## Perspective



## The research community must meet the coronavirus disease 2019 challenge

The coronavirus disease 2019 (COVID-19) pandemic continues to unfold. The situation varies greatly from country to country. In many countries, the number of cases is still less than ten. Some countries have declining epidemics, with no reported case in weeks. Of all the cases reported globally, a substantial majority are from a handful of countries. The outbreak in Europe is accelerating. Countries that have taken aggressive measures to contain the virus, such as China, Singapore and the Republic of Korea, have had success. Evidence shows that COVID-19 can be contained.

As of March 31, 2020, the South-East Asian Region has confirmed 4,215 cases and 166 deaths from 10 countries<sup>1</sup>. The countries affected are Thailand, Indonesia, India, Sri Lanka, Bangladesh, Maldives, Myanmar, Nepal, Bhutan and Timor-Leste. We expect the number of cases and deaths to rise in the coming weeks. All countries must be ready to aggressively contain the virus and must be prepared for all scenarios, including community transmission.

Our knowledge of this virus is growing. The World Health Organization (WHO)-China Mission made several key findings. The vast majority of cases in China arose from close contacts of symptomatic cases. Between one and five per cent of close contacts developed COVID-19. Transmission in most settings was driven by family clusters. There were no examples of children transmitting to adults. Approximately 80 per cent of cases are mild or moderate at diagnosis, 15 per cent are severe and five per cent are critical. Children tend to have milder disease than adults. Virus shedding is highest early in the course of the disease detected as early as 24-48 h prior to the disease onset. Virus shedding usually continues for 7-12 days in mild or moderate cases, and for over two weeks in severe cases<sup>2</sup>.

All countries must take a systematic and rigorous approach to containment. The WHO has consolidated

its guidance for countries into four scenarios: those with no cases; those with sporadic cases; those with clusters and those with community transmission. For all countries, the aim is the same: to stop transmission, prevent spread and save lives<sup>3</sup>. For the first three scenarios, health authorities must focus on finding, testing, treating and isolating individual cases and following their contacts. In areas with community spread, testing every suspected case and tracing their contacts becomes more challenging. Action must be taken to prevent transmission at the community level to reduce the epidemic to manageable clusters. It is possible that countries will experience one or more of the four scenarios at the subnational level, requiring them to tailor their approach.

Research and innovation must continue to inform the outbreak response. On March 7, 2020, the WHO published its Global Research Roadmap to help coordinate global research to overcome key challenges. The most pressing challenge is that there are currently no proven therapeutics, vaccines or rapid point-of-care diagnostic tests for COVID-19<sup>4</sup>. The global imperative for the research community is to maintain a high-level discussion platform that enables consensus on strategic directions, nurtures scientific collaborations and supports optimal and rapid research to address crucial gaps, without duplication of efforts.

The Roadmap identifies the following nine core research priorities: (*i*) virus: natural history, transmission and diagnostics; (*ii*) animal and environmental research on the virus origin, and management measures at the human-animal interface; (*iii*) epidemiological studies; (*iv*) clinical characterization and management; (*v*) infection prevention and control, including healthcare workers' protection; (*vi*) candidate therapeutics R&D; (*vii*) candidate vaccines R&D; (*viii*) ethical considerations for research; and (*ix*) integrating social sciences in the

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outbreak response. In each area, the WHO has identified key knowledge gaps, priorities and milestones. Researchers must focus their efforts and identify where they will have the greatest impact.

A coordinated and multidisciplinary approach is needed. The Global Research Roadmap is a critical tool, but only if transparency and collaboration are maintained. All researches must be carried out in the spirit of collaboration, solidarity and equitable access to all innovations. Research must also be applied in a context-specific way. Protocols, interventions, assessments and the translation of results must be adjusted to local needs and realities. The WHO will continue to provide Member States in the South-East Asian Region the best advice based on the best science, accounting for local contingencies.

The Indian research community has much to offer the outbreak response in India, the Region and the world. India's research community has informed evidencebased interventions against a range of infectious diseases, from TB, HIV and malaria to polio and Nipah virus. The Indian Council of Medical Research has already initiated a clinical study to ascertain the impact of repurposing lopinavir/ritonavir, which was successfully used against severe acute respiratory syndrome and Middle East respiratory syndrome coronavirus<sup>5</sup>. In addition to clinical treatments, the Indian research community has great potential to enhance knowledge on optimal infection prevention and control strategies, particularly in community settings. India's diverse skill set and research capability must be fully leveraged to generate information and knowledge that will contribute evidence to rapidly respond to this outbreak.

Our challenge is immense. COVID-19 is a serious threat to the health and well-being of all people in the South-East Asian Region, and across the world. The WHO will continue to support countries as they respond to every case, cluster and evidence of community transmission. The research community must continue to step up and inform the outbreak response. We must learn as much as possible as quickly as possible. Speed, focus and rigor: together we must prevail.

## Conflicts of Interest: None.

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