World Health Organization

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mHealth

Use of appropriate digital technologies for public health

Report by the Director-General

1. In May 2016, the Executive Board at its 139th session noted an earlier version of this report.[1] A previous version of this report was also considered and noted by the Executive Board at its 142nd session.[2] The present document has been amended to take account of Member States' comments. It also includes the use of other digital technologies for public health. Thus the report expands beyond but includes mobile wireless technologies.

2. The use of mobile wireless technologies for public health, or mHealth,[3] is an integral part of eHealth, which refers to the cost-effective and secure use of information and communication technologies in support of health and health-related fields.[4] Today the term "digital health" is often used as a broad umbrella term encompassing eHealth as well as developing areas such as the use of advanced computing sciences (in the fields of "big data", genomics and artificial intelligence, for example).

3. Digital technologies are becoming an important resource for health services delivery and public health. Mobile wireless technologies are particularly relevant, due to their ease of use, broad reach and wide acceptance. According to ITU, in 2015 there were more than 7 billion mobile telephone subscriptions across the world, over 70% of which were in low- or middle- income countries.[5,6] In

[1] Document EB139/8; see also document EB139/2016/REC/1, summary records of the third meeting, section 1.

[2] Document EB142/20 and the summary records of the Executive Board at its 142nd session, thirteenth meeting, section 2.

[3] See document EB139/8.

[4] See resolution WHA58.28 (2005) on eHealth.

[5] Measuring the information society report 2015. Geneva: International Telecommunication Union; 2015 (http://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2015/MISR2015-w5.pdf, accessed 5 March 2018).

[6] Mobile-cellular telephone subscriptions. In: Key ICT indicators for developed and developing countries and the world (totals and penetration rates). Geneva: International Telecommunication Union (http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2017/ITU_Key_2005-2017_ICT_data.xls, accessed 5 March 2018).

many such countries, people are more likely to have access to a mobile telephone than to clean water, a bank account or electricity.[1]

4. Digital technologies, such as mobile wireless technologies, have the potential to revolutionize how populations interact with national health services. Digital health and specifically mHealth have been shown to improve the quality and coverage of care, increase access to health information, services and skills, as well as promote positive changes in health behaviours to prevent the onset of acute and chronic diseases.[2,3] In order to realize these gains, Member States are seeking to identify standardized approaches for applying digital health in health systems and services.

5. An increasing proportion of the population is accessing health information and services through mobile telephones, and a vast array of mobile-based solutions – from SMS to complex "smartphone" applications – have been developed to improve health access, knowledge and behaviours across a range of contexts and target groups.[4]

6. In spite of the potentially wide applicability of digital health strategies and solutions to address the diversity of patients' and populations' needs, governments have found it challenging to assess, scale up and integrate such solutions. There are a number of contributing factors, including:

- multiplicity of pilot projects with no clear plan or process for scale;
- lack of interconnectedness between individual applications, and of integration with existing national eHealth strategies and health information architectures;
- absence of standards and tools for the comparative assessment of functionality, scalability and comparative value of fast-evolving digital health solutions, resulting in a lack of evidence to articulate normative guidance;
- lack of a multisectoral approach within government – and also among donor agencies – especially engagement between ministries of health and ministries of information and communication technologies and recommended rules of engagement with mobile network operators and the private sector.

PRIORITY AREAS FOR FUTURE CONSIDERATION

7. In the 2030 Agenda for Sustainable Development, it is recognized that there is a need to increase access to information and communication technologies significantly. Such technologies have

[1] Information and communications for development 2012: maximizing mobile. Washington, DC: World Bank; 2012 (http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/0,,contentMDK:23242711~pagePK:210058~piPK:210062~theSitePK:282823,00.html, accessed 5 March 2018).

[2] Free C, Phillips G, Galli L, Watson L, Felix L, Edwards P, et al. The effectiveness of mobile-health technology-based health behaviour change or disease management interventions for health care consumers: a systematic review. PLoS Med. 2013; 10:e1001362. doi: 10.1371/journal.pmed.1001362.

[3] Quinn C, Shardell M, Terrin M, Barr E, Ballew S, Gruber-Baldini A. Cluster-randomized trial of a mobile phone personalized behavioral intervention for blood glucose control. Diabetes Care. 2011; 34:1934–42. doi: 10.2337/dc11-0366.

[4] Things are looking app: mobile health apps are becoming more capable and potentially rather useful. The Economist. 10 March 2016 (http://www.economist.com/news/business/21694523-mobile-health-apps-are-becoming-more-capable-and-potentially-rather-useful-things-are-looking, accessed 5 March 2018).

the potential to play a major role in catalysing and measuring progress towards a number of the Sustainable Development Goals.

8. The spread of digital technologies and global interconnectedness has a significant potential to accelerate Member States' progress towards achieving universal health coverage, including ensuring access to quality health services. Increasing the capacity of Member States to implement digital health, and in particular mHealth, could play a major role in realizing that potential, particularly:

(a) *by increasing access to quality health services.* A key objective to implementing digital health, and in particular mHealth, is to increase access to health services through the effective and timely sharing of health data, particularly for hard-to-reach populations. For example, the ability to attach specialized devices and sensors, combined with the inherent capability of mobile technologies, increase their reach and power in disease diagnosis, monitoring, management and research. Moreover, information and communication technologies support a variety of critical health system functions by improving the ability to gather, analyse, manage, deliver and exchange information in all areas of health.

(b) *by increasing access to sexual and reproductive health services; reducing maternal, child and neonatal mortality.* The goal of integrating mHealth across the reproductive, maternal, newborn and child health continuum focuses on strengthening the quality, coverage and affordability of validated health interventions. This includes: electronically registering clients, assessing and monitoring those in need of services, having the necessary human resources and commodities in adequate supply, and ensuring that beneficiary populations are empowered; and that the health workforce is responsive to their needs, tracking and responding to health events in a timely manner, in order to improve outcomes and reduce mortality.

(c) *by reducing premature mortality from noncommunicable diseases and noncommunicable disease comorbidities.* Other opportunities for using mobile technologies include improving awareness to bring about change on the key noncommunicable diseases risk factors (including tobacco use, alcohol use, unhealthy diet and lack of physical activity), improving disease diagnosis and tracking, as well as self-care and home care and overall management of chronic conditions (including diabetes, cardiovascular disease, cancers and respiratory diseases).

(d) *by increasing global health security.* The limitations of current approaches to surveillance of both communicable and noncommunicable diseases and the increase in the public's use of the internet and mobile telephones have prompted new approaches for obtaining information directly from the public to support disease surveillance. These approaches include, for example, gathering information and data on epidemics and health indicators directly from affected populations or other stakeholders, through approaches such as "crowdsourcing" or community reporting.

(e) *by increasing the safety and quality of care.* The concept of making international patient summary data available through mobile technologies will increase the safety and quality of care by providing secure access to the information needed by the attending physicians at the time of care. This is particularly important in the event of disasters, emergencies and other unplanned care. Mobile technologies allow individuals to have access to their own summary health records and give physicians timely access to these records, which is particularly important when patients seek care outside of their normal care settings.

(f) *by increasing patient, family, and community engagement.* The framework on integrated, people-centred health services intends to make health care systems more responsive to people's needs by putting patients and their families at the centre of health care systems.[1] Creating delivery systems that support self- and family-driven care through digital, and in particular mHealth, solutions will be a key development in the near future.

9. For more than a decade, WHO has recognized the value that information and communication technologies bring to health systems and services. Evidence of the priority placed on such technologies is seen in the many resolutions on eHealth adopted by the World Health Assembly and by the regional committees.[2]

10. The WHO Global Observatory for eHealth survey of Member States in 2015 documented the surge in adoption of eHealth in countries. Today there are 121 countries that have national eHealth strategies, representing the beginning of a shift from an unsustainable project-based approach towards a systematic, integrated approach designed for cost-effective investment and alignment of partners.[3] In this context, there is potential for digital health programmes to become more systematically implemented, drawing from established standards-based and interoperable solutions, with increasing interest in sharing lessons learned and adopting enabling policies.

11. In collaboration with ITU, the Secretariat is working to raise awareness, record trends, build capacity, establish guidance, and generate and document evidence on digital health, including mHealth, as a tool to promote person-centred, integrated service delivery. The collaboration also promotes public–private partnerships under recommended rules of engagement.

12. Significant technical engagement by the Secretariat towards the development and implementation of mHealth programmes, include:

- the joint initiative with ITU "Be He@lthy, Be Mobile" for the prevention and management of noncommunicable diseases, their comorbidities and their risk factors, including improving disease diagnosis and tracking;

- the development of guidelines for digital health interventions, including mHealth applications for health systems strengthening through the mHealth Technical and Evidence Review Group for reproductive, maternal and child health;

- building on digital solutions to help tuberculosis patients.

[1] See resolution WHA69.24 (2016) on strengthening integrated, people-centred health services.

[2] Relevant resolutions of the World Health Assembly include WHA58.28 (2005) and WHA66.24 (2013); various resolutions of the regional committees include EM/RC53/R.10 (2006), AFR/RC56/R8 (2006), AFR/RC60/R3 (2010), CD51.R5 (2011) and AFR/RC63/R5 (2013).

[3] For more information, see the Global Observatory for eHealth website (http://www.who.int/goe/policies/en, accessed 5 March 2018).

13. WHO recognizes the significant role digital technologies can play in strengthening the health systems in countries to achieve universal health coverage, the health-related Sustainable Development Goals and other health objectives. Therefore, the new priorities for WHO in the area of digital health, specifically mHealth, include:

- to update its existing strategic approach in order to align better its collective activities and future direction at all levels of the Organization in the use of digital health in support of universal health coverage, taking into account new potential areas of focus related to technical advancement of the field;

- to support cross-sectoral collaboration as well as coordination between different organizations of the United Nations system and other bodies to identify and scale up cost-effective innovative digital health, specifically mHealth, solutions;

- to update the Global Observatory for eHealth mechanism for data collection and reporting;

- to build a repository of knowledge, best practices and tools to help Member States to implement their digital health strategies;

- to support and strengthen ongoing efforts to build evidence-based guidance on the use of mHealth in order to advance integrated person-centred health services and universal health coverage;

- to provide guidance and assessment frameworks on mHealth and digital innovations to help Member States to select, adopt, manage and evaluate digital health solutions in order to aid good governance and investment decisions;

- to work with Member States and partners to build platforms for sharing evidence, experience and good practices in mHealth implementation as a way to achieving the Sustainable Development Goals. These could include building on existing networks to create regional hubs of knowledge and excellence on mHealth;

- to support building capacity and the empowerment of health workers and their beneficiary populations to use information and communication technologies, in order to foster their engagement and accountability, and to catalyse and monitor progress on specific Sustainable Development Goals using mHealth.

ACTION BY THE HEALTH ASSEMBLY

14. The Health Assembly is invited to note the report.

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