

COVID-19 timeline of events

The COVID-19 pandemic continued to rage in 2021, but this was increasingly an unequal pandemic, with rich countries receiving millions of doses of vaccine and ending lockdowns and travel bans. It was also a year when policymakers started to prepare for the next inevitable pandemic.

JANUARY

Vaccine approval.

The first people in the world received their vaccines against COVID-19 in December 2020, but it was not until 5 January that the World Health Organization (WHO) gave emergency use approval for the BNT162b2 vaccine (BioNTech–Pfizer). More vaccine news swiftly followed throughout the month, with India starting vaccination against COVID-19 using Covaxin (Bharat Biotech) and ChAdOx 1 (Oxford–AstraZeneca) on 16 January. Days later, BNT162b2 was shown to be effective against the highly transmissible Alpha variant of SARS-CoV-2, first identified in the United Kingdom in October 2020, with later research showing its efficacy against more variants. Real-world data confirmed the effectiveness of vaccines in preventing hospitalization and death, with a weaker effect on reducing transmission.



The BNT162b2 vaccine (BioNTech–Pfizer) was given WHO emergency approval in January.
Credit: Friedrich Stark / Alamy Stock Photo

FEBRUARY

Virus origins.

After more than a year of debate on the origins of SARS-CoV-2, on 9 February, a joint report by the WHO and China stated that “the laboratory incident hypothesis is extremely unlikely to explain introduction of the virus into the human population.” Two days later, however, WHO Secretary General Tedros Adhanom Ghebreyesus said “all hypotheses remain open and require further study.” On 30 March, a WHO report stated that animal-to-human transmission was the most likely origin. In July, the WHO said it was establishing the international Scientific Advisory Group for Origins of Novel Pathogens to study the origins of SARS-CoV-2 and other emerging viruses. In September, a preprint (that has not yet been peer reviewed) identified three viruses in bats in Laos that are more similar to SARS-CoV-2 than any known viruses. This bolstered the ‘natural origin’ explanation for SARS-CoV-2 while also indicating that humans could be infected by numerous other novel coronaviruses.

MARCH

Vaccine side effects.

All medical interventions come with side effects, and vaccines are no exception. On 11 March, Denmark, Norway and Iceland suspended use of the ChAdOx1 vaccine (Oxford–AstraZeneca) as a precaution, due to concerns that it may increase the risk of blood clots. Further research found that ChAdOx1 can in rare cases cause **immune thrombotic thrombocytopenia**, but that the risk of thrombosis is greater from COVID-19. After a review, the European Medicines Agency concluded that the ChAdOx1 vaccine is “safe and effective,” which allowed the European distribution of the vaccine to resume. Concerns about side effects of vaccines against COVID-19 surfaced again in July when a WHO committee identified “a likely causal association” between myocarditis and mRNA vaccines, although such cases were rare. Data from the United States indicated about 40 cases of myocarditis per million second doses among males, with a lower risk among females. The risk of severe COVID-19 remains greater than the risk of vaccine side effects.

APRIL

Variants of concern.

The Alpha variant was detected in all 50 US states in April, which triggered concerns that the United States would not be able to administer vaccines fast enough to avoid another surge of cases. In May, alarmed by the spread of the Delta variant in India, the WHO labeled it a global variant of concern. The outbreak in India peaked at more than 400,000 daily cases on 7 May, with more than 4,000 deaths each day. Both the Alpha variant and the Delta variant were shown to be more transmissible, and Delta in particular has led countries to reinstate strict public-health measures. Thankfully, vaccines continue to provide protection against severe disease and death, regardless of new variants.

MAY

COVAX challenges.

On 27 May, WHO Director General Tedros Adhanom Ghebreyesus, along with his counterparts at UNICEF, the Coalition for Epidemic Preparedness Innovations, and Gavi, the Vaccine Alliance, warned in an open letter that due to the surge of the virus in India, the COVAX global vaccine

effort could face a major shortfall. As the only global initiative working to ensure the availability of vaccines against COVID-19, especially in low-income countries, COVAX had struggled to obtain enough vaccine. High-income countries have prioritized booster shots and vaccines for children, leaving vaccine orders from low-income countries unfulfilled. COVAX has had successes: more than 500 million doses of vaccine were delivered by mid-November. But with less than 5% of people in African countries vaccinated, it has fallen short of expectations. The year is almost over, but COVAX still expects to deliver 1.4 billion doses by the end of 2021.

JUNE

Pandemic preparedness.

On 17 June, the US government announced it will invest more than US\$3 billion to accelerate the development of antiviral medicines to develop the next generation of treatments for COVID-19, as well as for novel viruses with pandemic potential. This was followed by several other initiatives to prepare for the next inevitable pandemic. In July, a G20 panel proposed a five-year investment of at least US\$75 billion to fill gaps in global pandemic prevention and preparedness. In September, the WHO and the German government launched a Hub for Pandemic and Epidemic Intelligence, based in Berlin. With an initial contribution of US\$100 million from Germany, the new hub aims to build interdisciplinary partnerships to share data and intelligence. A new Pandemic Prevention Institute, backed with up to US\$150 million from the Rockefeller Foundation, pledged to work with the hub in “helping transform global capability for stopping disease outbreaks.”

JULY

Vaccine passports.

On 1 July, the EU Digital COVID Certificate went live in Europe. Other international jurisdictions, including the province of Quebec in Canada, began introducing vaccine certificates soon after Europe. In the United States, President Biden said he will leave it to individual states to decide whether or not to issue vaccine certificates, and announced that a travel ban to Europe would be lifted in November. Although some US states, including California

and New York, began introducing local versions of vaccination certificates, other states moved to ban them. Supporters of vaccination credentials say they make congregating safer while promoting vaccination. Critics, however, say introducing vaccine passports infringes on civil liberties and amounts to a new form of mass surveillance.

AUGUST

Increases in inequality.

On 2 August, the [International Monetary Fund](#) allocated US\$650 billion in Special Drawing Rights — its biggest-ever such disbursement — to help countries grapple with COVID-19. The [International Monetary Fund](#) said that although about US\$275 billion was earmarked for “emerging markets and developing countries,” the lowest-income nations will receive the least, with African countries expected to get less than 7% of the total. About 80 million more people in low- and middle-income countries in Asia and the Pacific were pushed into extreme poverty because of disruptions in economic activity due to COVID-19 in 2020. In September, the United Nations warned that developing countries will suffer economic losses of US\$12 trillion through 2025 as a result of the pandemic.

SEPTEMBER

Vaccine mandates.

On 9 September, President Biden issued an executive order mandating vaccination for all federal employees, as well as big private employers. Canada issued a similar mandate for federal employees a few days later. Both countries continue to struggle with abidingly high COVID-19 prevalence in numerous regions and cities, which led the Canadian provinces of Alberta and Saskatchewan to re-impose partial lockdowns. Another reversal came from the US Centers for Disease Control and Prevention, which reintroduced their recommendation for fully vaccinated people to wear masks.

OCTOBER

Brazil's tragic crisis.

On 8 October, Brazil reported more than 600,000 deaths from COVID-19 — only the second country after the United States to do so. Brazil remains the epicenter

of the COVID-19 pandemic in Latin America, in part due to persistent healthcare inequities. Blame was also apportioned to the government of President Bolsonaro, with critics highlighting a lack of central command, no strategic planning or evidence-based recommendations, and an anti-science agenda. Scientists also criticized the cancellation of [Brazil's largest epidemiological study](#) on COVID-19, which was discontinued by the Ministry of Health, in July 2020, “after the study identified marked regional, ethnic and socioeconomic disparities in antibody prevalence throughout the country.”

NOVEMBER

Australia reopens.



Australia ended its travel ban on citizens leaving the country in November. Credit: Andrew Michael / Alamy Stock Photo

Australia and Thailand lifted their travel bans on 1 November, with New Zealand also easing restrictions. Australia and New Zealand have had relatively few deaths from COVID-19, in part due to strict travel bans, but a zero-tolerance approach to COVID-19 led the city of Melbourne to have the longest lockdown of anywhere in the world. Vaccine uptake was slow in Australia, which created challenges to reopening the economy. Elsewhere, more borders opened, with the United States reopening the Canada–US land border on 8 November, after Canada's reopening of its land border to the United States on 9 August.

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