



# LEARNING FROM COVID-19 TO TRANSFORM GLOBAL HEALTH SYSTEMS

By Jennifer Clawson, Josh Kellar, and Stefan Larsson

**T**HE GLOBAL CORONAVIRUS PANDEMIC is proving to be a severe moment of truth for health systems around the world. In some places, it has exposed weaknesses and gaps—shortages of critical supplies, underinvestment in public health infrastructure, and a lack of coordination and agility among policymakers, political authorities, and health care leaders—which have led to overwhelmed health systems, rapid growth in cases, and high mortality.

Other health systems have responded more effectively. In Asia, South Korea, Singapore, Hong Kong, and Taiwan have been far more successful in the early phase of the pandemic in flattening the curve and preventing deaths. And the systems in Australia, Germany, Iceland, and New Zealand have also excelled in one or more dimensions of pandemic response.

We believe that any health system can learn a lot from the top performers. Although we are still at a relatively early stage in the crisis, BCG has identified six practices that represent a best-in-class re-

sponse to the pandemic and that can be applied by any national health system as part of its pandemic-control strategy.

Beyond the fight against COVID-19 itself, these best practices are also broadly applicable to the way that national health systems fight any disease and manage the overall population health of their citizens. In health care, periods of crisis and adversity are also frequently important catalysts for innovation. Campaigns against past epidemics were responsible for improvements in health system infrastructure and the adoption of better hygiene practices. Similarly, some of the greatest innovations in trauma care have been the product of wartime medicine. The fight against COVID-19 has the potential to accelerate the emergence of a new model for organizing and managing health systems worldwide.

## The Six Components of a Comprehensive Response to COVID-19

Collectively, the six best practices consti-

tute an integrated and comprehensive response to COVID-19. (See Exhibit 1.) How they work together is as important for system effectiveness as any individual component itself.

**1. Comprehensive Monitoring.** Unless a health system can monitor the rate of occurrence and mortality of an infectious disease in its population in real time (or close to it), it will be unable to devise appropriate strategies for containment or mitigation. In the context of COVID-19, a robust viral monitoring system consists of four key elements: widespread diagnostic and surveillance testing to know who has the disease and to identify community spread; contact tracing to identify who has come into contact with those infected and, therefore, may be infected themselves; tracking of emerging hotspots; and quarantining of the infected and exposed to prevent further spread.

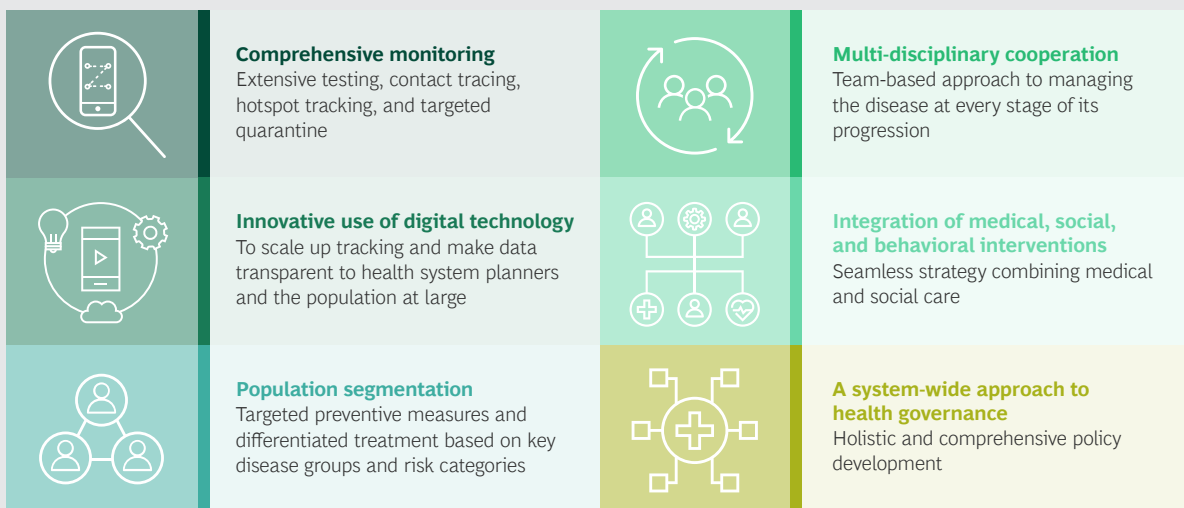
South Korea, for example, quickly established an aggressive monitoring regime that included an extensive network of drive-through diagnostic centers, rigorous contact tracing teams, and a robust process to test and quarantine international arrivals to the

country. The approach has allowed South Korea to avoid the society-wide lockdowns that have been necessary in many parts of the world. Germany and Iceland are among the other health systems that have established aggressive testing and monitoring regimes early in the pandemic.

**2. Innovative Use of Digital Technologies.** Leading health systems are also making creative uses of digital technologies to scale up tracking and to make the data transparent, both to health systems managers and the population at large. South Korea posts anonymized data obtained from cellphone records, credit card receipts, and other private data sources to track the movements of everyone who has tested positive.

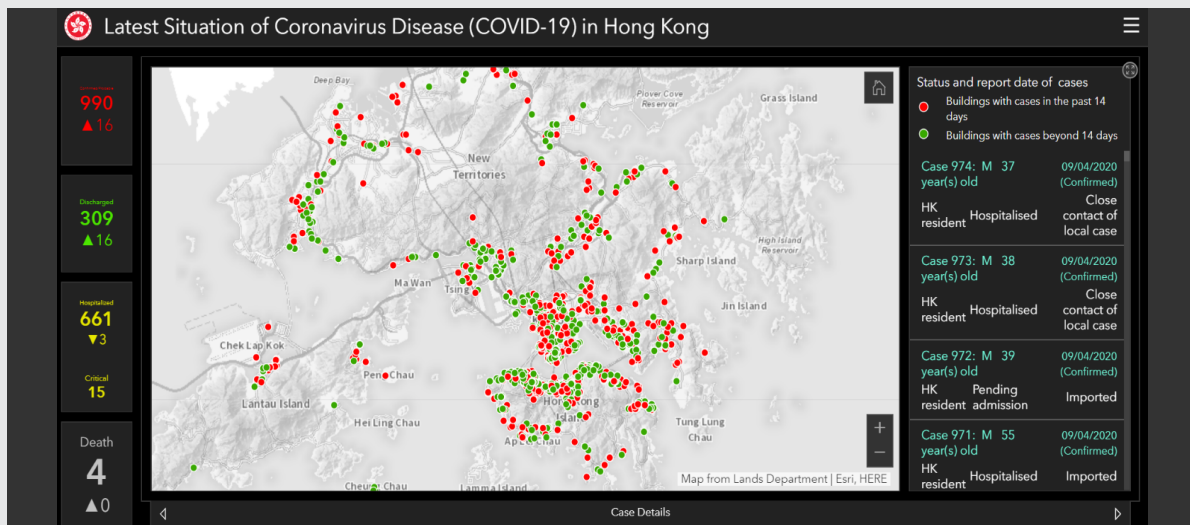
Meanwhile, Hong Kong is using geo-location data to create a publicly available dashboard that maps all current and former cases by building. (See Exhibit 2.) Singapore has developed a voluntary, encrypted, and anonymized mobile phone app called “TraceTogether,” which uses Bluetooth to collect data from phones in close proximity, allowing users to trace their contacts over a 21-day period (sharing the data with health officials is optional).

EXHIBIT 1 | Six Best Practices in the Fight Against COVID-19



Source: BCG analysis.

## EXHIBIT 2 | Hong Kong Uses Geo-Location Data to Create a COVID-19 Dashboard



Source: Hong Kong Special Administrative Region Government, available at <https://chp-dashboard.geodata.gov.hk/covid-19/en.html>.

To be sure, some uses of digital technologies raise serious privacy issues and may be inappropriate (or even illegal) in certain countries, but with sufficient care, it's possible to balance data transparency and personal privacy. Many efforts are underway to strike this balance worldwide. In the US, for example, Apple and Google have announced a Bluetooth-based contact tracing platform that is similar to Singapore's TraceTogether. Likewise, a consortium of epidemiologists, engineers, data scientists, and digital privacy experts led by the MIT Media Lab has developed an application for secure, privacy-protected location logging known as "Private Kit: Safe Paths."

**3. Population Segmentation.** Comprehensive tracking and transparent data are prerequisites for segmenting the population into key patient groups and risk categories. Segmentation is critical both to implement targeted preventive public health measures (and, thus, to limit the need for more general lockdowns) and to increase the precision of appropriate treatment for different populations. In addition to distinguishing those who are infected from those who are not, it's also critical to segment

by risk category, by stage of infection, and over time, by serological status.

**4. Multi-Disciplinary Cooperation.** As overwhelmed health systems struggle to contain the virus and treat the afflicted, health care workers from every specialty and area of expertise have contributed to an "all-hands-on-deck" effort. The best-performing health systems have gone further to develop a carefully targeted, team-based approach to managing the disease at every stage of its progression that is characterized by explicit shared goals for patient care. For example, since the multi-morbid elderly are most at risk from COVID-19, infectious disease experts are working closely with primary care and geriatric specialists at elderly care centers to develop strategies for prevention. Combatting the disease's ravages on the respiratory system requires collaboration between infectious disease specialists, internists, and ICU doctors.

**5. Integration of Medical, Social, and Behavioral Interventions.** Another best-practice response to the virus is the seamless integration of medical, social, and behavioral interventions. In many respects, this is an age-old principle of

effective public health that emphasizes community-based strategies to keep the population as healthy as possible. But as health systems around the world have grown more complex, specialized, and fragmented, there has been a tendency to treat health care, public health, and social care separately for budgetary and planning purposes. As a result, the health system can become narrowly focused on biomedical interventions to treat the sick, leading to a systematic underinvestment in public health and in the social and behavioral determinants of health.

In contrast, the best-performing health systems in the current pandemic are taking a far more integrated approach, which has allowed them to place greater emphasis on key social and behavioral interventions and implement them more creatively and rigorously. Examples include the systematic organization of food delivery to quarantined individuals in China, the designation of certain bus routes and specific “seniors-only” days each week in public parks in Singapore, and especially rigorous mechanisms to support social distancing among the vulnerable elderly in Germany.

**6. A System-Wide Approach to Health Governance.** The top health systems have been able to more effectively integrate their medical, social, and behavioral interventions because in many cases they had already adopted a more holistic system-wide approach to overall health governance. This has greatly improved their ability to respond with agility to the pandemic—for example, by rapidly growing the health care workforce, expanding ICU capacity, gaining access to protective equipment, and scaling up diagnostics. A major reason why Asian health systems are key leaders in the rapid response to the crisis is that their experience fighting the SARS epidemic in 2003 and the MERS outbreak in 2015 caused them to revamp their approach to health governance and to develop a

more holistic, comprehensive policy infrastructure.

In the two decades after SARS, Taiwan developed an agile health command center that was able to move quickly after the first COVID-19 cases in Taiwan were identified in late January and early February. The center implemented over 100 measures to protect against the spread of the coronavirus. This rapid mobilization helps explain why Taiwan, with a population of 24 million people, has had far fewer infections than its neighbors: only 420 counted as of April 18th, with six deaths.

## A Global Response Informed by Global Standards

The fight against the coronavirus has only just begun, and even the best performers face ongoing challenges. In early April, a number of the Asian systems that had done so well in the early phase of the pandemic were facing a second wave of new infections. For example, after avoiding a countrywide lockdown, Singapore later had to impose a strict control order banning all social gatherings to combat an unanticipated spike in infections associated with its densely populated dormitories for foreign workers. Fortunately, the same system Singapore put in place initially to fight the pandemic allowed it to respond rapidly to these new developments. Others will face similar challenges in the months ahead.

Since globalization has contributed to the quick spread of the coronavirus around the world, it will be tempting for countries to retreat into narrow national strategies for fighting it. This would be an enormous mistake. Rather, what is required is an equivalent globalization of scientific, medical, and public health efforts informed by a shared purpose and goals, as well as wider cooperation to counter this and future pandemics.

The world needs to create a shared learning system as soon as possible to identify and spread innovative approaches for combatting the virus. Particularly, health sys-

tems need to develop global standards for collecting health outcomes and other data associated with the pandemic, and to facilitate the widespread sharing of comparable information and evidence about the specific interventions used. Different health systems will inevitably take slightly different approaches to fighting the disease.

But if we can link variations in outcomes to variations in clinical and non-clinical practice through standardized outcome analytics and efficient feedback loops, health systems will be able to quickly identify and disseminate the best approaches for prevention, containment, mitigation, and treatment.

## A Model for the Future

In many cases, the practices that are proving most effective in the fight against COVID-19 are the same ones that should be used to treat any major health condition or population segment. This is particularly true for chronic conditions, such as diabetes, that represent a growing portion of the global disease burden. Every health system should:

- Track standardized health outcomes across all diseases and make data about those outcomes transparent.
- Use digital technology to more easily capture, analyze, and share that data among practitioners and patients.
- Continuously refine the segmentation of the population by disease groups and risk categories and develop customized interventions for each.
- Strengthen the multi-disciplinary, team-based approach to managing and treating specific conditions, diseases, and population segments.
- Integrate medical, social, and behavioral interventions.
- Take a more holistic approach to the design and governance of national health systems.

In this respect, the massive disruption that societies are facing as a result of the pandemic, however painful in the short term, also represents an important long-term opportunity to create more patient-centered health systems that facilitate continuous learning through sharing standardized data and benchmarks and, as a result, employ resources more effectively to meet patient needs.

The fight against COVID-19 is already pushing health systems toward a more integrated and value-based approach to managing disease. Consider the US, whose highly fragmented health system and underdeveloped public health capabilities are struggling to combat the pandemic. In our experience, those parts of the US system that have already adopted a more integrated, value-based approach—integrated payer-providers such as Kaiser Permanente and Intermountain Healthcare, for example—have been better able to weather the disruption.

Because these institutions have already invested heavily in digital technologies, they have been able to shift more rapidly to the widespread reliance on telemedicine. Because they have considerable experience designing integrated care delivery pathways for specific patient segments and tracking the results, they've been able to rapidly shift resources to adapt to the surge in patients and quickly develop protocols for treating them. Because they rely more on value-based contracts for reimbursement rather than a fee-for-service model, they have reduced the financial hit caused by the decline in office visits. Perhaps most importantly, because they have an integrated approach to care, these institutions have been more focused on overall patient health and system resilience rather than on maximizing the capacity utilization of any single unit within the system—a trait that is proving essential to managing the system-wide disruption the pandemic has brought in its wake.

We believe that even in the more traditional parts of the US health system, as well as in other health systems around the world,

the fight against COVID-19 will impel more coordination, collaboration, and transparency. It will create new disruptive imperatives—to integrate traditional medical care and social care, to invest in a patient-centered digital infrastructure that makes telemedicine a routine form of clinical practice, and, in general, to force more integration among multiple stakeholders in what has traditionally been a fragmented and highly specialized health system. Finally, it will place renewed emphasis on the goal of system-wide resiliency, much neglected in recent years due to an exclusive focus on cost-cutting, capacity utilization, and local efficiency.

Once the pandemic is under control, it will be critical for health systems not to lose the institutional “muscle memory” they are now building in the fight against COVID-19. The temptation to return to business as usual will be strong. But the reality is that there’s no going back to those traditional models of health care delivery that are no longer economically sustainable and will be even less so in the future, particularly given the current economic climate. Without a major transformation in how health systems are governed and managed, they will still lack the necessary resilience, and societies will face a future of rising health care costs and even more pressure to contain health care spending.

There is, however, an alternative scenario: use the public investments necessary to accelerate the economic recovery from the pandemic as a driver of health system transformation. In exchange for public investments in a more robust public health infrastructure, systems for routine health outcomes tracking, and the creation of a 21st-century digital platform that enables more appropriate prevention, diagnosis, and treatment, providers and other industry stakeholders should make a collective commitment. They must adopt practices that deliver better health outcomes at the same or lower cost. This is the best way, and likely the only way, to achieve high levels of overall population health in a cost-effective manner for the long term.

Out of crisis comes learning and innovation—both to face our immediate challenge and to build more sustainable health systems for a healthier and safer world in the decades to come.

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