



COVID-19: Preparing for the Worst Before Crisis Strikes

Diagnostic capabilities and coordination among and within countries can mean the difference between life and death.

The outbreak of COVID-19, caused by a new strain of coronavirus, has wreaked havoc around the world. Hospitals in Wuhan and other regions of China are overwhelmed and medical supplies are scarce. Countries have imposed **travel and visa restrictions** and activated emergency protocols for the screening and quarantine of people, as well as the supply of medicines and medical equipment. Health systems in many low- and middle-income countries, especially in sub-Saharan Africa, have limited ability to deal with the outbreak.

Faster screening and detection

The key to containing an epidemic is identifying new cases quickly so that patients get treatment and transmission can be halted. Polymerase chain reaction (PCR) machines are vital to containment. But while most labs in higher-income countries are equipped with them, low and lower middle-income countries do not have such machines beyond a few labs in capital cities. In China, which has a reasonably well-developed health system, laboratories are overwhelmed with demand for confirmatory tests for the novel coronavirus.

Notwithstanding shortage of PCR machines, specimen transport from the clinic where a patient is tested to the diagnostic lab can take days. Even though drones and better routing for specimen

transport are shortening the time required for diagnosis, building local diagnostic capacity in communities is key to fast diagnosis.

The modelling and prevention of highly infectious disease outbreaks is a core focus of the INSEAD Humanitarian Research Group (HRG) **research agenda**. The Group also works closely with partners such as the **Praesens Foundation** to create a strong diagnostic system combining point of care diagnostic tests, mobile labs and more effective specimen transport. Such a system can serve routine health system needs and is able to absorb demand spikes.

More money, more preparedness

A stitch in time saves nine, but needles and thread are often in short supply due to funding shortfalls until a state of emergency is declared. Research shows a faster and more efficient response is possible if operational decisions are made pre-crisis, rather than during a crisis.

Operational managers in humanitarian assistance and global health recognise this, but the money and resources for operational activities often do not become available until the epidemic or emergency has unfolded. If more resources were available, decisions could be made before a crisis, as some

Visit **INSEAD Knowledge**
<http://knowledge.insead.edu>

decisions are not based on information revealed during a crisis but on anticipated demand (e.g. emergency stockpiles of personal protective equipment).

By finding new and innovative ways to create incentives for low- and middle-income country governments to invest in health system preparedness, the INSEAD Humanitarian Research Group aims to help these countries prepare for the worst – before crisis strikes. This way, there would be more time and bandwidth for decisions that depend on the specific information revealed (e.g. laboratory testing of a new pathogen) during an outbreak or disaster.

Improving coordination and collaboration on critical medical supplies

Infectious disease outbreaks require vast quantities of personal protective equipment including gloves, surgical masks, coveralls and hoods, as well as medical countermeasures like antiviral agents and vaccines. Supplies are often scarce, due to limited manufacturing capacity or hoarding. Regional, national and international organisations need to cooperate and collaborate more in order to optimise limited supplies and avoid duplicating efforts. Within nations, greater coordination among different government agencies at the state and federal level is needed.

Similarly, government and non-government agencies, academia and the private sector need to work together to monitor available stock, production capacity, and create plans for priority distribution.

As different national and global agencies gear up their efforts to secure more supplies of personal protective equipment, varying technical specifications often result in a fragmented market. Inspections and product quality testing to evaluate suppliers of protective gear and other medical supplies is important, but the emphasis should be on a systematic quality system in production. This requires inter-agency collaboration and information exchange. Improved global demand forecasting, long-term contracting with minimum volume guarantees are additional levers for maintaining capacity for large outbreak events.

Mapping upstream supply chains

Active pharmaceutical ingredients (API) are the raw materials used for making finished medicines. Up to 85 percent of global API supply comes from China, and a majority of the production of these raw materials is concentrated in Hubei or its capital of Wuhan. **Fears of an imminent drug shortage** are foreshadowed by the Puerto Rico crisis in 2017.

Visit **INSEAD Knowledge**
<http://knowledge.insead.edu>

After a hurricane destroyed major medicine manufacturing hubs in the US territory, medicine supplies to the US became scarce. Better understanding of Puerto Rico's role in the pharmaceutical supply chain would have helped avoid the problem altogether.

The INSEAD Humanitarian Research Group is working to demonstrate the value of mapping and understanding upstream supply sources and market structure for some of the critical products in partnership with different universities and local stakeholders.

The COVID-19 crisis shows the vulnerability of our systems as well as the importance of preparedness. Many lives have been lost. The crisis has also profoundly hit tightly connected global supply chains, with damaging economic consequences.

When the dust eventually settles, the cost of the response will be a huge multiple of the investment that would be required to build better preparedness systems. To that end, the INSEAD Humanitarian Research Group works closely with organisations and brings together relevant stakeholders to create innovative business models that leverage new technologies.

*This article is part of a series of humanitarian operations vignettes by the **INSEAD Humanitarian Research Group** called "Behind the Scenes of Humanitarian Operations". For further reading, see our **publications** and mini-cases (under "HRG reflects" on our website).*

Prashant Yadav is an Affiliate Professor of Technology and Operations Management at INSEAD. His work focuses on improving healthcare supply chains and designing better supply chains for products with social benefits.

Don't miss our latest content. Download the free **INSEAD Knowledge app** today.

Follow INSEAD Knowledge on **Twitter** and **Facebook**.

Find article at
<https://knowledge.insead.edu/blog/insead-blog/covid-19-preparing-for-the-worst-before-crisis-strikes-13366>

Download the Knowledge app for free

