

EXPERT PANEL ON EFFECTIVE WAYS OF INVESTING IN HEALTH**Request for an opinion: Assessing the impact of digital transformation of health services****Background – Rationale**

Digital technologies, such as telemedicine and more broadly 4G/5G mobile communications, artificial intelligence and supercomputing, offer new opportunities and do transform healthcare systems¹. These innovative solutions can, if designed purposefully and implemented in a cost-effective way, provide better health outcomes and contribute to the sustainability of health systems. They can also bring the positive disruptive innovation² and change in healthcare.

EU policies have consistently emphasised the importance of digital solutions such as eHealth. The Communication on effective, accessible and resilient health systems³ and the Annual Growth Survey 2016⁴ stress how digital innovations can improve integration of care through up to date information channels and deliver more targeted, personalised, effective and efficient healthcare, reducing errors and length of hospitalisation.

The public expenditure on health and long-term care has been increasing over the last decades in all EU Member States, and is expected to rise even further. In 2015, it accounted for 8.5% of GDP in the EU and could reach up to 12.5% of GDP in 2060⁵. Much of the increase has been attributed to the new technologies, including digital ones.

In this context, there is a growing need for robust evidence to support arguments that digital health solutions⁶ - and the related new organisational model replacing the old - can bring better health outcomes for citizens and contribute to improving the effectiveness, accessibility and resilience of health systems.

Systematic assessment and evaluation of impact of the digital health services is therefore needed but unfortunately they have been few in number, and not normally touching upon the transformation of healthcare, the organisational and operational change. The literature on the impact, for example, of telehealth solutions for chronic conditions suggests that telehealth can reduce hospital admissions and mortality for chronic heart failure patients, improve blood

¹ Health and care has been identified by most of the digital PPPs in Horizon 2020 as a core business area where digital technologies can play a major role. The Digitising European Industry (DEI) high level group recently established a working group on health. The profound transformation of the job market sees an increasing number of routine tasks being replaced by automated processes, but at same time it leads to opportunities multiplying in the digital health care sector (Deloitte 2016 Transformers: How machines are changing every sector of the economy)

² https://ec.europa.eu/health/expert_panel/sites/expertpanel/files/012_disruptive_innovation_en.pdf

³ Communication from the Commission "On effective, accessible and resilient health systems", COM(2014) 215 final

⁴ Annual Growth Survey 2016. Strengthening the recovery and fostering convergence COM(2015) 690 final

⁵ European Commission's Joint Report on Health Care and Long-term Care Systems and Fiscal Sustainability (7 October 2016)

⁶ "The Impact of eHealth on the Quality & Safety of Healthcare", Imperial College London, http://www.ehealthnews.eu/images/stories/Impact_of_eHealth.pdf & "Monitoring and Evaluating Digital Health Interventions: A practical guide to conducting research and assessment", World Health Organisation, 2016

pressure control in patients with hypertension, reduce hospital admissions for chronic obstructive pulmonary disease and improve glycaemic control in diabetes^{7, 8, 9,10}.

The evidence base concerning cost-effectiveness is less clear, with most of the studies being of insufficient quality. Use of the model for assessing the value of telemedicine (MAST¹¹) has been limited and used only in some of the clinical studies¹². The lack of robust evidence on cost-effectiveness is partly due to the absence of available data collected over long periods of time; it is argued that it takes several years to see a clear impact at health system level. There are indeed a few examples which have demonstrated cost-effectiveness and even cost-savings after the accumulation of data from thousands of patients over years of operations^{13, 14, 15}.

A framework for the assessment of the digital transformation of health services and its impact is vital to generate the evidence required for decision-making on appropriate approaches to integrate effective digital health strategies into broader national and regional policies. On one hand, this framework should aim at determining the fulfilment of health objectives – access, health outcomes, patient empowerment, efficiency, effectiveness and use of resources - to help health policy makers make appropriate decisions. Further to these, there is the question of impact on the wider economy, i.e., the impact on labour force and productivity, which in turn impact on economic growth. These are meant to contribute to the wider fiscal and social policy making, beyond the boundaries of pure health policies.

The expert panel opinion on assessing the impact of digital transformation of health services would support EU member states with decision-making in the domain of health, social and fiscal policies. The opinion would also help the Commission to shape further activities toward a better uptake of the digital health services at the EU level.

⁷ Brettle AJ et al. Telehealth: The effects on clinical outcomes, cost effectiveness and the patient experience: a systematic overview of the literature, University of Salford, accessible at http://usir.salford.ac.uk/29392/1/Telehealth_v8_.pdf

⁸ Inglis SC et al. Structured telephone support or non-invasive telemonitoring for patients with heart failure. *Cochrane Database of Systematic Reviews* 2015, Issue 10. Art. No.: CD007228. DOI: 10.1002/14651858.CD007228.pub3.

⁹ Flodgren G et al. Interactive telemedicine: effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews* 2015, Issue 9. Art. No.: CD002098. DOI:10.1002/14651858.CD002098.pub2.

¹⁰ "TECS evidence base review. Findings and recommendations", NHS England, April 2017.

¹¹ <http://www.mast-model.info/>

¹² Sorknaes AD, Bech M, Madsen H, Titlestad IL, Hounsgaard L, Hansen-Nord M, Jest P, Olesen F, Lauridsen J, Østergaard B. The effect of real-time teleconsultations between hospital-based nurses and patients with severe COPD discharged after an exacerbation. *J Telemed Telecare*. 2013 Dec;19(8):466-74

¹² Jump up ^ Torbjørnsen A, Jenum AK, Småstuen MC, Arsand E, Holmen H, Wahl AK, Ribu L. A Low-Intensity Mobile Health Intervention With and Without Health Counseling for Persons With Type 2 Diabetes, Part 1: Baseline and Short-Term Results From a Randomized Controlled Trial in the Norwegian Part of RENEWING HEALTH. *JMIR Mhealth Uhealth*. 2014 Dec 11;2(4):e52. doi: 10.2196/mhealth.3535.

¹³ Darkins et al. Reduced cost and mortality using home telehealth to promote self-management of complex chronic conditions: a retrospective matched cohort study of 4,999 veteran patients. *Telemed J E Health*. 2015 Jan;21(1):70-6. doi: 10.1089/tmj.2014.0067. & Telehealth Services in the Department of Veterans Affairs (VA) accessible at http://www.e-healthpolicy.org/docs/2014_Sessions/Darkins.pdf.

¹⁴ Joint Improvement Team for the Scottish Government, An Assessment of the Development of Telecare in Scotland 2006-2010, 2010 & European Commission, European Innovation Partnership on Active and Healthy Ageing Reference Sites: Excellent innovation for ageing - A European Guide, 2013

¹⁵ Gesundes Kinzigital Case Study Report, Strategic Intelligence Monitor on Personal Health Systems Phase 3 (SIMP3S3), European Commission Joint Research Centre, 2014, <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC93763/jrc93763.pdf>

Terms of Reference for the Expert Panel on Health

The Expert Panel is requested to provide its analysis on the following:

- (a) What are the systematic methods available for assessing the impact of the digital transformation of healthcare with regard to health objectives: access, outcomes, patient participation, use of resources, and sustainability? Are the existing methods best tailored for assessing the value of digital transformation of health services? Is there a need for modification of existing methods or for the development of new ones to assess and evaluate the impact of digital health services?
- (b) What types of data are available and required to assess the value of digital health services?
- (c) What impacts of digitalisation of health services should be assessed systematically? Should this impact be considered with regards to health outcomes, health systems, the wider society, or all of these? Or should other dimensions be considered instead or in addition?
- (d) How could the impacts on wider fiscal and social policies, beyond the health sector, be assessed?

Timing

Ideally the opinion of the Panel should be finalised by the end of 2018.

The Commission has launched the market study on telemedicine¹⁶ which includes: 1) mapping and categorisation of the telemedicine solutions including standards and guidelines, 2) market analysis of key players, 3) barriers of accessing telemedicine solutions in the EU, and 4) economic analysis. Early results from this study will be available in in May 2018.

¹⁶ Telemedicine is here defined as the provision of healthcare services through use of ICT in situations where the health professional and the patient (or two health professionals) are not in the same location. It involves secure transmission of medical data and information through text, sound, images, video or other forms needed for the prevention, diagnosis, treatment, monitoring and follow-up of patients. This transmission of data may be synchronous (real-time), as in video-conferencing or telephone, or asynchronous (store-and-forward), as with imaging for teleradiology or telepathology.