INTERNATIONAL DEVELOPMENTS IN DIGITAL HEALTH IN THE WHO EUROPEAN REGION

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Italian Digital Health Summit 2018
Milan, Italy

About myself

- Born in Sydney, Australia.
- Employed at the WHO Regional Office for Europe, Copenhagen, Denmark.
- 21 years of experience in working for the United Nations.
- Responsible for leading the initiative for Digitalization of Health Systems in the WHO European Region.
- Experience in working with countries to develop their national digital health strategies and engagement plans and guiding implementation of national level digital infrastructure development and integration of health information.
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What I will be addressing today

- World Health Organization
- The role of WHO in developing digital health
- Country examples of national digital health implementation
- The 11 key factors underpinning success in national digital health
- Role of innovation in healthcare of the future
- Value-based healthcare
- Recommendations for accelerating digital health

The World Health Organization

WHO at a glance

- 194 Member States
- Headquarters in Geneva
- 6 regional offices
- More than 150 country offices
- More than 7000 staff
- More than 700 institutions supporting WHO's work
- Close partnerships with UN agencies, donors, foundations, academia, nongovernmental organizations and the private sector

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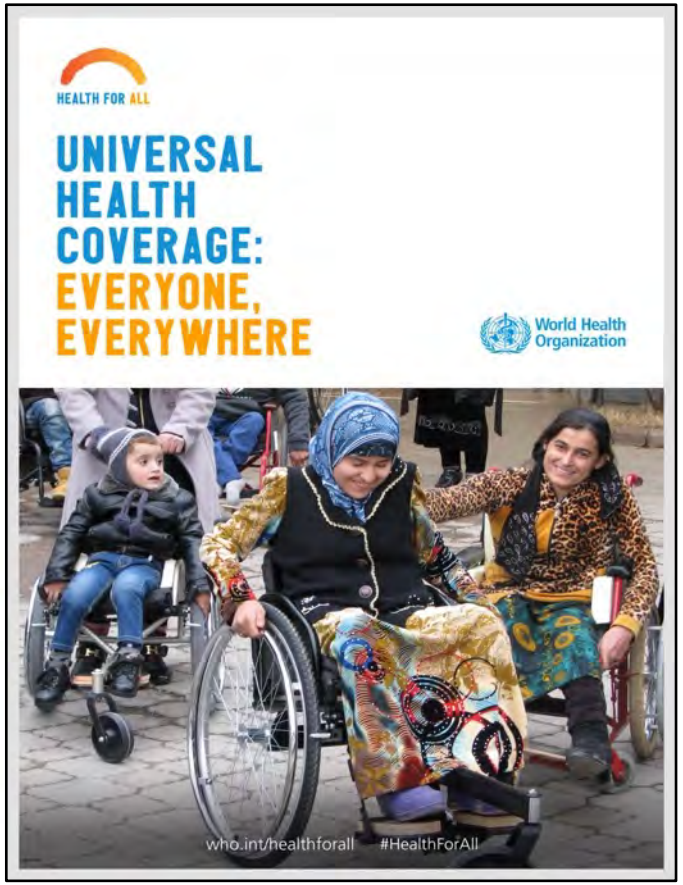
The 17 United Nations Sustainable Development Goals



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How does digital health contribute to the achievement of universal health coverage?

- Extending the scope, transparency and accessibility of health services and health information
- Widening the population base capable of accessing the available health services (including reaching marginalized and underserved populations)
- Improving public health surveillance
- Facilitating training of the health workforce
- Offering innovation and creating efficiency gains in the operation of health systems and the provision of health care

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Europeans are living longer

Life expectancy at birth increased by nearly 2 years on average in the European Region over the past decade and has now reached close to 78 years.

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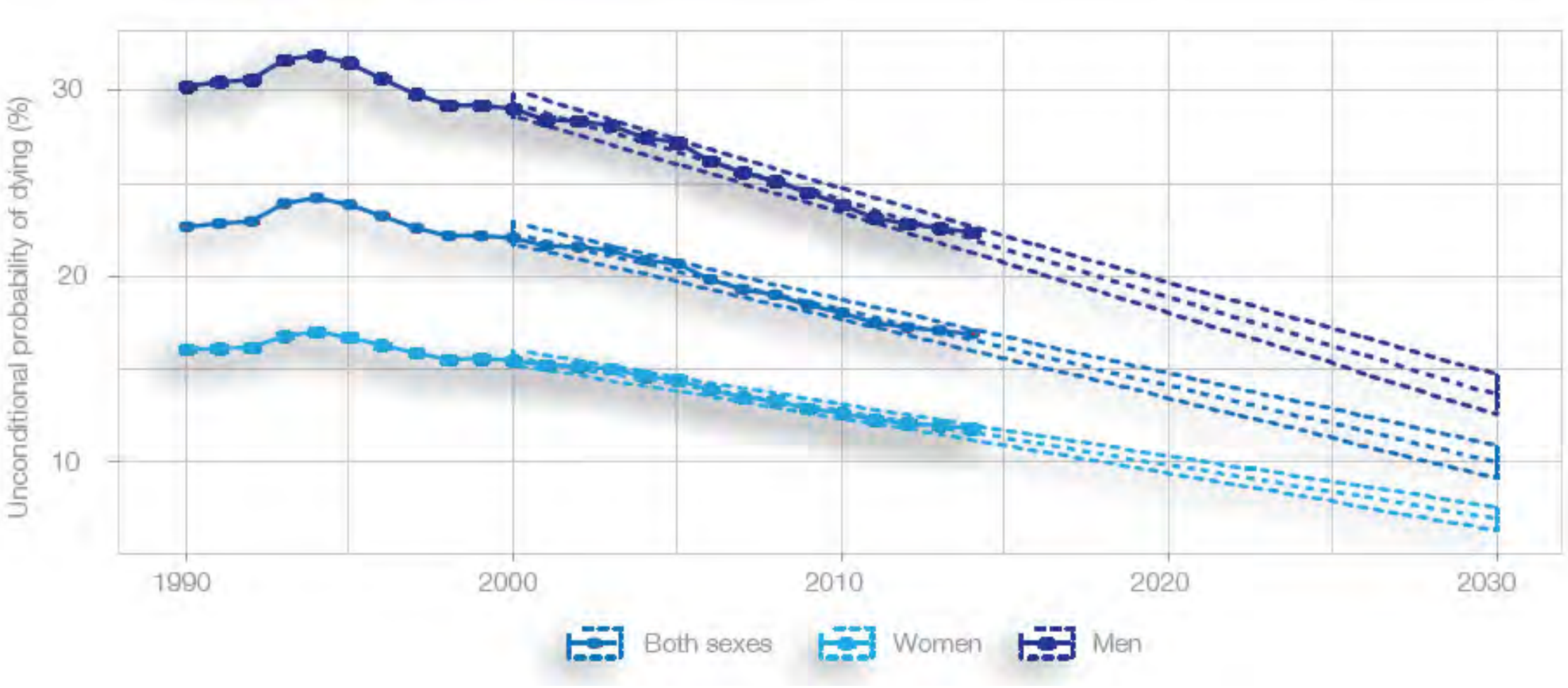
Premature NCD mortality in Europe – a global success story



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WHO's role in the field of digital health

Globally WHO:

- Develops consensus around standards for digital health.
- Monitors and reports on global progress.
- Sets global priorities and establishes international partnerships.

Regionally WHO:

- Supports countries directly in their national digital health implementations.
- Works with international partners in the region in addressing a range of health systems digitalization challenges and priorities.
- Addresses research bodies to help guide priorities for future research on digital health.
- Examines how emerging digital innovations will shape the future of health systems and health service delivery.

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Atlas of eHealth country profiles
The use of eHealth in support of universal health coverage
Based on the findings of the third global survey on eHealth 2015
Global Observatory for eHealth
World Health Organization


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FROM INNOVATION TO IMPLEMENTATION
eHealth in the WHO European Region
2016


CLASSIFICATION OF DIGITAL HEALTH INTERVENTIONS v1.0
A shared language to describe the uses of digital technology for health
WHAT IS IT?
The classification of digital health interventions (DHIs) categorizes the different ways in which digital and mobile technologies are being used to support health system needs. Targeted primarily at public health audiences, this Classification framework aims to promote an accessible and bridging language for health program planners to articulate functionalities of digital health implementations. Also referred to as a taxonomy, this Classification scheme is anchored on the unit of a "digital health intervention," which represents a discrete functionality of the digital technology to achieve health sector objectives.
HOW TO USE IT?
The digital health interventions are organized into the following overarching groupings based on the targeted primary user:
INTERVENTIONS FOR CLIENTS: Clients are members of the public who are potential or current users of health services, including health promotion activities. Caregivers of clients receiving health services are also included in this group.
INTERVENTIONS FOR HEALTHCARE PROVIDERS: Healthcare providers are members of the health workforce who deliver health services.
INTERVENTIONS FOR HEALTH SYSTEM OR RESOURCE MANAGERS: Health system and resource managers are involved in the administration and oversight of public health systems. Interventions within this category reflect managerial functions related to supply chain management, health financing, human resource management.
INTERVENTIONS FOR DATA SERVICES: This consists of crosscutting functionality to support a wide range of activities related to data collection, management, use, and exchange.

World Health Assembly Resolution on Digital Health WHA71.7 May, 2018

- Passed unanimously by Member States globally in the 71st session of the WHA
- Frames the development of Digital Health within the agenda for Health System Strengthening and “as a means of promoting equitable, affordable and universal access to health for all”
- Provides high-level guidance on future priorities and activities of WHO and its partners in the digital health domain

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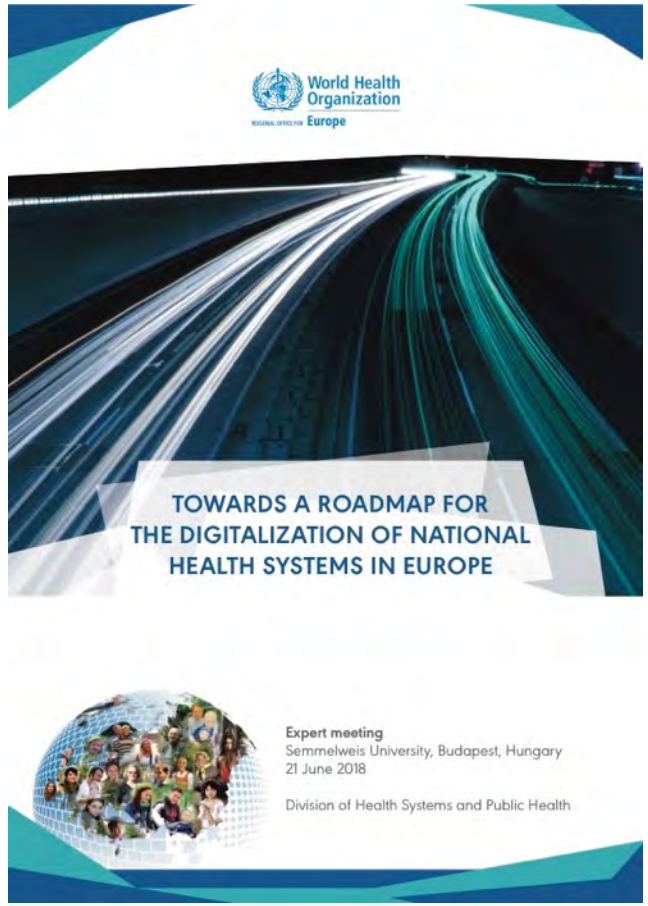
Launch of the Digitalization of Health Systems Initiative in the WHO European Region, Budapest, Hungary – 21 June 2018



http://bit.ly/WHO-DOHS-Budapest2018

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5 focus areas of the WHO/Europe Digitalization of Health Systems Initiative

1. Reforming health service delivery and access
2. Empowering individuals to better manage their own health and well-being through technology
3. Improving the operational efficiency and responsiveness of the health system
4. Enabling the transition to integrated, person-centred models of care and facilitating the move from treatment to prevention
5. Technology and innovation facilitating achievement of key public health initiatives

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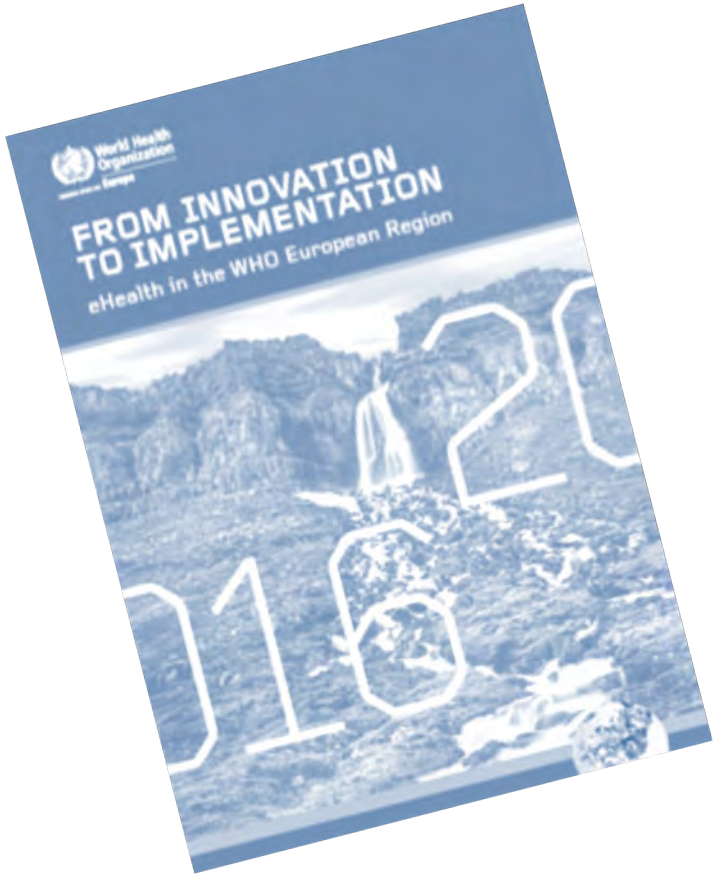
Report findings that help shape digital health policy in Europe



- A **notable *transition of eHealth to a subject of strategic importance for policy makers***. Digital health has become a key enabler of effective health service delivery and health information accessibility.

- Countries are actively building upon their national digital health foundations to ***deliver public health and health services in a more integrated, cross-sectoral manner***.

- Successful investment in eHealth requires ***far more than just technology acquisition***.

- ***Funding***, over any other aspect, is now the ***biggest barrier to adoption of digital health*** in the WHO European Region.

What are European countries doing in digital health?

1. (Still) spending a significant amount of effort on digitalizing health information (including disease registers), integrating systems and making health information interoperable and accessible to healthcare professionals and citizens (EMR/EHR and national data portals).

2. Implementing national ePrescription systems (and supply chain management of pharmaceuticals) together with other key national digital health services (eVaccination, eAppointmentBooking, ePathology, PACS etc.)

3. Scaling up mHealth and Telehealth applications (mostly for vertical, disease-specific interventions).

4. (Slowly) developing methods for basic data analytics for decision making in policy and health systems efficiency.

5. (Still) implementing the EU GDPR.

What are European countries doing in digital health? (More advanced countries)

1. Establishing biobanks and experimenting with personalized medicine
2. Establishing national Big Data initiatives
3. Implementing Blockchain-based smart contracts for consent and EHR operation
4. Experimenting with clinical applications of AI in health
    I. Oncology diagnostics (e.g. Machine Learning based tissue classification and feature evaluation/Understanding differential oncogenic wiring across cancers)
    II. Image recognition for automated skin anomaly analysis
    III. Improving speed of MRI (fastMRI)

AI for Health

An ITU Focus Group

In partnership with WHO

FG-AI4Health - Goals and Objectives (core)

Developing standardized assessment of AI for health solutions

1. Identify standardization opportunities for a **benchmarking framework** that will enable broad use of AI for health.

2. Create a technical framework and standardization approach of AI for **health algorithm assessment and validation**.

3. Develop open benchmarks, targeted to become international standards, and serve as guidance for the assessment of new AI for health algorithms.

https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/default.aspx

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Digital Health

SUCCESS FACTORS

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The 11 key factors underpinning national success in digital health

1. National digital identity for citizens, healthcare personnel and providers.
2. Strong and visible governance for digital health
3. Strong integration approach for health data linking both inside and outside of the health sector
4. Clear and unambiguous legislation supporting digital health
5. Political leadership for digital health
6. Digitally literate workforce and methods for continued professional development
7. Well-established cultures of trust
8. Public-Private partnerships for digital health* (when well-governed by public leadership)
9. Gender equality in digital health
10. Patient engagement in co-creating and implementing solutions
11. Sustained financing for digital health

Country example

DENMARK

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The Danish health care sector

- Free and equal access
- Universal coverage
- Cross sectorial
- GP as "gatekeeper"
  - keeping 90 % out of hospitals

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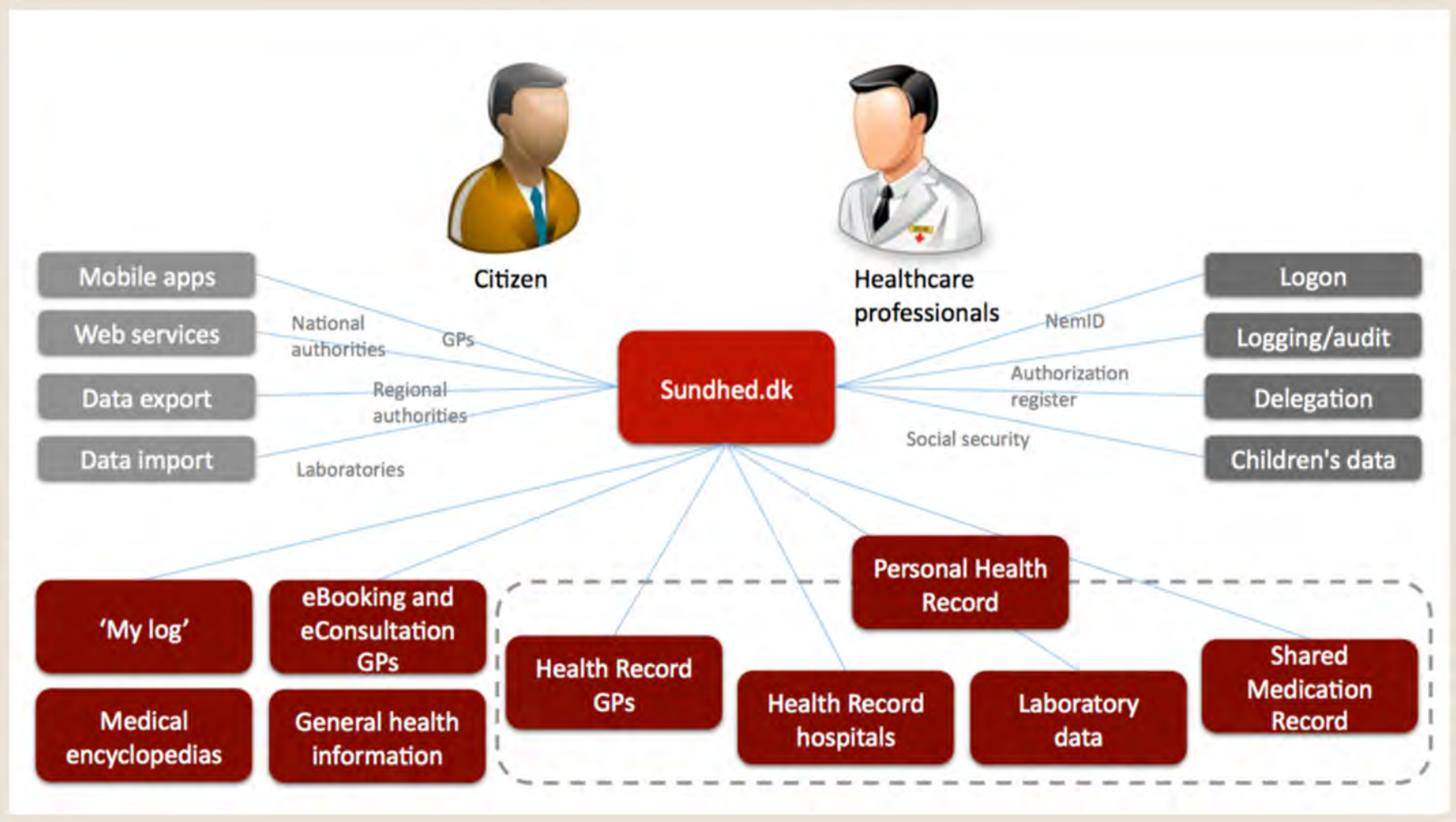
Building blocks of the Danish digital health infrastructure



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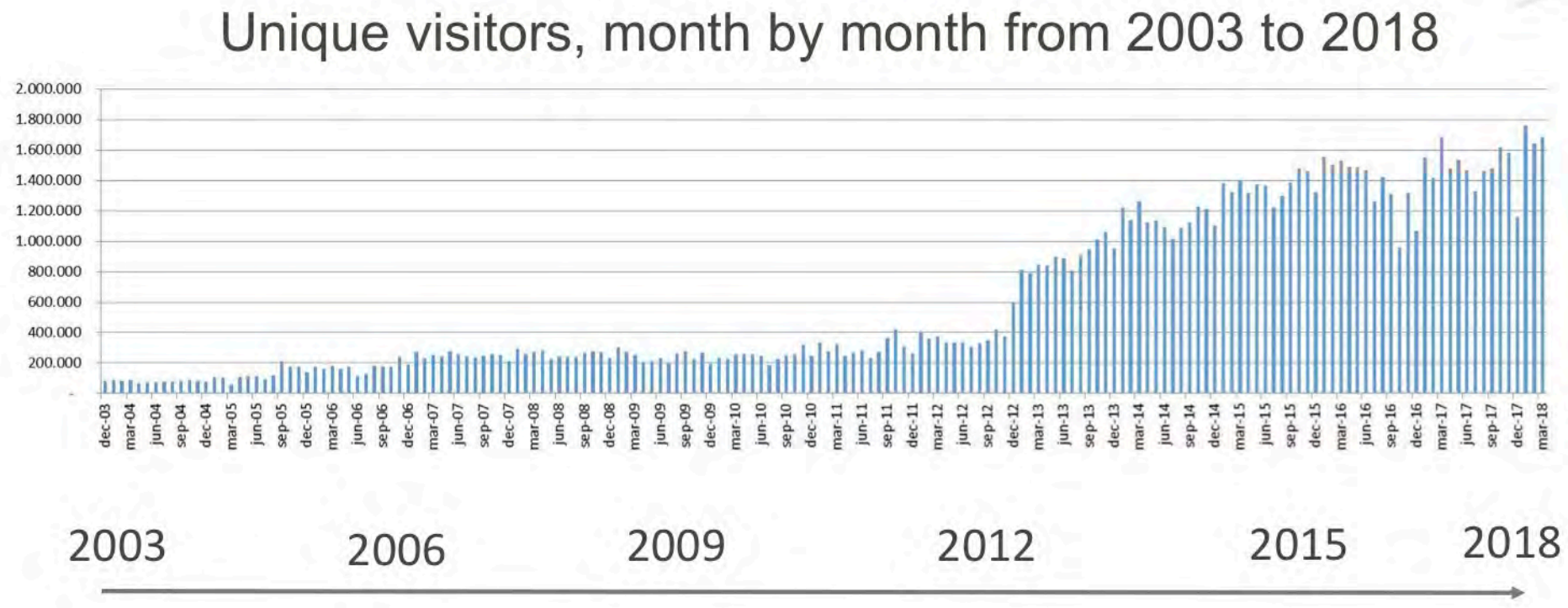
The number of users increases



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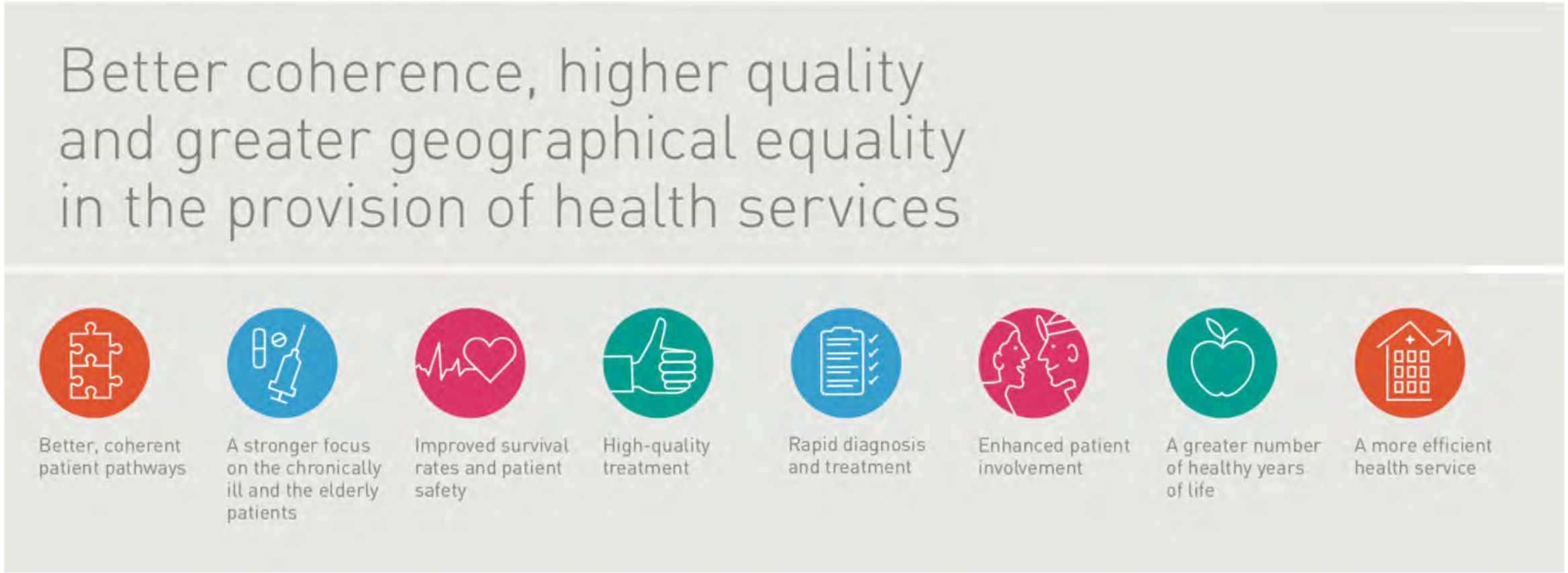
Supported by a wealth of strategic goal setting, alignment and evaluation

…and linkage to very clearly defined health system and patient-oriented outcomes



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Country example

ESTONIA

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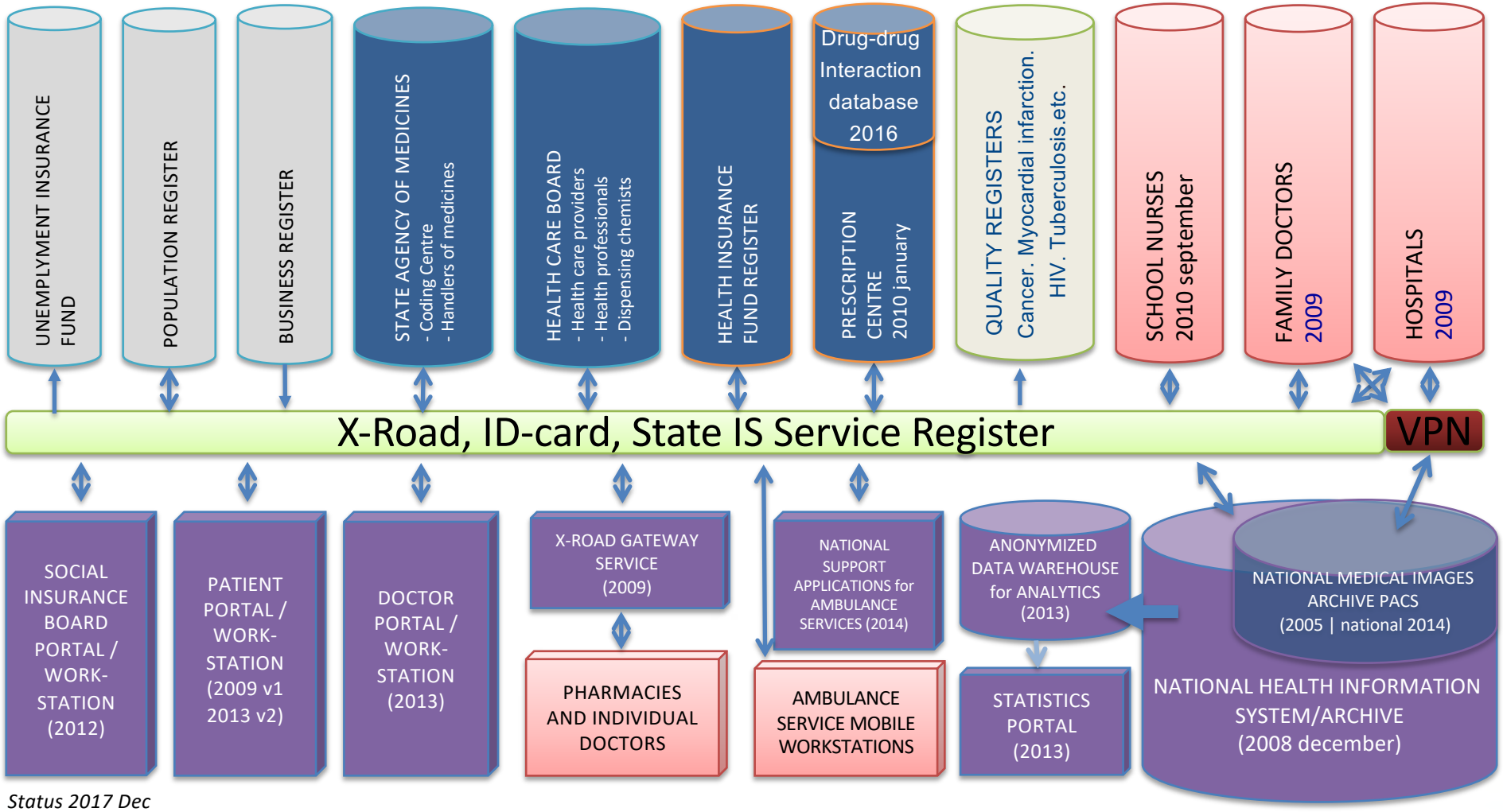
X-Road: Secure exchange of health data – cornerstone of Estonian digital health architecture



Status 2017 Dec

Main services of the e-health in Estonia

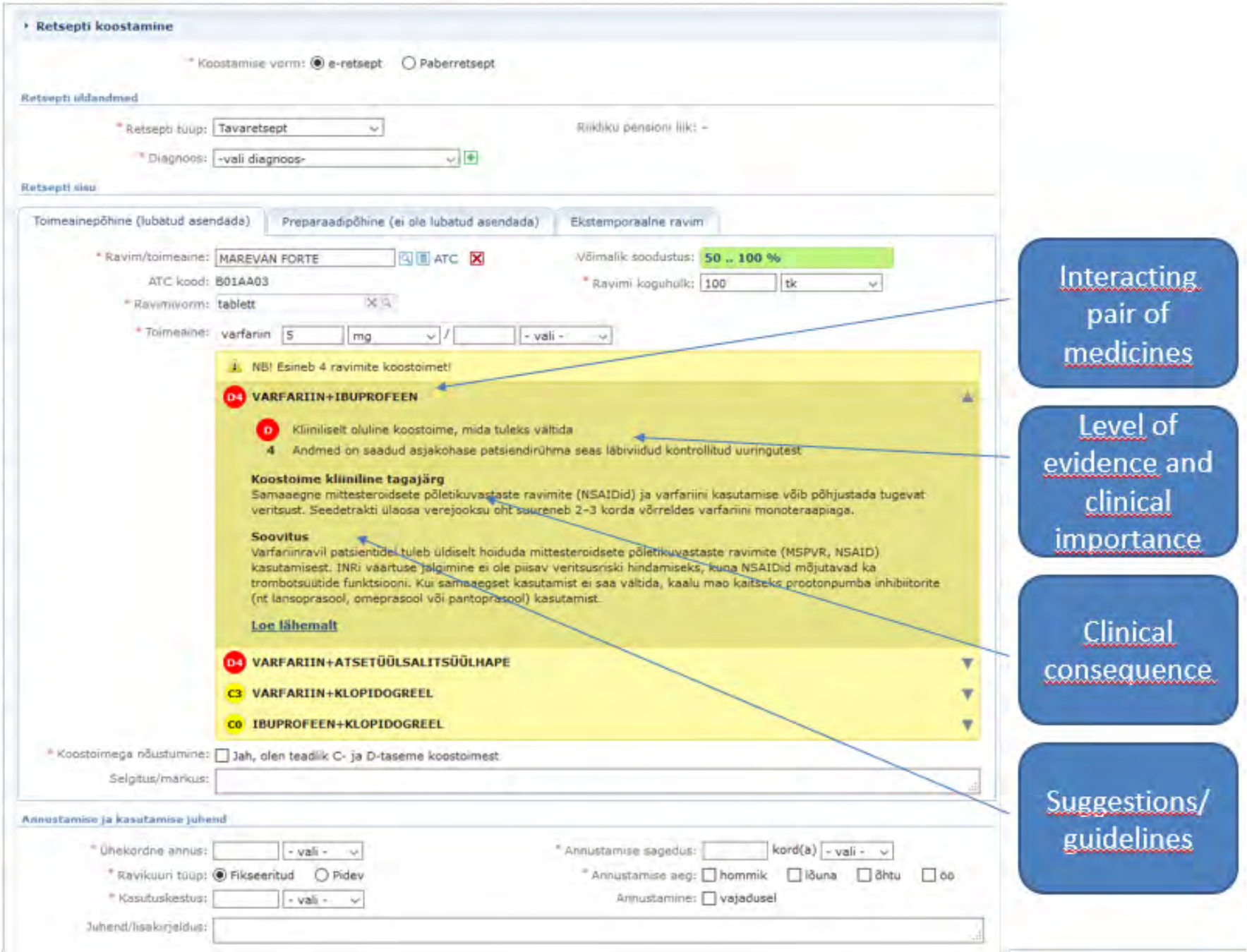
healthcare

Estonia's healthcare system has been revolutionized by innovative e-solutions. Patients and doctors, not to mention hospitals and the government, benefit from the convenient access and savings that e-services have delivered.

Each person in Estonia that has visited a doctor has an online e-Health record that can be tracked. Identified by the electronic ID-card, the health information is kept completely secure and at the same time accessible to authorised individuals. KSI Blockchain technology is being tested for the system and will be implemented in the near future to ensure data integrity and mitigate internal threats to the data.

e-Health Records | e-Prescription

95%	99%	500,000	100%
of health data digitized	of prescriptions are digital	queries by doctors every year	electronic billing


Retsepti koostamine
Koostamise vorm: e-retsept Paberretsept
Retsepti üldandmed
Retsepti tüüp: Tavaretsept
Riikliku pensioni liik: -
Diagnoos: -vali diagnoos-
Retsepti sisu
Toimeainepõhine (lubatud asendada)
Preparaadipõhine (ei ole lubatud asendada)
Ekstemporaalne ravim
Ravim/toimeaine: MAREVAN FORTE ATC
Võimalik soodustus: 50 .. 100 %
ATC kood: B01AA03
Ravimi koguhulk: 100 tk
Ravimivorm: tablett
Toimeaine: varfariin 5 mg / - vali -
NB! Esineb 4 ravimite koostoimet!
D4 VARFARIIN+IBUPROFEEN
D Kliiniliselt oluline koostoime, mida tuleks vältida
4 Andmed on saadud asjakohase patsiendirühma seas läbiviidud kontrollitud uuringutest
Koostoime kliiniline tagajärg
Samaaegne mittesteroidsete põletikuvastaste ravimite (NSAIDid) ja varfariini kasutamise võib põhjustada tugevat veritsust. Seedetrakti ülaosa verejooksu oht suureneb 2-3 korda võrreldes varfariini monoteraapiaga.
Soovitus
Varfariinravil patsientidel tuleb üldiselt hoiduda mittesteroidsete põletikuvastaste ravimite (MSPVR, NSAID) kasutamisest. INRi väärtuse jälgimine ei ole piisav veritsusriski hindamiseks, kuna NSAIDid mõjutavad ka trombotsüütide funktsiooni. Kui samaaegset kasutamist ei saa vältida, kaalu mao kaitseks prootonpumba inhibiitorite (nt lansoprasool, omeprasool või pantoprasool) kasutamist.
Loe lähemalt
D4 VARFARIIN+ATSETÜÜLSALITSÜÜLHAPE
C3 VARFARIIN+KLOPIDOGREEL
C0 IBUPROFEEN+KLOPIDOGREEL
Koostoimega nõustumine: Jah, olen teadlik C- ja D-taseme koostoimest
Selgitus/märkus:
Annustamise ja kasutamise juhend
Ühekordne annus: - vali -
Annustamise sagedus: kord(a) - vali -
Ravikuuri tüüp: Fikseeritud Pidev
Annustamise aeg: hommik lõuna õhtu öö
Kasutuskestus: - vali -
Annustamine: vajadusel
Juhend/lisakirjeldus:
Interacting pair of medicines
Level of evidence and clinical importance
Clinical consequence
Suggestions/ guidelines

Future healthcare priorities in Estonia

1. Personalized medicine
2. Clinical Decision Support Systems
3. Data lake

Digital health

CONCERNS

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Member States also have concerns about digital health

1. Digital technologies are becoming a significant factor in driving health system expenditure. Do investments in digital health reflect their comparative value-add to health and health systems?
2. Will adopting digital health contribute to an increase in social inequalities (and create an unwanted digital divide)?
3. How can resistance to innovation and technology-based change in health be addressed? How can digital literacy and training of the health workforce be accelerated?
4. Privacy, security and consent in digital health are key concerns. How can an acceptable balance in access vs. protection of health data for different uses be reached?
5. How can healthcare professionals concerns and risk exposure be reduced when using/prescribing digital technologies when there is no recognized certification mechanism in many cases (e.g. for mHealth apps)?

Future of

HEALTH INNOVATION

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Role of innovation in the future of health

- Innovation in health will be largely **data driven.**
- Sustainable innovations will be increasingly **linked** to achieving national health policy and public health objectives.
- Interest in **genomics, personalized medicine and AI** will continue to grow rapidly.
- There will be a **major (and painful) paradigm shift** in the roles and responsibilities of healthcare professionals.
- The potential of innovations to **deliver professional training** of healthcare personnel will be further exploited.
- **Integrated care models** supported by digital health will evolve as will the understanding and acknowledgement of their importance in ensuring sustainable health systems.

Value-based healthcare models

- Still characterized by a slow adoption rate in Europe
- Start by measuring outcomes that are relevant for patients and costs to achieve those outcomes – over the full cycle of care.
- However without EHRs in place that cut across the entire health sector specialties and services we can’t really capture and representation of the true value of outcomes!
- Examples:
  - Using patient relevant outcome indicators to work on improving the quality and transparency of care in heart centres in a doctor driven and patient-centered way.
  - ‘Outcome indicators’ for treatment of lung cancer and prostate cancer. What is the risk of complications, how long does a patient live after treatment and what is the quality of life?

Some recommendations for ACCELERATING digital health

1. Increase focus towards **implementation science** for digital health and the linkage to broader health systems and public health goals.
2. Understand the role of solutions in the context of **data integration** strategies.
3. Further examine **co-participation models** and methods for developing effective digital health solutions. **Cross-sectoral and patient engagement in solution design** will be important.
4. Address **consent, privacy and security** as part of holistic solution design.
5. Consider now how **roles and skills of the future health workforce will change**, what the requirements will be, and how these will operate together in new modes of healthcare delivery.

WHO Symposium

The FUTURE of digital health systems in the WHO European Region

UN City, Copenhagen
6-8 February 2019

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