Seeking the Origins of SARS-CoV-2—and More Cooperative Global Responses to New Viral Threats

Gail R. Wilensky, PhD

With the highly transmissible Delta variant of SARS-CoV-2 detected in some 65 countries, infections are likely to remain a problem, at least for the near term. There are also concerns that another variant, called Mu, already being tracked by the World Health Organization (WHO), may evade the immunity provided by a previous SARS-CoV-2 infection or the current vaccines against the coronavirus. A better understanding of the origins of SARS-CoV-2 might help lessen the effects of the next novel virus that will confront the US and other parts of the world.

According to the WHO COVID-19 dashboard, there were 217 million confirmed cases of COVID-19 and 4.5 million deaths worldwide as of August 30, 2021. To put the US losses in an economic perspective, according to the US Bureau of Labor Statistics, the country's unemployment rate jumped from 3.5% in February 2020, a half-century low, to 14.8% in April—the highest since statistics started to be collected in 1948—and the rate was 5.4% in July 2021. The labor force participation rate—which measures the percentage of the population working or actively looking for work—was 61.7% in July 2021, 1.7 percentage points below the rate in January 2020, another indication that the economy is still being affected by COVID-19.

Given the enormity of the economic loss in the US and around the world—compounded by the enormous loss of life—the attention being given to the origins of SARS-CoV-2 is not surprising. The WHO released a report in March 2021 written by a group of independent international members of a joint WHO-China team, discussing what was then known about SARS-CoV-2's origins. A theory that SARS-CoV-2 might have been accidentally leaked from a laboratory at the Wuhan Institute of Virology had not been a part of the original "terms of reference" for the investigation. More recently, however, Peter Ben Embarek, PhD, the Danish head of the WHO-led team, regarded that possibility as too important to ignore, and WHO Director-General Tedros Adhanom Ghebreyesus said that it was premature to rule out a laboratory leak and that the WHO is asking China "to be transparent, open and cooperate, especially on the information, raw data that we asked for at the early days of the pandemic."

The joint WHO-China team found clear evidence of widespread SARS-CoV-2 in Wuhan in December 2019 and that the Huanan seafood market had played a significant role during the early part of the pandemic. The scientific and popular press criticized the report and how the team's work had been conducted and the investigation's results. In response, the report authors said that if evidence supporting any of the hypotheses included in their March report becomes known, a second phase should examine such evidence. Authors of the report have maintained that position, but in a recent commentary in Nature, they raised an additional concern, that further delay could impair the group's ability to make reliable determinations. "Crucially, the window is rapidly closing on the biological feasibility of conducting the critical trace-back of people and animals inside and outside China" who were exposed to the new virus in 2019 when reports began to emerge, they noted.

Four possible pathways of the virus were included in the March WHO report, but no definitive proof was provided about which pathway was most plausible. The direct route is zoonotic introduction, a spillover of SARS-CoV-2 from an infected wild animal. Zoonotic spillovers have been attributed to the Ebola virus, Zika virus, and African swine fever. Three other indirect routes of infection were also included as possibilities: from handling infected farm animals; through...
consumption of contaminated food or food from infected animals; or from a laboratory working with animal viruses. Because all of these routes were regarded as plausible, the WHO report recommended a second phase of study to follow the evidence and trace it back to the route that seemed the most likely.2 Some scientists who are not part of the WHO study group also support the plausibility of a zoonotic spillover event.

Given that the US rejoined the WHO at the beginning of the Biden administration's term, the US can more effectively push for additional efforts to be undertaken within the WHO to monitor for future viruses, including but not limited to the phase 2 studies that the WHO report recommended to follow the evidence and trace the most likely pathways to the pandemic's origins.

In addition to the effort at the WHO, the US government should explore with other countries the possibility of designating an international body—either an existing organization (outside the United Nations and the WHO) or a new one—whose responsibility would be to alert the world regarding newly observed viruses and other biological threats. Given the current level of mistrust between the US, China, and Russia, full cooperation between these 3 powers may be unlikely anytime soon, but tensions now evident could subside over time.

In the meantime, the task of coordinating more cooperative global responses to new viral threats could be assigned to another organization with representatives from multiple countries. One possibility might be the International Institute for Applied Systems Analysis (IIASA), which studies environmental, economic, technological, and social developments. It was founded in 1972, with an initial membership of representatives from the US, the Soviet Union, and 10 other countries. It has grown to include 21 countries and is currently led by Albert van Jaarsveld, previously the CEO of the South African National Research Foundation. The IIASA might be an attractive alternative to coordinating global responses because of the widely shared perception that the WHO has not done well in providing global leadership during at least 2 viral threats—the Ebola outbreak in West Africa in 2014 to 2016 and the ongoing SARS-CoV-2 pandemic. The WHO had been looking to rebuild its image following what had been regarded as a slow response to Ebola.5 It is hard to imagine its reputation has been helped with what many regarded as a slow and pro-China response early in the current pandemic. The IIASA, whose members are frequently representatives from a country's national academies of science or medicine, has not been burdened by the same political charges that have befallen the WHO.

The Biden administration has appointed Gayle Smith as coordinator for Global COVID Response and Health Security. She and the Biden administration have pledged to allocate at least 75% of US-donated vaccines through COVAX, the partnership between Gavi, the Coalition for Epidemic Preparedness Innovations, and the WHO that was designed to facilitate fair and equitable global vaccine access. This pledge serves as an important indicator of the administration's interest in realigning the efforts of the US with existing international agencies. Hopefully, it will lead to other efforts by the US to work in coordination with its global partners.

