Toward a rapid digital health transformation

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E-health is a field in full development that takes various forms in response to the many challenges that health systems currently face or will face in the next few years. E-health, also called digital health or connected health, is not limited to teleconsultation, the use of which has accelerated considerably due to the COVID-19 epidemic. According WHO, The term digital health may conjure images of advanced, futuristic technology, but in fact it can include a range of interventions, including: electronic health records and standards underpinning the exchange of data; mobile health apps for monitoring and prevention; public health portals that provide transparent access to an individual's personal health records and contacts with the health system; telemedicine; teleconsultation, medical telemonitoring, as well as mobile health (or m-health) which covers a wide universe of connected objects and mobile applications; integrated care delivery; clinical decision-making support tools in primary care; robotics; personalized medicine; nanotechnologies; and artificial intelligence.

Digital health has been seen for years as an emerging strategic health priority and its potential role has come under the spotlight during the COVID-19 pandemic when physical distancing measures and mobility restrictions were gradually adopted. The COVID-19 is redefining how and what care is delivered. Digital tools can provide effective support for institutions, allowing the deployment of novel digital healthcare models at different stakeholder levels from healthcare and research, to government and general population. All countries around the world are facing the challenge of ensuring that their health services are affordable, accessible, equitable, and of high quality. An increase in the deployment of digital health tools has been recorded in a number of countries and regions, which has helped make digital health tangible to many people for the first time. However, the WHO estimates that 3.6 billion people are completely offline. For the most part, they live in low-income countries, where barely two out of ten people on average have Internet access. More than ever, these new digital applications should make it possible for everyone to access the information they need. The COVID-19 pandemic is the first pandemic in human history in which technologies and social media have been used on a massive scale so that people can remain safe, productive and connected without being physically in contact. Health is now seen as one of the most important sectors for the introduction and deployment of digital technology as a way to strengthen and reform health systems, ensure continuity of care, and enable new ways to connect health professional, patients and other stakeholders with one another to improve patient care.

The pandemic represents an unprecedented worldwide crisis and has put pressure on health systems. It has been necessary to fight the pandemic and simultaneously care for the people affected and preserve the rest of the population, while continuing to care for other patients. These constraints have tested every organization and every staff member as well all the tools in place and has highlighted the key role of digital health. Governments have mobilized as much as possible to better integrate digital technologies such as contact tracing systems to monitor epidemic outbreaks. Given the need to control the coronavirus as quickly and effectively as possible, it is perhaps not surprising that the introduction of contact-tracing coronavirus apps has so far generated mixed results. In some countries adoption has been relatively slow, development has been difficult, and trust has not been sufficiently built up yet at the population level. Medical laboratories found themselves on the front line to manage processes encompassing testing and associated diagnostics, viral genomic monitoring and contact tracing with COVID-19 patients. Databases and data processing have been deployed on the national scale. Laboratory medicine specialists have also often been often called upon for intelligent vaccination management.

The introduction of digital tools also highlighted some of the challenges that naturally occur during any significant technological transition and will need to be addressed to safeguard the successful integration of digital tools into health systems, the recent developments of e-health are demonstrating how digital tools and services are becoming more concrete and valuable for end users. E-health takes various forms in response to the many challenges that healthcare systems currently face or will face in the next few years. It has quickly proven its usefulness to alleviate certain issues with health care accessibility. Online consultations made it possible to ensure the safety of healthcare professionals and patients as well as the continuity of care. In this context, it is essential that communication networks and services are reliable. Digital technology is present in many health organizations and professions. The crisis has generated a tremendous momentum for initiatives, in a very responsive environment: many digital solutions have been deployed on a large scale, start-ups and manufacturers have adapted their products almost in real time and new organizational methods have emerged to adapt to the constraints induced by the crisis. The need to urgently deal with lockdown and social distancing rules as well as the need to manage the health dimension has led to simplifying decision-making circuits. Procedures have given way to an action/reaction approach.

The acceleration of the deployment of these new tools has shown the need to reinforce the dissemination of knowledge in this area to guarantee good service delivery and to ensure that health systems benefit from new technologies. The crisis has been a vector for the global acculturation of patients around digital health. The outlook of both professionals and patients has changed with regard to digital technology thanks to the development of uses. Some patients and healthcare professionals thought that digital technology would dehumanize their relationship. The COVID crisis has concretely demonstrated the value of digital technology and how it can be an additional connection or support. However, digital technology introduces a third party into the patient/caregiver relationship and the healthcare professional may appear less expert than the patient in the digital field.

The crisis has also generated a strong growth in the need for medical data exchange and sharing. The instantaneous addressing made possible by digital means may also have led the patient to think that the healthcare professional could be constantly on call. Nevertheless, the expected benefits are now widely recognized in terms of facilitating pathways, improving the appropriateness of care and limiting redundant examinations.

The crisis has accelerated the digital shift in hospitals, introduced all the possibilities of digital technology in medical and social institutions and improved the care of patients with chronic diseases. Many, technological platforms have been developed to ensure follow up at home of patients with COVID, thus limiting overcrowding of hospital services. The crisis has also highlighted the value of paperless approaches for certain processes such as making appointments and paperless collection of information and documents. Teleconsultation and telemedicine have exploded. Successive lockdowns have required patients and providers to use it extensively. Even when not in lockdown, the volume of teleconsultations has not necessarily declined. New practices have become permanent. The specialties that particularly made use of teleconsultation during the COVID crisis have been: general medicine, anaesthesia, obstetric and gynaecological follow-up, midwifery consultations, oncology follow-up, psychological follow-up, particularly relating to addictions, minor psychiatric care and patient triage to direct them according to the description of their symptoms.

Making health, medical and social processes paperless is currently a major efficiency challenge for the future. There are still several obstacles of a medical, technical and organizational nature. Teleconsultation can generate a loss of information in the absence of clinical examination. It is also felt to be more tiring than in-person consultation and requires greater concentration. The physician is often obligated to rephrase what patients say. Telemedicine requires appropriate equipment. Technical problems, such as sound and image as well as insufficient tools appropriation can disrupt the smooth progress of the teleconsultation. Except for managing laboratory data and simple prescriptions, management related to administrative tasks may be experienced at first as more important. These drawbacks are largely counterbalanced by the benefit of meeting patient needs in terms of saving time and improving quality of life and care of patients whose scheduled treatments have been cancelled. Teleconsultation also makes it possible to improve certain practices such as prescription adjustment or renewal for people having difficulty getting around and visual exchanges facilitate a close bond.

The development of telemedicine effectively proceeds through the democratization of connected health objects in the contexts of teleconsultation, medical telemonitoring or patient self-assessments. Numerous delocalized laboratory medicine tools facilitate communication between physician and patient. Beyond the simple use for one's own comfort or convenience, medicalized uses in connection with these objects must be developed within the framework of specific protocols. These remain to be built with healthcare professionals, especially prior to medical consultations or in the context of regular follow-up. The massive use of teleconsultation tools during the crisis has encouraged healthcare professionals to make these tools part of their everyday practice as long as they are solution-driven and benefit from good training in the rules and good remote work practices. The tools must make it possible to ensure the continuity of digital communication during the patient's pathway. The patient necessarily must be familiar with digital uses to be comfortable with these tools, which therefore introduce a new digital divide among patients, with digital illiteracy. E-health can also provide responses to demographic change, and in particular to the aging of the population, which is accompanied by an increase in medical needs. Among the promising prospects for ehealth, the empowerment of patients with chronic diseases is often highlighted. Digital services can empower citizens, making it easier for them to take a greater role in the management of their own health from following prevention guidelines and being motivated to lead healthier lifestyles, to managing chronic conditions and providing feedback to healthcare providers. Health systems will also benefit from innovative care models that use telehealth and m-Health to address the rising demand for healthcare, helping to shift progressively towards integrated and personalised care systems.

Health data protection in digital health services is a central challenge to create trust. Cybersecurity remains another ongoing challenge, before, during and after the crisis. During COVID-19, illicit tracking applications hacked phones and phishing emails proliferated. Attacks on hospitals and healthcare companies have exploded. One of the common techniques consists of massive, organized attacks originating from all over the world which overload networks to render them unavailable. Secure access to data and secured sharing of these data are indispensable in order to allow healthcare professionals to exchange patient records and electronic prescriptions. For example, the European Commission is working on the creation of a European format for the exchange of electronic health records accessible to all EU citizens. Likewise, digital technology is set to play a key role in research data sharing, faster diagnosis and improved health.

There is a huge potential of health data to support medical research with the aim of improving prevention, diagnosis, treatments, drugs and medical devices. Several breakthrough technologies will certainly influence the development and prospects of digital health for the post-COVID period. This is primarily the case with artificial intelligence, whose potential has now been clearly demonstrated for applications in epidemiology, patient pre-orientation, rapid emergency triage, telemonitoring or diagnostic assistance, especially regarding medical imaging, laboratory medicine and drug prescription. The digital transition will be beneficial to everyone. Health is one of the target sectors, given the potential advantages that digital services can offer to citizens as well as healthcare institutions and businesses Digital solutions are also key to fighting climate change and achieving the green transition.

Exponential advancements in science and technology are transforming health and medicine and giving patients more control over their own health. The pandemic COVID-19 has forced eHealth into the lives of many. The influence of health technology in the fight against this pandemic is expected to be significant. The demand for eHealth is going viral and it is happening fast and globally. E-health therefore has many promising prospects to support the transformation of health systems faced with many current and future challenges. Its deployment represents major progress which, like all progress, involves overcoming certain challenges and considering certain watch points. It is still necessary to define a legal and regulatory framework suited to health innovation, to develop an appropriate assessment framework and to guarantee equitable access to ehealth solutions to avoid increasing health inequality. Well defined and easy-tounderstand guidelines for the day-to-day use of telehealth technologies in the context of COVID-19 are needed. They need to convey the message that eHealth solutions are a viable alternative in times of this pandemic and beyond. This requires more research and robust methods on validating online information while ensuring that human rights, privacy, and confidentiality are maintained.