools required by law for facilities used by children No data 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 No Technology through filters and controls 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

#### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | diture Public funding Private funding |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|---------------------------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response                      | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | Yes                                   | 37                                   | Yes                         | 59                                   | Yes                                    | 28                                   |
| Software        | Yes              | 76                                   | Yes                                   | 35                                   | Yes                         | 56                                   | Yes                                    | 29                                   |
| Pilot projects  | Yes              | 69                                   | Yes                                   | 33                                   | Yes                         | 51                                   | Yes                                    | 28                                   |
| Skills training | Yes              | 61                                   | Yes                                   | 26                                   | Yes                         | 43                                   | Yes                                    | 20                                   |
| Ongoing support | Yes              | 61                                   | No                                    | 19                                   | Yes                         | 35                                   | Yes                                    | 18                                   |
| Scholarships    | Yes              | 28                                   | Yes                                   | 8                                    | Yes                         | 19                                   | Yes                                    | 4                                    |

#### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

#### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)°§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Poland

| S S           | Population (000s)                | 38 104       | Total health expenditure (%GDP)                  | 6.6   | ICT Development Index                              | 5.29   |
|---------------|----------------------------------|--------------|--|-------|--|--------|
| try<br>tors   | GNI per capita (PPP Int \$)      | 18 440       | Per capita total health expenditure (PPP Int \$) | 1 162 | ICT Development Index rank                         | 40     |
| Coun<br>Idica | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 52    | Mobile cellular subscriptions (per 100 population) | 117.68 |
| ind           | OECD country                     | Yes          | Physician density (per 10 000 population)        | 20.1  | Internet users (per 100 population)                | 58.97  |
|               | Life expectancy at birth (years) | 76           | Nurse density (per 10 000 population)            | 51.9  | Disability Adjusted Life Years (DALY)              | 13 209 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2008                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2004                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2007                   |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | 2004                   |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Allows Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Allows Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| in cricatil experiations and their randing source |          |                            |          |                            |          |                             |          |                            |
|---|----------|----------------------------|----------|----------------------------|----------|-----------------------------|----------|----------------------------|
| Expenditure                                       | Public   | funding                    | Private  | Private funding            |          | Donor/non-public<br>funding |          | private<br>ps funding      |
|   | Country  | Global                     | Country  | Global                     | Country  | Global                      | Country  | Global                     |
|   | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>  | response | response (%) <sup>b§</sup> |
| ICT equipment                                     | Yes      | 78                         | Yes      | 37                         | _        | 59                          | —        | 28                         |
| Software  | Yes      | 76                         | Yes      | 35                         | _        | 56                          | —        | 29                         |
| Pilot projects                                    | Yes      | 69                         | No       | 33                         | _        | 51                          | —        | 28                         |
| Skills training                                   | No       | 61                         | Yes      | 26                         | _        | 43                          | —        | 20                         |
| Ongoing support                                   | Yes      | 61                         | No       | 19                         | _        | 35                          | _        | 18                         |
| Scholarships                                      | No       | 28                         | No       | 8                          | —        | 19                          | —        | 4                          |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

#### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 No 56 Nursing No 50 No 55 Pharmacy No 45 Yes 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Portugal

| <b>S</b> | Population (000s)                | 10 677 | Total health expenditure (%GDP)                  | 10.1  | ICT Development Index                              | 5.77   |
|----------|----------------------------------|--------|--|-------|--|--------|
| tor      | GNI per capita (PPP Int \$)      | 22 870 | Per capita total health expenditure (PPP Int \$) | 2 334 | ICT Development Index rank                         | 32     |
| bun      | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 35    | Mobile cellular subscriptions (per 100 population) | 148.77 |
| ind C    | OECD country                     | Yes    | Physician density (per 10 000 population)        | 34.4  | Internet users (per 100 population)                | 48.27  |
|          | Life expectancy at birth (years) | 79     | Nurse density (per 10 000 population)            | 48.3  | Disability Adjusted Life Years (DALY)              | 11 419 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

II. Legal and ethical frameworks for eHealth

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | Before 2000            |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2008                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2007                   |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | Yes              | 25°                  | No                 | —                      |

#### **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data Yes 70 To ensure privacy of personally identifiable data To protect personally identifiable data specifically in EMR or EHR1 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Do not know 26 With different health care entities within the country Do not know 23 With health care entities in other countries Do not know 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Allows Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Do not know 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Do not know Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Yes 56 Voluntary compliance by content providers or web site owners Technology through filters and controls Yes 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals Yes 23 No 17

Official approval through certification, accreditation, or quality seals

| III. eHealth expenditures and their funding source |                  |                                      |                  |                                      |                             |                                      |  |                                      |
|--|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
| Expenditure  | Public funding   |                                      | Private funding  |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|  | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment                                      | Yes              | 78                                   | —                | 37                                   | —                           | 59                                   | —                                      | 28                                   |
| Software   | Yes              | 76                                   | —                | 35                                   | —                           | 56                                   | —                                      | 29                                   |
| Pilot projects                                     | Yes              | 69                                   | —                | 33                                   | —                           | 51                                   | _                                      | 28                                   |
| Skills training                                    | Yes              | 61                                   | —                | 26                                   | _                           | 43                                   | —                                      | 20                                   |
| Ongoing support                                    | Yes              | 61                                   | _                | 19                                   | _                           | 35                                   | _                                      | 18                                   |
| Scholarships                                       | No               | 28                                   | —                | 8                                    | —                           | 19                                   | —                                      | 4                                    |

#### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |  |  |  |
|---|------------------|-----------------------------------|--|--|--|
|   | Country response | Global response (%) <sup>c§</sup> |  |  |  |
| Telemedicine enabling actions   |                  |                                   |  |  |  |
| National telemedicine policy  | Yes              | 25                                |  |  |  |
| Implemented national telemedicine policy                                    | No               | —                                 |  |  |  |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |  |  |  |
| Barriers to implementing telemedicine solutions                             |                  |                                   |  |  |  |
| Perceived costs too high  | No               | 60                                |  |  |  |
| Lack of legal policies/regulation   | Yes              | 40                                |  |  |  |
| Organizational culture not supportive                                       | No               | 39                                |  |  |  |
| Underdeveloped infrastructure   | Yes              | 38                                |  |  |  |
| Lack of policy frameworks   | No               | 37                                |  |  |  |
| Competing priorities  | Yes              | 37                                |  |  |  |
| Lack of demand by health professionals                                      | No               | 31                                |  |  |  |
| Lack of nationally adopted standards  | No               | 26                                |  |  |  |
| Lack of knowledge of applications   | Yes              | 25                                |  |  |  |
| Lack of technical expertise   | No               | 17                                |  |  |  |
| Information most needed in country to support telemedicine development      |                  |                                   |  |  |  |
| Cost and cost effectiveness   | No               | 69                                |  |  |  |
| Clinical possibilities  | Yes              | 58                                |  |  |  |
| Infrastructure  | Yes              | 52                                |  |  |  |
| Evaluation  | Yes              | 46                                |  |  |  |
| Legal and ethical   | Yes              | 45                                |  |  |  |
| Effect on human resources   | No               | 40                                |  |  |  |
| Patients' perception  | No               | 30                                |  |  |  |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Do not know      | 72                                |
| Used in training health professionals              | Do not know      | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | Yes              | 21                                |

| IIIb. eLearning target groups |                  |                                   |                  |                                   |  |  |
|-------------------------------|------------------|-----------------------------------|------------------|-----------------------------------|--|--|
| Profession                    | Students         |                                   | Profes           | sionals                           |  |  |
|                               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%) <sup>c§</sup> |  |  |
| Medical                       | _                | 68                                | _                | 71                                |  |  |
| Public health                 | —                | 52                                | —                | 56                                |  |  |
| Nursing                       | —                | 50                                | _                | 55                                |  |  |
| Pharmacy                      | —                | 45                                | —                | 37                                |  |  |
| Dentistry                     | —                | 39                                | _                | 37                                |  |  |
| <sup>a</sup> n=113            |                  |                                   |                  |                                   |  |  |

# Qatar

| 6                 | Population (000s)                | 1 281 | Total health expenditure (%GDP)                  | 3.3   | ICT Development Index                              | 4.68   |
|-------------------|----------------------------------|-------|--|-------|--|--------|
| puntry<br>icators | GNI per capita (PPP Int \$)      | —     | Per capita total health expenditure (PPP Int \$) | 2 837 | ICT Development Index rank                         | 45     |
|                   | World Bank income group          | High  | Hospital bed density (per 10 000 population)     | 25    | Mobile cellular subscriptions (per 100 population) | 175.40 |
| ŭ D               | OECD country                     | No    | Physician density (per 10 000 population)        | 27.6  | Internet users (per 100 population)                | 40.00  |
|                   | Life expectancy at birth (years) | 76    | Nurse density (per 10 000 population)            | 73.7  | Disability Adjusted Life Years (DALY)              | 11 999 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

#### I. Policy framework Global response (%)§ **Policy implemented** Year of implementation **Country response** National eGovernment policy Partly 2005 Yes 85<sup>b</sup> Partly 2007 National eHealth policy 55<sup>b</sup> Yes National ICT procurement policy for health sector No 37<sup>b</sup> \_ National multiculturalism policy for eHealth 2003 Yes 30<sup>b</sup> Partly National telemedicine policy No 25° \_ \_

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Do not know      | 47                                |
| Security tools required by law for facilities used by children                                     | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

## III. eHealth expenditures and their funding source

| Expenditure     | Public           | funding                              | Private          | funding                              | ling Donor/non-p |                                      |                  |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | _                | 37                                   | _                | 59                                   | _                | 28                                   |
| Software        | Yes              | 76                                   | —                | 35                                   | _                | 56                                   | —                | 29                                   |
| Pilot projects  | Yes              | 69                                   | _                | 33                                   | _                | 51                                   | —                | 28                                   |
| Skills training | Yes              | 61                                   | _                | 26                                   | _                | 43                                   | —                | 20                                   |
| Ongoing support | Yes              | 61                                   | _                | 19                                   | _                | 35                                   | _                | 18                                   |
| Scholarships    | No               | 28                                   | <u> </u>         | 8                                    | —                | 19                                   | <u> </u>         | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Do not know      | 72                                |
| Used in training health professionals              | Do not know      | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

| Profession    | Students         |                                   | Professionals    |                                   |
|---------------|------------------|-----------------------------------|------------------|-----------------------------------|
|               | Country response | Global response (%) <sup>c§</sup> | Country response | Global response (%) <sup>c§</sup> |
| Medical       | -                | 68                                | —                | 71                                |
| Public health | -                | 52                                | —                | 56                                |
| Nursing       | _                | 50                                | _                | 55                                |
| Pharmacy      | -                | 45                                | —                | 37                                |
| Dentistry     | _                | 39                                | _                | 37                                |

# Republic of Korea

48 152 Total health ex

27 310

|      | Population (000s)                |  |
|------|----------------------------------|--|
| ton  | GNI per capita (PPP Int \$)      |  |
| lica | World Bank income group          |  |
| ŭ pi | OECD country                     |  |
|      | Life expectancy at birth (years) |  |

| 152  | Total health expenditure (%GDP)                  | 6.6   | ICT Development Index                              | 7.68   |
|------|--|-------|--|--------|
| 310  | Per capita total health expenditure (PPP Int \$) | 1 820 | ICT Development Index rank                         | 3      |
| High | Hospital bed density (per 10 000 population)     | 86    | Mobile cellular subscriptions (per 100 population) | 100.70 |
| Yes  | Physician density (per 10 000 population)        | 17.1  | Internet users (per 100 population)                | 81.52  |
| 80   | Nurse density (per 10 000 population)            | 43.9  | Disability Adjusted Life Years (DALY)              | 12 248 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|                           |                            | Country response | Global response (%)§ | Policy implemented | Year of implementation |  |
|---------------------------|----------------------------|------------------|----------------------|--------------------|------------------------|--|
| National eGovernment p    | olicy                      | Yes              | 85 <sup>b</sup>      | Partly             | 2007                   |  |
| National eHealth policy   |                            | Yes              | 55 <sup>⊳</sup>      | Partly             | 2007                   |  |
| National ICT procuremen   | t policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2007                   |  |
| National multiculturalism | policy for eHealth         | No data          | 30 <sup>b</sup>      | No data            | No data                |  |
| National telemedicine po  | licy                       | Yes              | 25°                  | Partly             | _                      |  |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data 70 To ensure privacy of personally identifiable data Yes To protect personally identifiable data specifically in EMR or EHR1 31 No Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Do not know 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations **Prohibits** Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries **Prohibits** Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

## III, eHealth expenditures and their funding source

| Expenditure     | Public   | funding                    | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |
|-----------------|----------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|
|                 | Country  | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |
|                 | response | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |
| ICT equipment   | Yes      | 78                         | _               | 37                         | _                           | 59                         | _                                      | 28                         |
| Software        | Yes      | 76                         | —               | 35                         | —                           | 56                         | _                                      | 29                         |
| Pilot projects  | Yes      | 69                         | —               | 33                         | _                           | 51                         | _                                      | 28                         |
| Skills training | Yes      | 61                         | —               | 26                         | _                           | 43                         | _                                      | 20                         |
| Ongoing support | Yes      | 61                         | _               | 19                         | _                           | 35                         | _                                      | 18                         |
| Scholarships    | Yes      | 28                         | <u> </u>        | 8                          | —                           | 19                         | _                                      | 4                          |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No data          | 77                                |
| Institutions offer continuing education in ICT for health professionals | No data          | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | No data          | 73                                |
| Nursing   | No data          | 62                                |
| Public health   | No data          | 60                                |
| Dentistry   | No data          | 54                                |
| Pharmacy  | No data          | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | Partly           | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Do not know      | 72                                |
| Used in training health professionals              | Do not know      | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

#### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Republic of Moldova

Lower-middle

3 633 Total h 3 060

> No Physic

69 Nurse

Per ca

Hospit

Country

| 6       | Population (000s)                |
|---------|----------------------------------|
| icators | GNI per capita (PPP Int \$)      |
|         | World Bank income group          |
| ind     | OECD country                     |
|         | Life expectancy at hirth (yeare) |

| nealth expenditure (%GDP)                   | 10.7 | ICT Development Index                              | 3.37   |
|---|------|--|--------|
| apita total health expenditure (PPP Int \$) | 318  | ICT Development Index rank                         | 73     |
| tal bed density (per 10 000 population)     | 61   | Mobile cellular subscriptions (per 100 population) | 77.28  |
| cian density (per 10 000 population)        | 26.7 | Internet users (per 100 population)                | 37.00  |
| density (per 10 000 population)             | 66.5 | Disability Adjusted Life Years (DALY)              | 20 105 |

ancy at birth (years) Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2005                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2004                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

## III, eHealth expenditures and their funding source

| in cheath expenditures and their funding source |          |                            |          |                            |          |                            |          |                            |
|---|----------|----------------------------|----------|----------------------------|----------|----------------------------|----------|----------------------------|
| Expenditure                                     | Public   | Public funding             |          | funding                    |          | on-public<br>ding          | •        |                            |
|   | Country  | Global                     | Country  | Global                     | Country  | Global                     | Country  | Global                     |
|   | response | response (%) <sup>b§</sup> |
| ICT equipment                                   | No       | 78                         | Yes      | 37                         | Yes      | 59                         | —        | 28                         |
| Software  | Yes      | 76                         | Yes      | 35                         | Yes      | 56                         | —        | 29                         |
| Pilot projects                                  | Yes      | 69                         | No       | 33                         | Yes      | 51                         | _        | 28                         |
| Skills training                                 | No       | 61                         | No       | 26                         | No       | 43                         | _        | 20                         |
| Ongoing support                                 | No       | 61                         | No       | 19                         | No       | 35                         | _        | 18                         |
| Scholarships                                    | No       | 28                         | No       | 8                          | No       | 19                         | —        | 4                          |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   | •                |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | Yes              | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

#### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113 <sup>b</sup> n=112

° n=114

# Sao Tome and Principe

middle

160 Total health expenditure (%GDP) 1 850 Per capita total health expenditure (PPP In

Hospital bed density (per 10 000 population No Physician density (per 10 000 population)

61 Nurse density (per 10 000 population)

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1.

| Country<br>indicators | Population (000s)                |        |
|-----------------------|----------------------------------|--------|
|                       | GNI per capita (PPP Int \$)      |        |
|                       | World Bank income group          | Lower- |
|                       | OECD country                     |        |
|                       | Life expectancy at birth (years) |        |

|        | 9.5  | ICT Development Index                              | —      |
|--------|------|--|--------|
| nt \$) | 167  | ICT Development Index rank                         | —      |
| ion)   | 32   | Mobile cellular subscriptions (per 100 population) | 39.32  |
| )      | 4.9  | Internet users (per 100 population)                | 16.41  |
|        | 18.7 | Disability Adjusted Life Years (DALY)              | 31 628 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | No               | 85 <sup>⊳</sup>      | —                  | —                      |
| National eHealth policy                           | No               | 55 <sup>⊳</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |

## II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

## III, eHealth expenditures and their funding source

| in cheath expenditures and then funding source |   |                            |                 |                            |          |                                     |          |                            |  |
|--|---|----------------------------|-----------------|----------------------------|----------|-------------------------------------|----------|----------------------------|--|
| Expenditure                                    | Public funding Private funding Donor/non-public funding |                            | Private funding |                            |          | <private<br>ps funding</private<br> |          |                            |  |
|  | Country   | Global                     | Country         | Global                     | Country  | Global                              | Country  | Global                     |  |
|  | response  | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>          | response | response (%) <sup>b§</sup> |  |
| ICT equipment                                  | _   | 78                         | _               | 37                         | Yes      | 59                                  | _        | 28                         |  |
| Software                                       | —   | 76                         | —               | 35                         | Yes      | 56                                  | —        | 29                         |  |
| Pilot projects                                 | _   | 69                         | —               | 33                         | Yes      | 51                                  | —        | 28                         |  |
| Skills training                                | _   | 61                         | <u> </u>        | 26                         | Yes      | 43                                  | —        | 20                         |  |
| Ongoing support                                | _   | 61                         | _               | 19                         | Yes      | 35                                  | _        | 18                         |  |
| Scholarships                                   | —   | 28                         | —               | 8                          | Yes      | 19                                  | —        | 4                          |  |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | —                | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | —                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |                        |                       |                  |                       |  |  |
|-------------------------------|------------------------|-----------------------|------------------|-----------------------|--|--|
| Profession                    | Students Professionals |                       |                  | sionals               |  |  |
|                               | Country response       | Global response (%)°§ | Country response | Global response (%)°§ |  |  |
| Medical                       | _                      | 68                    | _                | 71                    |  |  |
| Public health                 | —                      | 52                    | —                | 56                    |  |  |
| Nursing                       | —                      | 50                    | _                | 55                    |  |  |
| Pharmacy                      | —                      | 45                    | —                | 37                    |  |  |
| Dentistry                     | —                      | 39                    | _                | 37                    |  |  |
| <sup>a</sup> n=113            |                        |                       |                  |                       |  |  |

| S           | Population (000s)                | 12 211 | Total health expenditure (%GDP)                  | 5.7 | ICT Development Index                              | 1.49   |
|-------------|----------------------------------|--------|--|-----|--|--------|
| ton         | GNI per capita (PPP Int \$)      | 1 790  | Per capita total health expenditure (PPP Int \$) | 102 | ICT Development Index rank                         | 131    |
| oun<br>lica | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 3   | Mobile cellular subscriptions (per 100 population) | 55.06  |
| ind C       | OECD country                     | No     | Physician density (per 10 000 population)        | 0.6 | Internet users (per 100 population)                | 14.50  |
|             | Life expectancy at birth (years) | 59     | Nurse density (per 10 000 population)            | 4.2 | Disability Adjusted Life Years (DALY)              | 35 224 |

# eHealth foundation actions

|            | Senegal  |                |                                    |                   |                        |                                   |                   |          |  |
|------------|--|----------------|------------------------------------|-------------------|------------------------|-----------------------------------|-------------------|----------|--|
| $\subset$  | Population (000s)  | 12 211         | Total health expenditure (%GDF     | <sup>&gt;</sup> ) | 5.7 I                  | ICT Development Index             |                   | 1.49     |  |
| Regior     | GNI per capita (PPP Int \$)<br>World Bank income group<br>OECD country   | 1 790          | Per capita total health expenditur | re (PPP Int \$)   | 102 I                  | ICT Development Index rank        |                   | 131      |  |
| <u> </u>   | World Bank income group  | Low            | Hospital bed density (per 10 00    | 0 population)     | 3 1                    | Mobile cellular subscriptions (pe | r 100 population) | 55.06    |  |
| <u>ل</u>   | OECD country   | No             | Physician density (per 10 000 p    | opulation)        | 0.6 I                  | Internet users (per 100 populat   | ion)              | 14.50    |  |
| Ř          | Life expectancy at birth (years)   | 59             | Nurse density (per 10 000 popu     | llation)          | 4.2                    | Disability Adjusted Life Years (I | DALY)             | 35 224   |  |
|            | Sources: See page ix   |                |                                    |                   |                        |                                   |                   |          |  |
| African    | <ul> <li>eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.</li> </ul> |                |                                    |                   |                        |                                   |                   |          |  |
| 1          | I. Policy framework  |                |                                    |                   |                        |                                   |                   |          |  |
| $\bigcirc$ |  |                | Country response                   | Global res        | ponse (%) <sup>§</sup> | Policy implemented                | Year of implem    | entation |  |
| MHO        | National eGovernment policy  |                | Yes                                | 85                | 5 <sup>b</sup>         | Partly                            | 2001              |          |  |
| >          | National eHealth policy  |                | No                                 | 55                | 5 <sup>b</sup>         | -                                 | _                 |          |  |
| >          | National ICT procurement policy f  | or health sect | or Yes                             | 37                | 7 <sup>b</sup>         | Partly                            | 2006              |          |  |
|            | National multiculturalism policy for   | or eHealth     | No                                 | 30                | Dp                     | —                                 | —                 |          |  |
|            | National telemedicine policy   |                | No data                            | 25                | 5°                     | No data                           | _                 |          |  |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Yes 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

#### III, eHealth expenditures and their funding source

| in criterin experimentes and their running source |                |                            |                 |                            |          |                            |  |                            |  |  |  |
|---|----------------|----------------------------|-----------------|----------------------------|----------|----------------------------|--|----------------------------|--|--|--|
| Expenditure                                       | Public funding |                            | Private funding |                            |          | on-public<br>ding          | Public-private<br>partnerships funding |                            |  |  |  |
|   | Country        | Global                     | Country         | Global                     | Country  | Global                     | Country                                | Global                     |  |  |  |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |  |  |
| ICT equipment                                     | Yes            | 78                         | Yes             | 37                         | Yes      | 59                         | Yes                                    | 28                         |  |  |  |
| Software  | Yes            | 76                         | Yes             | 35                         | Yes      | 56                         | Yes                                    | 29                         |  |  |  |
| Pilot projects                                    | Yes            | 69                         | Yes             | 33                         | Yes      | 51                         | Yes                                    | 28                         |  |  |  |
| Skills training                                   | No             | 61                         | Yes             | 26                         | No       | 43                         | Yes                                    | 20                         |  |  |  |
| Ongoing support                                   | Yes            | 61                         | Yes             | 19                         | Yes      | 35                         | Yes                                    | 18                         |  |  |  |
| Scholarships                                      | No             | 28                         | Yes             | 8                          | No       | 19                         | Yes                                    | 4                          |  |  |  |

### IV. Capacity building

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No data          | 25                                |
| Implemented national telemedicine policy                                    | No data          | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | Yes              | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

## IIIb. eLearning target groups

| Stud             | dents  | Professionals   |  |  |
|------------------|--|---|--|--|
| Country response | ntry response Global response (%)°§ Country response G |   | Global response (%) c§   |  |
| Yes              | 68   | Yes   | 71   |  |
| Yes              | 52   | Yes   | 56   |  |
| No               | 50   | Yes   | 55   |  |
| No               | 45   | No  | 37   |  |
| No               | 39   | No  | 37   |  |
|                  | Country response<br>Yes<br>Yes<br>No<br>No             | Yes         68           Yes         52           No         50           No         45 | Country responseGlobal response (%)°§Country responseYes68YesYes52YesNo50YesNo45No |  |

| 5           | Population (000s)                | 84           | Total health expenditure (%GDP)                  | 4.1  | ICT Development Index                              | 3.64   |
|-------------|----------------------------------|--------------|--|------|--|--------|
| try<br>tors | GNI per capita (PPP Int \$)      | 16 820       | Per capita total health expenditure (PPP Int \$) | 904  | ICT Development Index rank                         | 66     |
| jun         | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 39   | Mobile cellular subscriptions (per 100 population) | 131.36 |
| ind         | OECD country                     | No           | Physician density (per 10 000 population)        | 15.1 | Internet users (per 100 population)                | —      |
|             | Life expectancy at birth (years) | 72           | Nurse density (per 10 000 population)            | 79.3 | Disability Adjusted Life Years (DALY)              | 16 790 |

# eHealth foundation actions

|          | Se   | eychelle                         | es           |                                    |                |                |                                   |                    |          |
|----------|--|----------------------------------|--------------|------------------------------------|----------------|----------------|-----------------------------------|--------------------|----------|
| C        | , s  | Population (000s)                | 84           | Total health expenditure (%GDF     | <sup>o</sup> ) | 4.1 l          | CT Development Index              |                    | 3.64     |
| Region   | Country<br>indicators  | GNI per capita (PPP Int \$)      | 16 820       | Per capita total health expenditur | e (PPP Int \$) | 904 l          | CT Development Index rank         |                    | 66       |
| <u> </u> | lica   | World Bank income group          | Upper-middle | Hospital bed density (per 10 000   | 0 population)  | 39 N           | Nobile cellular subscriptions (pe | er 100 population) | 131.36   |
|          | ind C  | OECD country                     | No           | Physician density (per 10 000 p    | opulation)     | 15.1 li        | nternet users (per 100 populat    | tion)              | —        |
| Ř        |  | Life expectancy at birth (years) | 72           | Nurse density (per 10 000 popu     | lation)        | 79.3 E         | Disability Adjusted Life Years (I | DALY)              | 16 790   |
| African  | <ul> <li>Sources: See page ix</li> <li>Constant</li>     &lt;</ul> |                                  |              |                                    |                |                |                                   |                    |          |
| 4        | I. Poli  | cy framework                     |              |                                    |                |                |                                   |                    |          |
| 0        |  |                                  |              | Country response                   | Global res     | ponse (%)§     | Policy implemented                | Year of implem     | entation |
| ОНМ      | Natio  | onal eGovernment policy          |              | Yes                                | 85             | 5 <sup>b</sup> | Yes                               | 2005               |          |
| $\geq$   | National eHealth policy  |                                  | Yes          | 55                                 | 5 <sup>b</sup> | Partly         | 2001                              |                    |          |
|          | National ICT procurement policy for health sector  |                                  |              | or No                              | 37             | 7 <sup>b</sup> | _                                 | _                  |          |
|          |  | onal multiculturalism policy fo  | or eHealth   | No                                 | 30             | -              | _                                 | _                  |          |
|          | Natio  | onal telemedicine policy         |              | No                                 | 25             | 5°             | _                                 | _                  |          |

## II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | Yes              | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | Do not know      | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No               | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations  | Yes              | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

## III, eHealth expenditures and their funding source

| in criterin experimentes and their running source |                |                            |                 |                            |          |                            |  |                            |  |  |  |
|---|----------------|----------------------------|-----------------|----------------------------|----------|----------------------------|--|----------------------------|--|--|--|
| Expenditure                                       | Public funding |                            | Private funding |                            |          | on-public<br>ding          | Public-private<br>partnerships funding |                            |  |  |  |
|   | Country        | Global                     | Country         | Global                     | Country  | Global                     | Country                                | Global                     |  |  |  |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |  |  |  |
| ICT equipment                                     | Yes            | 78                         | Yes             | 37                         | Yes      | 59                         | Yes                                    | 28                         |  |  |  |
| Software  | Yes            | 76                         | Yes             | 35                         | Yes      | 56                         | No                                     | 29                         |  |  |  |
| Pilot projects                                    | Yes            | 69                         | Yes             | 33                         | Yes      | 51                         | No                                     | 28                         |  |  |  |
| Skills training                                   | No             | 61                         | Yes             | 26                         | Yes      | 43                         | No                                     | 20                         |  |  |  |
| Ongoing support                                   | Yes            | 61                         | No              | 19                         | No       | 35                         | No                                     | 18                         |  |  |  |
| Scholarships                                      | No             | 28                         | No              | 8                          | No       | 19                         | No                                     | 4                          |  |  |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | Yes              | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

## IIIb. eLearning target groups

| Profession         | Stu              | Students Professionals                             |     | sionals                           |
|--------------------|------------------|--|-----|-----------------------------------|
|                    | Country response | Country response Global response (%) <sup>c§</sup> |     | Global response (%) <sup>c§</sup> |
| Medical            | Yes              | 68   | Yes | 71                                |
| Public health      | No               | 52   | No  | 56                                |
| Nursing            | No               | 50   | No  | 55                                |
| Pharmacy           | No               | 45   | No  | 37                                |
| Dentistry          | No               | 39   | No  | 37                                |
| <sup>a</sup> n=113 |                  |  |     |                                   |

# Sierra Leone

| 6     | Population (000s)                | 5 560 | Total health expenditure (%GDP)                  | 4.2  | ICT Development Index                              | —      |
|-------|----------------------------------|-------|--|------|--|--------|
| tor   | GNI per capita (PPP Int \$)      | 790   | Per capita total health expenditure (PPP Int \$) | 32   | ICT Development Index rank                         | —      |
| ica   | World Bank income group          | Low   | Hospital bed density (per 10 000 population)     | 4    | Mobile cellular subscriptions (per 100 population) | 20.36  |
| ind C | OECD country                     | No    | Physician density (per 10 000 population)        | <0.5 | Internet users (per 100 population)                | 0.26   |
|       | Life expectancy at birth (years) | 49    | Nurse density (per 10 000 population)            | 1.7  | Disability Adjusted Life Years (DALY)              | 66 278 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

#### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Do not know      | 85 <sup>b</sup>      | —                  | _                      |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No data          | 30 <sup>b</sup>      | No data            | No data                |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Do not know 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> Do not know 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Do not know 26 With different health care entities within the country No data 23 With health care entities in other countries Do not know 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Do not know Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Do not know 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Do not know Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 No data Technology through filters and controls 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

### III. eHealth expenditures and their funding source

| in one and the running course |                     |                                      |                     |                                      |                             |                                      |                     |                                      |
|-------------------------------|---------------------|--------------------------------------|---------------------|--------------------------------------|-----------------------------|--------------------------------------|---------------------|--------------------------------------|
| Expenditure                   | Public funding      |                                      | Private funding     |                                      | Donor/non-public<br>funding |                                      |                     | <pre> private ps funding </pre>      |
|                               | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response         | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment                 | Yes                 | 78                                   | Yes                 | 37                                   | Yes                         | 59                                   | _                   | 28                                   |
| Software                      | Yes                 | 76                                   | Yes                 | 35                                   | Yes                         | 56                                   | —                   | 29                                   |
| Pilot projects                | No                  | 69                                   | Yes                 | 33                                   | No                          | 51                                   | _                   | 28                                   |
| Skills training               | No                  | 61                                   | Yes                 | 26                                   | No                          | 43                                   | _                   | 20                                   |
| Ongoing support               | No                  | 61                                   | Yes                 | 19                                   | No                          | 35                                   | _                   | 18                                   |
| Scholarships                  | No                  | 28                                   | No                  | 8                                    | No                          | 19                                   | _                   | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

## IIIb. eLearning target groups

| Stuc   | lents                                      | Professionals   |   |  |
|--|--|---|---|--|
| Country response Global response (%) <sup>c§</sup> |  | Country response  | Global response (%) c§  |  |
| Yes  | 68   | Yes   | 71  |  |
| Yes  | 52   | Yes   | 56  |  |
| No   | 50   | Yes   | 55  |  |
| No   | 45   | No  | 37  |  |
| No   | 39   | No  | 37  |  |
|  | Country response<br>Yes<br>Yes<br>No<br>No | Yes         68           Yes         52           No         50           No         45 | Country responseGlobal response (%)°Country responseYes68YesYes52YesNo50YesNo45No |  |

# Singapore

| S    | Population (000s)                | 4 615  | Total health expenditure (%GDP)                  | 3.4   | ICT Development Index                              | 6.95   |
|------|----------------------------------|--------|--|-------|--|--------|
| tor  | GNI per capita (PPP Int \$)      | 49 850 | Per capita total health expenditure (PPP Int \$) | 1 757 | ICT Development Index rank                         | 14     |
| bun  | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 32    | Mobile cellular subscriptions (per 100 population) | 145.24 |
| ji Č | OECD country                     | No     | Physician density (per 10 000 population)        | 15.0  | Internet users (per 100 population)                | 68.29  |
|      | Life expectancy at birth (years) | 81     | Nurse density (per 10 000 population)            | 44.0  | Disability Adjusted Life Years (DALY)              | 10 111 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

#### I. Policy framework

|                        |                               | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|------------------------|-------------------------------|------------------|----------------------|--------------------|------------------------|
| National eGovernme     | nt policy                     | Yes              | 85 <sup>b</sup>      | Yes                | Before 2000            |
| National eHealth poli  | су                            | Yes              | 55 <sup>b</sup>      | Yes                | 2003                   |
| National ICT procure   | nent policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | Before 2000            |
| National multicultural | ism policy for eHealth        | Do not know      | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine  | e policy                      | No               | 25°                  | —                  | —                      |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Prohibits Legislation that allows/prohibits Internet pharmacy operations Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private funding  |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | _                | 37                                   | _                           | 59                                   | No                                     | 28                                   |
| Software        | Yes              | 76                                   | —                | 35                                   | _                           | 56                                   | No                                     | 29                                   |
| Pilot projects  | Yes              | 69                                   | _                | 33                                   | _                           | 51                                   | Yes                                    | 28                                   |
| Skills training | Yes              | 61                                   | _                | 26                                   | _                           | 43                                   | No                                     | 20                                   |
| Ongoing support | Yes              | 61                                   | _                | 19                                   | _                           | 35                                   | No                                     | 18                                   |
| Scholarships    | Yes              | 28                                   | <u> </u>         | 8                                    | —                           | 19                                   | No                                     | 4                                    |

#### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | -                | -                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No data          | 64                                |
| Lack of policy framework                           | No data          | 63                                |
| Lack of skilled course developers                  | No data          | 55                                |
| Lack of knowledge of applications                  | No data          | 46                                |
| Perceived costs too high                           | No data          | 45                                |
| Availability of suitable courses                   | No data          | 42                                |
| Lack of demand                                     | No data          | 21                                |

#### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)°§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Slovakia

| 6     | Population (000s)                | 5 400  | Total health expenditure (%GDP)                  | 7.8   | ICT Development Index                              | 5.38   |
|-------|----------------------------------|--------|--|-------|--|--------|
| tor   | GNI per capita (PPP Int \$)      | 21 600 | Per capita total health expenditure (PPP Int \$) | 1 717 | ICT Development Index rank                         | 38     |
| Jun   | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 68    | Mobile cellular subscriptions (per 100 population) | 101.70 |
| ind C | OECD country                     | Yes    | Physician density (per 10 000 population)        | 31.2  | Internet users (per 100 population)                | 75.17  |
|       | Life expectancy at birth (years) | 75     | Nurse density (per 10 000 population)            | 66.2  | Disability Adjusted Life Years (DALY)              | 13 844 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>⊳</sup>      | Yes                | 2008                   |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2009                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | 2005                   |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | _                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals No 17

## III. eHealth expenditures and their funding source

| in chediti expenditares and then randing source |                |                            |                 |                            |                             |                            |  |                            |
|---|----------------|----------------------------|-----------------|----------------------------|-----------------------------|----------------------------|--|----------------------------|
| Expenditure                                     | Public funding |                            | Private funding |                            | Donor/non-public<br>funding |                            | Public-private<br>partnerships funding |                            |
|   | Country        | Global                     | Country         | Global                     | Country                     | Global                     | Country                                | Global                     |
|   | response       | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                               | response (%) <sup>b§</sup> |
| ICT equipment                                   | Yes            | 78                         | _               | 37                         | _                           | 59                         | _                                      | 28                         |
| Software  | Yes            | 76                         | —               | 35                         | _                           | 56                         | _                                      | 29                         |
| Pilot projects                                  | Yes            | 69                         | _               | 33                         | _                           | 51                         | _                                      | 28                         |
| Skills training                                 | Yes            | 61                         | _               | 26                         | _                           | 43                         | _                                      | 20                         |
| Ongoing support                                 | Yes            | 61                         | _               | 19                         | _                           | 35                         | _                                      | 18                         |
| Scholarships                                    | No             | 28                         | <u> </u>        | 8                          | —                           | 19                         | _                                      | 4                          |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

#### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Slovenia

| 6              | Population (000s)                | 2 015  | Total health expenditure (%GDP)                  | 7.8   | ICT Development Index                              | 6.26   |
|----------------|----------------------------------|--------|--|-------|--|--------|
| itry<br>tors   | GNI per capita (PPP Int \$)      | 26 340 | Per capita total health expenditure (PPP Int \$) | 2 183 | ICT Development Index rank                         | 26     |
| Coun<br>indica | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 47    | Mobile cellular subscriptions (per 100 population) | 103.98 |
|                | OECD country                     | Yes    | Physician density (per 10 000 population)        | 24.2  | Internet users (per 100 population)                | 64.28  |
|                | Life expectancy at birth (years) | 79     | Nurse density (per 10 000 population)            | 78.1  | Disability Adjusted Life Years (DALY)              | 11 636 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2007                   |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2007                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2009                   |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | 2007                   |
| National telemedicine policy                      | No               | 25°                  | —                  | —                      |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries No 11 Internet pharmacies Prohibits Legislation that allows/prohibits Internet pharmacy operations Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries **Prohibits** Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| in onouni experianti co una manang cource |                     |                                      |                                    |                                      |                     |                                      |                     |  |  |  |  |
|---|---------------------|--------------------------------------|------------------------------------|--------------------------------------|---------------------|--------------------------------------|---------------------|--|--|--|--|
| Expenditure                               | Public funding      |                                      | Public funding Private funding Don |                                      |                     | Donor/non-public<br>funding          |                     | Public-private<br>partnerships funding |  |  |  |
|   | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response                | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup>   |  |  |  |
| ICT equipment                             | Yes                 | 78                                   | Yes                                | 37                                   | Yes                 | 59                                   | _                   | 28                                     |  |  |  |
| Software                                  | Yes                 | 76                                   | Yes                                | 35                                   | Yes                 | 56                                   | —                   | 29                                     |  |  |  |
| Pilot projects                            | Yes                 | 69                                   | Yes                                | 33                                   | Yes                 | 51                                   | _                   | 28                                     |  |  |  |
| Skills training                           | Yes                 | 61                                   | No                                 | 26                                   | Yes                 | 43                                   | _                   | 20                                     |  |  |  |
| Ongoing support                           | Yes                 | 61                                   | Yes                                | 19                                   | Yes                 | 35                                   | _                   | 18                                     |  |  |  |
| Scholarships                              | Yes                 | 28                                   | No                                 | 8                                    | Yes                 | 19                                   | _                   | 4                                      |  |  |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | Yes              | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

#### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 No 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

| S               | Population (000s)                | 44 486 | Total health expenditure (%GDP)                  | 8.7   | ICT Development Index                              | 6.27   |
|-----------------|----------------------------------|--------|--|-------|--|--------|
| tors            | GNI per capita (PPP Int \$)      | 31 630 | Per capita total health expenditure (PPP Int \$) | 2 791 | ICT Development Index rank                         | 25     |
| Coun<br>indicat | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 34    | Mobile cellular subscriptions (per 100 population) | 113.76 |
|                 | OECD country                     | Yes    | Physician density (per 10 000 population)        | 37.6  | Internet users (per 100 population)                | 62.62  |
|                 | Life expectancy at birth (years) | 81     | Nurse density (per 10 000 population)            | 74.4  | Disability Adjusted Life Years (DALY)              | 9 474  |

## eHealth foundation actions

## I. Policy framework

|                        | Sp  | Dain   |            |                                    |                   |           |                                   |                   |           |
|------------------------|---|--|------------|------------------------------------|-------------------|-----------|-----------------------------------|-------------------|-----------|
| C                      | (0  | Population (000s)  | 44 486     | Total health expenditure (%GDF     | <sup>&gt;</sup> ) | 8.7 I     | ICT Development Index             |                   | 6.27      |
| Ō                      | tor   | GNI per capita (PPP Int \$)  | 31 630     | Per capita total health expenditur | re (PPP Int \$)   | 2 791 I   | ICT Development Index rank        |                   | 25        |
| Region                 | Country<br>indicators                             | World Bank income group  | High       | Hospital bed density (per 10 000   | 0 population)     | 34 1      | Mobile cellular subscriptions (pe | r 100 population) | 113.76    |
|                        | D C C   | OECD country   | Yes        | Physician density (per 10 000 p    | opulation)        | 37.6 I    | Internet users (per 100 populat   | ion)              | 62.62     |
| $\overset{\vee}{\sim}$ |   | Life expectancy at birth (years)   | 81         | Nurse density (per 10 000 popu     | lation)           | 74.4 I    | Disability Adjusted Life Years (I | DALY)             | 9 474     |
| European               | policy,   | h foundation actions buil<br>legal and ethical framew<br>ity of the health work forc | orks; adeq | uate funding from vario            |                   |           |                                   |                   |           |
| JC                     | I. Poli   | icy framework  |            |                                    |                   |           |                                   |                   |           |
| ы                      |   |  |            | Country response                   | Global resp       | onse (%)§ | Policy implemented                | Year of implem    | nentation |
|                        | Natio   | onal eGovernment policy  |            | Yes                                | 85                | þ         | Partly                            | 2007              |           |
| MHO                    | National eHealth policy                           |  | Yes        | 55                                 | þ                 | Yes       | 2006                              |                   |           |
| Ţ                      | National ICT procurement policy for health sector |  | or Yes     | 37                                 | 'b                | Partly    | 2006                              |                   |           |
| $\geq$                 | National multiculturalism policy for eHealth      |  |            | Yes                                | 30                | þ         | No                                | _                 |           |
|                        | Natio   | onal telemedicine policy   |            | No                                 | 25                | jc        | _                                 | —                 |           |
|                        |   |  |            |                                    |                   |           |                                   |                   |           |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Yes 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries **Prohibits** Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No data 47 Security tools required by law for facilities used by children No data 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

### III. eHealth expenditures and their funding source

| Expenditure     | Public           | funding                              | Private funding Donor/non-public Public-prive funding partnerships |                                      | · · · · · · · · · · · · · · · · · · · |                                      |                  |                                      |
|-----------------|------------------|--------------------------------------|--|--------------------------------------|---------------------------------------|--------------------------------------|------------------|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response   | Global<br>response (%) <sup>b§</sup> | Country response                      | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | _  | 37                                   | _                                     | 59                                   | No data          | 28                                   |
| Software        | Yes              | 76                                   | —  | 35                                   | _                                     | 56                                   | No data          | 29                                   |
| Pilot projects  | Yes              | 69                                   | _  | 33                                   | _                                     | 51                                   | No data          | 28                                   |
| Skills training | Yes              | 61                                   | —  | 26                                   | _                                     | 43                                   | No data          | 20                                   |
| Ongoing support | Yes              | 61                                   | —  | 19                                   | _                                     | 35                                   | No data          | 18                                   |
| Scholarships    | No               | 28                                   | <u> </u>   | 8                                    | —                                     | 19                                   | No data          | 4                                    |

#### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No data          | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No data          | 64                                |
| Lack of policy framework                           | No data          | 63                                |
| Lack of skilled course developers                  | No data          | 55                                |
| Lack of knowledge of applications                  | No data          | 46                                |
| Perceived costs too high                           | No data          | 45                                |
| Availability of suitable courses                   | No data          | 42                                |
| Lack of demand                                     | No data          | 21                                |

#### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 No 56 Nursing No 50 No 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

|      | Population (000s)                | 20 061       | Total health expenditure (%GDP)                  | 4.0  | ICT Development Index                              | 2.51   |
|------|----------------------------------|--------------|--|------|--|--------|
| try  | GNI per capita (PPP Int \$)      | 4 720        | Per capita total health expenditure (PPP Int \$) | 184  | ICT Development Index rank                         | 105    |
| uno. | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 31   | Mobile cellular subscriptions (per 100 population) | 69.65  |
| Ŭ    | OECD country                     | No           | Physician density (per 10 000 population)        | 5.5  | Internet users (per 100 population)                | 8.78   |
|      | Life expectancy at birth (years) | 69           | Nurse density (per 10 000 population)            | 17.4 | Disability Adjusted Life Years (DALY)              | 24 956 |

## eHealth foundation actions

|                            | Sri Lank  | í<br>Q         |                                    |                     |                                   |                    |                      |
|----------------------------|---|----------------|------------------------------------|---------------------|-----------------------------------|--------------------|----------------------|
| C                          | Population (000s)   | 20 061         | Total health expenditure (%GDF     | <sup>o</sup> ) 4.0  | ICT Development Index             |                    | 2.51                 |
| õ                          | GNI per capita (PPP Int \$)   | 4 720          | Per capita total health expenditur | re (PPP Int \$) 184 | ICT Development Index rank        |                    | 105                  |
| jį                         | Station (coos)<br>GNI per capita (PPP Int \$)<br>World Bank income group<br>OECD country  | Lower-middle   | Hospital bed density (per 10 00    | D population) 31    | Mobile cellular subscriptions (pe | er 100 population) | 69.65                |
|                            | OECD country  | No             | Physician density (per 10 000 p    | opulation) 5.5      | Internet users (per 100 populat   | tion)              | 8.78                 |
| Še                         | Life expectancy at birth (years)  | 69             | Nurse density (per 10 000 popu     | lation) 17.4        | Disability Adjusted Life Years (I | DALY)              | 24 956               |
|                            | Sources: See page ix  |                |                                    |                     |                                   |                    |                      |
| WHO South-East Asia Region | eHealth foundation actions built<br>policy, legal and ethical framew<br>capacity of the health work forc<br>I. Policy framework | vorks; adeq    | uate funding from vario            |                     |                                   |                    |                      |
| لبا                        |   |                | Country response                   | Global response (%) | Policy implemented                | Year of impleme    | entation             |
| <u>–</u>                   | National eGovernment policy   |                | Yes                                | 85 <sup>b</sup>     | Partly                            | 2003               |                      |
| Ţ                          | National eHealth policy   |                | No                                 | 55 <sup>⊳</sup>     | _                                 | _                  |                      |
| $\supset$                  | National ICT procurement policy for   | or health sect | or Yes                             | 37 <sup>b</sup>     | Yes                               | 2004               |                      |
| 0                          | National multiculturalism policy for  | r eHealth      | Yes                                | 30 <sup>⊳</sup>     | Partly                            | 2005               |                      |
| S                          | National telemedicine policy  |                | No                                 | 25°                 | -                                 | _                  |                      |
| OHN                        | II. Legal and ethical framewor  |                | ealth                              |                     | Country response                  | Global respons     | se (%) <sup>a§</sup> |
|                            | Legislation on personal and health-r  |                | -                                  |                     | No.                               |                    |                      |
|                            | To ensure privacy of personally id  | entifiable dat | a                                  |                     |                                   |                    |                      |
|                            | To protect personally identifiable of   |                |                                    |                     | Yes                               | 70<br>31           |                      |

| II. Legal and ethical frameworks for eHealth   | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
|  | country response | Gibbai response (76)*             |
| Legislation on personal and health-related data  |                  | 1                                 |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III. eHealth expenditures and their funding source

| Expenditure     | Public              | funding                              | Private          | funding                              | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|---------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country<br>response         | Global<br>response (%) <sup>b§</sup> | Country<br>response                    | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes                 | 78                                   | _                | 37                                   | Yes                         | 59                                   | No                                     | 28                                   |
| Software        | No                  | 76                                   | —                | 35                                   | Yes                         | 56                                   | No                                     | 29                                   |
| Pilot projects  | No                  | 69                                   | —                | 33                                   | Yes                         | 51                                   | No                                     | 28                                   |
| Skills training | Yes                 | 61                                   | _                | 26                                   | Yes                         | 43                                   | Yes                                    | 20                                   |
| Ongoing support | No                  | 61                                   | _                | 19                                   | Yes                         | 35                                   | No                                     | 18                                   |
| Scholarships    | No                  | 28                                   | —                | 8                                    | Yes                         | 19                                   | No                                     | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | _                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

#### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health No 52 Yes 56 Nursing No 50 No 55 Pharmacy No 45 No 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

| Country<br>indicators | Population (000s)                | 41 348       | Total health expenditure (%GDP)                  | 3.6 | ICT Development Index                              | 1.57   |
|-----------------------|----------------------------------|--------------|--|-----|--|--------|
|                       | GNI per capita (PPP Int \$)      | 2 000        | Per capita total health expenditure (PPP Int \$) | 77  | ICT Development Index rank                         | 127    |
|                       | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 7   | Mobile cellular subscriptions (per 100 population) | 36.29  |
|                       | OECD country                     | No           | Physician density (per 10 000 population)        | 3.0 | Internet users (per 100 population)                | —      |
|                       | Life expectancy at birth (years) | 57           | Nurse density (per 10 000 population)            | 9.0 | Disability Adjusted Life Years (DALY)              | 38 563 |

# eHealth foundation actions

| I. Policy framework                               |                  |                      |                    |                        |
|---|------------------|----------------------|--------------------|------------------------|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2007                   |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2005                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | Yes              | 25°                  | Partly             | _                      |

| Population (000s)         41 348         Total health expenditure (%GDP)         3.6         ICT Development Index           GNI per capita (PPP Int \$)         2000         Per capita total health expenditure (%GDP)         3.6         ICT Development Index rank           World Bank income group         Lower-mide         Per capita total health expenditure (%GDP)         7         Mobile cellular subscriptions (per 100 population)           OECD country         No         No         Precipitation and the early of the per to 0000 population)         3.0         Internet users (per 100 population)           Sources: See page ix         I.         EHEalth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHe policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and develop capacity of the health work force through training.           I. Policy framework         Country response         Global response (%)         Policy implemented         Year of imple           National effective policy         Yes         55°         Partity         200           National effective policy for eHealth         No         30°         -         -           National effective policy for eHealth         No         30°         -         -         -           National information policy for eHealth         No         30°         - <th></th>   |                                       |
|---|---------------------------------------|
| GOOD       GMI per capita (PPP Int \$)       2 000       Per capita total health expenditure (PPP Int \$)       77       ICT Development index rank         World Bank income group       Lower-midde       Hospital bold density (per 10 000 population)       7       Mobile cellular subscriptions (per 100 population)         OECD country       No       Physician density (per 10 000 population)       3.0       Intermet users (per 100 population)         Uite expectancy at bitth (years)       57       Nurse density (per 10 000 population)       9.0       Disability Adjusted Life Years (DALY)         Sources:       See page ix       I.       EHEOLIDh foundation actions build an enabling environment for the use of ICT for health. These include supportive eHe policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and develop capacity of the health work force through training.         I. Policy framework       Country response       Global response (%) <sup>§</sup> Policy implemented       Year of imple         National eGovernment policy       Yes       85 <sup>b</sup> Partly       2000         National elevent policy for health sector       No       37 <sup>b</sup> -       -         National telemedicine policy       Yes       25 <sup>c</sup> Partly       2000         National telemedicine policy       Yes       25 <sup>c</sup> Partly       -         Na   | 36.29<br>—<br>38 563                  |
| Opposite       World Bank income group       Lower-middle       Hospital bed density (per 10 000 population)       7       Mobile cellular subscriptions (per 100 population)         DECD country       No       Physician density (per 10 000 population)       3.0       Internet users (per 100 population)         Sources: See page ix       57       Nurse density (per 10 000 population)       9.0       Disability Adjusted Life Years (DALY)         Behalth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHe policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and develop capacity of the health work force through training.         I. Policy framework       Country response       Global response (%)*       Policy implemented       Year of imple         National eGovernment policy       Yes       85 <sup>b</sup> Partly       200         National ICT procurement policy for health sector       No       30 <sup>b</sup> -       -         National telemedicine policy       Yes       25 <sup>c</sup> Partly       200         National telemedicine policy       Yes       25 <sup>c</sup> Partly       200         National telemedicine policy       Yes       25 <sup>c</sup> Partly       -         National telemedicine policy       Yes       25 <sup>c</sup> Partly       -  |                                       |
| Open CECD country       No       Physician density (per 10 000 population)       3.0       Internet users (per 100 population)         Utile expectancy at birth (years)       57       Nurse density (per 10 000 population)       9.0       Disability Adjusted Life Years (DALY)         Sources: See page ix       I       CHECOLTh foundation actions build an enabling environment for the use of ICT for health. These include supportive eHe policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and develop capacity of the health work force through training.         I. Policy framework       Country response       Global response (%) <sup>5</sup> Policy implemented       Year of implemented various and through training.         National eGovernment policy       Yes       35°       Partly       200         National eHealth policy for health sector       No       37°       -       -         National telemedicine policy       Yes       25°       Partly       200         National telemedicine policy       Yes       25°       Partly       200         I. Legal and ethical frameworks for eHealth       No       30°       -       -       -         I. Legal and ethical frameworks for eHealth       No       30°       -       -       -         I. Legal and ethical frameworks for eHealth       No       37°       -   | alth                                  |
| Iffe expectancy at birth (years)       57       Nurse density (per 10 000 population)       9.0       Disability Adjusted Life Years (DALY)         Sources: See page ix         I.       eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHe policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and develop capacity of the health work force through training.         I. Policy framework       Country response       Global response (%) <sup>§</sup> Policy implemented       Year of implemented         National eGovernment policy       Yes       85°       Partly       200         National eGovernment policy       Yes       55°       Partly       200         National eHealth policy for health sector       No       37°       -       -         National nulticulturalism policy for eHealth       No       30°       -       -         National telemedicine policy       Yes       25°       Partly       -       -         I. Legal and ethical frameworks for eHealth       No       30°       -       -       -         Legislation on personal and health-related data       To ensure privacy of personally identifiable data specifically in EMR or EHR <sup>1</sup> No       30       31   | alth                                  |
| Sources: See page ix         I. eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHe policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and develop capacity of the health work force through training.         I. Policy framework         Country response       Global response (%) <sup>§</sup> Policy implemented Year of imple capacity of the health work force through training.         National eGovernment policy       Yes       85°       Partly       200         National eGovernment policy       Yes       55°       Partly       200         National eGovernment policy for health sector       No       37°       -       -         National ICT procurement policy for eHealth       No       30°       -       -         National ulticulturalism policy for eHealth       No       30°       -       -         National telemedicine policy       Yes       25°       Partly       -         II. Legal and ethical frameworks for eHealth       No       30°       -       -         Legislation on personal and health-related data       Country response       Global response         Legislation on personal and health-related data       No       70         To ensure privacy of perso   |                                       |
| Image: Description of the sector in the s |                                       |
| I. Policy framework       Country response       Global response (%) <sup>s</sup> Policy implemented       Year of imple         National eGovernment policy       Yes       85 <sup>b</sup> Partly       200         National eHealth policy       Yes       55 <sup>b</sup> Partly       200         National ICT procurement policy for health sector       No       37 <sup>b</sup> -       -         National multiculturalism policy for eHealth       No       30 <sup>b</sup> -       -         National telemedicine policy       Yes       25 <sup>c</sup> Partly       -         National telemedicine policy       Yes       25 <sup>c</sup> Partly       -         II. Legal and ethical frameworks for eHealth       No       30 <sup>b</sup> -       -         Legislation on personal and health-related data       Country response       Global response         COULT       To ensure privacy of personally identifiable data       No       70         To protect personally identifiable data specifically in EMR or EHR <sup>1</sup> No       31  | · · · · · · · · · · · · · · · · · · · |
| Opposite       Country response       Global response (%) <sup>§</sup> Policy implemented       Year of implemented         National eGovernment policy       Yes       85 <sup>b</sup> Partly       200         National eHealth policy       Yes       55 <sup>b</sup> Partly       200         National ICT procurement policy for health sector       No       37 <sup>b</sup> -       -         National multiculturalism policy for eHealth       No       30 <sup>b</sup> -       -         National telemedicine policy       Yes       25 <sup>c</sup> Partly       -         National telemedicine policy       Yes       25 <sup>c</sup> Partly       -         IL Legal and ethical frameworks for eHealth       No       30 <sup>b</sup> -       -         Legislation on personal and health-related data       Egislation on personal and health-related data       No       70         To ensure privacy of personally identifiable data specifically in EMR or EHR <sup>1</sup> No       31  |                                       |
| National eGovernment policy       Yes       85b       Partly       200         National eHealth policy       Yes       55b       Partly       200         National eHealth policy       Yes       55b       Partly       200         National ICT procurement policy for health sector       No       37b       -       -         National multiculturalism policy for eHealth       No       30b       -       -         National telemedicine policy       Yes       25c       Partly       -         National telemedicine policy       Yes       25c       Partly       -         II. Legal and ethical frameworks for eHealth       Country response       Global response       Clobal response         Legislation on personal and health-related data       To ensure privacy of personally identifiable data       No       70         To protect personally identifiable data specifically in EMR or EHR <sup>1</sup> No       31   | nentation                             |
| National eHealth policy       Yes       55 <sup>b</sup> Partly       200         National ICT procurement policy for health sector       No       37 <sup>b</sup> -       - <td></td>   |                                       |
| National IC1 procurement policy for health sector       No       37°       -  | ;                                     |
| National multiculturalism policy for eHealth       No       30°       -       <   |                                       |
| National telemedicine policy       Yes       25°       Partiy       –         II. Legal and ethical frameworks for eHealth       Country response       Global response         Legislation on personal and health-related data       To ensure privacy of personally identifiable data       No       70         To protect personally identifiable data specifically in EMR or EHR1       No       31   |                                       |
| II. Legal and ethical frameworks for eHealth         Country response       Global response         Legislation on personal and health-related data         To ensure privacy of personally identifiable data         No       70         To protect personally identifiable data specifically in EMR or EHR <sup>1</sup> No       31   |                                       |
| Second and health-related data         Construction       No       70         Construction       No       70         Construction       No       31   | nse (%)ª§                             |
| To ensure privacy of personally identifiable data     No     70       Image: Description of the personally identifiable data specifically in EMR or EHR <sup>1</sup> No     31  |                                       |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup> No 31   |                                       |
|   |                                       |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup>  |                                       |
| Within the same health care facility and its network of care providers         No         26           Within the same health care facility and its network of care providers         No         26   |                                       |
| With different health care entities within the country     No     23       With health care entities in other countries     No     11   |                                       |
| With health care entities in other countries No 11 Internet pharmacies  |                                       |
| Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Pr   | hibite: 10                            |
| National regulation/accreditation/certification of Internet pharmacy sites         No         7   | 110113. 13                            |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Pr   | hibits: 12                            |
| Internet safety   | 110103.12                             |
| Government sponsored initiatives about Internet safety and literacy <b>Do not know</b> 47   |                                       |
| Security tools required by law for facilities used by children Do not know 22   |                                       |
| Quality assurance approaches to health-related Internet content   |                                       |
| Voluntary compliance by content providers or web site owners <b>Yes</b> 56  |                                       |
| Technology through filters and controls No 28   |                                       |
| Government intervention through laws or regulations Yes 26  |                                       |
| Education programmes for consumers and professionals No 23  |                                       |
| Official approval through certification, accreditation, or quality seals Yes 17   |                                       |

| orioanti experianta co ana mening couroo |                |                            |          |                            |          |                            |          |                                     |
|--|----------------|----------------------------|----------|----------------------------|----------|----------------------------|----------|-------------------------------------|
| Expenditure                              | Public funding |                            | Private  | funding                    |          | on-public<br>ding          |          | <private<br>ps funding</private<br> |
|  | Country        | Global                     | Country  | Global                     | Country  | Global                     | Country  | Global                              |
|  | response       | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup>          |
| ICT equipment                            | Yes            | 78                         | —        | 37                         | Yes      | 59                         | —        | 28                                  |
| Software                                 | Yes            | 76                         | —        | 35                         | Yes      | 56                         | —        | 29                                  |
| Pilot projects                           | Yes            | 69                         | —        | 33                         | Yes      | 51                         | _        | 28                                  |
| Skills training                          | No             | 61                         | —        | 26                         | No       | 43                         | —        | 20                                  |
| Ongoing support                          | No             | 61                         | _        | 19                         | No       | 35                         | _        | 18                                  |
| Scholarships                             | No             | 28                         | —        | 8                          | No       | 19                         | —        | 4                                   |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |  |  |  |  |  |
|---|------------------|-----------------------------------|--|--|--|--|--|
|   | Country response | Global response (%) <sup>c§</sup> |  |  |  |  |  |
| Telemedicine enabling actions   |                  |                                   |  |  |  |  |  |
| National telemedicine policy  | Yes              | 25                                |  |  |  |  |  |
| Implemented national telemedicine policy                                    | Partly           | -                                 |  |  |  |  |  |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |  |  |  |  |  |
| Barriers to implementing telemedicine solutions                             |                  |                                   |  |  |  |  |  |
| Perceived costs too high  | Yes              | 60                                |  |  |  |  |  |
| Lack of legal policies/regulation   | No               | 40                                |  |  |  |  |  |
| Organizational culture not supportive                                       | Yes              | 39                                |  |  |  |  |  |
| Underdeveloped infrastructure   | No               | 38                                |  |  |  |  |  |
| Lack of policy frameworks   | No               | 37                                |  |  |  |  |  |
| Competing priorities  | Yes              | 37                                |  |  |  |  |  |
| Lack of demand by health professionals                                      | No               | 31                                |  |  |  |  |  |
| Lack of nationally adopted standards  | No               | 26                                |  |  |  |  |  |
| Lack of knowledge of applications   | Yes              | 25                                |  |  |  |  |  |
| Lack of technical expertise   | No               | 17                                |  |  |  |  |  |
| Information most needed in country to support telemedicine development      |                  |                                   |  |  |  |  |  |
| Cost and cost effectiveness   | No               | 69                                |  |  |  |  |  |
| Clinical possibilities  | Yes              | 58                                |  |  |  |  |  |
| Infrastructure  | No               | 52                                |  |  |  |  |  |
| Evaluation  | Yes              | 46                                |  |  |  |  |  |
| Legal and ethical   | No               | 45                                |  |  |  |  |  |
| Effect on human resources   | Yes              | 40                                |  |  |  |  |  |
| Patients' perception  | Yes              | 30                                |  |  |  |  |  |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%)°§ |
|--|------------------|-----------------------|
| eLearning in health sciences at the tertiary level |                  |                       |
| Used in teaching health sciences                   | Yes              | 72                    |
| Used in training health professionals              | Yes              | 69                    |
| Barriers to eLearning                              |                  |                       |
| Underdeveloped infrastructure                      | No               | 64                    |
| Lack of policy framework                           | Yes              | 63                    |
| Lack of skilled course developers                  | Yes              | 55                    |
| Lack of knowledge of applications                  | Yes              | 46                    |
| Perceived costs too high                           | Yes              | 45                    |
| Availability of suitable courses                   | No               | 42                    |
| Lack of demand                                     | No               | 21                    |

## IIIb. eLearning target groups

| Profession    | Students         |                       | Students Professionals |                       |
|---------------|------------------|-----------------------|------------------------|-----------------------|
|               | Country response | Global response (%)°§ | Country response       | Global response (%)c§ |
| Medical       | Yes              | 68                    | Yes                    | 71                    |
| Public health | Yes              | 52                    | Yes                    | 56                    |
| Nursing       | No               | 50                    | No                     | 55                    |
| Pharmacy      | No               | 45                    | No                     | 37                    |
| Dentistry     | No               | 39                    | No                     | 37                    |
| a n-113       |                  |                       |                        |                       |

# Swaziland

|                | ntry<br>Itors           | Population (000s)                | 1 168  | Total health expenditure (%GDP)                  | 5.9  | ICT Development Index                 | 1.90   |
|----------------|-------------------------|----------------------------------|--|--|--|---------------------------------------|--------|
|                |                         | GNI per capita (PPP Int \$)      | 4 580  | Per capita total health expenditure (PPP Int \$) | 291  | ICT Development Index rank            | 115    |
| Coun<br>indica | World Bank income group | Lower-middle                     | Hospital bed density (per 10 000 population) | 21   | Mobile cellular subscriptions (per 100 population) | 55.36                                 |        |
|                | OECD country            | No                               | Physician density (per 10 000 population)    | 1.6  | Internet users (per 100 population)                | 7.60                                  |        |
|                |                         | Life expectancy at birth (years) | 48   | Nurse density (per 10 000 population)            | 63.1   | Disability Adjusted Life Years (DALY) | 55 883 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

| n i olioy namonork                                |                  |                      |                    |                        |
|---|------------------|----------------------|--------------------|------------------------|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
| National eGovernment policy                       | No data          | 85 <sup>b</sup>      | No data            | No data                |
| National eHealth policy                           | No data          | 55 <sup>b</sup>      | No data            | No data                |
| National ICT procurement policy for health sector | No data          | 37 <sup>b</sup>      | No data            | No data                |
| National multiculturalism policy for eHealth      | No data          | 30 <sup>b</sup>      | No data            | No data                |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data No data 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No data 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No data 26 With different health care entities within the country No data 23 With health care entities in other countries No data 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No data Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No data 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No data Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No data 47 Security tools required by law for facilities used by children No data 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No data 56 Technology through filters and controls No data 28 Government intervention through laws or regulations No data 26 Education programmes for consumers and professionals No data 23 Official approval through certification, accreditation, or quality seals No data 17

### III eHealth expenditures and their funding source

| Expenditure     | Public           | funding                              | Private funding  |                                      | nding Private funding Donor/non-public funding |                                      |                  | Public-private<br>partnerships funding |  |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|--|--------------------------------------|------------------|--|--|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response                               | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup>   |  |
| ICT equipment   | No data          | 78                                   | No data          | 37                                   | No data  | 59                                   | No data          | 28                                     |  |
| Software        | No data          | 76                                   | No data          | 35                                   | No data  | 56                                   | No data          | 29                                     |  |
| Pilot projects  | No data          | 69                                   | No data          | 33                                   | No data  | 51                                   | No data          | 28                                     |  |
| Skills training | No data          | 61                                   | No data          | 26                                   | No data  | 43                                   | No data          | 20                                     |  |
| Ongoing support | No data          | 61                                   | No data          | 19                                   | No data  | 35                                   | No data          | 18                                     |  |
| Scholarships    | No data          | 28                                   | No data          | 8                                    | No data  | 19                                   | No data          | 4                                      |  |

#### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No data          | 77                                |
| Institutions offer continuing education in ICT for health professionals | No data          | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | No data          | 73                                |
| Nursing   | No data          | 62                                |
| Public health   | No data          | 60                                |
| Dentistry   | No data          | 54                                |
| Pharmacy  | No data          | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | _                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | Yes              | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | Yes              | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No data          | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

## IIIb. eLearning target groups

| Stud             | dents  | Professionals   |  |  |
|------------------|--|---|--|--|
| Country response | Country response Global response (%) <sup>o§</sup> |   | Global response (%) c§   |  |
| No               | 68   | Yes   | 71   |  |
| No               | 52   | Yes   | 56   |  |
| No               | 50   | Yes   | 55   |  |
| No               | 45   | Yes   | 37   |  |
| No               | 39   | Yes   | 37   |  |
|                  | Country response No No No No No No No              | No         68           No         52           No         50           No         45 | Country responseGlobal response (%)°\$Country responseNo68YesNo52YesNo50YesNo45Yes |  |

# Switzerland

| 6    | Population (000s)                | 7 541  | Total health expenditure (%GDP)                  | 10.5  | ICT Development Index                              | 7.19   |
|------|----------------------------------|--------|--|-------|--|--------|
| tor  | GNI per capita (PPP Int \$)      | 41 830 | Per capita total health expenditure (PPP Int \$) | 4 620 | ICT Development Index rank                         | 7      |
| ica  | World Bank income group          | High   | Hospital bed density (per 10 000 population)     | 55    | Mobile cellular subscriptions (per 100 population) | 122.30 |
| indi | OECD country                     | Yes    | Physician density (per 10 000 population)        | 39.7  | Internet users (per 100 population)                | 81.30  |
|      | Life expectancy at birth (years) | 82     | Nurse density (per 10 000 population)            | 110.4 | Disability Adjusted Life Years (DALY)              | 9 277  |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

# I. Policy framework Country response Global re

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2007                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2007                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | 2006                   |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | No data            | No data                |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |

#### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 No Technology through filters and controls 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals 17 Yes

## III. eHealth expenditures and their funding source

| in cricatil expenditures and their funding source |          |  |          |  |          |                            |          |                            |
|---|----------|--|----------|--|----------|----------------------------|----------|----------------------------|
| Expenditure                                       | Public   | ublic funding Private funding Donor/non-public funding |          | Public-private<br>partnerships funding |          |                            |          |                            |
|   | Country  | Global   | Country  | Global                                 | Country  | Global                     | Country  | Global                     |
|   | response | response (%) <sup>b§</sup>                             | response | response (%) <sup>b§</sup>             | response | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> |
| ICT equipment                                     | No       | 78   | No       | 37                                     | _        | 59                         | Yes      | 28                         |
| Software  | No       | 76   | No       | 35                                     | _        | 56                         | Yes      | 29                         |
| Pilot projects                                    | No       | 69   | No       | 33                                     | _        | 51                         | Yes      | 28                         |
| Skills training                                   | No       | 61   | No       | 26                                     | _        | 43                         | Yes      | 20                         |
| Ongoing support                                   | Yes      | 61   | No       | 19                                     | _        | 35                         | Yes      | 18                         |
| Scholarships                                      | No       | 28   | No       | 8                                      | —        | 19                         | Yes      | 4                          |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Do not know      | 77                                |
| Institutions offer continuing education in ICT for health professionals | Do not know      | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | —                | 54                                |
| Pharmacy  | _                | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | No               | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | Yes              | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Yes              | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Syrian Arab Republic

21 227

4 620

Lower-middle

|      | Population (000s)                |
|------|----------------------------------|
| tors | GNI per capita (PPP Int \$)      |
| icat | World Bank income group          |
| ind  | OECD country                     |
|      | Life expectancy at birth (years) |

| 227   | Total health expenditure (%GDP)                  | 3.2  | ICT Development Index                              |
|-------|--|------|--|
| 620   | Per capita total health expenditure (PPP Int \$) | 143  | ICT Development Index rank                         |
| iddle | Hospital bed density (per 10 000 population)     | 15   | Mobile cellular subscriptions (per 100 population) |
| No    | Physician density (per 10 000 population)        | 5.3  | Internet users (per 100 population)                |
| 72    | Nurse density (per 10 000 population)            | 14.0 | Disability Adjusted Life Years (DALY)              |

2.76

45.57

20.40

16 167

٦)

93

Sources: See page ix

Country

I.

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                      |                    |                        |
|---|------------------|----------------------|--------------------|------------------------|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2009                   |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | Do not know      | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No               | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | Yes              | 17                                |

|--|

| in onoann oxponant |                     |                                      |                  |                                      |                  |                                      |                  |                                      |
|--------------------|---------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|
| Expenditure        | Public              | Public funding                       |                  | Private funding                      |                  | Donor/non-public<br>funding          |                  | <pre> private ps funding </pre>      |
|                    | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment      | Yes                 | 78                                   | Yes              | 37                                   | Yes              | 59                                   | Yes              | 28                                   |
| Software           | Yes                 | 76                                   | Yes              | 35                                   | Yes              | 56                                   | Yes              | 29                                   |
| Pilot projects     | Yes                 | 69                                   | Yes              | 33                                   | No               | 51                                   | Yes              | 28                                   |
| Skills training    | Yes                 | 61                                   | No               | 26                                   | Yes              | 43                                   | No               | 20                                   |
| Ongoing support    | No                  | 61                                   | No               | 19                                   | No               | 35                                   | No               | 18                                   |
| Scholarships       | Yes                 | 28                                   | No               | 8                                    | Yes              | 19                                   | No               | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | -                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | Yes              | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 71 Public health No 52 56 \_ Nursing No 50 \_ 55 Pharmacy Yes 45 \_ 37 Dentistry Yes 39 37 <sup>a</sup> n=113

# Thailand

1.

| so lo      | Population (000s)                | 67 386       | Total health expenditure (%GDP)                  | 4.0  | ICT Development Index                              | 3.27   |
|------------|----------------------------------|--------------|--|------|--|--------|
| try        | GNI per capita (PPP Int \$)      | 7 640        | Per capita total health expenditure (PPP Int \$) | 323  | ICT Development Index rank                         | 76     |
| jun<br>ica | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 22   | Mobile cellular subscriptions (per 100 population) | 97.33  |
| ind C      | OECD country                     | No           | Physician density (per 10 000 population)        | 3.1  | Internet users (per 100 population)                | 25.80  |
|            | Life expectancy at birth (years) | 70           | Nurse density (per 10 000 population)            | 13.6 | Disability Adjusted Life Years (DALY)              | 20 216 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                        |                    |                        |  |  |  |
|---|------------------|------------------------|--------------------|------------------------|--|--|--|
|   | Country response | Global response (%)§   | Policy implemented | Year of implementation |  |  |  |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>        | Yes                | 2002                   |  |  |  |
| National eHealth policy                           | No               | 55 <sup>⊳</sup>        | —                  | —                      |  |  |  |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>        | —                  | —                      |  |  |  |
| National multiculturalism policy for eHealth      | No               | <b>30</b> <sup>b</sup> | —                  | —                      |  |  |  |
| National telemedicine policy                      | No               | 25°                    | _                  | _                      |  |  |  |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | Yes              | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | Yes              | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III. eHealth expenditures and their funding source

| in orioatin experiate et a tren ranang eeuroo |                  |                                      |                  |                                      |                  |                                      |                  |                                      |  |
|---|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|--|
| Expenditure                                   | Public funding   |                                      | Private          | funding                              |                  | on-public<br>ding                    |                  | <pre> private ps funding </pre>      |  |
|   | Country response | Global<br>response (%) <sup>b§</sup> |  |
| ICT equipment                                 | Yes              | 78                                   | _                | 37                                   | Yes              | 59                                   | No               | 28                                   |  |
| Software                                      | Yes              | 76                                   | _                | 35                                   | Yes              | 56                                   | No               | 29                                   |  |
| Pilot projects                                | Yes              | 69                                   | _                | 33                                   | Yes              | 51                                   | Yes              | 28                                   |  |
| Skills training                               | Yes              | 61                                   | _                | 26                                   | Yes              | 43                                   | Yes              | 20                                   |  |
| Ongoing support                               | Yes              | 61                                   | _                | 19                                   | Yes              | 35                                   | No               | 18                                   |  |
| Scholarships                                  | Yes              | 28                                   | —                | 8                                    | Yes              | 19                                   | No               | 4                                    |  |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |  |  |  |  |  |
|---|------------------|-----------------------------------|--|--|--|--|--|
|   | Country response | Global response (%) <sup>c§</sup> |  |  |  |  |  |
| Telemedicine enabling actions   |                  |                                   |  |  |  |  |  |
| National telemedicine policy  | No               | 25                                |  |  |  |  |  |
| Implemented national telemedicine policy                                    | —                | -                                 |  |  |  |  |  |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |  |  |  |  |  |
| Barriers to implementing telemedicine solutions                             |                  |                                   |  |  |  |  |  |
| Perceived costs too high  | Yes              | 60                                |  |  |  |  |  |
| Lack of legal policies/regulation   | No               | 40                                |  |  |  |  |  |
| Organizational culture not supportive                                       | No               | 39                                |  |  |  |  |  |
| Underdeveloped infrastructure   | Yes              | 38                                |  |  |  |  |  |
| Lack of policy frameworks   | Yes              | 37                                |  |  |  |  |  |
| Competing priorities  | No               | 37                                |  |  |  |  |  |
| Lack of demand by health professionals                                      | Yes              | 31                                |  |  |  |  |  |
| Lack of nationally adopted standards  | Yes              | 26                                |  |  |  |  |  |
| Lack of knowledge of applications   | No               | 25                                |  |  |  |  |  |
| Lack of technical expertise   | No               | 17                                |  |  |  |  |  |
| Information most needed in country to support telemedicine development      |                  |                                   |  |  |  |  |  |
| Cost and cost effectiveness   | Yes              | 69                                |  |  |  |  |  |
| Clinical possibilities  | Yes              | 58                                |  |  |  |  |  |
| Infrastructure  | Yes              | 52                                |  |  |  |  |  |
| Evaluation  | Yes              | 46                                |  |  |  |  |  |
| Legal and ethical   | No               | 45                                |  |  |  |  |  |
| Effect on human resources   | No               | 40                                |  |  |  |  |  |
| Patients' perception  | No               | 30                                |  |  |  |  |  |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Togo

| 6   | Population (000s)                | 6 459 | Total health expenditure (%GDP)                  | 6.4 | ICT Development Index                              | 1.36   |
|-----|----------------------------------|-------|--|-----|--|--------|
| tor | GNI per capita (PPP Int \$)      | 850   | Per capita total health expenditure (PPP Int \$) | 71  | ICT Development Index rank                         | 140    |
| Jun | World Bank income group          | Low   | Hospital bed density (per 10 000 population)     | 9   | Mobile cellular subscriptions (per 100 population) | 33.05  |
| ind | OECD country                     | No    | Physician density (per 10 000 population)        | 0.5 | Internet users (per 100 population)                | 5.38   |
|     | Life expectancy at birth (years) | 59    | Nurse density (per 10 000 population)            | 2.7 | Disability Adjusted Life Years (DALY)              | 38 278 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

| in ronoy namonork                                 |                  |                      |                    |                        |
|---|------------------|----------------------|--------------------|------------------------|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
| National eGovernment policy                       | No               | 85 <sup>b</sup>      | —                  | —                      |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |

## II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | No               | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No data          | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | No data          | 56                                |
| Technology through filters and controls  | No data          | 28                                |
| Government intervention through laws or regulations  | No data          | 26                                |
| Education programmes for consumers and professionals   | No data          | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No data          | 17                                |

### III. eHealth expenditures and their funding source

| in cheatin experiations and their funding source |          |                            |          |                            |          |                            |          |                            |
|--|----------|----------------------------|----------|----------------------------|----------|----------------------------|----------|----------------------------|
| Expenditure                                      | Public   | funding                    | Private  | funding                    |          | on-public<br>ding          |          | -private<br>ps funding     |
|  | Country  | Global                     | Country  | Global                     | Country  | Global                     | Country  | Global                     |
|  | response | response (%) <sup>b§</sup> |
| ICT equipment                                    | _        | 78                         | —        | 37                         | _        | 59                         | _        | 28                         |
| Software   | _        | 76                         | —        | 35                         | _        | 56                         | —        | 29                         |
| Pilot projects                                   | _        | 69                         | —        | 33                         | _        | 51                         | —        | 28                         |
| Skills training                                  | _        | 61                         | _        | 26                         | _        | 43                         | _        | 20                         |
| Ongoing support                                  | _        | 61                         | _        | 19                         | _        | 35                         | _        | 18                         |
| Scholarships                                     | —        | 28                         | —        | 8                          | —        | 19                         | —        | 4                          |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | Yes              | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | Yes              | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

## IIIb. eLearning target groups

| Profession    | Students   |    | Professionals    |                       |
|---------------|--|----|------------------|-----------------------|
|               | Country response Global response (%) <sup>c§</sup> |    | Country response | Global response (%)°§ |
| Medical       | Yes  | 68 | Yes              | 71                    |
| Public health | No   | 52 | Yes              | 56                    |
| Nursing       | No   | 50 | No               | 55                    |
| Pharmacy      | Yes  | 45 | Yes              | 37                    |
| Dentistry     | No   | 39 | No               | 37                    |
| a n-113       |  |    |                  |                       |

# Tonga

| \$   | Population (000s)                | 104          | Total health expenditure (%GDP)                  | 4.0  | ICT Development Index                              | —     |
|------|----------------------------------|--------------|--|------|--|-------|
| tors | GNI per capita (PPP Int \$)      | 4 580        | Per capita total health expenditure (PPP Int \$) | 152  | ICT Development Index rank                         | —     |
| jun  | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 24   | Mobile cellular subscriptions (per 100 population) | 50.98 |
| ind  | OECD country                     | No           | Physician density (per 10 000 population)        | 2.9  | Internet users (per 100 population)                | 8.08  |
|      | Life expectancy at birth (years) | 71           | Nurse density (per 10 000 population)            | 34.0 | Disability Adjusted Life Years (DALY)              | —     |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2008                   |
| National eHealth policy                           | No               | 55 <sup>b</sup>      | —                  | —                      |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | _                      |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | Yes              | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | No               | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III. eHealth expenditures and their funding source

| Expenditure     | Public              | c funding Private funding Donor/non-public funding g |                     | Private funding                      |                     |                                      | <ul> <li>private</li> <li>ps funding</li> </ul> |                                      |
|-----------------|---------------------|--|---------------------|--------------------------------------|---------------------|--------------------------------------|---|--------------------------------------|
|                 | Country<br>response | Global<br>response (%) <sup>b§</sup>                 | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response                             | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes                 | 78   | Yes                 | 37                                   | Yes                 | 59                                   | _   | 28                                   |
| Software        | Yes                 | 76   | Yes                 | 35                                   | Yes                 | 56                                   | —   | 29                                   |
| Pilot projects  | No                  | 69   | No                  | 33                                   | Yes                 | 51                                   | —   | 28                                   |
| Skills training | No                  | 61   | No                  | 26                                   | Yes                 | 43                                   | —   | 20                                   |
| Ongoing support | No                  | 61   | No                  | 19                                   | Yes                 | 35                                   | _   | 18                                   |
| Scholarships    | No                  | 28   | No                  | 8                                    | No                  | 19                                   | —   | 4                                    |

## **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No               | 77                                |
| Institutions offer continuing education in ICT for health professionals | No               | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | —                | 73                                |
| Nursing   | —                | 62                                |
| Public health   | —                | 60                                |
| Dentistry   | _                | 54                                |
| Pharmacy  | _                | 54                                |

§ Indicates the percentage of participating Member States responding "Yes" <sup>1</sup> Electronic medical records / Electronic health records

1.

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | —                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No data          | 60                                |
| Lack of legal policies/regulation   | No data          | 40                                |
| Organizational culture not supportive                                       | No data          | 39                                |
| Underdeveloped infrastructure   | No data          | 38                                |
| Lack of policy frameworks   | No data          | 37                                |
| Competing priorities  | No data          | 37                                |
| Lack of demand by health professionals                                      | No data          | 31                                |
| Lack of nationally adopted standards  | No data          | 26                                |
| Lack of knowledge of applications   | No data          | 25                                |
| Lack of technical expertise   | No data          | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No data          | 69                                |
| Clinical possibilities  | No data          | 58                                |
| Infrastructure  | No data          | 52                                |
| Evaluation  | No data          | 46                                |
| Legal and ethical   | No data          | 45                                |
| Effect on human resources   | No data          | 40                                |
| Patients' perception  | No data          | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | No               | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No data          | 53                                |
| Lack of knowledge of applications                           | No data          | 47                                |
| Lack of policy framework                                    | No data          | 44                                |
| Cost effectiveness unknown                                  | No data          | 40                                |
| Lack of legal policies/regulation                           | No data          | 38                                |
| Perceived costs too high                                    | No data          | 37                                |
| Lack of demand  | No data          | 29                                |
| Underdeveloped infrastructure                               | No data          | 26                                |
| Lack of technical expertise                                 | No data          | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)°§ **Country response Country response** Medical Yes 68 No 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Turkey

| <b>(</b> ) | Population (000s)                | 73 914       | Total health expenditure (%GDP)                  | 5.0  | ICT Development Index                              | 3.90   |
|------------|----------------------------------|--------------|--|------|--|--------|
| ton        | GNI per capita (PPP Int \$)      | 13 730       | Per capita total health expenditure (PPP Int \$) | 695  | ICT Development Index rank                         | 57     |
| oun<br>ica | World Bank income group          | Upper-middle | Hospital bed density (per 10 000 population)     | 28   | Mobile cellular subscriptions (per 100 population) | 83.91  |
| ind        | OECD country                     | Yes          | Physician density (per 10 000 population)        | 14.5 | Internet users (per 100 population)                | 36.40  |
|            | Life expectancy at birth (years) | 74           | Nurse density (per 10 000 population)            | 18.9 | Disability Adjusted Life Years (DALY)              | 16 307 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2001                   |
| National eHealth policy                           | Yes              | 55 <sup>⊳</sup>      | Partly             | 2003                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Yes                | Before 2000            |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Yes                | 2008                   |
| National telemedicine policy                      | Yes              | 25°                  | Yes                | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data No 70 To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries Yes 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations **Prohibits** Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries **Prohibits** Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 No Technology through filters and controls 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals No 17

### III. eHealth expenditures and their funding source

| in cricatii experiatares and their randing source |                |                            |  |                            |                             |                            |                                     |                            |  |
|---|----------------|----------------------------|--|----------------------------|-----------------------------|----------------------------|-------------------------------------|----------------------------|--|
| Expenditure                                       | Public funding |                            | Expenditure Public tunding Private tunding |                            | Donor/non-public<br>funding |                            | <private<br>ps funding</private<br> |                            |  |
|   | Country        | Global                     | Country                                    | Global                     | Country                     | Global                     | Country                             | Global                     |  |
|   | response       | response (%) <sup>b§</sup> | response                                   | response (%) <sup>b§</sup> | response                    | response (%) <sup>b§</sup> | response                            | response (%) <sup>b§</sup> |  |
| ICT equipment                                     | Yes            | 78                         | Yes  | 37                         | Yes                         | 59                         | Yes                                 | 28                         |  |
| Software  | No             | 76                         | No   | 35                         | No                          | 56                         | No                                  | 29                         |  |
| Pilot projects                                    | No             | 69                         | No   | 33                         | No                          | 51                         | No                                  | 28                         |  |
| Skills training                                   | No             | 61                         | No   | 26                         | No                          | 43                         | No                                  | 20                         |  |
| Ongoing support                                   | No             | 61                         | No   | 19                         | No                          | 35                         | No                                  | 18                         |  |
| Scholarships                                      | No             | 28                         | No   | 8                          | No                          | 19                         | No                                  | 4                          |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | No               | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | Yes              | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | Yes              | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | Yes              | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | Yes              | 25                                |
| Lack of technical expertise   | Yes              | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | Yes              | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical No 68 Yes 71 Public health No 52 Yes 56 Nursing No 50 Yes 55 Pharmacy No 45 No 37 Dentistry No 39 No 37 <sup>a</sup> n=113

# Turkmenistan

| S    | Population (000s)                | 5 044        | Total health expenditure (%GDP)                  | 1.8  | ICT Development Index                             |
|------|----------------------------------|--------------|--|------|---|
| tors | GNI per capita (PPP Int \$)      | 6 990        | Per capita total health expenditure (PPP Int \$) | 120  | ICT Development Index rank                        |
| ica. | World Bank income group          | Lower-middle | Hospital bed density (per 10 000 population)     | 41   | Mobile cellular subscriptions (per 100 population |
| u p  | OECD country                     | No           | Physician density (per 10 000 population)        | 24.4 | Internet users (per 100 population)               |
|      | Life expectancy at birth (years) | 63           | Nurse density (per 10 000 population)            | 45.2 | Disability Adjusted Life Years (DALY)             |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | No               | 85 <sup>b</sup>      | —                  | —                      |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2006                   |
| National ICT procurement policy for health sector | Do not know      | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Yes                | 2006                   |
| National telemedicine policy                      | Yes              | 25°                  | Yes                | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Do not know Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Do not know 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries Do not know Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Do not know 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 No Technology through filters and controls 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals 17 Yes

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private          | funding                              |                  | on-public<br>ding                    | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | _                | 37                                   | _                | 59                                   | _                                      | 28                                   |
| Software        | Yes              | 76                                   | —                | 35                                   | _                | 56                                   | —                                      | 29                                   |
| Pilot projects  | No               | 69                                   | _                | 33                                   | _                | 51                                   | _                                      | 28                                   |
| Skills training | Yes              | 61                                   | —                | 26                                   | _                | 43                                   | _                                      | 20                                   |
| Ongoing support | No               | 61                                   | —                | 19                                   | _                | 35                                   | _                                      | 18                                   |
| Scholarships    | No               | 28                                   | <u> </u>         | 8                                    | —                | 19                                   | _                                      | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | No               | 54                                |
| Pharmacy  | No               | 54                                |

2.38 108 29.35

1.57 28 344

ion)

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | Yes              | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | Yes              | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | Yes              | 58                                |
| Infrastructure  | Yes              | 52                                |
| Evaluation  | No               | 46                                |
| Legal and ethical   | Yes              | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) c§ |
|--|------------------|------------------------|
| eLearning in health sciences at the tertiary level |                  |                        |
| Used in teaching health sciences                   | Yes              | 72                     |
| Used in training health professionals              | Do not know      | 69                     |
| Barriers to eLearning                              |                  |                        |
| Underdeveloped infrastructure                      | No data          | 64                     |
| Lack of policy framework                           | No data          | 63                     |
| Lack of skilled course developers                  | No data          | 55                     |
| Lack of knowledge of applications                  | No data          | 46                     |
| Perceived costs too high                           | No data          | 45                     |
| Availability of suitable courses                   | No data          | 42                     |
| Lack of demand                                     | No data          | 21                     |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 71 Public health Yes 52 56 — Nursing No 50 \_ 55 Pharmacy Yes 45 \_ 37 Dentistry Yes 39 37 <sup>a</sup> n=113

# United Kingdo

| Country<br>indicators | Population (000s)                | 61 231 | Tota |
|-----------------------|----------------------------------|--------|------|
|                       | GNI per capita (PPP Int \$)      | 37 360 | Per  |
|                       | World Bank income group          | High   | Hos  |
|                       | OECD country                     | Yes    | Phy  |
|                       | Life expectancy at birth (years) | 80     | Nur  |

| tal health expenditure (%GDP)                   | 9.0   | ICT Development Index                              | 7.07   |
|---|-------|--|--------|
| er capita total health expenditure (PPP Int \$) | 3 230 | ICT Development Index rank                         | 10     |
| ospital bed density (per 10 000 population)     | 39    | Mobile cellular subscriptions (per 100 population) | 130.55 |
| nysician density (per 10 000 population)        | 21.4  | Internet users (per 100 population)                | 83.56  |
| urse density (per 10,000 population)            | 63    | Disability Adjusted Life Vears (DALV)              | 11 012 |

Life expectancy at birth (years) Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                   | Yes              | 85 <sup>b</sup>      | Yes                | Before 2000            |
| National eHealth policy                       | Yes              | 55 <sup>b</sup>      | Yes                | 2002                   |
| National ICT procurement policy for health se | ector Yes        | 37 <sup>b</sup>      | Yes                | 2002                   |
| National multiculturalism policy for eHealth  | Yes              | 30 <sup>b</sup>      | Partly             | 2008                   |
| National telemedicine policy                  | Yes              | 25°                  | Yes                | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR1 No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Yes 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals 17 Yes

### III eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private funding  |                                      | Donor/non-public<br>funding |                                      |                  | <private<br>ps funding</private<br>  |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|------------------|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | No               | 37                                   | _                           | 59                                   | No               | 28                                   |
| Software        | Yes              | 76                                   | No               | 35                                   | _                           | 56                                   | Yes              | 29                                   |
| Pilot projects  | Yes              | 69                                   | Yes              | 33                                   | _                           | 51                                   | No               | 28                                   |
| Skills training | Yes              | 61                                   | No               | 26                                   | _                           | 43                                   | No               | 20                                   |
| Ongoing support | Yes              | 61                                   | No               | 19                                   | _                           | 35                                   | Yes              | 18                                   |
| Scholarships    | Yes              | 28                                   | No               | 8                                    | —                           | 19                                   | No               | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Do not know      | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | Yes              | 25                                |
| Implemented national telemedicine policy                                    | Yes              | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | No               | 60                                |
| Lack of legal policies/regulation   | No               | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | No               | 31                                |
| Lack of nationally adopted standards  | No               | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | No               | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | No               | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# United States of America

| S             | Population (000s)                | 311 666 | Total health expenditure (%GDP)                  | 16.0  | ICT Development Index                              | 6.54   |
|---------------|----------------------------------|---------|--|-------|--|--------|
| ntry<br>ators | GNI per capita (PPP Int \$)      | 46 730  | Per capita total health expenditure (PPP Int \$) | 7 536 | ICT Development Index rank                         | 19     |
| lica          | World Bank income group          | High    | Hospital bed density (per 10 000 population)     | 31    | Mobile cellular subscriptions (per 100 population) | 90.78  |
| Cou<br>indic  | OECD country                     | Yes     | Physician density (per 10 000 population)        | 26.7  | Internet users (per 100 population)                | 78.00  |
|               | Life expectancy at birth (years) | 78      | Nurse density (per 10 000 population)            | 98.2  | Disability Adjusted Life Years (DALY)              | 12 844 |

Sources: See page ix

## eHealth foundation actions

II. Legal and ethical frameworks for eHealth

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | No data                |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2006                   |
| National ICT procurement policy for health sector | Do not know      | 37 <sup>b</sup>      | —                  | —                      |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | No               | 25°                  | _                  | _                      |

### **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data No 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> Yes 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Yes 26 With different health care entities within the country Yes 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations Allows Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites Yes 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries **Prohibits** Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Do not know 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls Yes 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals 17 Yes

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private funding  |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |  |  |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|--|--|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |  |  |
| ICT equipment   | Yes              | 78                                   | Yes              | 37                                   | Yes                         | 59                                   | Yes                                    | 28                                   |  |  |
| Software        | Yes              | 76                                   | Yes              | 35                                   | Yes                         | 56                                   | Yes                                    | 29                                   |  |  |
| Pilot projects  | Yes              | 69                                   | Yes              | 33                                   | Yes                         | 51                                   | Yes                                    | 28                                   |  |  |
| Skills training | Yes              | 61                                   | Yes              | 26                                   | Yes                         | 43                                   | No                                     | 20                                   |  |  |
| Ongoing support | Yes              | 61                                   | Yes              | 19                                   | Yes                         | 35                                   | Yes                                    | 18                                   |  |  |
| Scholarships    | Yes              | 28                                   | Yes              | 8                                    | Yes                         | 19                                   | No                                     | 4                                    |  |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>c§</sup> |
| Telemedicine enabling actions   |                  |                                   |
| National telemedicine policy  | No               | 25                                |
| Implemented national telemedicine policy                                    | _                | —                                 |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                                |
| Barriers to implementing telemedicine solutions                             |                  |                                   |
| Perceived costs too high  | Yes              | 60                                |
| Lack of legal policies/regulation   | Yes              | 40                                |
| Organizational culture not supportive                                       | No               | 39                                |
| Underdeveloped infrastructure   | No               | 38                                |
| Lack of policy frameworks   | No               | 37                                |
| Competing priorities  | No               | 37                                |
| Lack of demand by health professionals                                      | Yes              | 31                                |
| Lack of nationally adopted standards  | Yes              | 26                                |
| Lack of knowledge of applications   | No               | 25                                |
| Lack of technical expertise   | No               | 17                                |
| Information most needed in country to support telemedicine development      |                  |                                   |
| Cost and cost effectiveness   | Yes              | 69                                |
| Clinical possibilities  | No               | 58                                |
| Infrastructure  | No               | 52                                |
| Evaluation  | Yes              | 46                                |
| Legal and ethical   | No               | 45                                |
| Effect on human resources   | Yes              | 40                                |
| Patients' perception  | No               | 30                                |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | Do not know      | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%)°§ |
|--|------------------|-----------------------|
| eLearning in health sciences at the tertiary level |                  |                       |
| Used in teaching health sciences                   | Yes              | 72                    |
| Used in training health professionals              | Yes              | 69                    |
| Barriers to eLearning                              |                  |                       |
| Underdeveloped infrastructure                      | Yes              | 64                    |
| Lack of policy framework                           | Yes              | 63                    |
| Lack of skilled course developers                  | Yes              | 55                    |
| Lack of knowledge of applications                  | Yes              | 46                    |
| Perceived costs too high                           | No               | 45                    |
| Availability of suitable courses                   | No               | 42                    |
| Lack of demand                                     | No               | 21                    |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)c§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113 <sup>b</sup> n=112

° n=114

# Uzbekistan

| <b>(</b> )     | Population (000s)                | 27 191 | Total health expenditure (%GDP)                  | 5.0   | ICT Development Index                              | 2.25   |
|----------------|----------------------------------|--------|--|-------|--|--------|
| untry<br>cator | GNI per capita (PPP Int \$)      | 2 890  | Per capita total health expenditure (PPP Int \$) | 134   | ICT Development Index rank                         | 110    |
| oun<br>ica     | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 48    | Mobile cellular subscriptions (per 100 population) | 59.73  |
| ind            | OECD country                     | No     | Physician density (per 10 000 population)        | 26.2  | Internet users (per 100 population)                | 17.06  |
|                | Life expectancy at birth (years) | 68     | Nurse density (per 10 000 population)            | 108.1 | Disability Adjusted Life Years (DALY)              | 21 277 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Do not know      | 85 <sup>b</sup>      | —                  | —                      |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2009                   |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>      | —                  | _                      |
| National multiculturalism policy for eHealth      | Yes              | 30 <sup>b</sup>      | Partly             | 2009                   |
| National telemedicine policy                      | Yes              | 25°                  | Partly             | _                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> 31 Yes Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy Yes 47 Security tools required by law for facilities used by children Yes 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners Yes 56 Technology through filters and controls No 28 Government intervention through laws or regulations No 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals No 17

### III eHealth expenditures and their funding source

| Expenditure     |                  | funding                              | Private funding  |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country                     | Global<br>response (%) <sup>b§</sup> | Country                                | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | Yes              | 37                                   | Yes                         | 59                                   | Yes                                    | 28                                   |
| Software        | No               | 76                                   | Yes              | 35                                   | Yes                         | 56                                   | Yes                                    | 29                                   |
| Pilot projects  | Yes              | 69                                   | Yes              | 33                                   | Yes                         | 51                                   | Yes                                    | 28                                   |
| Skills training | No               | 61                                   | Yes              | 26                                   | No                          | 43                                   | No                                     | 20                                   |
| Ongoing support | No               | 61                                   | No               | 19                                   | No                          | 35                                   | No                                     | 18                                   |
| Scholarships    | No               | 28                                   | No               | 8                                    | No                          | 19                                   | No                                     | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)c§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | Partly           | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Yes              | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | Yes              | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | No               | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | No               | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

| IIIb. eLearning target groups |  |    |                  |                       |  |
|-------------------------------|--|----|------------------|-----------------------|--|
| Profession                    | Students   |    | Professionals    |                       |  |
|                               | Country response Global response (%) <sup>c§</sup> |    | Country response | Global response (%)°§ |  |
| Medical                       | _  | 68 | Yes              | 71                    |  |
| Public health                 | —  | 52 | Yes              | 56                    |  |
| Nursing                       | —  | 50 | Yes              | 55                    |  |
| Pharmacy                      | —  | 45 | Yes              | 37                    |  |
| Dentistry                     | — 39   |    | Yes              | 37                    |  |
| <sup>a</sup> n=113            |  |    |                  |                       |  |

# Viet Nam

| Ś           | Population (000s)                | 87 096 | Total health expenditure (%GDP)                  | 7.3 | ICT Development Index                              | 3.05   |
|-------------|----------------------------------|--------|--|-----|--|--------|
| try<br>tors | GNI per capita (PPP Int \$)      | 2 850  | Per capita total health expenditure (PPP Int \$) | 201 | ICT Development Index rank                         | 86     |
| oun<br>ica  | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 28  | Mobile cellular subscriptions (per 100 population) | 111.53 |
| ind C       | OECD country                     | No     | Physician density (per 10 000 population)        | 5.6 | Internet users (per 100 population)                | 26.55  |
|             | Life expectancy at birth (years) | 73     | Nurse density (per 10 000 population)            | 7.7 | Disability Adjusted Life Years (DALY)              | 17 025 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

## I. Policy framework

|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
|---|------------------|----------------------|--------------------|------------------------|
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>      | Partly             | 2001                   |
| National eHealth policy                           | Yes              | 55 <sup>b</sup>      | Partly             | 2004                   |
| National ICT procurement policy for health sector | Yes              | 37 <sup>b</sup>      | Partly             | No data                |
| National multiculturalism policy for eHealth      | No               | 30 <sup>b</sup>      | —                  | —                      |
| National telemedicine policy                      | Yes              | 25°                  | Partly             | —                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> No 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers No 26 With different health care entities within the country No 23 With health care entities in other countries No 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls No 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals Yes 23 Official approval through certification, accreditation, or quality seals No 17

### III eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Public funding Private funding |                                      | Donor/non-public<br>funding |                                      | Public-private<br>partnerships funding |                                      |
|-----------------|------------------|--------------------------------------|--------------------------------|--------------------------------------|-----------------------------|--------------------------------------|--|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response               | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response                       | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | Yes              | 78                                   | Yes                            | 37                                   | Yes                         | 59                                   | Yes                                    | 28                                   |
| Software        | Yes              | 76                                   | Yes                            | 35                                   | Yes                         | 56                                   | Yes                                    | 29                                   |
| Pilot projects  | Yes              | 69                                   | Yes                            | 33                                   | Yes                         | 51                                   | Yes                                    | 28                                   |
| Skills training | Yes              | 61                                   | Yes                            | 26                                   | Yes                         | 43                                   | Yes                                    | 20                                   |
| Ongoing support | Yes              | 61                                   | No                             | 19                                   | Yes                         | 35                                   | Yes                                    | 18                                   |
| Scholarships    | Yes              | 28                                   | No                             | 8                                    | Yes                         | 19                                   | No                                     | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | Yes              | 25                    |
| Implemented national telemedicine policy                                    | Partly           | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | Do not know      | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | Yes              | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | No               | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | Yes              | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

### Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | No               | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | Yes              | 46                                |
| Perceived costs too high                           | No               | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

### IIIb. eLearning target groups Students Professionals Profession Global response (%)c§ Global response (%)°§ **Country response Country response** Medical Yes 68 Yes 71 Public health Yes 52 Yes 56 Nursing Yes 50 Yes 55 Pharmacy Yes 45 Yes 37 Dentistry Yes 39 Yes 37 <sup>a</sup> n=113

# Yemen

1.

| s s         | Population (000s)                | 22 917 | Total health expenditure (%GDP)                  | 3.7 | ICT Development Index                              | 1.52   |
|-------------|----------------------------------|--------|--|-----|--|--------|
| tor         | GNI per capita (PPP Int \$)      | 2 340  | Per capita total health expenditure (PPP Int \$) | 104 | ICT Development Index rank                         | 129    |
| oun<br>lica | World Bank income group          |        | Hospital bed density (per 10 000 population)     | 7   | Mobile cellular subscriptions (per 100 population) | 35.25  |
| in C        | OECD country                     | No     | Physician density (per 10 000 population)        | 3.3 | Internet users (per 100 population)                | 9.96   |
|             | Life expectancy at birth (years) | 64     | Nurse density (per 10 000 population)            | 6.6 | Disability Adjusted Life Years (DALY)              | 32 541 |

Sources: See page ix

# eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

| I. Policy framework                               |                  |                        |                    |                        |  |  |  |
|---|------------------|------------------------|--------------------|------------------------|--|--|--|
|   | Country response | Global response (%)§   | Policy implemented | Year of implementation |  |  |  |
| National eGovernment policy                       | Yes              | 85 <sup>b</sup>        | Yes                | 2002                   |  |  |  |
| National eHealth policy                           | No               | 55 <sup>⊳</sup>        | —                  | —                      |  |  |  |
| National ICT procurement policy for health sector | No               | 37 <sup>b</sup>        | —                  | —                      |  |  |  |
| National multiculturalism policy for eHealth      | No               | <b>30</b> <sup>b</sup> | —                  | —                      |  |  |  |
| National telemedicine policy                      | No               | 25°                    | _                  | —                      |  |  |  |

| II. Legal and ethical frameworks for eHealth   |                  |                                   |
|--|------------------|-----------------------------------|
|  | Country response | Global response (%) <sup>a§</sup> |
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | Yes              | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | Do not know      | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | No               | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations  | Yes              | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III. eHealth expenditures and their funding source

| in onoann oxponant |                     | in randing oo                        | 4.00                |                                      |                             |                                      |                     |                                      |
|--------------------|---------------------|--------------------------------------|---------------------|--------------------------------------|-----------------------------|--------------------------------------|---------------------|--------------------------------------|
| Expenditure        | Public funding      |                                      | Private funding     |                                      | Donor/non-public<br>funding |                                      |                     | -private<br>ps funding               |
|                    | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country<br>response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment      | —                   | 78                                   | _                   | 37                                   | Yes                         | 59                                   | _                   | 28                                   |
| Software           | —                   | 76                                   | —                   | 35                                   | Yes                         | 56                                   | —                   | 29                                   |
| Pilot projects     | _                   | 69                                   | _                   | 33                                   | Yes                         | 51                                   | _                   | 28                                   |
| Skills training    | _                   | 61                                   | _                   | 26                                   | Yes                         | 43                                   | _                   | 20                                   |
| Ongoing support    | —                   | 61                                   | _                   | 19                                   | Yes                         | 35                                   | _                   | 18                                   |
| Scholarships       | —                   | 28                                   | _                   | 8                                    | No                          | 19                                   | _                   | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | No               | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | -                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | Yes              | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | No               | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | No               | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | Yes              | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No data          | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | No               | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | Yes              | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | Yes              | 42                                |
| Lack of demand                                     | No               | 21                                |

## IIIb. eLearning target groups Profession Students

|               | Country response | Global response (%)** | Country response | Global response (%)* |
|---------------|------------------|-----------------------|------------------|----------------------|
| Medical       | Yes              | 68                    | Yes              | 71                   |
| Public health | No               | 52                    | Yes              | 56                   |
| Nursing       | Yes              | 50                    | No               | 55                   |
| Pharmacy      | Yes              | 45                    | Yes              | 37                   |
| Dentistry     | Yes              | 39                    | Yes              | 37                   |
| an-113        |                  |                       |                  |                      |

Professionals

Olahal w

# Zambia

| S     | Population (000s)                | 12 620 | Total health expenditure (%GDP)  | 6.0 | ICT Development Index                              | 1.42   |
|-------|----------------------------------|--------|--|-----|--|--------|
| tor   | GNI per capita (PPP Int \$)      | 1 280  | Per capita total health expenditure (PPP Int \$) 81 ICT Development Index rank |     | ICT Development Index rank                         | 136    |
| Jun   | World Bank income group          | Low    | Hospital bed density (per 10 000 population)                                   | 19  | Mobile cellular subscriptions (per 100 population) | 34.07  |
| ind C | OECD country                     | No     | Physician density (per 10 000 population)                                      | 0.6 | Internet users (per 100 population)                | 6.31   |
|       | Life expectancy at birth (years) | 48     | Nurse density (per 10 000 population)  | 7.1 | Disability Adjusted Life Years (DALY)              | 62 024 |

Sources: See page ix

## eHealth foundation actions

eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the capacity of the health work force through training.

### I. Policy framework

| n i olioy namonork                                |                  |                      |                    |                        |
|---|------------------|----------------------|--------------------|------------------------|
|   | Country response | Global response (%)§ | Policy implemented | Year of implementation |
| National eGovernment policy                       | No data          | 85 <sup>b</sup>      | No data            | No data                |
| National eHealth policy                           | No data          | 55 <sup>b</sup>      | No data            | No data                |
| National ICT procurement policy for health sector | No data          | 37 <sup>b</sup>      | No data            | No data                |
| National multiculturalism policy for eHealth      | No data          | 30 <sup>b</sup>      | No data            | No data                |
| National telemedicine policy                      | No               | 25°                  | —                  | _                      |

### II. Legal and ethical frameworks for eHealth **Country response** Global response (%)<sup>a§</sup> Legislation on personal and health-related data To ensure privacy of personally identifiable data Yes 70 To protect personally identifiable data specifically in EMR or EHR<sup>1</sup> Yes 31 Legislation for sharing health-related data between health care staff through EMR/EHR<sup>1</sup> Within the same health care facility and its network of care providers Do not know 26 With different health care entities within the country Do not know 23 With health care entities in other countries Do not know 11 Internet pharmacies Legislation that allows/prohibits Internet pharmacy operations No Allows: 7, Prohibits: 19 National regulation/accreditation/certification of Internet pharmacy sites No 7 Legislation that allows/prohibits Internet pharmacy purchases from other countries No Allows: 6, Prohibits: 12 Internet safety Government sponsored initiatives about Internet safety and literacy No 47 Security tools required by law for facilities used by children No 22 Quality assurance approaches to health-related Internet content Voluntary compliance by content providers or web site owners No 56 Technology through filters and controls No 28 Government intervention through laws or regulations Yes 26 Education programmes for consumers and professionals No 23 Official approval through certification, accreditation, or quality seals Yes 17

### III. eHealth expenditures and their funding source

| Expenditure     | Public funding   |                                      | Private funding  |                                      | Donor/non-public<br>funding |                                      |                  | -private<br>ips funding              |
|-----------------|------------------|--------------------------------------|------------------|--------------------------------------|-----------------------------|--------------------------------------|------------------|--------------------------------------|
|                 | Country response | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> | Country response            | Global<br>response (%) <sup>b§</sup> | Country response | Global<br>response (%) <sup>b§</sup> |
| ICT equipment   | No data          | 78                                   | No data          | 37                                   | No data                     | 59                                   | No data          | 28                                   |
| Software        | No data          | 76                                   | No data          | 35                                   | No data                     | 56                                   | No data          | 29                                   |
| Pilot projects  | No data          | 69                                   | No data          | 33                                   | No data                     | 51                                   | No data          | 28                                   |
| Skills training | No data          | 61                                   | No data          | 26                                   | No data                     | 43                                   | No data          | 20                                   |
| Ongoing support | No data          | 61                                   | No data          | 19                                   | No data                     | 35                                   | No data          | 18                                   |
| Scholarships    | No data          | 28                                   | No data          | 8                                    | No data                     | 19                                   | No data          | 4                                    |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | No data          | 77                                |
| Institutions offer continuing education in ICT for health professionals | No data          | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | No data          | 73                                |
| Nursing   | No data          | 62                                |
| Public health   | No data          | 60                                |
| Dentistry   | No data          | 54                                |
| Pharmacy  | No data          | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   |                  |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No data          | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | No               | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | Yes              | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | Yes              | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | No               | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | Yes              | 53                                |
| Lack of knowledge of applications                           | Yes              | 47                                |
| Lack of policy framework                                    | No               | 44                                |
| Cost effectiveness unknown                                  | No               | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | Yes              | 29                                |
| Underdeveloped infrastructure                               | No               | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | No               | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | No               | 63                                |
| Lack of skilled course developers                  | Yes              | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | Yes              | 21                                |

## IIIb. eLearning target groups

| Stud             | dents  | Professionals   |   |  |
|------------------|--|---|---|--|
| Country response | Country response Global response (%) <sup>c§</sup> C |   | Global response (%) c§  |  |
| Yes              | 68   | Yes   | 71  |  |
| Yes              | 52   | Yes   | 56  |  |
| Yes              | 50   | Yes   | 55  |  |
| Yes              | 45   | Yes   | 37  |  |
| Yes              | 39   | Yes   | 37  |  |
|                  | Country response<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes  | Yes         68           Yes         52           Yes         50           Yes         45 | Country responseGlobal response (%)°§Country responseYes68YesYes52YesYes50YesYes45Yes |  |

| 6           | Population (000s)                | 12 463 | Total health expenditure (%GDP)                  | 12.2 | ICT Development Index                              | 1.51   |
|-------------|----------------------------------|--------|--|------|--|--------|
| try<br>tors | GNI per capita (PPP Int \$)      | _      | Per capita total health expenditure (PPP Int \$) | 20   | ICT Development Index rank                         | 130    |
| oun<br>ica  | World Bank income group          | Low    | Hospital bed density (per 10 000 population)     | 30   | Mobile cellular subscriptions (per 100 population) | 23.88  |
| ind         | OECD country                     | No     | Physician density (per 10 000 population)        | 1.6  | Internet users (per 100 population)                | 11.36  |
|             | Life expectancy at birth (years) | 42     | Nurse density (per 10 000 population)            | 7.2  | Disability Adjusted Life Years (DALY)              | 82 801 |

# eHealth foundation actions

|                       | Zi   | mbabv                           | Ve        |                                    |                 |                        |                                   |                    |          |
|-----------------------|--|---------------------------------|-----------|------------------------------------|-----------------|------------------------|-----------------------------------|--------------------|----------|
| C                     | S  | Population (000s)               | 12 463    | Total health expenditure (%GDF     | °)              | 12.2                   | ICT Development Index             |                    | 1.51     |
| Region                | Country<br>indicators  | GNI per capita (PPP Int \$)     | —         | Per capita total health expenditur | re (PPP Int \$) | 20                     | ICT Development Index rank        |                    | 130      |
| $\overline{\bigcirc}$ | lica   | World Bank income group         | Low       | Hospital bed density (per 10 00    | 0 population)   | 30                     | Mobile cellular subscriptions (pe | er 100 population) | 23.88    |
|                       | in C   | OECD country                    | No        | Physician density (per 10 000 p    | opulation)      | 1.6                    | Internet users (per 100 populat   | tion)              | 11.36    |
| Ř                     | Life expectancy at birth (years) 42 Nurse density (per 10 000 population) 7.2 Disability Adjusted Life Years (DALY) 82 801   |                                 |           |                                    |                 |                        |                                   |                    | 82 801   |
| African               | Sources: See page ix<br>. eHealth foundation actions build an enabling environment for the use of ICT for health. These include supportive eHealth<br>policy, legal and ethical frameworks; adequate funding from various sources; infrastructure development; and developing the<br>capacity of the health work force through training. |                                 |           |                                    |                 |                        |                                   |                    |          |
| 4                     | I. Pol   | icy framework                   |           |                                    |                 |                        |                                   |                    |          |
| $\bigcirc$            |  |                                 |           | Country response                   | Global res      | ponse (%) <sup>§</sup> | Policy implemented                | Year of implem     | entation |
| МНО                   | National eGovernment policy Yes 85 <sup>b</sup> No –   |                                 |           |                                    |                 |                        |                                   |                    |          |
| $\geq$                | National eHealth policy         No         55 <sup>b</sup> —         —   |                                 |           |                                    |                 |                        |                                   |                    |          |
|                       |  | onal ICT procurement policy f   |           |                                    | 37              |                        | -                                 | _                  |          |
|                       |  | onal multiculturalism policy fo | r eHealth | No                                 | 30              | -                      | -                                 | _                  |          |
|                       | Nati   | onal telemedicine policy        |           | No                                 | 25              | 5°                     | -                                 | —                  |          |

## II. Legal and ethical frameworks for eHealth

|  | Country response | Global response (%) <sup>a§</sup> |
|--|------------------|-----------------------------------|
| Legislation on personal and health-related data  |                  |                                   |
| To ensure privacy of personally identifiable data  | Yes              | 70                                |
| To protect personally identifiable data specifically in EMR or EHR <sup>1</sup>                    | No               | 31                                |
| Legislation for sharing health-related data between health care staff through EMR/EHR <sup>1</sup> |                  |                                   |
| Within the same health care facility and its network of care providers                             | No               | 26                                |
| With different health care entities within the country   | No               | 23                                |
| With health care entities in other countries   | No               | 11                                |
| Internet pharmacies  |                  |                                   |
| Legislation that allows/prohibits Internet pharmacy operations                                     | No               | Allows: 7, Prohibits: 19          |
| National regulation/accreditation/certification of Internet pharmacy sites                         | No               | 7                                 |
| Legislation that allows/prohibits Internet pharmacy purchases from other countries                 | No               | Allows: 6, Prohibits: 12          |
| Internet safety  |                  |                                   |
| Government sponsored initiatives about Internet safety and literacy                                | No               | 47                                |
| Security tools required by law for facilities used by children                                     | Yes              | 22                                |
| Quality assurance approaches to health-related Internet content                                    |                  |                                   |
| Voluntary compliance by content providers or web site owners                                       | Yes              | 56                                |
| Technology through filters and controls  | Yes              | 28                                |
| Government intervention through laws or regulations  | No               | 26                                |
| Education programmes for consumers and professionals   | No               | 23                                |
| Official approval through certification, accreditation, or quality seals                           | No               | 17                                |

### III, eHealth expenditures and their funding source

| in cricatil experiations and their randing source |                |                            |   |                            |                 |                            |          |                            |  |
|---|----------------|----------------------------|---|----------------------------|-----------------|----------------------------|----------|----------------------------|--|
| Expenditure                                       | Public funding |                            | ng Private funding Donor/non-public funding |                            | Private funding |                            |          | -private<br>ps funding     |  |
|   | Country        | Global                     | Country                                     | Global                     | Country         | Global                     | Country  | Global                     |  |
|   | response       | response (%) <sup>b§</sup> | response                                    | response (%) <sup>b§</sup> | response        | response (%) <sup>b§</sup> | response | response (%) <sup>b§</sup> |  |
| ICT equipment                                     | Yes            | 78                         | Yes   | 37                         | Yes             | 59                         | _        | 28                         |  |
| Software  | Yes            | 76                         | Yes   | 35                         | Yes             | 56                         | _        | 29                         |  |
| Pilot projects                                    | Yes            | 69                         | Yes   | 33                         | Yes             | 51                         | _        | 28                         |  |
| Skills training                                   | Yes            | 61                         | No  | 26                         | No              | 43                         | _        | 20                         |  |
| Ongoing support                                   | Yes            | 61                         | No  | 19                         | Yes             | 35                         | _        | 18                         |  |
| Scholarships                                      | No             | 28                         | No  | 8                          | No              | 19                         | _        | 4                          |  |

### **IV. Capacity building**

|   | Country response | Global response (%) <sup>b§</sup> |
|---|------------------|-----------------------------------|
| ICT education   |                  |                                   |
| ICT training for students in health sciences at tertiary institutions   | Yes              | 77                                |
| Institutions offer continuing education in ICT for health professionals | Yes              | 75                                |
| Professional groups offered ICT continuing education                    |                  |                                   |
| Medical   | Yes              | 73                                |
| Nursing   | Yes              | 62                                |
| Public health   | Yes              | 60                                |
| Dentistry   | Yes              | 54                                |
| Pharmacy  | Yes              | 54                                |

| I. Telemedicine   |                  |                       |
|---|------------------|-----------------------|
|   | Country response | Global response (%)°§ |
| Telemedicine enabling actions   | •                |                       |
| National telemedicine policy  | No               | 25                    |
| Implemented national telemedicine policy                                    | -                | —                     |
| Formal evaluation and/or publication of telemedicine initiatives since 2006 | No               | 22                    |
| Barriers to implementing telemedicine solutions                             |                  |                       |
| Perceived costs too high  | Yes              | 60                    |
| Lack of legal policies/regulation   | No               | 40                    |
| Organizational culture not supportive                                       | No               | 39                    |
| Underdeveloped infrastructure   | Yes              | 38                    |
| Lack of policy frameworks   | No               | 37                    |
| Competing priorities  | Yes              | 37                    |
| Lack of demand by health professionals                                      | No               | 31                    |
| Lack of nationally adopted standards  | Yes              | 26                    |
| Lack of knowledge of applications   | No               | 25                    |
| Lack of technical expertise   | No               | 17                    |
| Information most needed in country to support telemedicine development      |                  |                       |
| Cost and cost effectiveness   | Yes              | 69                    |
| Clinical possibilities  | No               | 58                    |
| Infrastructure  | Yes              | 52                    |
| Evaluation  | Yes              | 46                    |
| Legal and ethical   | Yes              | 45                    |
| Effect on human resources   | No               | 40                    |
| Patients' perception  | No               | 30                    |

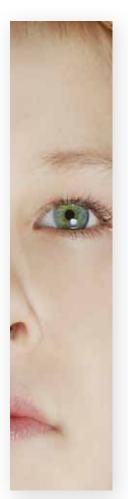
| II. mHealth   |                  |                                   |
|---|------------------|-----------------------------------|
|   | Country response | Global response (%) <sup>b§</sup> |
| mHealth initiatives   |                  |                                   |
| mHealth initiatives are conducted in country                | Yes              | 83                                |
| Formal evaluation and/or publication of mHealth initiatives | No               | 12                                |
| Barriers to implementing mHealth initiatives                |                  |                                   |
| Competing priorities  | No               | 53                                |
| Lack of knowledge of applications                           | No               | 47                                |
| Lack of policy framework                                    | Yes              | 44                                |
| Cost effectiveness unknown                                  | Yes              | 40                                |
| Lack of legal policies/regulation                           | No               | 38                                |
| Perceived costs too high                                    | Yes              | 37                                |
| Lack of demand  | No               | 29                                |
| Underdeveloped infrastructure                               | Yes              | 26                                |
| Lack of technical expertise                                 | No               | 26                                |

## Illa. eLearning

|  | Country response | Global response (%) <sup>c§</sup> |
|--|------------------|-----------------------------------|
| eLearning in health sciences at the tertiary level |                  |                                   |
| Used in teaching health sciences                   | Yes              | 72                                |
| Used in training health professionals              | Yes              | 69                                |
| Barriers to eLearning                              |                  |                                   |
| Underdeveloped infrastructure                      | Yes              | 64                                |
| Lack of policy framework                           | Yes              | 63                                |
| Lack of skilled course developers                  | No               | 55                                |
| Lack of knowledge of applications                  | No               | 46                                |
| Perceived costs too high                           | Yes              | 45                                |
| Availability of suitable courses                   | No               | 42                                |
| Lack of demand                                     | No               | 21                                |

## IIIb. eLearning target groups

| Profession         | Stud             | dents  | Professionals |                                   |  |
|--------------------|------------------|--|---------------|-----------------------------------|--|
|                    | Country response | Country response Global response (%) <sup>c§</sup> C |               | Global response (%) <sup>c§</sup> |  |
| Medical            | Yes              | 68   | Yes           | 71                                |  |
| Public health      | Yes              | 52   | Yes           | 56                                |  |
| Nursing            | Yes              | 50   | Yes           | 55                                |  |
| Pharmacy           | Yes              | 45   | Yes           | 37                                |  |
| Dentistry          | Yes              | 39   | Yes           | 37                                |  |
| <sup>a</sup> n=113 |                  |  |               |                                   |  |





Based on the findings of the second global survey on eHealth

ATLAS eHealth country profiles



2010

