COVID-19 Sparked a Digital Health Boom – But Will it Last?

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Digital health has experienced a boom during the pandemic, with solutions such as AI and telemedicine being adopted with speed across Europe. However, as many instances of such adoption have been the result of temporary or emergency measures, there is a question mark over whether solutions will continue to be leveraged after the pandemic, or whether the boom will be short lived.

Key Points

- The healthcare sector has been called upon to find solutions to many of the challenges raised by the pandemic – from diagnostics, to vaccinations, and digital healthcare.
- Healthcare innovation, including digital health, has significant potential to overcome the challenges that exist within our healthcare systems and make them more sustainable.
- Artificial intelligence and telemedicine can offer relief to overburdened healthcare systems, yet barriers have historically existed preventing large scale uptake, such as regulatory challenges and low chances of reimbursement.
- The pandemic has seen the sector waking up to the possibilities of digital healthcare, and this has been seen all over Europe. A number of solutions developed and launched by the EIT Health community have demonstrated strong impact.
- To enable technology in healthcare, supportive frameworks from policy and regulation, investment, reimbursement to education, are needed and it is crucial that we do not find ourselves in a similar situation in future, either due to another pandemic or by rising chronic diseases and ageing populations.

The COVID-19 pandemic has brought with it many challenges – across all sectors, however healthcare is the one that has been thrust into the spotlight. The healthcare sector has been called upon to find solutions to many of the challenges raised by the pandemic – from diagnostics, to vaccinations and digital healthcare.

Digital healthcare is not a term that is new to any of us – we have had the technology to provide many aspects of healthcare digitally for many years. But it was the pandemic that led to this well-established, yet under-utilised, area of healthcare to have its day in the sun.

Healthcare innovation, including digital health, has significant potential to overcome the challenges that exist within our healthcare systems and make them more sustainable. It has the potential to drive the paradigm shift in healthcare towards more prevention and prediction. Artificial intelligence and telemedicine can also offer relief to overburdened healthcare systems, yet barriers have historically existed preventing large scale uptake, such as regulatory challenges and low chances of reimbursement. 'Necessity is the mother of invention'; and as such, the sheer urgency of demand created by COVID-19 has broken down many of these barriers. We see that when need, motivation and collaboration are combined, we are indeed in the position to overcome the inertia that has existed. However, such 'broken down barriers' have largely been ad hoc and/or temporary such as accelerated regulatory reviews or reimbursement decisions, and this puts the future of digital healthcare somewhat in question.

Once the pandemic is over, will we go back to our old ways? I hope not, I hope we recognise the learnings that come from the pandemic, the value that has been seen from digital health, and the very real and tangible fragility of our healthcare systems, harnessing the momentum created by COVID-19 to make lasting changes that will modernise our healthcare systems and make them more resilient.

We should also not forget the tremendous market opportunity. Europe has an opportunity to invest in digital and become an attractive market for investors and innovative companies from around the globe. For this we need excellent regulation that not only provides access to data but also a defragmentation of the market and a European fast track for regulatory assessment digital health solutions.

The pandemic has certainly seen the sector waking up to the possibilities of digital healthcare, and this has been seen all over Europe. A number of solutions developed and launched by the EIT Health community have demonstrated strong impact throughout the pandemic, and the technology can be applied to many other challenges facing our healthcare systems such as non-communicable diseases. Telemedicine, for example, could revolutionise the way healthcare is structured around such diseases, allowing for patients to be constantly monitored outside of the clinic (which could aid effective management and prevent complications), have access to online consultations, and receive in-person care only when needed, as opposed to routinely. The pandemic demonstrated the need for such solutions as two related challenges emerged:

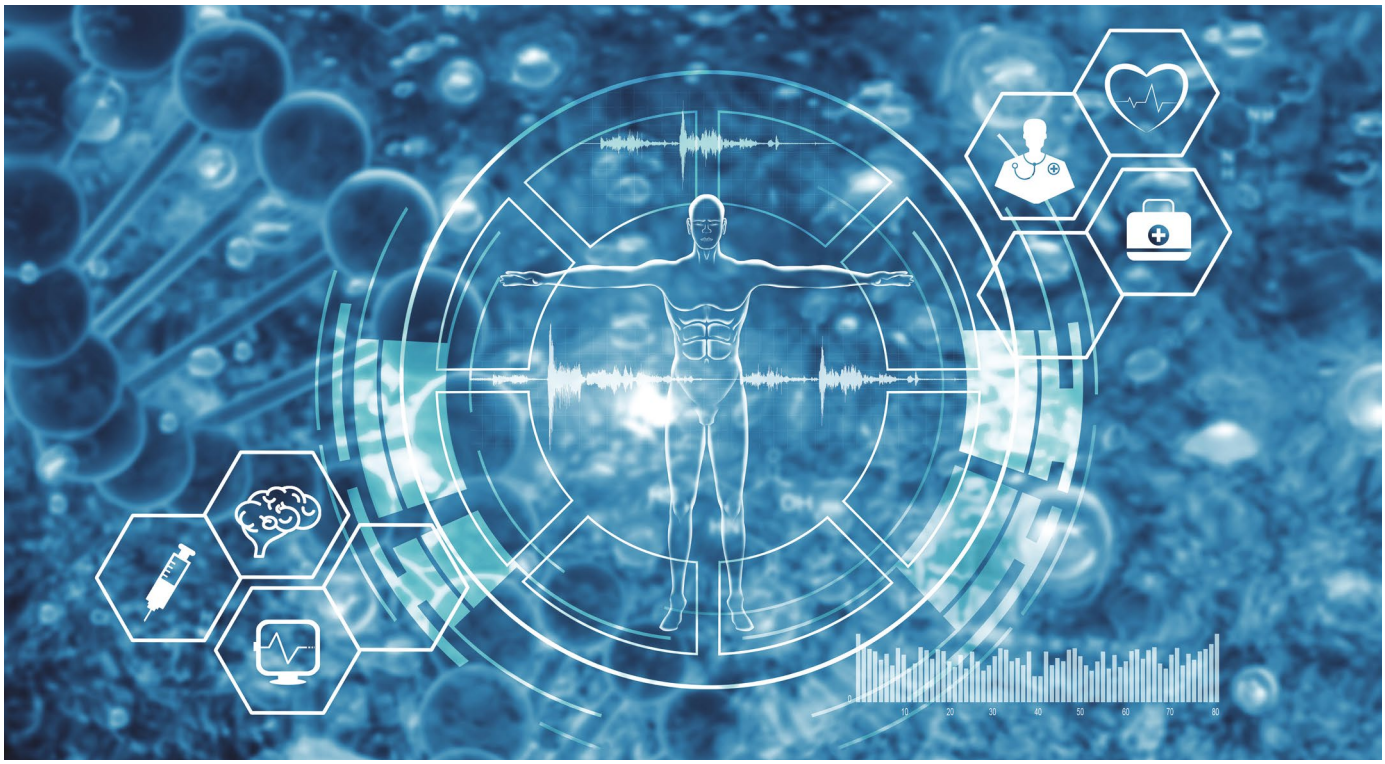
1. In person care was strictly limited to emergency only due to the threat of virus transmission
2. Hospitals were overwhelmed and beds needed to be reserved for those with severe COVID-19 complications

Covidom Community was one such project. Launched at the height of the pandemic, it provided home monitoring of patients with mild or moderate COVID-19 symptoms, allowing for effective intervention if symptoms worsen, while preserving already limited bed space for patients with severe symptoms. It is a web and mobile application which allows patients to fill in short daily questionnaires about their symptoms until they have recovered. The answers are analysed by algorithms and an alert is raised if the data indicates an issue via the control centre, which can then arrange a consultation, refer them to hospital or send emergency services directly to the patient.

The project is led by Assistance Publique – Hôpitaux de Paris and Inria and is currently available in France and Guadeloupe, with discussions taking place about introducing it in other countries. The solution has been used by more than 2,000 healthcare professionals and more than 1.2 million patients, and satisfaction has been extremely high. Most impressively, the solution has saved 210,000 emergency room visits.

One of the challenges faced by this project was the inertia of governments and healthcare authorities who were focusing on hospitals beds, which was a catch 22, as here was a solution to avoid overcrowding and keep patients who can safely recover at home, out of the hospital. This indicates a lesson that digital systems need to be in place at all times, even if running in the background, so that they can be drawn upon when needed. A pandemic is not the time to introduce new technologies, train healthcare professionals on how to use them, and familiarise patients with changes in the delivery of their care. Solutions such as Covidom Community could also help with other emergency room peaks in demand, such as flu season or for chronic disease patients. Project managers are already in discussions with health authorities in France to discuss implementation beyond COVID-19.

Another example of a digital solution that made significant impact during the pandemic was the EIT Health project Digital Control Centre for COVID-19. The main cause of death for patients with COVID-19 has been respiratory failure, however many patients experiencing respiratory symptoms can be effectively treated if adequate care is provided at the right timepoint. Digital Control Centre for COVID-19 uses AI to analyse the data of hospitalised patients who are experiencing respiratory symptoms, and defining three distinct clinical pattern stratifications which reflect differing symptom complications – inflammation, co-infection and thrombosis. Early knowledge of these symptomatic patterns conferring various clinical complications can lead to differing therapeutic approaches and subsequent personalised treatment decisions. Researchers at Hospital Clinic Barcelona-IDIBAPS created the



artificial intelligence solution capable of analysing, in real time, more than a trillion anonymised data points of COVID-19 patients, identifying clinical patterns and suggesting personalised treatments. This provides a real-time control centre for all COVID-19 patients admitted to hospital, under the supervision of an expert in infectious diseases. Initially implemented in Barcelona, the tool demonstrated a 50% reduction in mortality, and has since been scaled out to hospitals in Belgium and the Netherlands.

Finally, other solutions not directly linked to COVID-19 have also been accelerated during the pandemic as a result of public consciousness around healthcare being raised. There is a visible recognition that our healthcare systems require and deserve modernisation. EIT Health-supported start-up Clinomic has developed a solution to address many of the challenges with delivering care in the intensive care unit (ICU). Co-founded by two ICU doctors, they had direct knowledge of the significant and growing issues facing ICU doctors.

Firstly, the enormous amounts and exponential growth of data points that must be monitored - doctors in the ICU have a minimum of six screens to monitor at any given time, and the majority of their time is spent in analysing data. This problem is only set to increase and Clinomic believes the system is immediately unsustainable, giving it around 2-3 years before it breaks down.

Secondly, top specialists are often confined to larger hospitals or centres of excellence, meaning that knowledge is not easily shared with other consultants or nurses. Clinomic has built an AI-enabled telemedicine solution that removes both challenges. Specifically built for the ICU, it has specialised technology such as voice control, so that clinicians do not need to remove their gloves in order to interact, as well as mobile 5G which means the doctor doesn't even need to be in the same country as the patient, and it can be used even where there is no Wi-Fi – the opportunities to allow equal access to specialist care is increased across hospitals, regions, and countries which could offer significant support to developing countries. Before the pandemic, ICUs were using systems mostly from the 90s, the need for innovation was there and the pandemic has accelerated uptake with a long list of countries now discussing implementation of the solution.

We have many examples of where digital technology has stepped in during the pandemic to offer solutions to challenges that do not only exist within a crisis, but within our everyday practice.

Our healthcare systems cannot physically grow in line with the demand, and we have to get smart about how we address this rather than sleepwalking into the inevitable. I hope that now is the time for some serious conversations about how we can enable technology in the long-term. This requires supportive frameworks from policy and regulation, investment, reimbursement to education, and it is crucial that we do not find ourselves in a similar situation in future, either due to another pandemic or by rising chronic diseases and ageing populations eventually becoming too much to bear. We need to make lasting change, now.

Conflict of Interest

None. ■