



GLOBAL

↓
519 847 952
confirmed cases
504 400 000
recovered
6 260 296 deaths

USA

(7-days incidence 114)
↑
81 400 310
confirmed cases
79 440 355 recovered
993 301 death

IND

(7-days incidence 1,6)
↑
43 110 586
confirmed cases
42 535 843 recovered
524 157 deaths

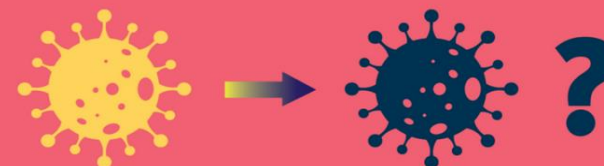
BRA

(7-days incidence 49,4)
↑
30 594 388
confirmed cases
29 691 436 recovered
664 624 deaths

News:

- **WHO:** New estimates from the [World Health Organization \(WHO\)](#) show that the full death toll associated directly or indirectly with the COVID-19 pandemic (described as “excess mortality”) between 1 January 2020 and 31 December 2021 was approximately 14.9 million (range 13.3 million to 16.6 million).
- **WHO:** [WHO emergence appeal: Ukraine & refugee-receiving and hosting countries](#)
- **ECDC:** [Legionnaires’ disease - Annual Epidemiological Report for 2020](#)
- **ECDC:** published technical guidance [COVID-19 Aviation Health Safety Protocol: Operational guidelines for the management of air passengers and aviation personnel in relation to the COVID-19 pandemic](#)
- **ECDC:** ECDC supports [World Hand Hygiene Day](#) and wants to show that good hand hygiene is a simple, yet effective way to prevent infections, and is the most important measure for preventing the spread of multidrug-resistant organisms and other healthcare-associated infections.
- **ECDC:** [ECDC Summer School 2022: Emerging challenges from the COVID-19 pandemic](#). The ECDC Summer School is an annual event for public health experts within the ECDC network. It aims to build and further develop the EU/EEA Member States` public health capacity in the field of communicable diseases.
- **Topics:**
- COVID-19 situation
- Global situation: Updates on COVID-19
- Ukraine War
- Other Infectious Disease Outbreaks
- 2021 Infectious Disease Year-in-Review, Part 2
- Summary of Information on the Individual National Corona Restrictions
- Travel Recommendations and other Useful Links

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Why should we vaccinate for #COVID19, including with the booster dose? To reduce circulation and prevent further mutations of the SARS-CoV-2 virus. To help keep others safe. And because #VaccinesSaveLives. #LongLifeForAll

EUROPE

↓
210 172 028
confirmed cases
204 100 000
recovered
1 927 749 deaths

FRA

(7-days incidence 416,0)
↓
29 212 276
confirmed cases
28 293 210 recovered
148 016 deaths

GBR

(7-days incidence 116)
↓
22 150 700
confirmed cases
21 775 852 recovered
176 708 deaths

DEU

(7-days incidence 507,0)
↑
25 504 046
confirmed cases
23 676 500 recovered
136 999 deaths

Global Situation

Long COVID or Post-COVID Conditions

Most people with COVID-19 get better within a few days to a few weeks after infection. Some people can experience long-term effects from their infection, known as post-COVID conditions or long COVID.

People with post-COVID conditions can have a [wide range of symptoms](#) that can last weeks, months, or years. Sometimes the symptoms will go away but return later.

People who experience post-COVID conditions most commonly report:

General symptoms

- Tiredness or fatigue that interferes with daily life
- Symptoms that get worse after physical or mental effort (also known as “post-exertional malaise”)
- Fever

Respiratory and heart symptoms

- Difficulty breathing or shortness of breath
- Cough
- Chest pain
- Fast-beating or pounding heart (also known as heart palpitations)

Neurological symptoms

- Difficulty thinking or concentrating (sometimes referred to as “brain fog”)
- Headache
- Sleep problems
- Dizziness when you stand up (lightheadedness)
- Pins-and-needles feelings
- Change in smell or taste
- Depression or anxiety

Digestive symptoms

- Diarrhea
- Stomach pain

Other symptoms

- Joint or muscle pain
- Rash
- Changes in menstrual cycles

Post-COVID conditions are found more often in people who had severe COVID-19 illness, but anyone who has been infected with the virus that causes COVID-19 can experience post-COVID conditions.

There is no test to diagnose post-COVID conditions, and symptoms could come from other health problems. This can make it difficult for healthcare providers to recognize post-COVID conditions. Your healthcare provider considers a diagnosis of post-COVID conditions based on your health history, including if you had a diagnosis of COVID-19 either by a positive test or by symptoms or exposure, as well as doing a health examination.

“Long COVID,” also known as post-COVID conditions, can be considered a disability under the Americans with Disabilities Act (ADA). Learn more: [Guidance on “Long COVID” as a Disability Under the ADA, Section](#)

Sources: [CDC](#) and [HHS.gov](#)

Omicron Sublineage Follow-up



According to GISAID as of May 4, approximately 800 BA.4 and BA.5 positive sequences have been detected worldwide in at least 15 countries. However, our understanding of BA.4 and BA.5 comes from the early epidemiological situation in South Africa as the country with the largest cumulative prevalence.

South Africa is observing a wave of cases likely attributed to BA.4 and BA.5, with a 14-day test positivity rate of 18% as of May 4 (+56% increase since April 20). As of April 20, these sublineages combined are the **dominant variants in South Africa**, accounting for approximately 70% of sequenced cases. Based on the trends over the past 14 days, **the rate of change in the seven-day rolling average number of daily new cases is 214 cases per day with 4,581 new cases reported on May 4.** As a comparison, a similar rate of change was observed during the previous Omicron (primarily BA.1) wave on November 25, 2021, which was followed by a significant surge in new cases.

Transmissibility - Together, **BA.4 and BA.5 are estimated to be about 10% more transmissible than BA.2.** Early analysis of genomic data up to April 20, 2022, in South Africa estimates the growth rate per day relative to BA.2 is 0.08 for BA.4 and 0.12 for BA.5. Notably, the difference is comparable to the growth advantage (0.07 per day) of BA.2 over BA.1.

Vaccine Efficacy - BA.4 and BA.5 demonstrate strong antibody escape in both those who were vaccinated but uninfected with Omicron (BA.1) and vaccinated, previously infected with Omicron (BA.1).

Plasma of three dose CoronaVac COVID-19 vaccine recipients (n = 40) showed reduced neutralization titers (1.62-fold reduction compared to BA.2) against the BA.4 and BA.5 sublineages with a larger reduction (4.3-fold reduction compared to BA.2) if they had experienced a BA.1 breakthrough infection (n=50). Neutralizing titers against BA.1 and BA.2 in vaccinated breakthrough cases were notably higher than in the vaccinated-only group. Thus, the larger-fold reduction in neutralization against BA.4 and BA.5 in those previously infected with either BA.1 may be explained by the higher baseline reference points but indicates that previous Omicron infections did not provide additional antibody protection. Similar reductions were observed with other COVID-19 vaccines including Comirnaty (Pfizer) and Janssen (Johnson & Johnson).

Re-infections - Assay studies indicate that BA.4 and BA.5 can evade antibody immunity derived from a prior BA.1 infection due to the mutations. **Antibody titres among unvaccinated individuals with previous infection (BA.1) were lower than among vaccinated breakthrough cases.**

Unvaccinated individuals with a previous BA.1 infection (n=24) observed a significant reduction in neutralization ability (BA.4 7.6-fold decrease; BA.5 7.5-fold decrease). Notably, these individuals demonstrated low residual neutralization against BA.4/BA.5 (levels slightly above non-sufficient) suggesting **limited protection from an infection alone. Neutralization ability in breakthrough vaccinated cases was 5-fold greater than in the unvaccinated previously-infected.**

Clinical Severity - While the cumulative cases with genomic sequencing identified as BA.4 and BA.5 remain relatively small so far, **there currently is no indication of increased severity of infections.**

However, given the increased immune evasion and decreasing population level immunity (including under-vaccinated populations) we can anticipate increases in the number of infections, leading to increases in severe cases and hospitalizations. While it is known that BA.1 derived immunity is impacted by the mutations in BA.4 and BA.5, the degree of protection from prior BA.2 infections among the unvaccinated is unknown. This may be relevant to clinical outcomes in regions with varying levels of immunity acquired from BA.1 and BA.2 during the first Omicron wave. Additional time is required to assess the impact of mutations in BA.4 and BA.5 on clinical severity, and the impact of previous BA.2 infections among populations.

Global Situation

Current Understanding of BA.2.12.1



According to GISAID as of May 4, approximately 9,199 BA.2.12.1 positive sequences have been detected worldwide in at least 24 countries, with the highest prevalence reported in the U.S. (8,442 sequences) and Canada (610 sequences). The remaining countries have detected at least one positive sequence.

- Structural analysis of the spike protein indicates the same form as BA.2. However, mutations within BA.2.12.1 may promote increased infectivity (binding affinity) and immune evasion.
- Neutralization ability against BA.2.12.1 is reduced in individuals with three doses of CoronaVac COVID-19 vaccine compared to BA.1 and BA.2.
- Current research is more limited than for BA.4 and BA.5 subvariants with regards to the impact of vaccination and/or previous infections on immune protection against infection with BA.2.12.1.

United States - The rate of change, based on trends over the past 14 days, in the seven-day rolling average number of daily new cases, increased by three-fold compared to early April when cases began increasing (**May 4 – 1,374 cases per day**, April 8 – 40 cases per day).

The prevalence of BA.2.12.1 continues to grow in the U.S. with an estimated proportion of **36.5% of cases as of April 30**, a +37% increase from 26.6% the week prior on April 23.

The Omicron sublineage has been detected in at least 48 states, with the **highest prevalence in New York** (3,549 cases), **New Jersey** (555), **Pennsylvania** (386), **District of Columbia** (165), and **Vermont** (133). Additionally, several states such as New York, New Jersey, Colorado, and Pennsylvania may emerge as hotspots for other variants like BA.4 and BA.5 due to the presence of these subvariants. The country is experiencing **moderate increases in hospitalizations** (+23%, May 4 – 13,726 hospitalizations, April 21 - 11,209 hospitalizations). Concurrent decreases in seven-day rolling average number of new deaths (-19%, May 4 – 312 deaths, April 21 – 387 deaths) in the past 14 days are likely due to time lags and are expected to rebound.

Canada - As of April 27, BA.2 remained the dominant variant in Canada, accounting for 68% of sequenced cases submitted to GISAD in the prior 15 days, compared to the 6% for BA.2.12.1.

The Omicron sublineage BA.2.12.1 has been detected in at least seven provinces, with the **highest prevalence in British Columbia** (356 cases), **Alberta** (103 cases), **Ontario** (96 cases), and **Saskatchewan** (39 cases).

The country's 14-day percent positivity as of May 4 has decreased by 5.9% compared to the previous 14 days (May 4 – 17.7%, April 21 – 18.8%). **Reduced testing and reporting provides challenges in assessing current outlook; however, the country has yet to observe a surge in reported hospitalization or deaths recently**, with overall reported cases declining since mid-April. For example, in the week of April 24-30 British Columbia is reporting a -10% decrease in the weekly number of hospitalizations (375 hospitalizations in the week of April 24, 418 hospitalizations in the week of April 17) and -24% decrease in the weekly number of deaths (50 deaths in the week of April 24, 66 deaths in the week of April 17) compared to the previous week. ⁽⁹⁾ Continued monitoring is needed since there is currently limited but growing numbers of cases of the Omicron sublineage BA.2.12.1 in these locations.

OUTLOOK

- Newer Omicron subvariants are better than earlier strains at evading the immunity offered by vaccines and prior infections of earlier Omicron subvariants, thus there is a **higher risk of re-infection and breakthrough infections**.
- BA.2 became dominant in the U.S. earlier this spring. However, now, an additional Omicron subvariant known as BA.2.12.1 is accounting for about 36% of samples sequenced during the week ending April 30. Overall, average daily diagnoses have roughly doubled nationwide since early April.
- **We can anticipate growing numbers of BA.2.12.1 across North America over the next few weeks, as already seen in some states in the U.S.**
- Two other Omicron subvariants known as BA.4 and BA.5, are also currently spreading in South Africa, where Omicron BA.1 was first identified, and have been spreading to other countries as well.
- Early data suggest that all these new Omicron subvariants spread faster than BA.2, but there is still insufficient evidence to conclude whether they could cause more severe disease. **Protection against severe disease among those vaccinated and/or previously infected is likely to remain consistent with previous variants**. However, the impact of cumulative re-infections on disease severity over time among populations is not well understood.

The relaxation and/or removal of public health protections and restricted testing in many countries places jurisdictions at risk of rapid growth in newer, more fit Omicron subvariants, with subsequent impacts on healthcare and long-term implications.

War in Ukraine

Russian forces are continuing to focus their attacks on the east of the country but opposition from Ukrainian troops is slowing their progress.

Here are the latest developments:

- After 10 weeks, invading Russian troops still haven't taken control of any major cities
- In eastern Ukraine, Russian forces have taken the town of **Popasna** but otherwise made little progress in recent days
- Strong Ukrainian defences in **Donbas** region are holding for now
- Russian troops now face counter-attacks from Ukrainian forces around **Kharkiv**
- Efforts continue to try to rescue civilians trapped in the **Mariupol** factory

Source: Ukraine war in maps: Tracking the Russian invasion - BBC News



WHO emergency appeal: Ukraine & refugee-receiving and hosting countries

- Active fighting in proximity to large population centres leads to a high number of people in need of trauma and surgical care.
- Roughly 300 health facilities are located in conflict areas, and 1,000 health facilities are in changed areas of control, which leaves the health system vulnerable to infrastructural damage and severe disruptions. Consequently, there is limited or no access to medicines, health facilities, or healthcare workers in some areas. Nearly 50% of Ukraine's pharmacies are presumed to be closed, and many health workers are either displaced or unable to work.
- WHO has confirmed 176 attacks on healthcare in Ukraine as of 5 May 2022.
- Noncommunicable diseases (NCDs) are the leading cause of morbidity and mortality in Ukraine, with the five major NCDs (cardiovascular disease, diabetes, cancer, chronic respiratory disease, and mental health conditions) accounting for 84% of all mortality.
- Ukraine also has one of the highest burdens of chronic infectious diseases in Europe, particularly HIV and tuberculosis.
- Shortages of medical supplies challenge access to essential health services. In contrast, the interruption of prevention, diagnostic and treatment services increase the risk of adverse disease outcomes and threatens treatment continuity.
- The need for continued mental health and psychosocial support services is very high.
- There is a risk of outbreaks of respiratory and diarrheal diseases. There continues to be a risk of COVID-19, and vaccination uptake remains low, particularly in vulnerable populations. This, along with disruption in testing and treatment, puts those most vulnerable at increased risk of severe illness and death.

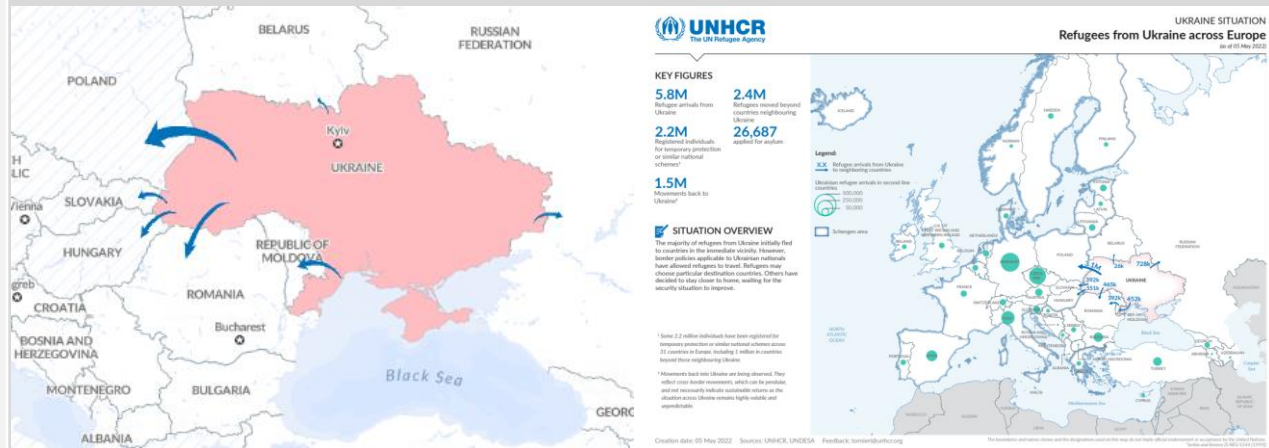
Humanitarian corridors

Over 100 civilians were evacuated from the Azovstal steel plant and other areas of the southeastern Ukrainian city of Mariupol by 3 May. Another 300 people from Mariupol and nearby towns were evacuated two days later to Ukrainian-held territory via humanitarian corridors brokered by the UN and the International Committee of the Red Cross (ICRC). Russia has since launched an assault against Azovstal, the last holdout of Ukrainian troops in the city, and where more than 200 civilians may still be trapped. Efforts to open humanitarian corridors have frequently failed, leading to anger in Ukraine with the ICRC over its approach of engaging with all sides in the conflict. Mariupol has become emblematic of the destruction and humanitarian

suffering caused by Russia's invasion since it began in late February. The city was quickly surrounded, and then indiscriminately bombarded, leaving hundreds of thousands of residents trapped without access to food, water, medical care, and other essential supplies and services. More than 20,000 civilians may have been killed, according to the city's mayor.

In the 10 weeks since the Russian invasion, a third of Ukrainians have been forced from their homes. This is the largest human displacement crisis in the world today. As of today, more than 5.7 million refugees have fled Ukraine. A further 7.7 million people have been displaced internally within Ukraine. Some 13 million people are estimated to be stranded in affected areas or unable to leave due to heightened security risks, destruction of bridges and roads, as well as lack of resources or information on where to find safety and accommodation. Many people who are trapped are unable to meet their basic needs including food, water and medicines. The delivery of life-saving aid remains challenging, with a lack of safe humanitarian access. UNHCR and partners continue striving to reach hard-hit areas with life-saving assistance as part of inter-agency humanitarian convoys. UNHCR continues to call for the protection of civilians and civilian infrastructure, respect for international humanitarian law, and for neighbouring countries to continue keeping their borders open to those fleeing.

Source: [UNHCR Ukraine situation Flash Update 11](#)



Total Refugee influx from Ukraine in neighboring countries***

Location name	Source	Date date	Population
Poland	Government	9 May 2022	3,234,036
Romania	Government	9 May 2022	883,655
Russian Federation	Government	6 May 2022	739,418
Hungary	Government	9 May 2022	572,760
Republic of Moldova	Government	9 May 2022	457,066
Slovakia	Government	9 May 2022	404,463
Belarus	Government	9 May 2022	26,985

Other Infectious Disease Outbreaks/ Conflicts



Unknown Hepatitis

Puerto Rico - On May 6, 2022, the Department of Health of Puerto Rico reported a case of acute hepatitis in a child under five years of age. Health authorities note that the child is currently receiving treatment. It is unknown what the child's present condition is or where the child may have been infected. Parents and guardians of children under the age of 16 are advised to seek medical attention if symptoms such as fever, abdominal pain, jaundice, and general fatigue, are observed. Investigations are still underway to analyze possible causes and factors driving the current disease activity of the unknown hepatitis globally.

Canada - Seven cases that may be part of an unexplained outbreak of "severe acute" hepatitis have been discovered at one of Canada's largest children's hospitals in recent months. This possible epidemic affects young people in several countries. It is still unclear how many cases have been reported in Canada. It is also unclear whether the cases reported at SickKids Hospital are linked to those discovered in the UK, US, Israel and elsewhere.

Source: [Insights by BlueDot](#)

The aetiology and pathogenetic mechanisms of disease are still under investigation. A possible association with current adenovirus infection has been found in cases in the UK in particular but other hypotheses and possible co-factors are under investigation. Most cases continue to be reported as sporadic un-linked cases.

Case definition used in EU/EEA:

- **Confirmed:** N/A
- **Probable:** A person presenting with an acute hepatitis (non-hepatitis viruses A, B, C, D and E*) with aspartate transaminase (AST) or alanine transaminase (ALT) over 500 IU/L, who is 16 years old or younger, since 1 October 2021.
- **Epi-linked:** A person presenting with an acute hepatitis (non-hepatitis viruses A, B, C, D and E*) of any age who is a close contact of a probable case since 1 October 2021.

Cases of hepatitis with known aetiology such those due to specific infectious diseases, drug toxicity, and metabolic hereditary, or autoimmune disorders should not be reported under this protocol.

Source: <https://www.ecdc.europa.eu/en/news-events/epidemiological-update-hepatitis-unknown-aetiology-children>

Ebola

Democratic Republic of the Congo - The World Health Organization has confirmed a third case of Ebola in the city of Mbandaka, located in the northwest region of the Democratic Republic of Congo (DRC). Mbandaka is the capital city of Equateur province and is subdivided into 3 health zones: Mbandaka, Wangata and Bolenge. Wangata health zone is the epicentre of this outbreak. The 48-year-old patient is a high-risk contact of the previously identified 31-year-old who died on April 21st due to ebola. News media reports that 444 contacts have been identified and are being monitored for symptoms. A vaccination campaign in Equateur province has been underway since last week. Health authorities declared this an outbreak on April 22, it marks the 14th Ebola outbreak in the DRC since 1976.

Source: [Insights by BlueDot](#)

Dengue

Sao Tome and Principe - An outbreak of dengue fever has been declared in Sao Tome and Principe. According to officially available information, the first cases emerged on April 11 and had a recent history of travel. Through the epidemiological surveillance department, in collaboration with the Institute of Hygiene and Tropical Medicine in Lisbon, laboratory samples

have confirmed locally acquired cases of dengue virus infection by rapid antigen, serological and PCR-RT tests. Further, the ongoing outbreak is due to dengue virus serotype 3 (DENV-3). Health authorities are implementing strict surveillance and vector control activities to prevent the further spread of infection.

Source: [Insights by BlueDot – MundoaoMinuto](#)

Cholera

South Sudan - Cases of cholera and at least one related death have been confirmed in South Sudan. According to available information, the deceased was a 29-month-old child who tested positive by rapid diagnostic test on March 21, 2022, in the Bentiu Camp, Rubkona county. On March 25, 2022, Vibrio cholerae was isolated from the sample on culture at the National Public Health Laboratory in Juba and was confirmed in the Microbiology Reference Laboratory in Kampala, Uganda. Epidemiological information indicates that 52% of the total cases are female, and the age group between 0-4 years accounted for 45.2% of all cases, while those ≥20 years account for 22.6% of cases. South Sudan had not experienced cholera since December 2017 and the last epidemic was declared in June 2016, when over 20,000 cases and at least 436 associated deaths were reported.

Somalia - Cases of cholera continue to be reported in Somalia since the beginning of 2022. All of the cases reported to date have been from districts in the Southwest and Hirshabelle states and the Banadir region. The most affected districts include Daynile, Dharkeynley, Wadajir, Baidoa, Afgoye and Jowhar. Approximately 62% of all cases were among children under five years. Health officials continue to increase epidemiological surveillance and testing in affected regions due to an increase in cholera cases. Those who need medical attention can access the five functional Cholera Treatment Centres available in the Southwest State, Hirshabelle, and Banadir regions.

Kenya - Cases of cholera continue to be reported in Kenya in 2022. According to the Ministry of Health, a cholera outbreak was recorded in an informal settlement in Kamukunji, Nairobi. To date, over 14 individuals, including children, have been hospitalized in addition to two fatal cases. Health officials continue to assess other potential cases. Following local investigations, it was determined that the cholera outbreaks were caused by contaminated drinking water in the locality. The drinking water came from pipes flooded with open sewage flowing downstream to a dumping site near the informal settlements. Health officials recommend that the public observe proper hygiene and sanitation practices to prevent the further spread of disease.

Source: [Insights by BlueDot – News Media](#) and [ProMed](#)

Food & mouth disease

Indonesia - In two provinces, clinical signs first observed by field officers are decreased appetite, hypersalivation, lameness (some to lie down), and fever. Mostly diagnosed as bovine ephemeral fever and treated by providing supportive therapy in the form of analgesics, antipyretics, vitamins, and antibiotics. However, after treatments, clinical signs do not disappear but spread quickly to the surrounding livestock in an average of 1-2 days. Clinical signs then develop with the appearance of vesicles/blisters and/or erosions around the mouth, tongue, gums, nose, rashes, and nipples. Several dead animals were found, and one cattle had a miscarriage in the last trimester. Disease then spread rapidly to other villages in the provinces. Disease investigation has been conducted in both provinces. Although final result still difficult to define the source of infection, however illegal importation of live animals is suspected as the main source of infection. Vaccination will be the main disease control measure. Samples have been sent to OIE reference laboratory to determine the strain of the virus for effective vaccine used. Alert has been broadcasted to all provinces especially those who has history of animal movement from infected provinces (high risk). Increased public awareness and case-finding in high-risk provinces.

Source: [ProMed](#)

2021 Infectious Disease Year-in-Review, Part 2 – Vaccine-Preventable/Vector-borne Diseases & Importation Events



This report – the second part of a two-part “Year-in-Review” series, focusses on several important trends observed by the BlueDot surveillance team in 2021. Previously, Part 1 of this report highlighted emerging infectious diseases and pathogens in 2021. In this report, we highlight examples of vaccine-preventable diseases, vector-borne diseases, and importation events that demonstrated notable increasing trends or changing distributions in 2021. The first notable trend is the observation of increasing outbreaks of vaccine-preventable diseases. This trend began prior to the COVID-19 pandemic, and has likely been exacerbated by knock-on negative consequences of COVID-19 on public health vaccination programs, healthcare accessibility and healthcare-seeking behaviours, and growing vaccine hesitancy. The second noteworthy pattern has also continued from prior to the pandemic, which is the changing geographic range of vector-borne diseases into areas where they have previously not been observed, or have been observed sporadically. This trend is driven by changing seasonal climate patterns that support infectious disease vector suitability in new locations. Moreover, the impacts of the pandemic on public health programs and capacity can further magnify the problem by weakening the ability of local public health programs to detect and respond to vector-borne disease outbreaks.

Executive Summary

- In 2021, there were signals of a wider circulation of several vaccine-preventable diseases (VPD) including, but not limited to: Measles - By the end of 2021, the countries with the largest number of confirmed cases of measles were Nigeria (10,407 cases), Pakistan (8,829 cases), and Somalia (6,029 cases). This trend has continued into 2022 with at least 21 significant outbreaks worldwide. Most outbreaks have been in the WHO African and the Eastern Mediterranean Regions where an 80-90% increase in cases was reported in January and February 2022 compared to the same months in 2021.
- Vaccine-Derived Polio - The increase in positive environmental samples, cases, and/or outbreaks of circulating vaccine-derived poliomyelitis virus type 1 (cVDPV1) and type 2 (cVDPV2) in multiple countries across Africa throughout 2021 indicated widespread circulation of poliovirus.
- Diphtheria - Cases in Mayotte highlighted the consequences of halted immunization programs due to COVID-19. A fatal case in a traveller from India arriving to Canada (findings published in 2021) also emphasize the ongoing risk of infection from endemic countries.

In 2021, reported human cases of various vector-borne diseases in new locations indicated the widening geographic spread of vectors. Examples of these diseases and its growing geographic distribution included but were not limited to: dengue in Afghanistan; dengue in Shangil Tobaya, Sudan; Chagas in Texas, United States; Oropouche Fever in Teresina, Brazil; and human Zika cases in India.

Disruptions to services due to the COVID-19 pandemic also led to a marked increase in malaria cases and deaths in 2021.

In 2021, BlueDot detected importation events of two re-emerging pathogens: o Human cases of monkeypox were imported to the U.K. and the U.S. from Nigeria. o cVDPV (mentioned above) was imported to Gambia, Uganda, and Senegal for the first time.

What does this mean?

Negative consequences of the COVID-19 pandemic are beginning to be observed in increased vaccine-preventable disease (VPD) environmental signals, cases, and outbreaks – all signs of increasing circulation. The disruption of efforts (e.g., vaccine campaigns) integral to the prevention of vaccine-preventable diseases, healthcare-seeking behaviour changes, and the spread of vaccine disinformation and misinformation have likely led to increased susceptibility to VPDs. Concurrently, vector-borne infectious diseases were observed to be expanding into new geographies, at a time when public health resources and capacity are stretched thin. This expansion serves as an indication of the ever-increasing, spatially dynamic risk of disease spread. The recovering air travel patterns in 2021 underscore the risk of importing infectious diseases beyond COVID-19, such as VPD and vector-borne diseases, into new locations with varying capacity to respond. BlueDot’s Epidemic Intelligence team continues to monitor these infectious disease threats in a timely manner to empower response to infectious disease risks in this rapidly evolving landscape.

Vaccine-Preventable Diseases

Figure 1 highlights select examples of vaccine-preventable diseases that BlueDot monitored throughout 2021. These are described in detail in this section.


















Fig. 1. Select examples of diphtheria, circulating vaccine-derived poliomyelitis virus type 1 (cVDPV1), and circulating vaccine-derived poliomyelitis virus type 2 (cVDPV2) detected by BlueDot in 2021.

Please find the fully report [here](#)
















Summary of information on the individual national Corona restrictions

The icons are linked to the respective information. Please click on the icons for information.

NATO Member State (click on country for official COVID-19 information)		Approved vaccines											
		Comirnaty	Spikevax	Janssen	Vaxzevria	Nuvaxovid	Sputnik V	CoronaVac	Covishield	Convidecia	Covilo	Turkovac	
	Albania	X			X		X	X					
	Belgium	X	X	X	X	X							
	Bulgaria	X	X	X	X	X							
	Canada	X	X	X	X				X				
	Croatia	X	X	X	X	X							
	Czech Republic	X	X	X	X	X							
	Denmark	X	X	X		X							
	Estonia	X	X	X	X	X							
	France	X	X	X	X	X							
	Germany	X	X	X	X	X							
	Great Britain	X	X	X	X								
	Greece	X	X	X	X	X							
	Hungary	X	X	X	X	X	X		X	X	X		EMA Authorized
	Italy	X	X	X	X	X							
	Iceland	X	X	X	X	X							EMA & FDA Authorized

Summary of information on the individual national Corona restrictions

The icons are linked to the respective information. Please click on the icons for information.

NATO Member State (click on country for official COVID-19 information)		Approved vaccines										
		Comirnaty	Spikevax	Janssen	Vaxzevria	Nuvaxovid	Sputnik V	CoronaVac	Covishield	Convidecia	Covilo	Turkovac
	Latvia	X	X	X	X	X						
	Lithuania	X	X	X	X	X						
	Luxembourg	X	X	X	X	X						
	Montenegro				X		X			X		
	Netherlands	X	X	X	X	X						
	North Macedonia	X			X		X			X		
	Norway	X	X	X		X						
	Poland	X	X	X	X	X						
	Portugal	X	X	X	X	X						
	Romania	X	X	X	X	X						
	Slovakia	X	X	X	X	X						
	Slovenia	X	X	X	X	X						
	Spain	X	X	X	X	X						
	Turkey	X					X	X				X
	USA	X	X	X								

EMA
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Travel Recommendations and other Useful Links

Travel Recommendations

Many countries have halted some or all international travel since the onset of the COVID-19 pandemic but now have re-open travel some already closed public-travel again. This document outlines key considerations for national health authorities when considering or implementing the gradual return to international travel operations.

The decision-making process should be multisectoral and ensure coordination of the measures implemented by national and international transport authorities and other relevant sectors and be aligned with the overall national strategies for adjusting public health and social measures.

Travel has been shown to facilitate the spread of COVID-19 from affected to unaffected areas. Travel and trade restrictions during a public health event of international concern (PHEIC) are regulated under the International Health Regulations (IHR), part III.

The majority of measures taken by WHO Member States relate to the denial of entry of passengers from countries experiencing outbreaks, followed by flight suspensions, visa restrictions, border closures, and quarantine measures. Currently there are exceptions foreseen for travellers with an essential function or need.

Information on COVID-19 testing and quarantine of air travellers in the EU and the US you can find following the link:

- <https://www.ecdc.europa.eu/en/publications-data/guidelines-covid-19-testing-and-quarantine-airtravellers>
- <https://www.cdc.gov/coronavirus/2019-ncov/travelers/how-level-is-determined.html>

More information about traveling worldwide:

- National regulation regarding travel restrictions, flight operation and screening for single countries you will find [here](#) (US) and [here](#) (EU).
- Official IATA travel restrictions. You will find [here](#).

More information about traveling in the EU

- by the **European Commission** you will find here:

<https://www.consilium.europa.eu/en/policies/coronavirus/covid-19-travel-and-transport/>

- The **ECDC** publishes a map of EU Member States, broken down by regions, which show the risk levels across the regions in Europe using a traffic light system. Find it [here](#).

As a general rule, information on new measures will be published 24 hours before they come into effect.

All information should also be made available on [Re-open EU](#), which should contain a cross-reference to the map published regularly by the European Centre for Disease Prevention and Control.

Useful links

ECDC:

- [All info about the COVID-19 pandemic](#); (situation updates, latest news and reports, risk assessments etc.)
- [COVID-19 Vaccine tracker](#)
- [SARS-CoV-2 variants dashboard](#) for EU
- [Latest Risk assessment on COVID-19](#), 15 Feb 2021
- All "guidance's and technical reports" can be found under "All COVID-19 outputs" on this page [here](#)

WHO:

- Epi-WIN [webinars and updates](#)
- All information about the COVID-19 pandemic: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

CDC:

- COVID [Data Tracker](#) and [weekly review](#)
- [What's new and Updated](#)
- [Guidance for COVID-19](#)

References:

- European Centre for Disease Prevention and Control <https://www.ecdc.europa.eu/en>
- World Health Organization WHO; www.who.int
- Centres for Disease Control and Prevention CDC; www.cdc.gov
- European Commission; https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/travel-and-transportation-during-coronavirus-pandemic_en
- Our World in Data; <https://ourworldindata.org/coronavirus>
- Morgenpost; <https://interaktiv.morgenpost.de/corona-virus-karte-infektionen-deutschland-weltweit/>
- BlueDot; <https://bluedot.global/>