Current Issues in Health Policy

IHSM/EU-HEM Case Competition

How to make use of Big data, Digitization and HealthTech to increase healthy living, healthy ageing, or to improve healthcare systems in an appealing way for policy makers?

An overview on eHealth, incorporating “Big data”, “Digitization” and “HealthTech” throughout the European Union: A collection of relevant background information to guide you in preparing your proposal and presentation.

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eu-hem EUROPEAN MASTER IN HEALTH ECONOMICS AND MANAGEMENT

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The Case - In a nutshell…

Buzzwords like **"Big data"**, **"Digitization"** and **"HealthTech"** have become landmarks of our time. Private companies as well as public stakeholders are making an effort to get a piece of the cake which promises significant enhancements in terms of:

healthier living, healthier ageing and improved healthcare systems.

Various electronic appliances, services and tools enable us humans to quantify and hence optimize our life-style and motivate us to self-manage our health at our fingertips. Ideally these smart and innovative technologies will even empower us to live a longer active life and prolong our mobility as well as our brain functions and other capabilities. New electronic solutions are to revolutionize our healthcare systems and could be the much-sought route to strengthen our systems to become more resilient.

Big markets have evolved already, offering a sheer exploding number of new information and communication technologies (ICTs), sensors and devices, such as really smart phones, fitness trackers, assisted-living technologies and the alike. These gadgets serve the purpose to collect and monitor personal – mostly health-relevant – data and analysable biomaterial (e.g. saliva, DNA, stool) which in combination with a smart algorithm has become very valuable, leading us into a period of biocapitalism. The ones making capital from these analyses are mainly the big players, the Google mother company Alphabet, Apple, Amazon and Co, that offer their products such as direct-to-consumer genetic tests and give ordinary people a voice as citizen scientists.

Moreover, also from the standpoint of policy makers, the necessity for the targeted utilization of innovative technology in healthcare has arisen and the European commission has formulated an action plan to bring eHealth up to speed within the EU and to shape a fertile regulatory environment. Technology is seen as a major driving force for a stable and thriving economy as well as social growth, particularly in the challenge faced of a continuously growing and ageing population.

Now, the big question, which remains to be tackled, is: How can "Big data", "Digitization" and "HealthTech" be exploited to improve our lives, to assist our society and to strengthen our health systems? Or, in other words - How can eHealth lead to better health for all? Your goal for this case competition is to find a new and innovative approach and to defend and promote it towards experts in the field. For the purpose of this simulation, imagine that you have been commissioned to act as coordinators of the project consortium and in synergy with your partners search for a way to sustainably implement such a new technology.

Abbreviations

EC European Commission

eHN eHealth Network

EHR electronic health record

ELGA electronic health record in Austria

EPF European Patient Forum

EU European Union

ICT information and communication technologies

GOe Global Observatory for eHealth

OECD Organisation for Economic Co-operation and Development

WHO World Health Organisation

eHealth electronic Health

mHealth mobile Health

Contents

1 Introduction

The **4th Industrial Revolution**, preceded by the 1st - the mechanization and the first steam engine (1784), the 2nd - electricity and mass production (1870) and the 3rd - electronics, IT and production automation, is now characterized by cybernetics, the Internet of Things, virtual reality, new and innovative information and communication technologies and is hence accompanied by "Big data", "Digitization" and in the sector of healthcare "HealthTech". Our society already, to a large extent, lives in a digital reality and soon we shall be surrounded by the technology of tomorrow: artificial intelligence, robotics, the Internet of Things, autonomous cars, 3D printing, nanotechnology, biotechnology, quantum computerization, and thus virtual reality and clouds, data analytics and mining.[1]

All these technologies and innovations are opening new windows of opportunity to the data economy and convey one promise: **to revolutionize healthcare and present solutions for its pressing needs and challenges.**

Digital innovation can support Europe's response to some of the major challenges ahead, challenges as postulated by the European Commission (EC) in 2016:

"Increasing pressures and demands on European countries' health systems call for a change in the way of organising and managing the delivery of health services:

- Changes in the national health systems (e.g. digitisation, integrated care, growing number of new medical technologies/services)
- Paradigm shift from doctor-centred healthcare to patient-centred healthcare
- Shortages and uneven distribution of health professionals
- Health inequalities and inequalities in access to healthcare
- Ageing society
- Increased prevalence of chronic diseases
- Demand for more patient engagement
- Financial pressure on health systems

The use of digital applications and solutions is becoming increasingly present in our daily lives, offering opportunities to tackle some of the challenges our society faces." [2]

And as additionally stressed by the Organisation for Economic Co-operation and Development (OECD) in their ***Health at a Glance: Europe 2016*** report:

"Demographic change, rising chronic disease and multi-morbidity, along with fiscal pressures, are challenging the medium- and long-term sustainability of European health systems. In order to meet these challenges, health services must become more effective and efficient. **Health care is an information-intensive endeavour, and adoption of digital technology and eHealth can enable such improvement. While health system digitalisation is complex, and can be costly, the potential longer-term benefits in promoting efficiency gains must also be considered.** These include improved quality of care, better planning and resource allocation, and enhancing the evidence base for health service delivery and policy making." [3]

[1] ***eHealth – Trends & Talks***, 2016: http://www.ehealthnews.eu/images/stories/pdf/ehealth_2016.pdf
[2] ***eHealth: connecting health systems in Europe***, 2016: http://ec.europa.eu/health/ehealth/publications_en
[3] ***Health at a Glance: Europe***, 2016: http://www.oecd.org/health/health-at-a-glance-europe-23056088.htm

"Based on these results, improvement in the adoption of digital technology in both the primary care and the hospital sectors is needed across Europe to fulfil the vision set out in the European Commission eHealth Strategy."[4]

Thus, the EC formulated its vision, highlighting that:

- eHealth could be part of the solution if we take advantage of the new technologies which can ease and improve the current health services.
- Information and Communication Technologies used in healthcare and social care systems can increase their efficiency, improve quality of life and unlock innovation in health markets.
- The EU plays an active role in the uptake of eHealth at European level, facilitating cross-border health services and supporting Member States' action to roll out eHealth solutions at national level.[5]

In their ***Health at a Glance: Europe 2018*** report, the OECD once more emphasises the importance of the digital transformation of health and care with the following:

"**We need more resilient health systems.** As health systems evolve, they must become more resilient and adapted to rapidly changing environments and needs. In this edition of Health at a Glance: Europe, we highlight the importance of reducing wasteful spending, and the potential gains for efficiency and sustainability of health systems. Evidence from various countries suggests that up to one-fifth of health spending is wasteful and could be reallocated to better use. For example, too many hospital admissions reflect failures in the management of health problems in the community and consume over 37 million bed days each year across the EU. **The digital transformation of health and care, a key component of the EU's Digital Single Market, offers tremendous potential for improving the prevention, detection and management of chronic diseases, as well as improving health system management and research.**

The OECD and the European Commission will work closely together with policymakers and other key stakeholders throughout the State of Health in the EU cycle, to help promote policies that will deliver both longer and healthier lives for all EU citizens."[6]

Hence, the EC has channelled its vision with the following infographic.[7] (see next page)

This infographic gives an overview of the European Commission policy on transformation of health care in the Digital Single Market.

[4] ***Health at a Glance: Europe***, 2016: http://www.oecd.org/health/health-at-a-glance-europe-23056088.htm
[5] ***eHealth: connecting health systems in Europe***, 2016: http://ec.europa.eu/health/ehealth/publications_en
[6] ***Health at a Glance: Europe***, 2018: https://www.oecd.org/health/health-at-a-glance-europe-23056088.htm
[7] **Digital and Health care strategy EU**, 2018: https://ec.europa.eu/digital-single-market/en/news/infographic-digital-health-and-care-eu

Digital Health and Care

TRANSFORMATION OF HEALTH AND CARE IN THE DIGITAL SINGLE MARKET - Harnessing the potential of data to empower citizens and build a healthier society

European health challenges

- Ageing population and chronic diseases putting pressure on health budgets
- Unequal quality and access to healthcare services
- Shortage of health professionals

Potential of digital applications and data to improve health

- Efficient and integrated healthcare systems
- Personalised health research, diagnosis and treatment
- Prevention and citizen-centred health services

What EU citizens expect...

90% agree To access their own health data (requiring interoperable and quality health data)

80% agree To share their health data (if privacy and security are ensured)

80% agree To provide feedback on quality of treatments

Support European Commission:

Updated 24/04/2018

1 Secure access and exchange of health data

Ambition:

Citizens securely access their health data and health providers (doctors, pharmacies...) can exchange them across the EU.

Actions:

- eHealth Digital Service Infrastructure will deliver initial cross-border services (patient summaries and ePrescriptions) and cooperation between participating countries will be strengthened.
- Proposals to extend scope of eHealth cross-border services to additional cases, e.g. full electronic health records.
- Recommended exchange format for interoperability of existing electronic health records in Europe.

2 Health data pooled for research and personalised medicine

Ambition:

Shared health resources (data, infrastructure, expertise...) allowing targeted and faster research, diagnosis and treatment.

Actions:

- Voluntary collaboration mechanisms for health research and clinical practice (starting with "one million genomes by 2022" target).
- Specifications for secure access and exchange of health data.
- Pilot actions on rare diseases, infectious diseases and impact data.

3 Digital tools and data for citizen empowerment and person-centred healthcare

Ambition:

Citizens can monitor their health, adapt their lifestyle and interact with their doctors and carers (receiving and providing feedback).

Actions:

- Facilitate supply of innovative digital-based solutions for health, also by SMEs, with common principles and certification.
- Support demand uptake of innovative digital-based solutions for health, notably by healthcare authorities and providers, with exchange of practices and technical assistance.
- Mobilise more efficiently public funding for innovative digital-based solutions for health, including EU funding.

#DigitalSingleMarket #DigitalHealth @eHealth_EU @EU_Health

A definition of eHealth

According to the World Health Organization (WHO) eHealth is:

"the use of information and communication technologies (ICT) for health. Examples include treating patients, conducting research, educating the health workforce, tracking diseases and monitoring public health."[8]

The European Commission (EC) defines eHealth as:

- "refers to tools and services using **information and communication technologies (ICTs)** that can improve prevention, diagnosis, treatment, monitoring and management.
- can benefit the entire community by **improving access to care and quality of care** and by making the health sector more efficient.
- includes information and data sharing between patients and health service providers, hospitals, health professionals and health information networks; electronic health records; telemedicine services; portable patient-monitoring devices, operating room scheduling software, robotized surgery and blue-sky research on the virtual physiological human."[9]

The European Patient Forum (EPF) complements these definitions by stating that eHealth:

"can be used as a means to more effectively provide or exchange information, whether for healthcare professionals, patients, or citizens. It can also be aimed at improving the management of health systems, or the functioning of public health services.

eHealth services - **including mobile Health (mHealth)** - encompass:

- Services and information tools focusing on electronic provision of health and wellness information to patients
- Services aimed at supporting healthcare providers and users, for example patient-accessible electronic health records or ePrescriptions tools
- eHealth homecare and telemedicine tools and services for patients with chronic diseases focusing on applications that allow citizens who are receiving healthcare to be supported in their personal environment, whether fixed or mobile, outside traditional healthcare facilities
- Services that allow to collect or manage data in order to advance research"[10]

[8] ***Health topics – eHealth***, 2016: http://www.who.int/topics/ehealth/en/
[9] ***EC > DG Health and Food Safety > Public health > eHealth > Policy***, 2016: https://ec.europa.eu/health/ehealth/policy/index_en.htm
[10] European Patients' Forum - ***A final draft of the eHealth position paper***, 2015: http://www.eu-patient.eu/Members/Weekly-Mailing/final-consultation-on-the-epf-ehealth-position-paper

Denoted goals of eHealth strategies

The EC names the following foci as goals:

- "to **improve citizens' health** by making life-saving information available – between countries when necessary – using eHealth tools
- to **increase healthcare quality and access** by making eHealth part of health policy and coordinating EU countries' political, financial and technical strategies
- to **make eHealth tools more effective, user-friendly and widely accepted** by involving professionals and patients in strategy, design and implementation."

The EPF explains furthermore, that:

"eHealth is often cited as a solution towards **sustainability of healthcare**, in a context of growing healthcare demand due to demographic change, and of healthcare professional shortage.

In its eHealth action plan (2012-2020)[11] [expanded on below], the European Commission noted that eHealth could help improve chronic diseases and multimorbidity management, enhance patient centric care, foster cross-border healthcare, and increase efficiency of healthcare systems and equity of access."[12]

Hence, eHealth is regarded as a powerful and potent strategy to improve healthcare for the individual as well as for the society overall, and to make healthcare systems more sustainable and resilient.

eHealth at EU policy level

Since 2008, various initiatives at EU level have focused on eHealth, presented subsequently in a short overview:

01 January 2008

European Patients Smart Open Services project

The 2008-2011 European Patients Smart Open Services project (epSOS) [www.epsos.eu] and its related thematic network Calliope [www.calliope-network.eu], was co-financed by DG Infso to develop and validate cross-border interoperability of patient summaries and ePrescription solutions.

02 July 2008

Commission Recommendation (C(2008) 3282)

Commission Recommendation of 2 July 2008 on cross-border interoperability of electronic health record systems (notified under document number C(2008) 3282). It provides guidelines for interoperable electronic health record systems, allowing for cross-border exchange of

[11] ***eHealth Action Plan 2012-2020***: https://ec.europa.eu/digital-single-market/en/news/ehealth-action-plan-2012-2020-innovative-healthcare-21st-century

[12] European Patients' Forum - ***A final draft of the eHealth position paper***, 2015: http://www.eu-patient.eu/Members/Weekly-Mailing/final-consultation-on-the-epf-ehealth-position-paper

patient data within the Community so far as necessary for a legitimate medical or healthcare purpose.

04 November 2008

Commission Communication COM/2008/0689 final
Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions (COM/2008/0689 final) on telemedicine for the benefit of patients, healthcare systems and society

01 December 2009

Council conclusions on "Safe and efficient healthcare through eHealth"

22 December 2011

Network of national responsible authorities on eHealth
Commission implementing decision 2011/890/EU of 22 December 2011 providing the rules for the establishment, the management and the functioning of the network of national responsible authorities on eHealth

06 December 2012

eHealth Action Plan 2012-2020
Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on eHealth Action Plan 2012-2020 - Innovative healthcare for the 21st century

19 November 2013

Guidelines on minimum/nonexhaustive patient summary dataset for electronic exchange in accordance with the cross-border Directive 2011/24/EU

18 November 2014

Guidelines on ePrescriptions dataset for electronic exchange under Cross-Border Directive 2011/24/EU

02 December 2014

Overview of the national laws on electronic health records in the EU Member States

01 October 2015

Methodological guidelines and recommendations for efficient and rational governance of patient registries

19 April 2016

EU eGovernment Action Plan 2016-2020 Accelerating the digital transformation of government
Its vision: By 2020, public administrations and public institutions in the European Union should be open, efficient and inclusive, providing borderless, personalised, user-friendly, end-to-end digital public services to all citizens and businesses in the EU. Innovative approaches are used to design and deliver better services in line with the needs and demands of citizens and businesses. Public administrations use the opportunities offered by the new digital environment to facilitate their interactions with stakeholders and with each other.
⇨ This development affects the sector of eHealth significantly

23 September 2018

The Web Accessibility Directive requires Member States to make the websites and mobile apps of public sector bodies accessible, and to monitor and report on their accessibility

15 July 2020

Commission Implementing Decision (EU) 2020/1023 amending Implementing Decision (EU) 2019/1765 as regards the cross-border exchange of data between national contact tracing and warning mobile applications with regard to combatting the COVID-19 pandemic, OJ L 227I , 16.7.2020, p. 1–9

The **eHealth Action Plan 2012-2020**[13] is seen as the key document, a roadmap, of the entire strategy, as it acknowledges that healthcare lags behind in the application of state-of-the-art ICT solutions, compared to other sectors. Moreover, it names various barriers of technical (such as e.g. interoperability) and legal nature as well as user-friendliness of tools and services, which the EC indents to tackle. It elaborates on the **key actions** the European Union intends to take to support Member States for their further development in the area of eHealth.

[13] ***eHealth Action Plan 2012-2020***: https://ec.europa.eu/digital-single-market/en/news/ehealth-action-plan-2012-2020-innovative-healthcare-21st-century

In summary, the **eHealth Action Plan** states the following operational objectives:

- Achieving wider interoperability of eHealth services
- Supporting research, development and innovation
- Ensuring wider development and facilitating uptake
- Promoting international cooperation

Additionally, **strategies** on health policy level have been developed, for instance:

The **Directive on the application of patients' rights in cross-border healthcare**

> Directive 2011/24/EU, Article 14, sets up a voluntary Network of national authorities responsible for eHealth. The eHealth Network will draw up guidelines in the area of eHealth. It aims to enhance interoperability between electronic health systems and continuity of care and to ensure access to safe and quality healthcare.

Hence, a voluntary **eHealth Network** has been established, which has been set up under this Article 14 of Directive 2011/24 on the application of patients' rights in cross-border healthcare. It serves the purpose to bring together national authorities from Member States to tackle shared orientations for eHealth initiatives and to enforce the goals denoted above. Its aim is to formulate guidelines on eHealth, including a set of patients' data to be exchanged across borders, identification and authentication measures used in healthcare, and interoperability of e-prescriptions.[14]

On the 7th of June, 2016 the eHealth Network held a meeting in Amsterdam for an intermediate evaluation, in order to judge the accomplishments of the eHealth Action Plan 2012 -2020 after three years of operation; to identify and analyse any weaknesses that may prevent implementing the Action Plan fully by 2020; to identify areas in which more in-depth actions should be taken; and to point out new topics that have emerged since the publication of the Action Plan in December 2012.

Also, the EC has formed an **eHealth Stakeholder Group**, under which relevant partners, such as e.g. the EPF is represented, convene to work on issues like the quality and reliability of mHealth apps data. Additionally, the EC has hired **Deloitte** to assess the process and has been presented with conclusions of this evaluations and recommendations to strengthen the rolling plan of actions.[15]

Moreover, the **EU eGovernment Action Plan 2016-2020** aims at accelerating the digital transformation of governments and specifically targets the health sector "in the development of eHealth services that also enable cross-border exchange of e-prescriptions, based on the e-prescription guidelines adopted by the eHealth Network and telemedicine and tele-monitoring solutions, in particular for the successful provision of treatment by European Reference Networks" AND "In addition, it will support the development of a report and guidelines by the eHealth Network on citizens' electronic access to their health data." More precisely the actions are that the "Commission will complete the setup of the Electronic Exchange of Social Security Information" (Target date: 2019) and "Support Member States in the development of cross-border eHealth services" (Target date: 2016-18).[16]

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[14] **EC on the eHealth Network**: http://ec.europa.eu/health/ehealth/policy/network/index_en.htm

[15] **Deloitte/IPSOS** (2011), "eHealth Benchmarking (Phase III): Final report for the European Commission", Brussels.

[16] **Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: EU eGovernment Action Plan 2016-2020 Accelerating the digital transformation of government (COM(2016) 179 final)**

Secondly, the EC has implemented the **Digital Single Market Strategy**

> "The EC adopts its Digital Single Market Strategy for Europe which aims to make the EU's single market freedoms "go digital" and boost growth and jobs in the EU. The strategy includes telemedicine and ehealth, which is a step forward in promoting interoperability and standards of these digital technologies in the EU, for the benefit of patients, health professionals, health systems and industry."

A policy package put forward under this framework was launched by the European Commission on 19 April 2016 and became the first industry-related initiative of the Digital Single Market package. It is a strategy to digitise the European industry, which builds on and complements the various national initiatives for digitising industry, such as Industrie 4.0, Smart Industry and l'industrie du futur. This digitization in the industry is driven by new-generation information technologies (e.g. the Internet of Things (IoT), cloud computing, big data and data analytics, robotics and 3D printing), all of which open up new horizons for industry. This plan mobilises up to EUR 50 billion of public and private investments in support of the digitisation of industry, of which EUR 37 billion should be an investment to boost digital innovation and, for instance, EUR 6.7 billion should be spend for the European Cloud Initiative.

Furthermore, to better target and boost developments in this area, in 2014 the EC has published an mHealth green paper, to consult with stakeholders for the successful development of mHealth in the EU.[17] Since then various mHealth projects and initiatives have been supported. One best-practice example is the Horizon 2020 EU-funded mHealth4Afrika project, which addresses these challenges by developing a cross-border oriented, multi-lingual patient-centric health platform and aims at strengthening primary healthcare delivery in Africa.

eHealth and EC project funding

Also, the European Commission supports projects, which can be divided into three main areas: **"(1) co-financing of projects**, **(2) support to awareness-raising events** (in particular to the annual High-Level Presidency eHealth conferences) and **(3) running structures for awareness and network building, best practice sharing and policy development**.

A vast number of projects related to eHealth have already been co-financed by the EU under several programmes including **Horizon 2020**, the **CIP ICT Policy Support Programme**, and the **EU structural funds."**[18]

- EU Public Health Programmes
- Funding mechanisms under DG Information Society

[17] ***EC Green Paper on Mobile Health***, 2014: https://ec.europa.eu/digital-agenda/en/news/green-paper-mobileHealth-mhealth

[18] ***EC > eHealth projects - Research and Innovation in the field of ICT for Health and Wellbeing***: an overview: https://ec.europa.eu/digital-agenda/en/news/ehealth-projects-research-and-innovation-field-ict-health-and-wellbeing-overview

An overview of these projects - worth looking at! - has recently (13 September 2019) been published: **EU-funded Research and Innovation in the field of ICT for Health, Wellbeing and Ageing: an overview**. In a nutshell, the EC manages around 100 eHealth and ICT for ageing projects, among which one finds: **Innovation projects** focussing on Personal Health Systems, mobile health (mHealth), telehealth etc., and also projects to improve interoperability; AND **Research projects** covering areas such as diabetes, mental illness, cardiovascular disease, stroke and many others.

#DigitalSingleMarket #DigitalHealth @eHealth_EU @EU_Health

Most recently,

In 2018, the Commission presented an AI strategy for the first time, and agreed a coordinated plan with Member States. The High-Level Expert Group on Artificial Intelligence presented their Ethics Guidelines on trustworthy AI in April 2019. This was built upon the framework for AI presented on 19 February 2020.

In her Political Guidelines, Commission President Ursula von der Leyen stressed the need to lead the transition to a healthy planet and a new digital world. In that context, she kick-started the debate on ethical Artificial Intelligence and the use of big data to create wealth for societies and businesses during her first 100 days in office.

2 Scale of the Issue: facts & numbers

2015 WHO global survey on eHealth

A in 2015 published report by the WHO documents the current status of eHealth in the European Region, based on the results of the ***2015 WHO global survey on eHealth***[19] and thus provides insights on how it is being used, major areas of development, perceived barriers to adoption and potential areas of growth. It presents "an increasing appetite" for eHealth and shows palpable developments in the direction of technology solutions, which have potential to improve public health and health service delivery. Moreover, it acknowledges that a fruitful investment in eHealth means more than just the acquisition of technology, but states that "a holistic view of the impact and changes required to organizational processes, structures, roles, standards and legislation is needed, as well as consideration of the specifics of human resources, education, reimbursement and the culture of those who will be utilizing the eHealth services – any of which can serve to derail initiatives if neglected." Furthermore, the authors highlight that a stronger political commitment as well as sustainable funding is needed for the effective implementation and that recurrent changes in the national political landscape are a strong barrier and are to be avoided.

Key findings from the survey data

eHealth foundations

- 84% of respondents (38 Member States) have a national universal health coverage policy or strategy, of which 74% (28 Member States) report that the policy or strategy specifically refers to eHealth or information and communication technologies in support of universal health coverage.
- 70% (30 Member States) have a national eHealth policy or strategy, of which 90% (27 Member States) indicate that their policy or strategy refers explicitly to objectives or key elements of universal health coverage.
- 69% (31 Member States) have financial support available specifically for the implementation of their national eHealth strategy or policy.
- 89% (40 Member States) have universities or technical colleges providing students with training on how to use information and communication technologies and eHealth, and 82% (37 Member States) provide training to professionals on how to use information and communication technologies and eHealth.

Electronic health records

- 59% of respondents (27 Member States) have a national electronic health record system; 69% of those (18 Member States) have legislation governing its use.
- 50% (22 Member States) report that funding is the most important barrier to implementing national electronic health record systems.

[19] WHO global survey on eHealth, in ***From Innovation to Implementation***, 2015: http://www.euro.who.int/__data/assets/pdf_file/0012/302331/From-Innovation-to-Implementation-eHealth-Report-EU.pdf

Telehealth

- 27% of respondents (12 Member States) have a dedicated policy or strategy for telehealth; an additional 36% (16 Member States) refer to telehealth in their national eHealth policies or strategies.
- Teleradiology is the most prevalent telehealth programme in the WHO European Region: 83% (38 Member States) report its use. Remote patient monitoring is the second most prevalent telehealth programme, with 72% (33 Member States) utilizing these services.

mHealth

- 49% of respondents (22 Member States) have government-sponsored mHealth programmes.
- 73% (33 Member States) do not have an entity that is responsible for the regulatory oversight of the quality, safety and reliability of mHealth applications.
- The use of mHealth for access to patient records has increased by 25% since the 2009 survey.
- The use of mHealth for appointment reminders has risen by 21% since the 2009 survey.
- Three Member States (7%) have carried out evaluations of government-sponsored mHealth programmes.

eLearning

- 66% of respondents (29 Member States) use eLearning for students of health sciences.
- 71% (32 Member States) use eLearning for in-service training of health professionals.
- The main reason for using eLearning was reported as "improving access to educational content and experts" by 96% (27 Member States) for students and by 94% (30 Member States) for professionals.

Social media

- 91% of respondents (40 Member States) report that individuals and communities use social media to learn about health issues.
- 81% (35 Member States) report that health care organizations use social media to promote health messages as part of health promotion campaigns.
- 14% (6 Member States) have a national policy to govern the use of social media in health professions; 81% (35 Member States) report having no such policy.

Health analytics and big data

- 13% of respondents (6 Member States) have a national policy or strategy regulating the use of big data in the health sector.
- 9% (4 Member States) have a national policy or strategy regulating the use of big data by private companies.

Legal frameworks

- 80% of respondents (36 Member States) have legislation to protect the privacy of an individual's health-related data in electronic format in electronic health records. This has increased by nearly 30% since the 2009 survey.
- 53% (24 Member States) do not have legislation that allows individuals electronic access to their own health data in their electronic health records.
- 50% (22 Member States) report that individuals have the legal right to specify which health-related information in their electronic health records can be shared with health professionals of their choice.

- 43% (19 Member States) have policies or legislation that defines medical jurisdiction, liability or reimbursement of eHealth services.

Key recommendations (based on the outcomes of the survey)

- Political commitment
- Dedicated eHealth strategies
- Legislation on electronic health records
- Guidance on telehealth
- Adoption of standards (data exchange, interoperability, etc.)
- Regulation in mHealth
- Increasing digital and health literacy
- Increasing the use of eLearning
- Increasing guidance on social media use in health and big data

Actions the WHO intends to take (in response to the survey)

The WHO Regional Office for Europe will:

- "intensify **open and active partnerships** with the European Commission, Organisation for Economic Co-operation and Development, World Bank, nongovernmental organizations and other international stakeholders engaged in developing and promoting eHealth, with the aim of leveraging the collective strengths of each in providing harmonized support to Member States;
- under the umbrella of the **WHO European Health Information Initiative**, engage with Member States in the European Region to build capacity for implementing and managing eHealth as a national strategic asset and to further its role in reforming national health information landscapes;
- continue to support international development of **eHealth standards** and frameworks for interoperability;
- act as a **knowledge broker** for development of best practices for eHealth and innovation within a European context."

"Of the 53 Member States in the European Region, 47 responded to the 2015 WHO global survey on eHealth (an overall regional response rate of 89%). Results are based on data available at the time of analysis and percentages shown are calculated in accordance with the number of non-blank responses to each survey question. In making its key recommendations, the report draws upon evidence from the survey results together with the collective experience of several eHealth and health information experts. These recommendations are a call to action for all Member States in the WHO European Region to take appropriate steps to strengthen their existing national eHealth foundations and to accelerate activities for future development and adoption of eHealth."[20]

[20] WHO global survey on eHealth, in ***From Innovation to Implementation***, 2015: http://www.euro.who.int/__data/assets/pdf_file/0012/302331/From-Innovation-to-Implementation-eHealth-Report-EU.pdf

2016 and 2018 OECD evaluation on eHealth

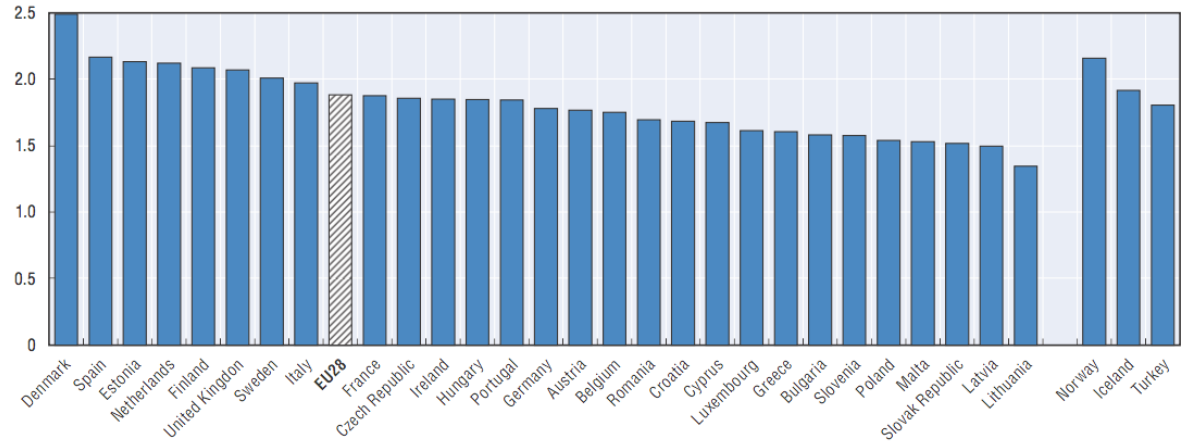
As presented in ***Health at a Glance: Europe 2016***[21], in 2013, the EC assessed the adoption of eHealth strategies by general practitioners and hospitals. The outcomes are presented in the chapter **Resilience, efficiency and sustainability of health systems**:

"A 2013 European Commission survey examined the adoption of eHealth in general practice. Figure 8.1 shows the composite scores for the surveyed countries. Denmark achieved the highest score (2.49 out of a possible 4), followed by Spain (2.17), Norway (2.16), Estonia (2.13), the Netherlands (2.12), Finland (2.09) and the United Kingdom (2.07). Lithuania and Latvia had the lowest scores. These results suggest room for improvement in all countries. While basic forms of electronic health records (EHR) are now available to over 90% of GPs on average across EU countries, more advanced features are limited – most notably exchange of health information with patients and other providers. Adoption levels for TeleHealth and for patient access to their health record remained low. Adoption was influenced by GPs' characteristics and attitudes, particularly by perceived impacts and barriers. These principally concern the lack of resources and financial incentives, of data interoperability, and of sound regulatory frameworks (European Commission, 2013).

A survey of eHealth adoption in European hospitals was also conducted in 2013. The averages for EU member states (based on a maximum score of 1) were 0.44 for eHealth *deployment*, and 0.30 for *availability and use* (Figure 8.2). These results also suggest room for improvement as no country was close to the optimal score of 1. Hospitals in the Nordic countries achieved higher scores on both indicators. Hospitals in Eastern and Southern Europe had lower scores. Larger hospitals and public hospitals recorded higher scores on both indicators. Overall, these results reveal gaps in governance with regard to data security, privacy and interoperability. Only 57% of hospitals reported having a strategic plan for eHealth. There has been a modest increase in many countries' eHealth *deployment* score compared with the results of a similar survey in 2010 (Deloitte/IPSOS, 2011). Results improved for dimensions related to the infrastructure and integration and, more modestly, to the information flow. On the other hand, privacy and security results worsened in the 2013 survey. Countries with lower 2010 results showed the greatest improvement across the two surveys (European Commission, 2014)."[22]

[21] ***Health at a Glance: Europe***, 2016: http://www.oecd.org/health/health-at-a-glance-europe-23056088.htm
[22] ***Health topics – eHealth***, 2016: http://www.who.int/topics/ehealth/en/

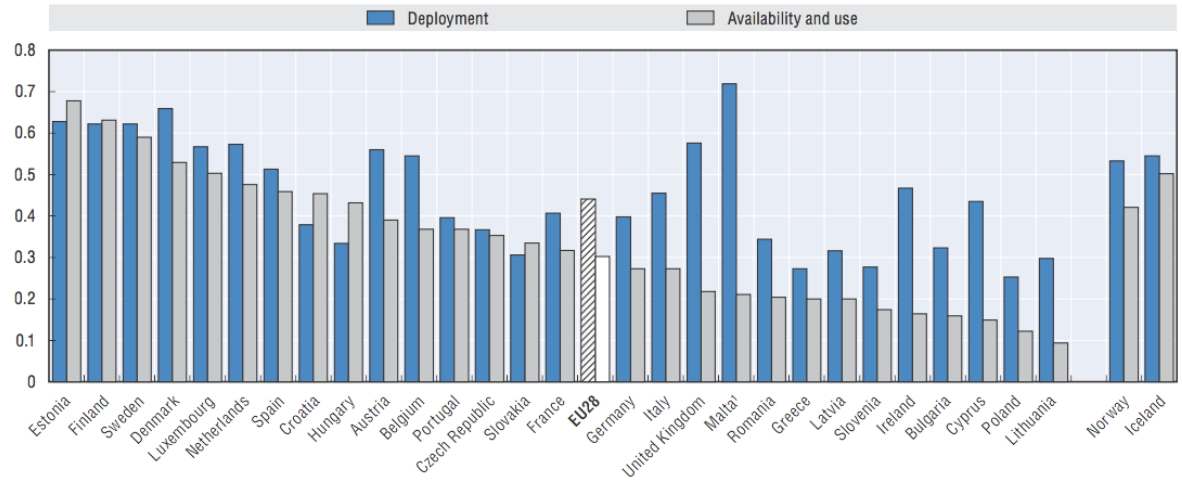
8.1. Composite index of eHealth adoption among general practitioners, 2013



Note: The maximum score for this indicator is 4.
Source: European Commission (2013), "Benchmarking Deployment of eHealth Among General Practitioners".

StatLink http://dx.doi.org/10.1787/888933430057

8.2. Composite indicators of eHealth adoption in hospitals, 2013



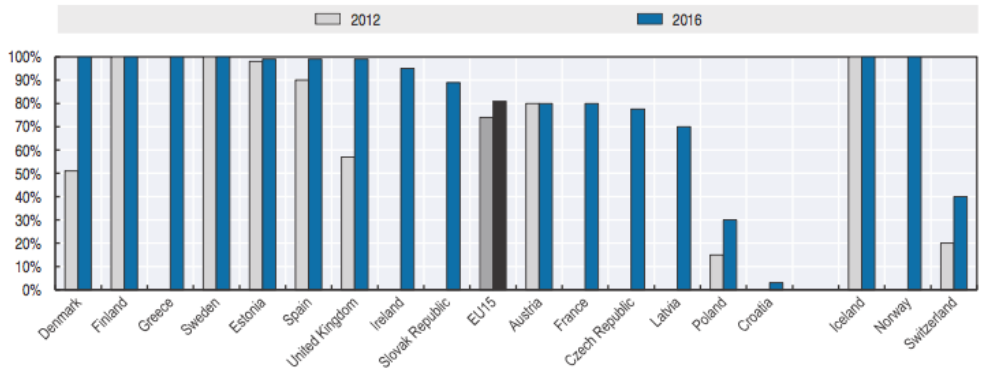
Note: The maximum score for these indicators is 1.
1. In Malta, the data refer to one hospital only.
Source: European Commission (2014), "European Hospital Survey: Benchmarking Deployment of eHealth Services".

StatLink http://dx.doi.org/10.1787/888933430069

Furthermore, as presented in ***Health at a Glance: Europe 2018***[23], in 2012 and 2016, the EC assessed the adoption of electronic medical records by primary care physician offices. The outcomes are presented in the chapter **Resilience: innovation, efficiency and fiscal sustainability:**

[23] ***Health at a Glance: Europe***, 2018: http://www.oecd.org/health/health-at-a-glance-europe-23056088.htm

8.1. Percentage of primary care physician offices using electronic medical records, 2012 and 2016



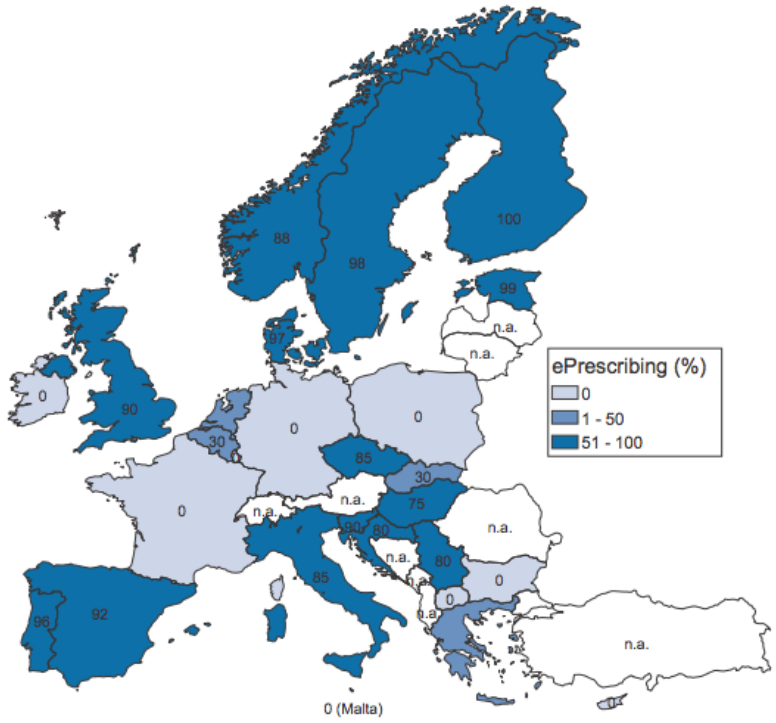
Source: OECD Survey of Electronic Health Record System Development and Use, 2012 and 2016.

StatLink http://dx.doi.org/10.1787/888933836732

As an explanation, why EMRs and also ePrescribtions were evaluated the OECD, 2018 states:

"Digital technology offers great opportunities to deliver health services more efficiently, and the European Commission supports a digital transformation of health systems to empower citizens to have access to their health data and to promote exchange of health data among health care providers across the EU. The use of eHealth and ePrescribing continues to grow in many EU countries, although some countries are lagging behind."

8.2. Percentage of ePrescriptions in community pharmacies, 2018



Note: Greece and the Netherlands are implementing ePrescribing but the percentage was not reported.
Source: Pharmaceutical Group of the European Union (PGEU).

StatLink http://dx.doi.org/10.1787/888933836751

"Health care that is safe, effective, timely, efficient and patient-centred relies on the right information reaching the right person (or organisation) at the right time. A digitalised information infrastructure that ensures timely and reliable sharing of clinical and other information can improve health outcomes and efficiency, and also create a repository of valuable data for researchers and system managers (OECD, 2017). Enabling people to access, and interact with, their electronic medical record (EMR) is an important feature that can help people become more involved in their health and their care."

The European Commission's Digital Single Market Strategy includes three pillars to improve the health and care sector across the EU:

1) to secure access to and sharing of personal health information across borders, with the intention of going beyond ePrescriptions and patient summaries and establish full interoperability of member states' EMRs and a European exchange format for electronic records;

2) to connect and share health data to enable research, better diagnosis and improved health; and

3) to strengthen citizen empowerment and individual care through eHealth solutions and new care models (European Commission, 2018)."[24]

[24] ***Health at a Glance: Europe***, 2018: http://www.oecd.org/health/health-at-a-glance-europe-23056088.htm

3 Approaches, projects and potential

According to the EC, utilizing "ICT for health, wellbeing and ageing" generates a triple win. Information and Communication Technology (ICT) is known to "contribute by providing better services to manage your health and wellbeing. The introduction of ICT and telemedicine alone is estimated to improve efficiency of health and care by 20%. ICT empowers users of every age to better manage their health. The European economy can also benefit from a growing market."

Thus, by going digital we can achieve a triple win:

- "a **better quality of life** for European citizens,
- **innovation and growth** for a competitive EU industry and
- **more sustainable healthcare systems** for society."[25]

Healthy and active living

Huge potential for the successful implementation of eHealth strategies lies in its enhancements for **patient-centeredness**, which is increasingly recognised as a core component of high quality care.

As the EPF provides and summarizes the evidence: "patient-centred care models have been shown to be cost-effective as well as to increase patient satisfaction and often clinical outcomes. Patients with chronic and long term conditions develop specific needs compared to the general population. An increasing number of patients also have multiple conditions. One important element to take into account in the development of eHealth services is that care should be centred on the patient, not the disease.

eHealth has the potential to bring care closer to patients' lives, and to ensure an improved coordination of patients' care through better exchange of information and data between healthcare professionals."[26]

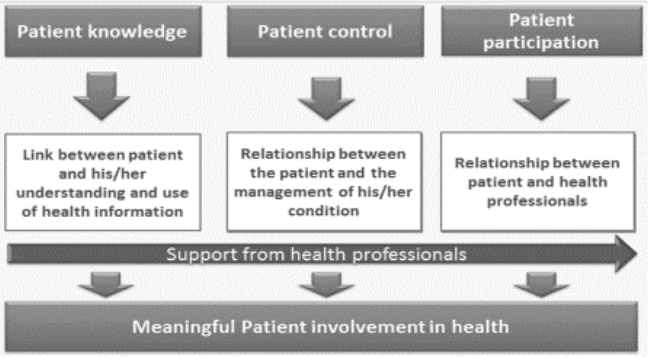
Moreover, the EPF defines **patient empowerment** as "a multi-dimensional process that helps people gain control over their own lives and increases their capacity to act on issues that they themselves define as important." Collective empowerment is "a process through which individuals and communities are able to express their needs, present their concerns, devise strategies for involvement in decision-making, and take political, social, and cultural action to meet those needs."[27]

In fact, citizens aspire to actively participate in their health and/or disease management as informed patients. Movements such as **Quantified-Self** count numerous engaging **life-**

[25] **EC statement on the triple win of eHealth**: https://ec.europa.eu/digital-single-market/en/ehealth-and-ageing
[26] European Patients' Forum - ***A final draft of the eHealth position paper***, 2015: http://www.eu-patient.eu/Members/Weekly-Mailing/final-consultation-on-the-epf-ehealth-position-paper
[27] For more information see ***EPF's briefing on patient empowerment***: http://www.eu-patient.eu/globalassets/campaign-patient-empowerment/briefing_paperpatient-empowerment_final_external.pdf

loggers, who desire to keep track of their vitals on a regular basis with the goal to enhance their personal health and performance capability.[28] They rely on new technologies – tracking devices, smart phones and an exponentially growing number of mHealth applications – to evaluate their health status.

As a successful example, the Sustains project [defined below], which focused on patients' access to electronic health records, developed a model for patient empowerment:



"Also, the Chain of Trust project [as well defined below] showed that 92% of patients who participated to the survey are willing to play a more active role in managing their own condition, but only 48% thought they were ready to handle the additional responsibilities presented by eHealth.[29]

Patient empowerment is both a precondition for the large scale implementation of eHealth and a potential outcome for eHealth. Patients need the necessary skills to access and use eHealth services, which calls for a strategy to strengthen **Health literacy**.

Digital health literacy or **eHealth literacy** sets challenges. Though an increasing number of European people use internet to find information about health[30], digital health literacy is a wider concept that also encompasses the skills necessary to use eHealth tools."[31]

In order to establish an eHealth evidence base, various stakeholders have already invested in this area. So for instance the EPF, which has been involved in various eHealth projects with a strong focus on patients' role in eHealth as well as needs and expectations of patients towards eHealth services and tools.[32]

[28] **Information about the Quantified-Self movement**: http://quantifiedself.com/
[29] **Chain of Trust final report - main findings and recommendations**: http://www.eu-patient.eu/globalassets/projects/chainoftrust/epf-report-web.pdf
[30] ***European Citizens' Digital Health Literacy Report***, 2014: http://ec.europa.eu/public_opinion/flash/fl_404_en.pdf
[31] European Patients' Forum - ***A final draft of the eHealth position paper***, 2015: http://www.eu-patient.eu/Members/Weekly-Mailing/final-consultation-on-the-epf-ehealth-position-paper
[32] **For more information on other eHealth projects the EPF participated in please see**: http://www.eu-patient.eu/whatwedo/Projects/

As presented in their recently published position paper, the EPF's major projects in this area include:

- **"SUSTAINS - Support USers To Access INformation and Services**: The project aimed to develop and deploy a wide range of eHealth services linked to patients' access to Electronic Health Records (EHR) in 11 regions in 9 European countries. EPF plays a key role in this project, especially in the work relating to patient requirements' identification and the assessment of patient empowerment as a result of using the SUSTAINS services. [33]
- **Chain of Trust**: EPF was the coordinator of this EU public health programme project. It assessed the perspective of the main end users of telehealth services across the EU to see whether and how views have evolved since the initial deployment of telehealth and what barriers persist in building confidence in and acceptance of this innovative type of services. For more information, see the final report.
- **Renewing Health**: EPF was involved in the **User Advisory** of this project. The project implemented large-scale real-life test-beds for the validation and subsequent evaluation of innovative telemedicine services in nine European regions for patients suffering from three major chronic conditions, notably diabetes, cardiovascular diseases, and Chronic Obstructive Pulmonary Disease (COPD).[34]
- EPF was also involved in the project **SmartCare**, which aimed to promote a more integrated and effective approach to providing health and social care, and **Calliope** which was focusing on interoperability of eHealth infrastructures and services in the EU."[35]

Healthy and active ageing

Various policy initiatives have focused on the matter of demographic changes and how to make the necessary adaptations in order to support Europe's ageing society of the 21st century and contribute to the European Silver Economy. A "shared vision" has been developed under the title of "Blueprint on Digital Innovation for Active and Healthy Ageing".

As can be deduced from the document[36], the Blueprint "is a means to "connect the dots" of a very complex landscape on digital health and social care and active and healthy ageing. The Blueprint can create an overarching "political vision" that is aligned with the major priorities of the Juncker Commission (notably on promoting Economic Growth and Jobs, and realising the Digital Single Market). This vision is a necessary pre-requisite to mobilise "political will" across the European Union and harness resources to act, particularly as results are not likely to come overnight and fall within short-term political cycles at regional, national and European levels. The Blueprint will serve as a tool to raise awareness about the potential of better care coordination amongst the large community of relevant stakeholders, including users.

[33] **A three-year project co-funded under the Competitiveness and Innovation Programme of the European Commission**: http://www.sustainsproject.eu/
[34] **More information in a project, which was funded under the Competitiveness and Innovation Framework Programme (CIP)**: http://www.renewinghealth.eu
[35] **More information under**: http://www.pilotsmartcare.eu/home.html and http://www.calliope-network.eu/
[36] ***Blueprint on Digital Innovation for Active and Healthy Ageing***: http://ec.europa.eu/research/conferences/2016/aha-summit/index.cfm?pg=blueprint

Current activities of DG CNECT targeting digital innovation for health and social care in ageing well include research and innovation under Horizon 2020-Societal Challenge 1 (550€M), the Active and Assisted Living Programme with Member States, the new EIT-KIC on healthy living and active ageing, the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA) co-managed with DG SANTE and DG RTD, the eHealth Action Plan, the Joint Programming Initiative with Member States on More Years –Better Lives and the EU Silver Economy strategy.

Other EU activities and priorities that are relevant and can benefit from further synergy include IoT, micro-nano systems, Smart Homes and mobility, Big Data, Inclusion, Industry 4.0 and Robotics; Technology platform of construction industries (DG GROW), medical devices (DG GROW), telemedicine legal framework, cross border care and assessment performance of health systems (DG SANTE), long term care and labour inclusion (DG EMPL), smart specialisation strategies (DG REGIO), innovation for health and ageing (DG RTD, JRC)."

5 Challenges and ethical implications

The 5 challenges of personalised medicine (as an example)

Chosen as an aspect to focus on, as needs become more pressing, **personalised medicine** has become the centre of attention, also of the EC. According to their definition "it is based on the smart use of technology, coupled with greater participation by patients in the management of their own health, to help prevent diseases and promote healthy living. When diseases can be prevented and not only treated, the cost of healthcare will come down, creating a virtuous circle for health policy."[37]

As published, the Personalised Medicine conference organised by the European Commission in July 2016, addressed the policy perspective on personalised medicine, an up and coming paradigm in healthcare.

Five major challenges were identified, around which the conference was organised:

- **Challenge 1. Developing awareness and empowerment.** Two cancer survivors outlined what today's patients want from policymakers. This can be summarised in one sentence: to be involved in decision-making affecting their own healthcare.
- **Challenge 2. Integrating big data and ICT solutions.** Making technology work for patients. This concept was illustrated by IBM's Watson Health unit which has developed artificial intelligence with algorithms that analyse databases to help doctors with diagnosis. A challenge for policymakers is to ensure that the system for obtaining patient consent is robust and the purpose for which it will be used is transparent. A related issue is managing new data sources effectively.
- **Challenge 3. Translating basic to clinical research and beyond.** The discussion about information technology was taken further by illustrating how new sequencing technologies can be used to identify gene mutations, which in turn become targets for developing novel therapies. Genomic and phenotypic data can be combined with epidemiological data to design disease prevention campaigns.
- **Challenge 4. Bringing innovation to the market.** This discussion focused on incentives for bringing personalised medicine to the market. Each personalised medicine approach or drug will be developed for a relatively small patient population. Companies need incentives to undertake this work, which will not be as remunerative as developing drugs for a large market. Options discussed included a risk-sharing agreement under which the public authority would guarantee a market share in exchange for an agreement to undertake the risk of drug development.
- **Challenge 5. Shaping sustainable healthcare.** To be sustainable, any strategy for personalised medicine needs to enjoy broad support from the population. This starts with having sound policies on informed consent and the use of personal data. It continues with the building of electronic patient records, registries and biobanks, all of which need to be integrated into a system that has practical benefits for people.[38]

[37] More information on the topic and the presentations are to be found on the event page: https://ec.europa.eu/digital-single-market/en/news/5-challenges-personalised-medicine; Please note: author: Mathilde Vivot, NCP Health, Demographic Change and Well-being; additional information also to be found on the Euresearch web page: https://www.euresearch.ch/en/

[38] More information on the topic and the presentations are to be found on the event page: https://ec.europa.eu/digital-single-market/en/news/5-challenges-personalised-medicine; Please note: author: Mathilde Vivot, NCP Health, Demographic Change and Well-being; additional information also to be found on the Euresearch web page: https://www.euresearch.ch/en/

Ethical implications (exemplary)

e.g. Informed consent

The EPF stresses that a recent study comparing electronic health records in the EU shows that many Member States do not require informed consent of the patient to establish an electronic health record, or for the sharing of the record with other healthcare professionals.[39]

e.g. Ownership of information

Who owns the information, for instance in an EHR, is a highly critical question. This information is personal data of the patients and as such, it grants them rights under the data protection legislation, but healthcare providers in turn input these data and provide their medical knowledge.

[Furthermore, question like **e.g. Who can have access and input in the health record/documentation?** or **Which kind of data should be masked or withheld?** for instance with direct-to-consumer (DTC) genetic tests, arise soon when working on ICT and eHealth problems. For more information please consult the ***National Data Guardian for Health and Care - Review of Data Security, Consent and Opt-Outs***, 2016, and the ***EU General Data Protection Regulation***]

Additionally, an issue, which cannot be ignored are possible security breaches, as for instance even with encryption and controlled authorized access only, a secure virtual workplace and network might not exclude all types of data transfers, such as e.g. printing, downloading, emailing, etc.[40]

Since there is no one size fits all solution for the broad range of potential privacy issues, and the cases might be diverging in privacy vs. confidentiality vs. security vs. sensitivity etc. an expert body and review body should be implemented (consumer review board, participant-led review board, personal data cooperative, etc.).[41]

For addition information, please read: Überall, M., & Werner-Felmayer, G. (2019). Integrative Biology and Big-Data-Centrism: Mapping out a Bioscience Ethics Perspective with a SWOT Matrix. *Omics: a journal of integrative biology*, *23*(8), 371-379., and ask your lecturers for more information!

Moreover, the recently presented document Ethics Guidelines on trustworthy AI[42] (by the High-Level Expert Group on Artificial Intelligence) might be relevant for your project and the framework for AI presented on 19 February 2020.

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[39] ***Overview of the national laws on electronic health records in the EU Member States and their interaction with the provision of cross-border eHealth services***. Final report and recommendations, 2014: http://ec.europa.eu/health/ehealth/docs/laws_report_recommendations_en.pdf

[40] Shoffner, M., Owen, P., Mostafa, J., Lamm, B., Wang, X., Schmitt, C. P., & Ahalt, S. C. (2013). ***The secure medical research workspace: an IT infrastructure to enable secure research on clinical data***. Clinical and translational science, 6(3), 222-225.

[41] Vayena, E., Gasser, U., Wood, A., O'Brien, D. R., & Altman, M. (2016). ***Elements of a New Ethical Framework for Big Data Research***. Washington and Lee Law Review Online, 72(3), 420.

[42] https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai

6 The Task

Application for a grant within the Third Health Programme

On 21 March 2014, the Third Health Programme[43] was published in the Official Journal of the European Union.

The programme has **4 overarching objectives**:

- Promote health, prevent diseases and foster supportive environments for **healthy lifestyles** taking into account the 'health in all policies' principle
- Protect Union citizens from serious **cross-border health threats**
- Contribute to **innovative, efficient and sustainable health systems**
- Facilitate access to **better and safer healthcare** for Union citizens

The Third EU Health Programme with a budget of **€ 449.4 million** is the main European Commission instrument to implement the EU health strategy.

It is implemented by means of annual work plans which set out priority areas and the criteria for funding actions under the programme.

The **Consumers, Health, Agriculture and Food Executive Agency (Chafea)** is entrusted by the European Commission to implement the Health Programme. This is mainly done through financing three types of different actions: **projects, joint actions and operation grants**. Those actions should have a special European dimension, meaning that a minimum of various partners of different European Countries have to be involved in the project plan.

Since 2014, the Call for Proposals under the Third Health Programme are being published in parallel at the webpages of Chafea as well as in the EU Research & Innovation Participant Portal. The evaluation of the proposals is done by external experts in the respective topic fields.

Proposals must respond to the priorities identified in the annual work programmes, implementing the Health Programme.

All EU Member States, Iceland, Norway and Serbia participate in the Health Programme, i.e. entities registered in these countries are eligible to participate in the calls for proposals. Organisations from other countries can only participate as subcontractors or collaborating stakeholders. Please note: Financial support is not available for individuals. Only legally established organisations are able to apply (such as non-governmental organisations, public sector bodies, public administrations, universities, higher education establishments etc.).

There are 3 additional principles which you have to know if you want to apply:

Non-profit rule: the grant may not have the purpose or effect of producing a profit

[43] ***The Third Health programme***, 2014: https://ec.europa.eu/health/sites/health/files/programme/docs/factsheet_healthprogramme2014_2020_en.pdf

Non-retroactivity rule: you can get co-funding only for the costs incurred after the starting date

Non-cumulate rule: each action may give rise to the award of only one grant to any one beneficiary

(The Third Health Programme was preceded by the two health programmes 1st HP (2003/2008) and 2nd HP (2008-2013).)

The objective of each team is to prepare an outline proposal that focuses on the aims of the European Commission as stated in the Third Health Programme and is compatible with the actions proposed by the WHO with feasible, effective and culturally appropriate strategies to address the public health challenges of eHealth (Big data, Digitization & HealthTech) within the EU, with a special focus on healthy living, healthy ageing, or to improve healthcare systems in an appealing way for policy makers. Your outcomes will then be presented to an evaluation committee.

For the purpose of this simulation, imagine that you have been commissioned to act as coordinators of the project consortium. You can have up to 10 partners (e.g. national ministries of health, regions, universities, research institutions, SMEs, industry etc.) in the consortium, including yourselves as coordinator, and no fewer than four.

The concept should be sustainable, financially justifiable and acceptable.

You should define and justify your choice of target population, i.e. are you only focusing on the working population, adolescents, older workers, immigrants, and the unemployed, specific occupation groups i.e. healthcare workers etc., as well as your choice of intervention(s).

The budget is €3 million over 3 years. Unusually, in this case the Commission has decided to fund the pilot at 100% so that partners in the consortium do not have to make a financial contribution.

7 Final proposals and presentation

On **January 8th, 2021** you will present your idea to a jury panel composed of MCI faculty. For this, each team has to submit its final **presentation slides** no later than **January 7th 2021, 22:00 to Sakai (Assignments).** Each team will be given **12 minutes to present** their proposal. Subsequently, the jury members will pose critical questions (**additional 5-8 minutes**).

Questions to consider in your preparations might include:

- What group(s) might you link with to implement your proposed program(s)?
- How will you monitor and evaluate your program components?
- What indicators would you use in the evaluation process?
- How would you scale up any pilot projects or programs that work well?
- How would you phase the activities across the 3 years?
- Which new technologies will have a role in your pilot?
- What is innovative about your program?
- Budget: How would you allocate the money?

The **written proposal** (not to exceed 40 pages excluding abstract, table of contents, list of abbreviations, references and appendices; line-spacing 1.5, Font Size 11, Times New Roman) is to be submitted **no later than January 14th 2021, 22:00 to Sakai (Assignments)**, and will be evaluated by an **external commission of judges** who are international experts in the fields of health policy, health promotion, medical technologies, health economics and financing, legislation as well as management.

Please include the following elements in your written proposal:

- Project Summary (Abstract)
- Rationale
- Aims and Objectives
- Approach and Method
- Outputs, Outcomes and Impact
- Planning and organization of work (Work Plan)
- Organization of the partnership
- Budget and Resource Planning
- Monitoring and Evaluation Plan
- Communication Plan
- Dissemination Plan
- Appendix

8 Case competition: judging criteria

Criterion	Sub-Criteria	Max. Points	
Key Issues identified	• Definition of problem and key subsidiary issue (How does the team address the key issues of the case?)	**15**	Evaluated by external Commission of Judges
Analysis	• Careful quantitative and qualitative analysis of the issues at stake	**10**	
Quality of the proposal	• Realism and practicality of the solutions • Clear articulation of the proposal in its parts and actions • Description of potential barriers • Strategic orientation and focus	**30**	
Implementation and Plan of Action	• Consideration of Cost and Control • Reasonable time planning	**15**	
Presentation Form & Style	• Presentation Style / Communication Skills • Professionalism • Creativity • Use of time • Attribution of sources	**20**	Evaluated by MCI Faculty Jury
Handling of Questions	• Ability to defend position, convincing, consistency with presentation • Ability to answer questions • Smoothness and balance of the group	**10**	
	Total Points	**100**	

Also, additional "Comments" will be provided by the jury members!

The average of achieved points / % will then define the final grade, according to the MCI Standard Evaluation system:

Achieved points / %	Grade
90-100	1
80-89	2
70-79	3
60-69	4
0-59	5

9 Additional References

Complementary to the FOOTNOTES in the document:

Deloitte/IPSOS (2011), "eHealth Benchmarking (Phase III): Final report for the European Commission", Brussels.

European Commission (2016), "eHealth: Connecting Health Systems across Europe", *http://ec.europa.eu/health/ ehealth/docs/2016_ehealthleaflet_horiz_en.pdf*.

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OECD (2017), "New Health Technologies: Managing Access, Value and Sustainability", OECD Publishing, Paris. DOI: *https:// doi.org/10.1787/9789264266438-en*.

OECD/EU (2018), "Health at a Glance: Europe 2018: State of Health in the EU Cycle", OECD Publishing, Paris. DOI: https://doi.org/10.1787/health_glance_eur-2018-en.

WHO (2019), "WHO Guideline: recommendations on digital interventions for health system strengthening", World Health Organization, Geneva. *https://www.who.int/reproductivehealth/publications/digital-interventions-health-system-strengthening/en/*.

10 Glossary

The EC defines *standardisation* as process of developing technical standards which help to maximise compatibility, interoperability, safety, repeatability or quality.

The EC defines interoperability as capacity to make use and exchange data between different health systems in order to interconnect information.

The WHO defines *empowerment* as "a process through which people gain greater control over decisions and actions affecting their health. To achieve this, individuals and communities need to develop skills, have access to information and resources, and opportunities to have a voice and influence the factors affecting their health and well-being".

The WHO defines *health literacy* as "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health," and states: "by improving people's access to health information, and their capacity to use it effectively, health literacy is critical to empowerment".

The WHO defines *health systems* as "The ensemble of all public and private organizations, institutions and resources mandated to improve, maintain or restore health. Health systems encompass both personal and population services, as well as activities to influence the policies and actions of other sectors to address the social, environmental and economic determinants of health".

The WHO defines *mHealth* as medical practice supported by mobile devices such as mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices.

mHealth (mobile Health) is generally considered as a subcategory of eHealth.

The OECD defines *Electronic Medical Record (EMR)* as a computerised medical record created in an organisation that delivers care, such as a hospital or physician's office, for patients of that organisation. Ideally, EMRs should be shared between providers and settings to provide a detailed history of contact with the health care system for individual patients from multiple organisations (Oderkirk, 2017).

The OECD defines *ePrescribing* as the computer-based electronic generation, transmission and filing of a medicine prescription. It allows prescribers to write prescriptions that can be retrieved by a pharmacy electronically without the need for a paper prescription. ePrescribing systems may also be linked or integrated to the reimbursement and claiming system.

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