

THE ALCIVAX

Alcimed explores the future of respiratory infections as insights emerge about the effect of COVID on the previous cold and flu season.

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Dear COVID, When can We Move On?

Officially declared a global pandemic more than a year ago, COVID-19 continues to spread throughout the global resulting in 1st, 2nd, 3rd, even 4th waves of infections in places that thought that maybe they were already out of the woods. But when will it be over? Well that is up the variants.



Variant History

The answer to that question may actually lie in a museum. Researchers in a broad international consortium are ready to publish a study showing the development of variants from the deadly 1918 influenza pandemic. They have analyzed the genetic sequences of soldiers in Berlin who died in the first wave to a woman in Munich who died several waves later to understand the differences in the variants and their behavior. Understanding how variants have moved on such a large scale in the past may help us to predict what will happen to COVID-19 variants now.

During the 1918 pandemic, the arising variants in subsequent waves caused significantly more severe disease than the milder variants at the start of the pandemic. According to these new analysis, the seasonal H1N1 Influenza A strain that now circulate may have arisen as a late stage variant in the 1918 pandemic. This current study continues to lend credence to the likelihood of some later variant of COVID-19 creating a new seasonal coronavirus variant that circulates annually in the population.



What happened to the rest of respiratory disease?

Patterns of respiratory virus infections

During the pandemic, circulation patterns of respiratory viruses other than severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have been disrupted. This could mean a future shift in the epidemiology of respiratory diseases, potential for new epidemic threats, or larger outbreaks than previously observed. It is also unknown how long it will take for seasonal circulation patterns to return to prepandemic levels. Graphs illustrate trends in detection of respiratory viruses. Data are from respiratory illness surveillance in participating sites of the Global Influenza Surveillance Network (14).

— 2018–2019 — 2019–2020 — 2020–2021

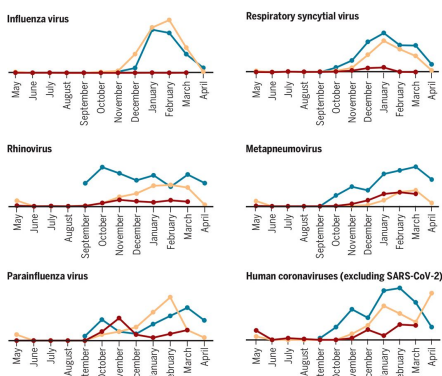


Image Credit: [N. DESAI/SCIENCE](#)

While our attention has been solely on COVID-19, many commonly circulating respiratory viruses have been taking a sabbatical. All 6 families of the normally circulating respiratory viruses have been reported at lower rates during the pandemic than would be expected, thanks in large part to increased nonpharmacological interventions, such as handwashing, mask wearing, and social distancing. Now that these measures are loosening, these respiratory infections may be back worse than before if population-level immunity has lessened due to low circulation. This could result in a shift in seasonality for these viruses or even a shift in the age populations that are affected and even the

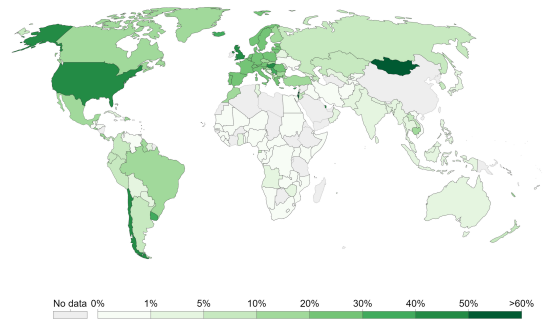
disease severity. Current modeling suggests that it may take years for the normal seasonal patterns to resume. For example, neither the B/Yamagata or the H3N2 clade known as 3c3 of influenza have been seen since March 2020 causing premature speculation that they may have gone extinct. However, emerging reports of H5N8 and H10N3 avian flu circulations, including 1 reported H10N3 human infection in China, quickly remind us how many respiratory viruses circulating in animals may yet still have pandemic potential. The need for better global surveillance of respiratory pathogens is well illustrated across these reports and will require collaboration not just among governments, but academics, and pharma companies as well.



The COVID Vaccine Race In Graphs

People in low-income countries who have received at least one dose: **Only 0.8%**

Share of the population fully vaccinated against COVID-19
Share of the total population that have received all doses prescribed by the vaccination protocol. This data is only available for countries which report the breakdown of doses administered by first and second doses.

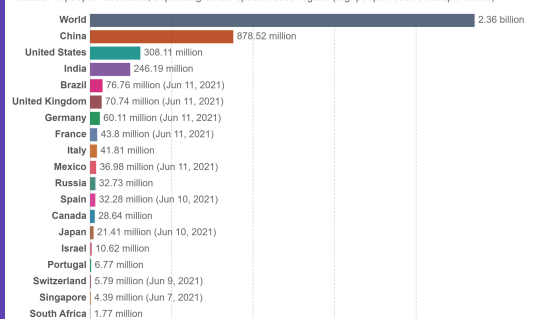


Source: Official data collated by Our World in Data – Last updated 13 June, 11:00 (London time) OurWorldInData.org/coronavirus • CC BY

Doses have been administered globally? **2.4 billion**
Doses administered daily worldwide? **33.3 million**

COVID-19 vaccine doses administered

Total number of vaccination doses administered. This is counted as a single dose, and may not equal the total number of people vaccinated, depending on the specific dose regime (e.g. people receive multiple doses).

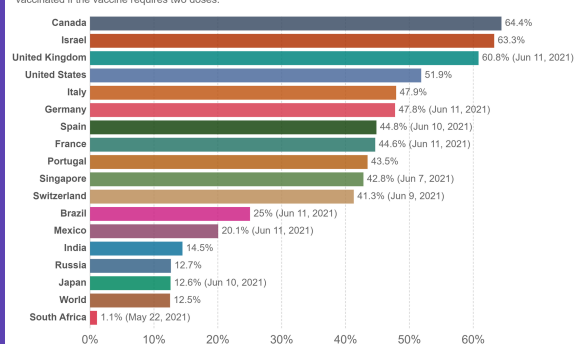


Source: Official data collated by Our World in Data – Last updated 13 June, 11:00 (London time) OurWorldInData.org/coronavirus • CC BY

How much of the world population has received at least one dose of a COVID-19 vaccine? **12.5%**

Share of people who received at least one dose of COVID-19 vaccine

Share of the total population that received at least one vaccine dose. This may not equal the share that are fully vaccinated if the vaccine requires two doses.



Source: Official data collated by Our World in Data – Last updated 13 June, 11:00 (London time) OurWorldInData.org/coronavirus • CC BY

COVID Vaccines: Good News/Bad News



The Variant News

To prevent stigmatizing the populations in which variants arose, the WHO has instituted a non-location based naming system, with the last variant switching over as of the 1st of June, 2021. They are:

Name	Origin
Alpha	UK, Sept 2020
Beta	South Africa, May 2020
Gamma	Brazil, Nov 2020
Delta	India, Oct 2020

- While the Delta variant originally made headlines for raging through Brazil, as much as 6% of new US cases are also the Delta variant.
- The Delta variant was already noted to be highly transmissible as it swept through India and became the dominant strain in the UK. The 6K COVID deaths per day in India is thought to be attributable to the Delta variant.
- Guangzhou China has also reported an outbreak of the Delta variant, that is once again reeking havoc on the world's raw material supply.
- Studies show the Pfizer vaccine is up to 88% effective against the Delta variant.
- A new Mexican variant is emerging as well but has not yet been declared of concern and is contained in North America.

Longer term follow up studies in individuals that had contracted COVID suggest that long term memory responses will likely persist in those infected long after infection. Long-lived, antibody-secreting memory plasma cells can be isolated from the bone marrow of those who have been infected with COVID, provided the first evidence of lasting immunity. Those responses are significantly boosted by vaccination, suggesting that booster vaccine doses may not be as imminent or necessary as has been previously discussed. These studies also verify the current policy of vaccinating people regardless of their previous infection status.

Given the higher vaccination rates in the US and EU, over 40% uniformly, the vast majority of new cases are the unvaccinated, putting even more pressure on governments to vaccinate the hesitant and continue to quell anti-vax messaging. Germany has even recruited David Hasselhoff in a recent COVID vaccine ad.

At the G7 summit this week, leaders have promised to donate 1 B doses of vaccine to mainly be delivered through COVAX, distributed by the end of 2022. As they are two doses regimens, it represents ~10% of the 5 M people who still need to be vaccinated globally.



Vaccine Side Effect Setbacks

The FDA is investigating reports of myocarditis and pericarditis in people vaccinated with either the Pfizer or Moderna vaccine. All 226 verified cases occurred in males under the age of 30, primarily after the second dose of the vaccine. While 81% of patients have fully recovered, an emergency meeting of the CDC's Advisory Committee on Immunization Practices (ACIP) will take place this week. While reviewing addition cases, the CDC has stood by its recommendation to continue vaccinating all children 12 and up. This is however, not the first time that a vaccine has caused myocarditis. That honor belongs to smallpox.

Additionally, reports of blood clots with the AstraZeneca vaccine, have also prompted Italy to stop use of the AstraZeneca vaccine for people under the age of 60. Those who have already received a first dose can receive an mRNA vaccine as their second dose. A top EMA official has even hinted that if other vaccines are available that AstraZeneca should be skipped in all age groups, signaling even more trouble ahead for AstraZeneca.



Now for the Good News

RoboScientific has developed a rapid room monitor that can tell if someone in a crowded room has COVID in as few as 15 minutes and is the size of a smoke alarm. Following the example of Airbus and Koniku, this could really open up airline travel. At 98 to 100% accuracy, it at least rivals PCR tests, and the subtle changes in body odor it detects could be better at rooting out asymptomatic carriers.

Ocugen announced it would not seek an emergency use authorization (EUA) for its Covaxin candidate, but would instead follow the FDA's recommendation to seek a biologics license application (BLA) in both the US and FDA, which will call for an additional clinical study and will prolong approval. Novavax's Phase 3 studies show a 90% efficacy, but may not be eligible for an EUA, with 3 strong contenders already approved.

In non-vaccine good news, a new modeling study in Science, suggests that looking at cycle thresholds (Ct) during PCR testing can depict the dynamics of an outbreak based on viral load. While still an early stage model, having the ability to tell whether an outbreak is on an upward or a downward trajectory would provide real time information that could revolutionize outbreak response.



All Joking Aside

There is a new definition of super strength! A 104 year old woman in Detroit, Michigan has now conquered cancer, the 1968 strain of pandemic influenza, and now COVID. May the rest of us be so lucky.

In sports news, Demark's midfielder Christian Eriksen collapsed on the pitch Saturday during a game against Finland for the Euro 2020 opener. While it has been speculated that COVID was the culprit, his coach from Inter Milan has reassured fans that there is no evidence to support the theory.

True to tradition the Olympic committee will distribute over 150K condoms to athletes at the upcoming Tokyo games postponed from last year to raise awareness for HIV/AIDS. The difference this year? Japanese officials are making it clear that they should only end up going home with athletes and are not to be used inside of the Olympic Village, where social distancing rules will be enforced during the games, in addition to banning international spectators.

Brazilian president Bolsonaro's COVID troubles continued this week when he was assessed a fine for failing to comply with a mask mandate ordinance while at a motorcycle rally. Fine: \$110.

COVID: New Problems, Same Pandemic

The New COVID Anxiety



Image Credit: Bruce Petush

Vaccine Horoscopes

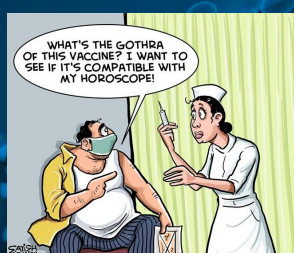


Image Credit: Satish Acharya

Consistency is Key

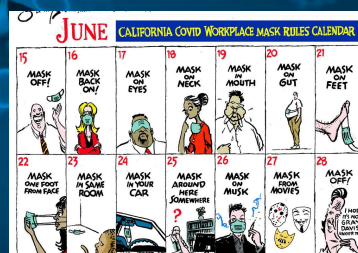


Image Credit: Jack Ohman

Greece Finally Gets a Variant



Image Credit: Chappette