

Digital challenges and opportunities: best uses of data and artificial intelligence to promote health and equity

Online discussion – 14 May 2020

Key messages

- e-Health has real potential to help improve accessibility of preventative measures and organisation and delivery of healthcare. In particular, it brings a strong added value in local strategies for tackling health inequalities.
- Differences in national systems constitute a considerable barrier for effective use of data systems and related technologies. More coordination at EU level and common standards are needed overcome these issues.
- EU institutions should foster better communication on digital innovation and technologies to increase trust and acceptance of new digital tools as well as their use.
- In the design and implementation of AI systems for health, robustness and explainability are key to guarantee performance. In addition, issues of potential discrimination need to be addressed to avoid detrimental outcomes for specific groups.

Webinar
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Digital innovation is creating new opportunities to transform the organisation and delivery of health care and public health interventions. In addition, as it becomes clear that digital technologies are already reshaping the way we live, consume, and work, major effects on people's health and wellbeing can be expected. New digital applications are also playing an increasingly **important role in addressing the COVID-19 pandemic**, including through providing accelerated services via remote access and tackling the spread of the outbreak through tracing technologies.

In line with new European Commission's (EC) political priorities and as part of its strategy "Shaping Europe's Digital Future", the EC has made new proposals to boost digital innovation and put forward a [European Strategy for Data](#) and a [White Paper on Artificial Intelligence](#) (AI). Both of these initiatives are currently open for **public consultation until the 31st of May and 14th of June respectively**. Seizing the opportunity, EuroHealthNet organised an **online discussion for its members to exchange on their expectations and concerns** regarding the use of new digital technologies in public health. The discussion put a particular focus on data and AI systems and their use in tackling the current health emergency as well as other societal challenges.

The aim was to

- Provide an opportunity to EuroHealthNet's members to **present their experiences** on e-Health, with particular focus on data and AI systems, as part of their (sub)national actions to address COVID-19 as well as other societal challenges including health inequalities, and social vulnerabilities.
- Provide an opportunity to members to **discuss and exchange expectations and concerns** on the introduction of new digital technologies.
- Help EuroHealthNet to respond to the EC Consultation due by 31 May and 14 June – and to suggest next steps for EuroHealthNet to support members' work in these fields.

The meeting was attended by around 20 participants from EuroHealthNet partnership and affiliated organisations.

Introduction

Clive Needle, Senior Advisor, EuroHealthNet

- Clive opened the online meeting by presenting EuroHealthNet and introducing the main topics of the discussion.

Presentations

The four speakers presented perspectives on issues associated with design of data and artificial intelligence systems to direct implementations of these new technologies to tackle the current COVID19 pandemic.

Unlocking the eHealth potential in tackling health inequalities – *Robbert van Bokhoven, Strategic advisor, PHAROS – Dutch Centre of Expertise on Health Disparities, the Netherlands*

- PHAROS' e-Health programme aims at ensuring that everyone can make efficient and effective use of digital tools, despite socio-economic status or other backgrounds. The Dutch Ministry of Health considers e-Health a promising perspective in answering main societal challenges like ageing population, shortage of employees, and rising healthcare expenditure.
- E-Health offers strong potential at both individual and collective levels:
 - At an individual level, giving people access to their health records, enabling them to self-manage and monitor their health data/conditions, and facilitating communications with healthcare professionals. Ultimately, it *“brings prevention and healthcare literally nearby”*.
 - At a collective level, eHealth generates substantial data on the health status of wider populations/neighbourhoods, giving local systems the information on how to match supply with needs and preferences. In this way prevention and healthcare can be tailored to local demand.
- The Dutch government will soon launch the National Public Health Policy Brief 2020-2024, which includes a call to action for local governments to make data work for health services at local levels.
- To unlock the real potential of e-Health technologies, a problem of 'digital divide' needs to be addressed first.
- To 'bridge the gap' PHAROS has developed an [eHealth4all](#) model which is based on four principles to be applied during the design and implementation of e-Health tools: 1) tools should be clear and comprehensible for all 2) tools should be easy to find, use, and navigate; 3) health professionals should have a coaching role and 4) local contexts need to be ready before implementation; local networks should make arrangements on guidance and support to help people along the way, especially so for people with poor health literacy and lower social-economic status. It all comes down to tailoring prevention and healthcare to local demand.
- PHAROS has set up criteria for inclusive design and blended care which are part of the standardization framework of the National eHealth Living Lab on quality of Health and Wellness Apps.
- Concluding remarks: e-Health has real potential to help improving accessibility of preventative measures and organisation and delivery of healthcare. In particular, it brings a strong added value in local strategies for tackling health disparities.

Resources:

- [Unlocking the eHealth potential in tackling health inequalities - Slides](#)
- [eHealth4all](#)

- [Online checklist Accessible information](#)
- [National eHealth Living Lab](#)

AI and HealthCare: outlook and activities of the Italian Public Health Institute – Mauro Grigioni,
Director of National Centre for Innovative Technologies in Public Health, Italian Public Health Institute (ISS), Italy

- The Italian constitutional law requires universal and equal access to health and care as well as to diagnostic/therapeutic technologies across all the country. Artificial Intelligence (AI) can offer the opportunity to achieve this goal and increase health equity across the country;
- ISS carries out three main activities related to AI and big data: 1) scientific research for their implementation for public health, 2) regulatory issues and market controls, and 3) quality assurance of public health facilities;
- ISS identifies and supports the development of common, coherent infrastructure for data exploitation for effective use of AI environment. Given that AI applications in health in Italy are considered medical devices, ISS has been conducting studies to assess how AI health devices can guarantee their performance as required by regulation (with focus on *robustness/vulnerability* and *ability to be explained*). ISS has been also investigating new AI-driven approaches for medical device optimisation, and stimulating stakeholders' discussion on AI, health and ethics;
- Their specific activities on extraction of data were discussed. Issues of access and sharing constitute mayor barriers for the implementation of IA systems. ISS is currently developing *automated radiomic features extraction*. This supports the analysis and processing (denoising, quality assessment, segmentation etc.) of radiomic images. In a collaboration with the Ministry of Digital Innovation, ISS employs a 'Datathon' approach, namely:
 - The data gathered should be first GDPR compliant, and all hospitals in Italy must share data in the same way.
 - The use of a 'Federated Learning system' allows easier implementation of AI technologies by "moving the algorithm instead of the data itself". This type of system helps avoid problems of privacy and ownership of data.
- Finally, 'explainability' is another important issue to be addressed. It is not possible to give a diagnostic to a patient if this was obtained only automatically. We require digital tools to provide explanation of their decision process in order to be able to back-track potential mistakes, such as digital "black boxes".

Resources:

- AI and HealthCare: outlook and activities of the Italian Public Health Institute - [Slides](#)

Finnish Institute for Health and Welfare data resources: how to access and utilize them – Mr. Antti Tuomi-Nikula,
Development Manager, Finnish Institute for Health and Welfare (THL), Finland

- THL has the largest compilation of health and welfare open data in Finland

- THL collects data on different stages of the lifespan by tapping in different data collections (eg.: registers and surveys) in the country. However, personal data will always remain classified. It can only be open if it is first processed accordingly to legal requirements (eg.: aggregated data).
- The main open data resources are statistical databases, application program interface, metadata, contacts, and background information. THL also offers tools for visualisation.
- THL's open data is utilised by a great extent by universities, the media, and start-ups.
- A dedicated service for COVID-19 was opened shortly after the outbreak of the virus.
- The use of THL's open data has been widely promoted by the institute.

Resources:

- Finnish Institute for Health and Welfare data resources: how to access and utilize them – [Slides](#)
- [THL Open Data](#)
- Examples of THL reporting services: [Sotkanet.fi](#), [Terveystemme.fi](#), [TEAviisari](#)
- [Findata – Health and Social Data Permit Authority](#)

COVID-19: Communication based on Risk Perception Analysis – Miguel Telo de Arriaga, Head of the Division of Literacy, Health and Well-being, Directorate-General of Health (DGS), Portugal

- Portugal has a national action plan of health literacy which also includes e-Health literacy and IT developments. Its objective is to promote patient empowerment but also to give the opportunity to people and patients to be involved in decision-making processes. There are a number of systems (eg.: electronic health records) that people can access whenever and where they want (if they have the technologies to use it).
- When the COVID-19 pandemic outbreak began, DGS decided to start collecting data on the risk perception of the population to design the evidence-based communication strategy.
- Crisis situations, with effective communication planning and strategy, could indeed function as opportunities to promote health literacy.
- DGS utilised AI powered software to scan, over four-day periods, comments on social media posts related to COVID-19. Each comment was categorised according to a qualitative thematic analysis, which included two broad categories used to build the AI algorithm:
 - Perceived demands: danger, effort, uncertainty
 - Perceived resources: knowledge, skills or abilities, external support
- Once the AI software combines the information, it develops a “traffic lights” risk perception tool, with the possibility to look and assess the fluctuation of the risk perception indicators
- The results of the risk perception analysis showed that population had confidence in health authorities and support for health professionals, which lead DGS to tailor the communication campaign accordingly for better outreach
- Concluding remarks: the implementation of AI technologies can offer the opportunity to develop tailored approaches that allow better outreach, especially toward more isolated groups such as those with lower levels of health literacy

Resources:

COVID-19: Communication based on Risk Perception Analysis – [Slides](#)

Discussion

After the presentations, all participants were invited to comment, share their opinion and activities or ask questions relative to the presentations. The moderator opened the discussion:

- **Clive Needle, EuroHealthNet:** It has been estimated by the European Commission that only four fifths of Europeans are digitally aware and active. So how do you ensure inclusion and equity?
- **Robbert van Bokhoven, PHAROS:** In general, around 80% of people in the Netherlands can access their health data. A potential solution to this problem is to organise group meetings at local level to coach and train people to access and use their health data.
- **Clive Needle, EuroHealthNet:** Different speakers have pointed out the importance of standards. Should there be common European standards?
- **Mauro Grigioni, ISS:** Common European standards should be a must. The lack of interoperability of data between projects on AI limits the implementation of the results to actors other than the consortium that was carrying out the project. This heavily limits the implementation of data and AI systems on larger scale.
- **Miguel Telo de Arriaga, DGS:** In Portugal, 97% of the data collection systems are interoperable and interconnected with each other. This allow very effective fast data collection and use.
- **Timo Stal, THL:** How can you generate health data at local level to be used by the respective authorities in the Netherlands? How do you convince people to provide this data and to use apps?
- **Robbert van Bokhoven, PHAROS:** Data is gathered mainly through apps which collect information on health status at neighbourhood level. The use of Apps to monitor health data is encouraged at a community level, by helping people understand the individual and collective benefits of providing data. Different channels can be used, general practitioners' recommendations are very effective, as are opinion leaders or communication campaigns.
- **Miguel Telo de Arriaga, DGS:** Lessons learned in Portugal showed that to make an app attractive to people it has to be useful also for the user and not only for the data collection. In addition, it must collect the data without interfering with people's daily lives, should not be perceived as an additional burden.

Concluding remarks

Mojca Gabrijelcic, President EuroHealthNet, NIJZ: The use of data and related technologies is impacting the functioning of all sectors, with new opportunities but also new challenges. EuroHealthNet's Executive Board appreciates the contribution from the speakers and participants and will discuss how to take them further.

The moderator posed two final questions for the speakers: what do you think the EU can do to support better implementation of these new technologies so that everybody can benefit from them equally? And what can EuroHealthNet do best to support its partnership on digital developments?

- **Miguel Telo de Arriaga, DGS:** At European level, a lot of work needs to be done. The strong heterogeneity of different national systems is a considerable barrier to the access and sharing of data between countries in the EU.
- **Antti Tuomi-Nikula, THL:** Across the EU we are facing similar challenges, this means that more collaborative approaches between all countries should be fostered.
- **Mauro Grigioni, ISS:** Communication technologies can be used to help people to accept digital tools, such as apps. We should also call on EU institutions support better communication on digital innovation and digital technologies, which would lead to more uptake and reduce digital divide.
- **Robbert van Bokhoven, PHAROS:**
 - EuroHealthNet should support exchange of best practices and learnings from national strategies on eHealth;
 - EU should put forward European standards for quality of e-Health tools similar to PHAROS actions in the Netherlands;
 - In the design of AI algorithms, it is crucial to ensure to avoid discriminatory results toward specific groups.

Follow up

This report is being shared as a follow-up to the online meeting. EuroHealthNet has encouraged members to contribute to the EU consultations and will submit a collective response, including learnings from the online event.

Further webinars – for instance on *Climate, health and inequalities: exploring public health responses to interlinked issues* on 28 May – will be organised during 2020, to continue exchanges with the EuroHealthNet Partnership's members, invited experts and other stakeholders where appropriate.