



Hindsight is 2020? Lessons in global health governance one year into the pandemic

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Fourteen months into the SARS-CoV-2 pandemic, we identify key lessons in the global and national responses to the pandemic. The World Health Organization has played a pivotal technical, normative and coordinating role, but has been constrained by its lack of authority over sovereign member states. Many governments also mistakenly attempted to manage COVID-19 like influenza, resulting in repeated lockdowns, high excess morbidity and mortality, and poor economic recovery. Despite the incredible speed of the development and approval of effective and safe vaccines, the emergence of new SARS-CoV-2 variants means that all countries will have to rely on a globally coordinated public health effort for several years to defeat this pandemic.

It has now been just over one year since the first two cases of coronavirus disease 2019 (COVID-19) were confirmed in two Chinese nationals staying at a hotel in York, England, on 31 January 2020 (ref. ¹). On 26 January 2021, the death toll from COVID-19 in the United Kingdom had surpassed 100,000 and there were reportedly over 30,000 daily cases of the disease, with an estimated 1 in 10 people going on to experience the enduring effects of ‘long COVID’ (Official UK Coronavirus Dashboard, <https://coronavirus.data.gov.uk/details/deaths>). The global death toll has just reached 2.1 million (World Health Organization (WHO) COVID-19 Dashboard, <https://covid19.who.int>). The global death toll had reached almost 2.5 million by 23 February 2021.

However, around the world, a varied picture has emerged (<https://covid19.who.int> and refs. ^{2,3}). Countries such as China, Taiwan, New Zealand and Australia have managed to eliminate or get close to elimination of their epidemics caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) relatively well^{2,3}. Others such as Hong Kong, South Korea, Singapore, Finland and Norway have managed to control it at low levels. Sadly, both the United States and the United Kingdom are still battling high numbers of daily cases, tens of thousands of deaths, and an exhausted health workforce and overstretched health services^{4,5}.

As the virus proliferated across the globe, it also revealed critical vulnerabilities in our global and national health governance systems that have resulted in inadequate outbreak responses^{6,7}. In this Perspective, we explore what is now known about the virus and identify key lessons learned about the WHO and national governance and the impact on pandemic preparedness and response.

What do we know scientifically?

Since January 2020, a massive surge of research into COVID-19 has enabled the scientific and medical communities to better understand how to manage and ultimately eliminate the virus through pharmaceutical and public health interventions⁸. Among the key findings a year on is that transmission occurs through droplets and aerosols spread through breathing, coughing, speaking and sneezing⁹. Stopping the spread of COVID-19 requires people to avoid mixing through restrictions on social and economic life, as well as a robust test–trace–isolate system and travel restrictions^{10,11}.

We have learned that COVID-19 causes more severe symptoms and death in those who are older¹² and who have underlying health issues (such as cardiovascular disease or obesity) or are immunocompromised (as in those with malignancies or diabetes mellitus)¹³.

We have learned that certain genetic markers can identify individuals more susceptible to respiratory failure¹⁴.

We have also been learning about the long-term effects of COVID-19, the so-called long COVID, and the morbidity attached to having this virus¹⁵. Even after recovery from acute illness caused by COVID-19, some patients continue to experience symptoms such as dyspnea and fatigue for weeks or months¹⁵. Also, the emergence of hyperinflammatory symptoms in children (multisystem inflammatory syndrome, or MIS-C) was reported to coincide with regional COVID-19 epidemics¹⁶.

We have learned that immunity lasts at least eight months¹⁷. We also have three licensed vaccines in the United Kingdom, which are already being rolled out and are effective at reducing the incidence of severe COVID-19, although we do not know how long immunity will last or whether the vaccines stop people from being infectious¹⁸. We have learned that the virus can mutate into various strains that can be more transmissible, can be more severe in their health outcomes and can possibly evade natural or vaccine-induced immunity to the original SARS-CoV-2 virus, requiring governments to plan for a cat-and-mouse game between vaccines and variants¹⁹.

The role of the WHO

This pandemic has highlighted the interdependence of countries like never before and, most importantly, the need for a globally coordinated governance response²⁰. As countries attempted to respond to COVID-19 outbreaks, the WHO was thrust into the spotlight as many countries looked to it for leadership and guidance²¹. In the process, it has faced inevitable criticism from various stakeholders. This criticism has unveiled—not for the first time—some misinterpretation of the WHO’s mandate, its authority, or the lack thereof, over its member states and a number of organizational and legal instrument constraints that have impacted pandemic preparedness and response^{6,22–24}. The WHO has three key roles in addressing health emergencies: coordination, normative guidance and technical steering²⁵.

As the only organization in the United Nations (UN) focused on health, the WHO has a mandate to be “the directing and coordinating authority on international health work” (ref. ²⁵). During the COVID-19 outbreak, it convened the seventy-third World Health Assembly, in which a resolution was adopted to bring the world together to fight the pandemic. The WHO has called for equitable access to all essential health products, such as vaccines, tests and treatments, through the Access to COVID-19 Tools (ACT)

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Accelerator (<https://www.who.int/initiatives/act-accelerator>). The WHO has also assembled the COVAX Facility as the vaccine pillar of the ACT Accelerator with other global actors, a mechanism designed to ensure timely access to a diverse set of vaccines for at least 20% of countries' populations, and the COVID-19 Technology Access Pool (C-TAP), a platform to share patent-protected trial data on emerging treatments²⁶. There has been some success: to date, two billion doses of approved and pipeline vaccines have been pledged by wealthy nations, the European Union Commission and the Bill and Melinda Gates Foundation, among others²⁷. However, as of January 2021, while vaccine rollout is fully underway in many wealthy nations such as the United Kingdom and the United States, no COVID-19 vaccines have been administered on the continent of Africa and in other low- and middle-income countries²⁸. This highlights the limited accountability of COVAX participants and perhaps inefficient incentives for wealthy nations, which have secured in some cases more doses than required to protect their populations (refs. ^{29,30} and Our World in Data, <https://ourworldindata.org/covid-vaccinations>). Furthermore, by January 2021, C-TAP had attracted zero contributions, nine months after its launch³⁰.

Through the International Health Regulations (IHR; last revised in 2005), the WHO also has a “central and historic responsibility” to manage the “global regime for the control of the international spread of disease” (ref. ³¹). In its normative role, it has the “power to shape or influence global rules and norms and to monitor compliance” (ref. ³²). It has arguably fulfilled a large part of this role by providing state-endorsed guidance and by setting norms and standards on outbreak preparedness and response, which include making use of measures such as border controls, identification of cases, prioritization of testing, contact tracing and isolation of carriers of the virus and their contacts, among other interventions³¹. Critically, this guidance ensured that China reported the presence of a novel pathogen on 30 December 2019 and enabled the WHO to declare a Public Health Emergency of International Concern (PHEIC)—the highest level of alert—one month later on 30 January 2020, notably 111 days before the UN Security Council adopted a resolution stating that the COVID-19 pandemic threatened international peace and security^{26,33}. Four days after adoption of this resolution, the

WHO published a global strategy to tackle the pandemic, much of which remains valid today²⁶.

Moreover, within its technical capacity, it was able to send an international team on mission to China in February 2020 to collect key data on how the virus was spreading and the emerging disease profile as well as lessons learned from policy responses in China up to that point³⁴, invaluable knowledge that was shared with the rest of the world in the same month. Furthermore, through its technical role, the WHO has provided daily press briefings on a variety of scientific and policy topics, including up-to-date epidemiology data, the nature of SARS-CoV-2 transmission and appropriate non-pharmaceutical intervention guidance, since it declared a PHEIC (<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/media-resources/press-briefings>).

However, there was some criticism that the PHEIC should have been called earlier and that the WHO's diplomatic, but perhaps opaque, approach in working with China to investigate the source of the outbreak and rapidly share information demonstrated a lack of authority over member states⁶. This was further publicized as a result of the Trump administration's threat to withdraw from the WHO³⁵. However, the IHR only afford the WHO normative power, a ‘soft’ power that relies on the cooperation of member states and cannot be legally enforced³². Throughout the pandemic, the WHO has struggled with country cooperation, namely because it does not have an official operational role in outbreak response³⁶. This has also been demonstrated in the failure of notable countries such as the United Kingdom and the United States to implement some of the WHO's key public health guidance, such as ‘testing, testing, testing’, the provision of personal protective equipment and the ramping up of hospital capacity³⁷.

Furthermore, although the WHO's technical capabilities during the pandemic are mostly to be lauded, it was slow to offer some key recommendations, namely, on the potential risk of airborne transmission of SARS-CoV-2 under special circumstances (enclosed spaces, prolonged exposure and inadequate ventilation³⁸), the important role that masks³⁹ have in preventing transmission and the use of border controls. History has shown us that the risk of doing nothing while waiting for perfect data outweighs the risk of acting quickly with imperfect data. As Mike Ryan, the executive director of the WHO's Health Emergencies Programme, said in a press conference on 13 March 2020, “Be fast—have no regrets [...] perfection is the enemy of the good when it comes to emergency management. Speed trumps perfection” (<https://twitter.com/SkyNews/status/1238504143104421888>). Another technical area where it fell short was that its preparedness metrics (WHO Joint External Evaluation (JEE) mission reports, <http://www.who.int/ihr/procedures/mission-reports/en/>) seemingly did not account for variations in country leadership and political will, which have clearly had a big impact on the way countries have responded to the pandemic. Also, it did not sufficiently focus on policies to minimize the increase in social, racial and health inequalities resulting from outbreaks³¹. One major factor that has an impact on all of these coordination, normative and technical shortcomings is the limited funding available to the WHO to operate optimally⁴⁰. Critically, it has been suggested that the health and economic fallout of this unprecedented pandemic may spur new opportunities for more stable funding that might result in transformational change⁴¹.

National governance: best practice

By the end of March 2020, almost all countries around the world had introduced nationwide public health measures aimed at containing the spread of SARS-CoV-2 (Coronavirus Government Response Tracker, <https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker>). However, the measures used and, subsequently, the health and economic outcomes of the response varied drastically⁴². This variation in response seems to reflect past

experience in managing infectious disease outbreaks, societal values, long-term investment in healthcare and, critically, the political will of the government in power.

Overall strategic differences. In Europe and the United States, a combination of mitigation and suppression strategies has largely been used at various points in time. This is despite the WHO advising countries to follow the model of elimination from February 2020 (ref. 43). The United Kingdom's initial strategy was based largely on the response to pandemic flu, and government communications made several mentions of mild flu and cold-like symptoms as a result of COVID-19 for the majority of the population⁴⁴. Elimination of the virus was touted as impossible, with the best course of action being to shield the vulnerable as the virus made its way through the population, to avoid overwhelming health services in an attempt to achieve so-called 'herd immunity' (ref. 45). While the successful use of measures such as social distancing and home isolation in China was noted by government advisors, these measures were perceived as postponing the inevitable⁴⁶. The overreliance on the flu model painted an inaccurate picture of how COVID-19 is transmitted: as COVID-19 is more contagious than the influenza virus, it leads to super-spreader events in crowded places. This initial stance evolved into a suppression strategy where targeted health interventions have been used to reduce COVID-19 cases to 'acceptable' levels, for example, by implementing mass testing, lockdowns and the use of masks in indoor public spaces⁴⁷. In contrast, in New Zealand, Taiwan, Vietnam, South Korea, Australia and China, effort was taken to try to rapidly exclude community transmission of the virus using an elimination strategy. As Jacinda Ardern, the prime minister of New Zealand, recently said, even if elimination is not achieved, the approach "will result in a reduction of lives lost in the process" (<https://www.facebook.com/deutschewellenews/videos/236469201156575/>). As the world has witnessed a return to almost normalcy—at least within national borders—in countries that chose an elimination approach, there appears to be greater enthusiasm to pursue this approach among academics and politicians³. In contrast, those who did not follow this approach have succumbed to repeated national lockdowns throughout the year, high mortality rates, long-term health consequences in survivors (including in up to 10% of survivors in the United Kingdom), indirect health impacts, long-term economic loss and an increase in social and health inequalities⁴⁸.

One factor that has impacted the strategies used by governments is the relatively low case fatality rate (CFR) for COVID-19 of 2% (ref. 49). The CFRs of severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) are much higher than that of COVID-19 at 9–10% and 36%, respectively⁴⁹. On the basis of past experience, most countries would have adopted an elimination strategy if the CFR for COVID-19 were higher, because it would have been impossible to let SARS-CoV-2 spread within communities⁴³. However, CFR is a deceptive metric on its own because the underlying SARS-CoV-2 virus spreads more easily among people than other viruses with higher CFRs, leading to more cases and therefore more deaths at the population level. Hospitalization rates are a better measure of COVID-19 prevalence because they not only reveal the level of community spread but also provide insight into hospital capacity⁵⁰.

Public health measures. We also now know that effective use of test, trace and isolate (TTI) programs, where infected people and their contacts are rapidly identified and provided financial support to isolate during the incubation period of the virus, along with border controls and efficient and equitable rollout of emerging vaccines, is key to controlling this virus.

In East Asian and Pacific countries, TTI programs, strict border measures and good voluntary public health guidance were central

to elimination strategies, allowing these countries to rapidly manage local flare-ups. These measures also resulted in relatively few lockdowns⁴². In Hong Kong, uptake of testing was encouraged by paying people to be tested. Germany also had a relatively lower CFR in comparison to its European counterparts like Italy and the United Kingdom, in part because of its early and broad testing strategy³.

The development of vaccines has provided governments with an additional tool to protect their populations. Governments in high-income countries in particular have embarked on mass efforts to roll out vaccine, starting with their most vulnerable groups. By mid-January 2021, Israel had administered the first dose of a two-part vaccine to over 25% of its population, including to 75% of those over the age of 60 years. There are early indications that this is having a positive impact, with a reduction from 30% to 7% in the occurrence of critical illness in patients in the older age bracket two weeks after vaccination⁵¹. However, questions remain on the protection provided until the second dose is administered. Additionally, inequitable access, both globally and nationally, is an issue; in Israel, cities of lower socioeconomic status had administered fewer vaccinations than their wealthier counterparts (COVID-19 Maps, <https://vaccinations.covid19maps.org/>). What is clear is that a fast rollout is essential to stopping hospitalizations and deaths, as well as—eventually—community transmission, ultimately reducing the likelihood that new variants of the SARS-CoV-2 virus will emerge.

Social inequalities. The disproportionate impact that this pandemic has had on vulnerable populations and minority ethnic groups around the world must also not be overlooked⁵². This is typically a result of riskier work and living conditions, limited access to protective wear—and in some countries treatments—and limited availability of financial protection to ensure that key public health measures such as isolation and distancing can be implemented⁵². Governments have learned, often as a result of a public outcry, that identifying these vulnerable groups quickly and implementing tailored interventions to reduce the risk of infection in these groups is critical. For example, in Hong Kong, people were paid to encourage testing, while in the United Kingdom mass testing was eventually introduced in care homes as a way to rapidly identify and isolate cases^{53,54}.

Other key lessons are that elimination is achievable if swift political commitment is made early on in an outbreak and that, by accepting short-term stringent public health measures, viral community transmission is reduced, fewer COVID-19 cases are detected and economic loss is minimized³. At the global level, however, we should also recognize that not every country is able to implement the same public health measures. Countries such as Japan could not legally enforce strict containment measures because of their infringement on human rights⁵⁵. Furthermore, in Nigeria, political disorder and aggressive use of force by the police to limit protests intensified when strict public health interventions were enforced⁵⁶.

Leadership and communication. Clear and evidence-based communication during an outbreak is critical to build trust with the public and to ensure adherence to public health measures and successful containment. Most importantly, a government's concept of a successful outcome and the strategy used to achieve it need to be well defined⁵⁷. Some leaders seem to have managed clear communication, for example, in New Zealand, South Korea, Scotland, Taiwan and Senegal, while others have struggled, for example, in the United States and the United Kingdom. As the pandemic has unfolded, knowledge about the virus, how to manage it and the interventions available to us has rapidly evolved. Some governments have been good at communicating uncertainty and necessary changes in strategy when better options have become clear. For instance, in New Zealand, after the PHEIC was declared by the WHO, the government communicated that an elimination strategy was being adopted⁵⁸.

In the United States and the United Kingdom, it has at times been unclear what success would look like, how this would be measured and what approach was being adopted: exclusion, elimination, suppression or containment of the virus². In the United States, the Trump administration regularly ignored scientific evidence and the federal government “largely abandoned disease control to the states” (ref. ⁵⁹), resulting in a massive failure in handling COVID-19. In the United Kingdom, questions about changes were often met with protestations of having ‘world-beating’ approaches, a symptom of the UK exceptionalism that underestimated the virus in the first place⁶⁰. Moreover, some government ministers in the United Kingdom recently announced that National Health Service (NHS) hospitals were full because the public was not adhering to public health measures⁶¹. Shifting responsibility to individuals alone through such disparaging messaging can lead to a lack of compliance with government rules.

Economy versus health. Throughout the pandemic, a false dichotomy pitting public health against economic success has emerged⁶². In fact, one common argument against stringent public health measures like lockdowns is the potential damage such measures could inflict on the national economy. It is incorrect that loss of economic growth and job losses are a primary consequence of social distancing measures rather than the virus itself⁶². Not taking strict public health measures to prevent harm to the national economy during the pandemic is a short-sighted policy; in the long run, a brief closure and temporary subsidization have proven to be more cost-beneficial than keeping the economy open. Although New Zealand experienced an annual contraction in real gross domestic product (GDP) of 6.1%, this is much lower than the decrease seen in other comparable countries, and in Taiwan the net GDP was 0% (ref. ⁶³). Furthermore, economists argue that the estimated economic cost of the pandemic in the United States has been US\$16 trillion⁶⁴. Effective public health measures, if implemented, can reduce these financial costs significantly. Contrary to the false—yet commonly cited—dichotomy, protecting the health of the people is equivalent to protecting the wealth of the people. Similar analyses have shown that this was also the case in the 1918 influenza pandemic⁶⁵.

Conclusion

Looking ahead to year two of the pandemic, our collective progress will be dependent on a coordinated global effort to leave no one behind. Although the mass vaccination rollout will dominate COVID-19 policy this year, the emergence of new SARS-CoV-2 variants that may escape the body’s neutralizing antibody response and continued inequitable access to vaccines indicate that the COVID-19 pandemic will continue. This may well turn out to be the year of variants and vaccines. However, now we are armed with knowing what works, what does not and the range of interventions needed to keep case numbers low. Let us fix our fragmented global health system and follow the elimination playbook together because, if we have learned anything this past year, it is that, globally, we are only as strong as our weakest link.

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Author contributions

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