WHO - World Health Organization
Pandemic Preparation and Prevention

Introduction

The course of human history and prehistory is shaped by natural disasters, mass crises whose effects can leave long-lasting influence on affected populations and their descendants. Among the most devastating and infamous of these crises is the pandemic. The spread of a pathogen across the world can lead to massive amounts of direct harm and death in addition to economic, political, technological and social consequences. The COVID-19 pandemic has shown that in a globalized world no country, rich or poor, small or large, is completely immune from these negative effects. As the world recovers, the WHO sees preventing a similar emergency as a top priority.[1] Equally important is pandemic preparation, which involves establishing the protocols to be followed should preventative measures fail.

The World Health Organization (WHO)

The World Health Organization is the successor to several interbellum health organizations whose primary objectives were to combat epidemics. Since its establishment in 1948, the WHO's goals have broadened to promoting and expanding health coverage worldwide.[2] To this effect, it directs and coordinates global responses to health emergencies. The member states of the WHO are coterminous with those of the UN, with the exception of the United States, which is due to withdraw from the organization by the end of 2026.[3] All together,

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[1] "Core priorities," World Health Organization, accessed December 15, 2025, https://www.who.int/europe/about-us/our-work/core-priorities.
[2] "History," World Health Organization, accessed December 15, 2025, https://www.who.int/about/history.
[3] "Executive Order 14155 of January 20, 2025, Withdrawing the United States from the World Health Organization," https://www.whitehouse.gov/presidential-actions/2025/01/withdrawing-the-united-states-from-the-worldhealth-organization/.

these member states constitute the World Health Assembly (WHA). Funding for the WHO is provided through assessed payments (i.e. % of GDP), members' voluntary contributions, and private funding.[4]

The nature of the WHO's activities is voted on by the WHA and approved by its executive board of medical specialists and Director-General in Geneva. Generally, the organization orients itself with its strategic objectives. The strategic objectives for the latter years of this decade, as set out in the *Fourteenth General Programme of Work* (GPW), include responding to climate change, addressing the determinants of health/disease, mitigating health risks from hazards and rapidly detecting and responding to health emergencies.[5] The WHO is also guided by the UN's Sustainable Development Goals.[6]

The WHO functions in diverse ways: it sets standards for essential medicines, substances, medical equipment and best practices; it maintains programs such as child vaccination; and it has the ability to declare a public health emergency of international concern (PHEIC), where the WHO can impose nonbinding restrictions on travel to and from affected regions and issue guidance to states on how to act properly.[7]

[4] "What does the World Health Organization do?" Council on Foreign Relations, last modified June 2, 2022, https://www.cfr.org/backgrounder/what-does-world-health-organization-do.
[5] "WHO Fourteenth General Programme of Work, 2025-2028," World Health Organization, accessed December 16, 2025, https://www.who.int/about/general-programme-of-work/fourteenth.
[6] "Sustainable Development Goals," World Health Organization, accessed December 15, 2025, https://www.who.int/europe/about-us/our-work/sustainable-development-goals.
[7] Council on Foreign Relations, "World Health Organization."

Background

An epidemic is a rapid increase of the number of disease hosts in a population, beginning with a "patient zero". Once an epidemic becomes intercontinental, it is termed a pandemic, from the Ancient Greek words for "all-people".[8]

Scourge of History

The impacts of past epidemics are not only engraved into our history books, but also into our DNA.[9] Infamously, the Plague of Athens turned the tide of the Peloponnesian War; the Plague of Justinian, caused by the bacterium *Y. pestis*, permanently arrested the regrowth of the Roman Empire. *Y. pestis* would return eight centuries later as the Black Death. Further outbreaks would be caused by cholera in the 1800s.[10]

The first truly modern pandemic was the Spanish flu, whose patient zero was documented in the United States in 1918. Due to modern advances in germ theory, social distancing and widespread mask wearing were practiced. More recently, the HIV/AIDS and COVID-19 pandemics have caused millions of deaths. The development of critical care medicine has significantly aided humanity in dealing with these last two crises.[11]

Pathogens and Vaccines

The driving force of a pandemic is known as a pathogen. Most commonly, these are viruses (nonliving infectious agents that need a living host to reproduce) or bacteria (unicellular

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[8] Kim Jackson, "Endemics, Epidemics and Pandemics," Physiopedia, accessed December 18, 2025, https://www.physio-pedia.com/Endemics,_Epidemics_and_Pandemics.
[9] Keila DePape, "Ancient viruses in our DNA may hold clues to what makes us human," McGill University, July 21, 2025, https://www.mcgill.ca/newsroom/channels/news/ancient-viruses-our-dna-may-hold-clues-what-makes-us-human-366069.
[10] Shrikanth Sampath et al., "Pandemics Throughout the History," *Cureus* 13, no.9 (2021), https://doi.org/10.7759/cureus.18136.
[11] Mitchell Hamele et al., "Always ready, always prepared—preparing for the next pandemic," *Translational Pediatrics* 7, no. 4 (2018), https://doi.org/10.21037/tp.2018.09.06.

organisms).[12] Of particular concern in pandemic prevention are pathogens that transmit through the respiratory tract, due to the ease of transmission; zoonotic (animal-to-human) pathogens, due to the lack of pre-existing human immunity; tick/mosquito-borne pathogens, whose reach increases with climate change and urbanization; and antimicrobial resistant bacteria,[13] which emerge in hospitals and have evolved to resist antibiotics. All of these make good candidates for the so-called Disease X, a completely novel disease that would cause the next pandemic.[14]

As living beings, bacteria can usually be killed with the appropriate antibiotics. Viruses, however, are much more difficult to contain as, if an outbreak is not snuffed out immediately, a vaccine must be rapidly produced in order to avoid countless deaths. A vaccine acts by rendering an injectee immune to a virus through exposure to a harmless version of the virus.[15] Producing a vaccine, which requires research, testing, facilities and industrial equipment, is an extremely costly endeavour with price tags in the hundreds of millions of USD.[16] However, a country or corporation that succeeds can wield enormous political and economic control.

The COVID-19 Pandemic

The COVID-19 pandemic[17] began in December 2019 with an outbreak of a novel disease in Wuhan, China.[18] This respiratory disease was caused by the previously unknown coronavirus

[12] "How do vaccines work?" World Health Organization, February 25, 2025, https://www.who.int/news-room/feature-stories/detail/how-do-vaccines-work.
[13] Saia Ma'u Piukala, "The next pandemic is already here: Antimicrobial resistance is upending a century of achievements in global health," World Health Organization, November 18, 2025, https://www.who.int/westernpacific/newsroom/commentaries/detail/the-next-pandemic-is-already-here--antimicrobial-resistance-is-upending-a-century-of-achievements-in-global-health.
[14] Morgan Coulson, "Defining Disease X," Johns Hopkins University, February 15, 2024, https://publichealth.jhu.edu/2024/what-is-disease-x.
[15] World Health Organization, "Vaccines."
[16] Stanley Plotkin et al., "The complexity and cost of vaccine manufacturing - An overview," *Vaccine* 35, no. 33 (2017): 4064-4071, https://doi.org/10.1016/j.vaccine.2017.06.003.
[17] Henceforth referred to as 'the pandemic' in this document.
[18] "CDC Museum COVID-19 Timeline," Centers for Disease Control and Prevention, accessed December 17, 2025, https://www.cdc.gov/museum/timeline/covid19.html.

SARS-CoV-2, which is theorized to have zoonotic origins in bats. The WHO declared a PHEIC on January 30th, 2020 and first described the outbreak as a pandemic on March 11th.

Despite warnings from the SARS outbreak a decade prior, shortages of personal protective equipment (PPE), limited testing capacity and underfunding of healthcare systems hindered early containment and demonstrated a lack of global preparedness.[19] Governments worldwide deployed emergency powers such as travel restrictions, border closures, expansion of hospital capacities and economic relief. International scientific collaboration enabled the rapid invention of mRNA vaccines, a brand-new technology to counter a human coronavirus, a family of viruses without any previous vaccine.

As of the end of 2025, COVID-19 has caused over 7 million confirmed deaths[20] and 18-34 million total deaths,[21] ranking it as the fifth-deadliest pandemic in history. In the wake of the pandemic, political and economic tensions remain worldwide.

Medical and Pharmaceutical Preparedness

The first step to preventing a pandemic is the surveillance and rapid detection of new pathogens, which occurs quite often.[22] This consists of notifications given to authorities by healthcare professionals worldwide and through laboratory initiatives such as the GISRS.[23] In addition, as many epidemics are caused by zoonotic pathogens, monitoring is also important at

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[19] Thomas J Bollyky and Stewart M Patrick, "Improving Pandemic Preparedness: Lessons From COVID-19," Council on Foreign Relations, last modified October 2020, https://www.cfr.org/task-force-report/improving-pandemic-preparedness/findings.
[20] "COVID-19 deaths," World Health Organization, accessed December 24, 2025, https://data.who.int/dashboards/covid19/deaths.
[21] "The pandemic's true death toll," The Economist, October 25, 2022, https://www.economist.com/graphic-detail/coronavirus-excess-deaths-estimates.
[22] C. Raina MacIntyre et al., "Early detection of emerging infectious diseases - implications for vaccine development," *Vaccine* 42, no. 7 (2024): 1826-1830, https://doi.org/10.1016/j.vaccine.2023.05.069.
[23] "Global Influenza Surveillance and Response System (GISRS)," World Health Organization, accessed December 20, 2025, https://www.who.int/initiatives/global-influenza-surveillance-and-response-system.

the human-animal interface. Unfortunately, detection and containment can falter in the lower-income and rural regions where these interactions tend to take place, making them particularly fertile ground for an outbreak.[24] Open-source sharing of genomic and epidemiological data and the use of machine learning have also begun to become more common in this century.

As stated above, the production of a vaccine is essential to countering a viral pandemic. In the wake of the COVID-19 pandemic, organizations such as CEPI have established initiatives like The 100 Days Mission, which seeks to accelerate the development of a vaccine to a 100-day timeline.[25] This plan has three components: preparation, through developing vaccines against known pathogens similar to likely pandemic threats; technological development, by creating an open-source vaccine library and pre-emptively readying clinical trials; and distributing the burden onto public and private stakeholders worldwide while encouraging international collaboration. However, a global plan may run counter to the interests of some public and private actors that have the charge of caring for their own populations/customers first.

A last safeguard against a pandemic is securing the stability of medical and pharmaceutical systems within a country. These include stocking PPE, assuring the supply and distribution chains for medicines and planning emergency protocols within the country's healthcare system. The exact nature of this stage is shaped by the country's unique healthcare system and usually involves public-private collaboration.[26]

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[24] Saurav Pantha et al., "Zoonotic diseases in low and middle-income countries (LMICs): Economic burden, challenges, strategies, and future directions," *Animals and Zoonoses*, published online November 5, 2025, https://doi.org/10.1016/j.azn.2025.11.001.

[25] "CEPI 2.0 and the 100 Days Mission," Coalition for Epidemic Preparedness Innovations, accessed December 20, 2025, https://cepi.net/cepi-20-and-100-days-mission.

[26] Organisation for Economic Co-operation and Development, *Securing Health Supply Chains in a Post-Pandemic World*, (Paris: OECD Publishing, 2024), https://www.oecd.org/content/dam/oecd/en/publications/reports/2024/02/securing-medical-supply-chains-in-a-post-pandemic-world_3c8cef7c/119c59d9-en.pdf.

Economic, Political and Social Preparedness

Economy

While the main impact of a pandemic is on healthcare, the effect on national and global economies can be even longer. As a pandemic progresses, productivity declines due to illness and mortality. Consumption also declines if a government decides to impose movement restrictions, curfews or other protective measures. As healthcare spending increases, government debt grows.

Pandemic prevention generally has a positive return on investment,[27] and protecting the global economy against a pandemic is also important in the short term. To this end, there exist a variety of shock absorbers, such as paid sick leave, unemployment and food assistance, pandemic contingency funds, and emergency spending frameworks. The supply chains so affected by pandemics can be protected by diversifying sources and cooperating internationally.[28] Finally, digitizing public and private assets (at the cost of losing real assets) allows for increased resilience and diversification when travel is restricted.

Politics and Society

Halting the progress of a pandemic is a collaborative effort between the global populace, governments and the private sector. The pandemic is therefore also an exercise in civil trust, as a government that institutes unpopular measures may lose legitimacy. Democratic societies with strong institutional trust have the advantage in this dimension. More authoritarian regimes, where the risk of reprisal is less present, can afford to employ harsher measures when the crisis comes.

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[27] Jay Patel and Devi Sridhar, "Toward better pandemic preparedness," International Monetary Fund, December 2021, https://www.imf.org/en/publications/fandd/issues/2021/12/pandemic-preparedness-patel-sridhar.
[28] Dawn Downes, "How to Prepare Your Supply Chain for Disaster," Purolator International, April 15, 2022, https://www.purolatorinternational.com/how-to-prepare-your-supply-chain-for-disaster/.

Regardless of government type, certain social determinants must still be considered. Certain populations are more vulnerable to a pandemic. These include the elderly, those with pre-existing medical conditions, and socioeconomically disadvantaged groups.[29] In addition, although they are relatively safe from health consequences, young people are disproportionately vulnerable to disruptions caused by a pandemic.[30] For all the above reasons, preparing a good communication strategy and public restriction criteria can help establish trust with the general population. The demographic makeup of targeted regions should also be taken into account.

Questions to Consider

1. Does your country's government currently consider itself prepared for a pandemic?
2. How did your country manage the COVID-19 pandemic? Did they collaborate with other countries?
3. Does your country have a history with health emergencies (e.g. Ebola, MERS)? How did it deal with them, and how much international aid did it provide/receive?
4. How developed is your country? What is the condition and structure of your country's healthcare system, and how was it affected by the COVID-19 pandemic? What cultural significance does healthcare have in your country?
5. Does your country house companies that contribute to the global and national medical industry through research, manufacturing or resource exploitation?

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[29] Sharon Kardia and Jon Zelner, "Which Populations Are Most Vulnerable to the COVID-19 Pandemic?" University of Michigan, April 6, 2020, https://sph.umich.edu/news/2020posts/which-populations-are-most-vulnerable-to-coronavirus.html.
[30] Mental Health Commission of Canada, *Lockdown Life: Mental Health Impacts of COVID-19 on Youth in Canada*, (Ottawa: self-pub, 2020), https://www.oecd.org/content/dam/oecd/en/publications/reports/2024/02/securing-medical-supply-chains-in-a-post-pandemic-world_3c8cef7c/119c59d9-en.pdf.

6. What were the principal economic and political impacts of the COVID-19 pandemic on your country? What mechanisms does your country have in place to ensure stability in the case of a disaster?
7. Which groups in your country were most adversely affected by the pandemic, and how? How were youth affected by the pandemic in your nation?

Useful Delegate Resources

World Health Organization

WHO Pandemic Agreement (2025)

International Health Regulations (2005, amended 2024)

Current health expenditure (% of GDP)

Zoonotic diseases in low and middle-income countries (LMICs): Economic burden, challenges, strategies, and future directions

The impact of the COVID-19 pandemic on global GDP growth

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