



Renewing Relationship

LESSONS FROM COVID-19: THE ROLE OF DIGITAL HEALTH AND THE FUTURE OF HEALTH CARE



INTRODUCTION

The global nature of the COVID-19 pandemic offers an unprecedented opportunity for those of us involved in global health to look at current philosophy and practice.

We've had a universal experience of isolation, of shortages, fear and new rules. How might those shared realities help us consider new ways to renew our solidarity with our partners in low- and middle-income countries and to assist us as we build something different through our global health strategies?

“The pandemic is a crisis and we do not emerge from a crisis the same as before: either we come out of it better or we come out of it worse. We must come out of it better, to counter social injustice and environmental damage. Today we have an opportunity to build something different,” said Pope Francis.*

In order to come out better, we will need to identify where breakdowns occurred when travel was banned and consider if new paths need to be created. Many public health and access challenges have become more evident, requiring lengthy research and analysis, but, overall, how do we emerge from quarantine with greater meaning and purpose? What are we learning from all that is happening amid this global pandemic?

The following essays are an offering to set the stage for collective consideration of how the complexities and challenges of the pandemic create an opportunity for us to rethink, reset and renew our global health relationships. While COVID-19 and the isolation we have experienced inspires more questions, they provide us with renewed hope and inspiration to do it better in the future. We hope you will take this time “apart” to reflect on our future opportunity to be brother and sister to our global neighbors.



A handwritten signature in black ink that reads "Bruce Compton". The signature is written in a cursive, flowing style.

BRUCE COMPTON

Senior Director, Global Health

Catholic Health Association of the United States


*From Pope Francis' General Audience on Aug. 19, 2020.



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Lessons from COVID-19: The Role of Digital Health and the Future of Health Care

BY NATASHA SUNDERJI, MPP

 COVID-19 has fundamentally reshaped our worlds and our daily lives. It has also exposed the fragility of our global health care systems. Health care systems around the world have struggled to flatten the curve and fragile, conflict-affected areas are unable to combat a pandemic of the magnitudes we've seen in Asia, Europe and the United States. Haiti has a population of 11 million but only has the ventilator capacity to support 60 people; Sierra Leone, West Africa, has the capacity to support only one. According to the WHO COVID-19 readiness report, only 10 out of 34 countries in Africa reported having adequate capacity to respond to the pandemic. From the lack of rapid responses to the mass shortages of critical health care supplies and health workers, traditional health care systems cannot keep up with the increased demand driven by an acute shock like a pandemic. The consequences will be long lasting.

At the same time, COVID-19 provides us with a unique opportunity to reflect, rethink and restart — to pivot from the traditional, long-standing models of health care surveillance and delivery to more resilient, forward-thinking health care systems. While the specifics of health care systems of the future are highly debated, one thing is certain: the future of health care is digital.

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Since the onset of the pandemic, digital health solutions have accelerated the world's response to COVID-19, revealing the true potential of technology within the health care sector. Digital solutions have been crucial to flattening the curve in South Korea, China, Israel, Singapore, Japan and the Gulf States. Thanks to the hard-won lessons from the SARS outbreak in the 2000s and MERS in the 2010s, these countries actively built up their digital capabilities. South Korea

was able to use artificial intelligence (AI) to quickly mass produce COVID-19 testing kits with Seegene, taking just three weeks to develop a test that targets genes specific to COVID-19. In China, Wuhan Thunder Mountain Hospital used AI-powered medical robots to disinfect hospital wards, measure patients' temperatures and distribute medical supplies, reducing both the workload of health workers and the risk of cross-infection.

Despite such promising examples, not everyone has benefitted equally from the technology revolution underway in health care. While most high-income countries (HIC) have the infrastructure and capacity to implement digital health solutions, underserved populations in low- and middle-income countries (LMIC) are likely to miss out on the benefits of digital health in the absence of appropriate investments and capacity building at the global, national and sub-national levels.

The rise of digital health solutions during COVID-19 prompts an important question for governments, NGOs, academia, the private sector and for society at large:

How can all organizations and communities contribute to and benefit from scalable and sustainable digital solutions to respond to the health care needs of today and tomorrow?

We can begin to answer this question by reflecting on the lessons we have learned from the use of digital health solutions in the current COVID world:

Lesson 1: Digital has the Power to Strengthen Health Systems

The global response to COVID-19 has fast-tracked unprecedented innovation and is showing us the impact digital health solutions can have on all facets of health care. Six

major use cases emerged during the pandemic, illustrating the true potential of digital to make health systems stronger and more resilient:

- 1. POPULATION MANAGEMENT, EDUCATION, AND PREVENTION:** Digital solutions have proven to be instrumental in tracking the spread of the infection and forecasting transmission dynamics with big data from migration maps coupled with machine learning models. In China, Tencent developed an AI platform that uses data from WeChat to model the virus's spread, correctly predicting COVID-19's spillover to Bangkok, Seoul, Taipei and Tokyo in the days following its first diagnosis.
- 2. SCREENING AND DIAGNOSIS:** Symptom checkers, chatbots, remote consultations, AI triage tools and diagnosis kits have played a major role in easing the pressure on health care facilities and systems for testing and diagnosis. For example, Baidu's AI infrared thermometer uses facial recognition to identify humans and measure body temperatures of railway and airport passengers passing through Beijing and Shenzhen.
- 3. TRACING AND TRACKING:** Digital has enabled health professionals and governments to track the real-time spread of the disease, the development of virus hotspots and the movement of infected individuals. Singapore strongly encouraged its citizens to install TraceTogether, an application that transmits Bluetooth signals between mobile phones to track and notify individuals that were in close proximity to a COVID-positive user over a 14-day period. In Africa, Ghanaian startup Redbird launched a COVID-19 daily check-in app and symptom tracker to enable officials from Ghana Health Service to see a real-time map of self-reported symptoms and ensure efficient follow-up with high-risk patients.
- 4. QUARANTINE AND POST-CARE MANAGEMENT:** Digital, supported by Internet of Things (IoT) devices, has enabled remote monitoring of patients (e.g. vitals, symptoms, adherence) during quarantine. Geofences, or virtual perimeters for real-world geographic areas, have helped governments enforce quarantine

measures. Hong Kong introduced a compulsory 14-day quarantine upon entry for all overseas arrivals, enforced by requiring all new arrivals to install the StayHomeSafe app and pair it with a geofencing wristband.

5. **IN-HOSPITAL MANAGEMENT:** Digital medical devices, telediagnosics and robotics are lessening pressure on hospitals and health centers that experience unparalleled demand for health care services. Hospitals in Seattle, which served some of the first U.S. COVID-19 patients, collaborated with Microsoft to develop an online analytics screening tool that rapidly identifies those most likely to suffer from COVID-19, serving over 40,000 patients in the first week alone.
6. **DRUG DEVELOPMENT AND REPURPOSING:** The race to find an effective COVID-19 treatment is on; however, candidate identification, drug development, effective repurposing identification and fast-track or subgroup clinical trials have traditionally taken months to years. Technology is changing the game. For example, Insilico Medicine and BenevolentAI have been using AI models to screen existing and design new molecules that might inhibit COVID-19's impact.

Such examples highlight the diversity of digital health solutions today and its potential to strengthen all elements of health systems.

Lesson 2: There is a Need for Organizations and Communities to Build Capacity in Digital Health to Support the Development, Scale and Sustainability of Solutions

While digital health solutions will serve an increasingly larger role in the post-COVID world, not all solutions can be adopted by all groups of people. Many LMICs still lack the basic information and communications technology (ICT) and infrastructure necessary to support digital solutions at scale. Health care systems in these countries suffer from significant underinvestment in backbone technology infrastructure at the national and health facility level. That, in combination with the high cost of mobile broadband and internet connectivity, creates significant challenges for digital health adoption – particularly for last-mile communities. Digital health education and training also remain key challenges for many LMICs. Education and public learning opportunities are needed to enhance the overall digital literacy of LMIC populations, as

they enable populations to manage their own health and effectively support the design and scale of appropriate digital health solutions.

Yet LMICs have some key advantages to build on, such as a smaller number of existing legacy systems

than HICs, which provides them with an opportunity to leapfrog and adopt newer digital solutions faster. Mobile phone adoption, e-banking and blockchain applications are all technologies that users in LMICs have adopted faster and more comprehensively than their peers in HICs. Today, the Rwandan Government is partnering with Zipline to support drone-based blood delivery across the country. Zipline relied on recruiting and training local engineers and flight operators to support their work at scale. Similar novel digital solutions are possible in LMICs with the right strategic investments.

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Lesson 3: New Models of Partnerships are Needed to Support the Appropriate Design, Tailoring and Delivery of Digital Health Solutions

Partnerships enable stakeholders — governments, NGOs, academia, the private sector, civil society and local communities — to draw upon the collective expertise of one another to appropriately design and scale digital health solutions. Partnerships are also critical to ensuring data-driven decision making in health.

Health care systems are increasingly relying on the aggregation of large amounts of dispersed data to drive more efficient, quality care. This includes patient health habits and behaviors, socio-economic data like employment and education and geographic data. Partnerships provide the fuel for high-quality data and COVID-19 has shown us the power of cross-sectoral partnership platforms. For example, the COVID-19 Technology Access Pool (C-TAP), launched by the WHO, compiles COVID-19 health technology related knowledge, intellectual property and data through a global solidarity call to action. Such novel partnership platforms engage cross-sectoral actors and accelerate innovation and digital health solution development to ensure quality health care and access for all.

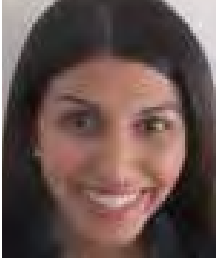
The Future of Health Care is Digital

Digital health solutions can fundamentally change the cost-quality equation in health care. They can empower patients, health providers, governments and other stakeholders with the information and tools they need to expand access and improve outcomes.

Though health care is behind many other sectors in its utilization of digital solutions, COVID-19 has shown us that we can rapidly develop and implement digital health solutions with the right investments and political will. Now more than ever, we must encourage new, innovative solutions to ensure that the world that emerges post-pandemic

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supports and protects those most vulnerable. Whether we are responding to the health care needs of today or designing the health care systems of tomorrow, digital health must be at the forefront of our solution design. Each of us has a role to play in enabling the right leadership, infrastructure investments, capacity building and partnerships needed for success.



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The current pandemic has highlighted our interdependence: we are all connected to each other, for better or for worse. Therefore, to emerge from this crisis better than before, we have to do so together; together, not alone. Together. Not alone, because it cannot be done. Either it is done together, or it is not done. We must do it together, all of us, in solidarity.

POPE FRANCIS

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