



**GLOBAL**  
↓  
614 338 054 confirmed cases  
599 800 000 recovered  
6 534 297 deaths

**MSR**  
7-days incidence  
1 600,0 ↑

**TWN**  
7-days incidence  
1 213,0 →

**BRN**  
7-days incidence  
726,0 ↑

News:

- ECDC:** Started a [pilot protocol for a COVID-19 vaccine effectiveness study](#) using health data registries. The overall aim of the project is to monitor the real-time performance of COVID-19 vaccines in the community-dwelling resident population in EU/EEA countries in order to detect any signal in terms of reduced vaccine effectiveness, so that public health vaccine recommendations may be adjusted accordingly.
- WHO:** The Research for Health department has helped spearhead the launch of a [new policy from the Science Division](#) which covers all research undertaken by or with support from WHO. The goal is to make sure that all research data is shared equitably, ethically and efficiently. Through this policy, WHO indicates its commitment to transparency in order to reach the goal of one billion more people enjoying better health and well-being.
- The Lancet:** The Lancet Commission published a new report on "[lessons for the future from the COVID-19 pandemic](#)". The report provides a comprehensive investigation, analysis, and response to COVID-19. The Commission delivers a number of recommendations that are divided into three main areas. The [WHO responded to this article](#) by welcoming the overarching recommendations which align with the WHO commitment to stronger global, regional and national pandemic preparedness, prevention, readiness and response. But also highlighted that there are several key omissions and misinterpretations in the report.
- UN:** The global fallout from Russia's invasion of [Ukraine](#), [food systems](#), and [the climate crisis](#) are among the main issues in the spotlight at this years 77<sup>th</sup> session of the [UN General Assembly](#).
- ECDC:** There are a wide range of potential trajectories for the progression of the COVID-19 pandemic in the coming months and years. [ECDC published a document](#) that sets out several scenarios that are intended to be plausible, internally consistent, and coherent descriptions of possible futures.

Topics:

- Global situation: COVID-19 (slide 2 – 6)
- Notable Public Health Events (slide 7)
- Significant Events in August 2022 (slide 8 – 11)
- Other infectious diseases (slide 12)
- Ukraine Situation Report (slide 13)

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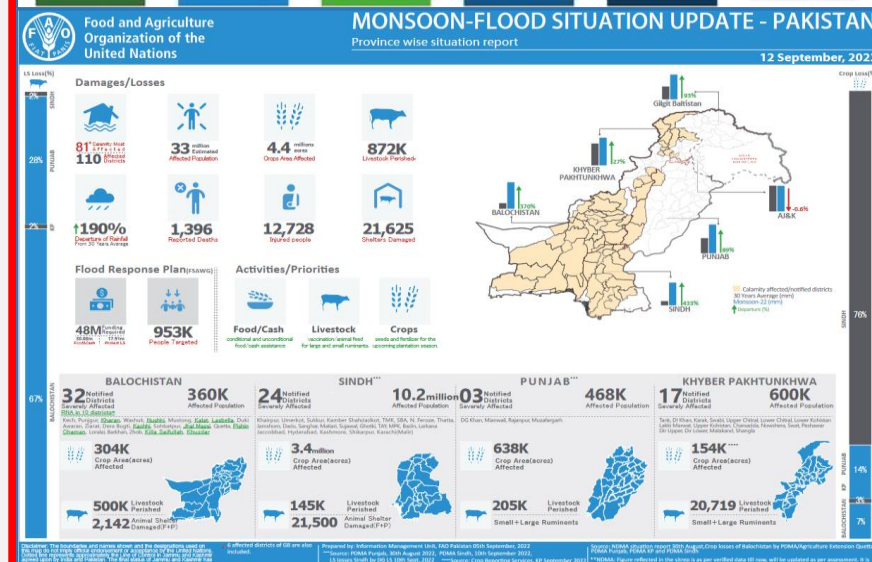


**EUROPE**  
↑  
244 088 051 confirmed cases  
239 200 000 recovered  
2 038 634 deaths

**SVN**  
7-days incidence  
692,0 ↑

**SVK**  
7-days incidence  
672,0 ↑

**LVA**  
7-days incidence  
464,0 ↑



# COVID-19 Situation by WHO Region, as of 14 September

## Global epidemiological situation overview; WHO as of 14 September 2022

Globally, the number of new weekly cases decreased by 28% during the week of 5 to 11 September 2022, as compared to the previous week, with over 3.1 million new cases reported (Figure 1, Table 1). The number of new weekly deaths decreased by 22% as compared to the previous week, with just under 11 000 fatalities reported. As of 11 September 2022, over 605 million confirmed cases and over 6.4 million deaths have been reported globally.

At the regional level, the number of newly reported weekly cases decreased across all six WHO regions: the Western Pacific Region (-36%), the African Region (-33%), the Region of the Americas (-27%), the South-East Asia Region (-20%), the Eastern Mediterranean Region (-19%) and the European Region (-15%). The number of new weekly deaths decreased across five of the six regions: the European Region (-31%), the South-East Asia Region (-25%), the Region of the Americas (-22%), the Western Pacific Region (-11%), the Eastern Mediterranean Region (-10%); while it increased in the African Region (+10%).

At the country level, the highest numbers of new weekly cases were reported from Japan (537 181 new cases; -54%), the Republic of Korea (435 695 new cases; -26%), the United States of America (430 048 new cases; -26%), the Russian Federation (337 187 new cases; +4%) and China (263 288 new cases; +11%). The highest numbers of new weekly deaths were reported from the United States of America (2306 new deaths; -21%), Japan (1681 new deaths; -18%), the Russian Federation (637 new deaths; +1%), Brazil (551 new deaths; -36%) and the Philippines (440 new deaths; +28%). of Korea (525 new deaths; +25%).

## WHO regional overviews:

Epidemiological week 5 - 11 September 2022\*\*

### African Region

The African Region reported over 8800 new weekly cases, a 33% decrease as compared to the previous week. Nine (18%) countries reported increases in the number of new cases of 20% or greater, with some of the greatest proportional increases seen in Mali (629 vs 262 new cases; +140%), Liberia (31 vs 15 new cases; +107%) and Zimbabwe (115 vs 56 new cases; +105%). The highest numbers of new cases were reported from Réunion (4661 new cases; 520.6 new cases per 100 000 population; -34%), South Africa (1792 new cases; 3.0 new cases per 100 000; +41%) and Mali (629 new cases; 3.1 new cases per 100 000; +140%).

The number of new weekly deaths in the Region increased by 10% as compared to the previous week, with 57 deaths reported. The highest numbers of new deaths were reported from South Africa (21 new deaths; <1 new death per 100 000 population; -13%), the Democratic Republic of the Congo (17 new deaths; <1 new death per 100 000; +325%) and Nigeria (six new deaths; <1 new death per 100 000; no deaths reported during the previous week).

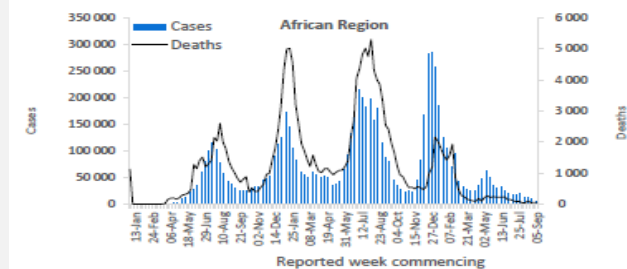
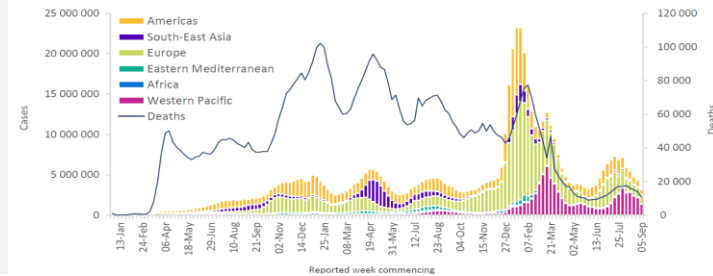


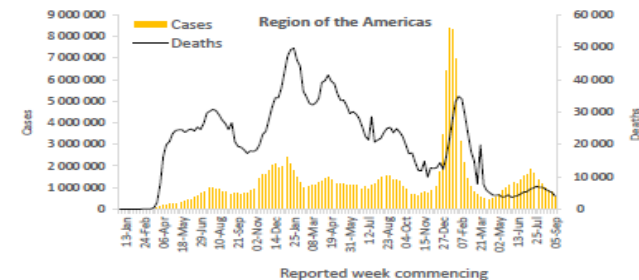
Figure 1. COVID-19 cases reported weekly by WHO Region, and global deaths, as of 11 September 2022\*\*



### Region of the Americas

The Region of the Americas reported over 610 000 new cases, a 27% decrease as compared to the previous week. Five of 56 (9%) countries for which data are available reported increases in the number of new cases of 20% or greater, with some of the greatest proportional increases observed in Montserrat (86 vs 64 new cases; +34%), Venezuela (Bolivarian Republic of) (890 vs 665 new cases; +34%) and Aruba (122 vs 98 new cases; +24%). The highest numbers of new cases were reported from the United States of America (430 048 new cases; 129.9 new cases per 100 000; -26%), Brazil (60 594 new cases; 28.5 new cases per 100 000; -31%) and Chile (32 268 new cases; 168.8 new cases per 100 000; -19%).

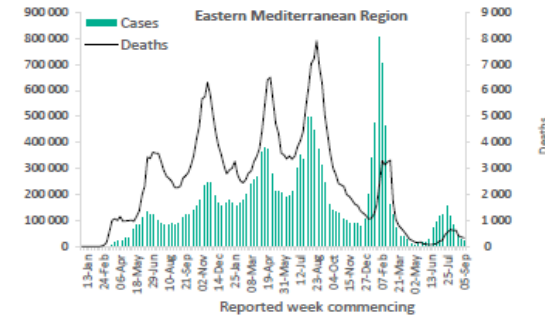
The number of new weekly deaths reported in the Region decreased by 22% as compared to the previous week, with just under 4000 new deaths reported. The highest numbers of new deaths were reported from the United States of America (2306 new deaths; <1 new death per 100 000; -21%), Brazil (551 new deaths; <1 new death per 100 000; -36%) and Peru (255 new deaths; <1 new death per 100 000; +9%).



### Eastern Mediterranean Region

The Eastern Mediterranean Region reported over 27 000 new cases, a 19% decrease as compared to the previous week. Three (14%) countries reported increases in new cases of 20% or greater, with the highest proportional increases observed in Yemen (six vs one new cases; +500%), Sudan (23 vs 14 new cases; +64%) and Tunisia (962 vs 695 new cases; +38%). The highest numbers of new cases were reported from the Islamic Republic of Iran (7800 new cases; 9.3 new cases per 100 000; -31%), Qatar (4247 new cases; 147.4 new cases per 100 000; +8%) and Jordan (3372 new cases; 33.0 new cases per 100 000; -15%).

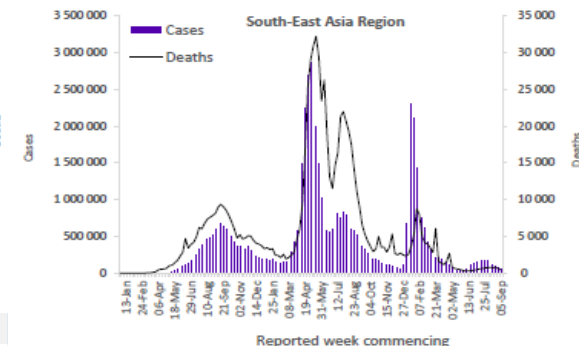
The number of new weekly deaths decreased in the Region by 10% as compared to the previous week, with over 300 new deaths reported. The highest numbers of new deaths were reported from the Islamic Republic of Iran (260 new deaths; <1 new death per 100 000; -8%), Saudi Arabia (13 new deaths; <1 new death per 100 000; similar to the previous week's figures) and Pakistan (11 new deaths; <1 new death per 100 000; -35%).



### South-East Asia Region

The South-East Asia Region reported over 72 000 new cases, a 20% decrease as compared to the previous week. Three of the 10 countries (30%) in the Region for which data are available showed an increase in the number of new cases of 20% or greater: Myanmar (1293 vs 597 new cases; +117%), Bangladesh (2126 vs 1444 new cases; +47%) and Timor-Leste (33 vs 25; +32%). The highest numbers of new cases were reported from India (38 824 new cases; 2.8 new cases per 100 000; -20%), Indonesia (19 950 new cases; 7.3 new cases per 100 000; -24%) and Thailand (9004 new cases; 12.9 new cases per 100 000; -26%).

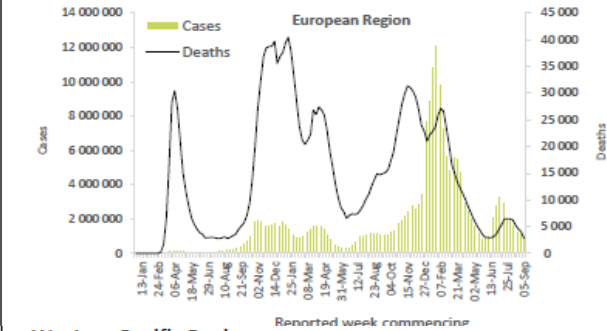
The Region reported over 400 deaths, a 25% decrease as compared to the previous week. The highest numbers of new deaths were reported from India (159 new deaths; <1 new death per 100 000; -33%), Thailand (139 new deaths; <1 new death per 100 000; -22%) and Indonesia (123 new deaths; <1 new death per 100 000; -16%).



### European Region

The European Region reported over 1 million new cases, a 15% decrease as compared to the previous week. Four (7%) countries reported increases in new cases of 20% or greater, with the highest proportional increases observed in Ukraine (16 155 vs 11 437 new cases; +41%), Slovenia (11 076 vs 8872 new cases; +25%) and Poland (25 133 vs 20 247 new cases; +24%). The highest numbers of new cases were reported from the Russian Federation (337 187 new cases; 231.1 new cases per 100 000; similar to the previous week's figures), Germany (183 874 new cases; 221.1 new cases per 100 000; -9%) and Italy (110 644 new cases; 185.5 new cases per 100 000; -19%).

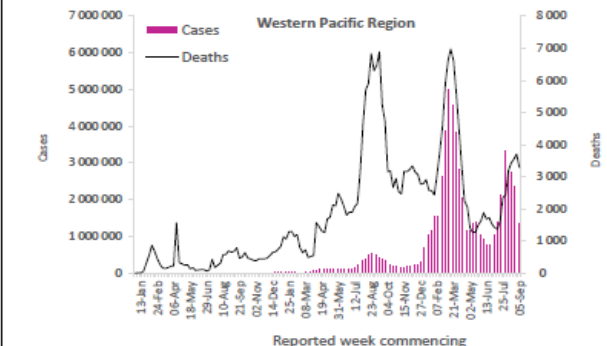
Over 2800 new weekly deaths were reported in the Region, a 31% decrease as compared to the previous week. The highest numbers of new deaths were reported from the Russian Federation (637 new deaths; <1 new death per 100 000; similar to the previous week), Italy (373 new deaths; <1 new death per 100 000; -25%) and Spain (326 new deaths; <1 new death per 100 000; -7%).



### Western Pacific Region

The Western Pacific Region reported just over 1.3 million new cases, a 36% decrease as compared to the previous week. Two (6%) countries reported increases in new cases of 20% or greater, with the largest proportional increases observed in Papua New Guinea (20 vs 15 new cases; +33%) and Viet Nam (20 467 vs 15 906 new cases; +29%). The highest numbers of new cases were reported from Japan (537 181 new cases; 424.7 new cases per 100 000; -54%), the Republic of Korea (435 695 new cases; 849.8 new cases per 100 000; -26%) and China (263 288 new cases; 17.9 new cases per 100 000; +11%).

The Region reported an 11% decrease in new weekly deaths as compared to the previous week, with over 3200 deaths reported. The highest numbers of new deaths were reported from Japan (1681 new deaths; 1.3 new deaths per 100 000; -18%), the Philippines (440 new deaths; <1 new death per 100 000; +28%) and Australia (407 new deaths; 1.6 new deaths per 100 000; +11%).





# COVID-19 situation updates I

## Spotlight on Omicron-Targeted Vaccines

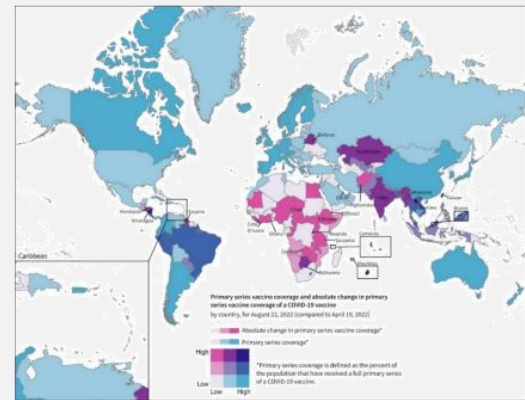


Source:  
<https://www.afro.who.int/countries/zambia/news/zambia-receives-4500000-doses-covid-19-vaccines-canada>  
<https://www.worldbank.org/en/news/press-release/2022/06/03/ethiopia-to-rapidly-scale-up-covid-19-vaccination-with-world-bank-support>  
<https://healthpolicy-watch.news/poor-vaccines-coverage-pandemic-barriers/>

### Vaccine Administration

While 62.3% of the world's population have received a primary series of COVID-19 vaccines, only 18.4% of the population in low-income countries have completed a primary series. Countries with low primary series coverage, including the Democratic Republic of the Congo, Haiti, Jamaica, Madagascar, Senegal, Somalia, Uganda, and Ukraine have not made substantial gains in improving primary series coverage over the last four months.

**Primary Series Coverage**  
 What percentage of the population has received a primary series vaccine? How has total coverage for a primary series COVID-19 vaccine changed globally?



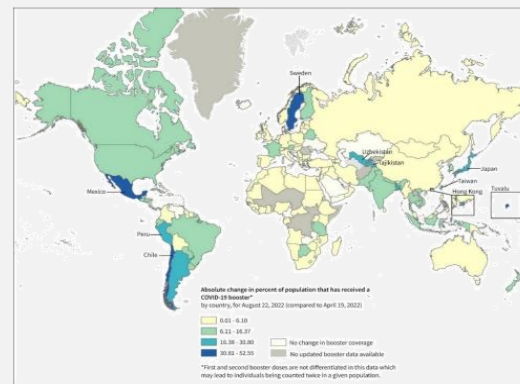
**Figure 1A.** Bivariate map of percent of population that has received a primary series of a COVID-19 vaccine\*, as of August 22, 2022, as well as the absolute change in cumulative percent of population that has received a primary series of a COVID-19 vaccine, compared to April 19, 2022. Source: BlueDot Data Suite.

vaccine supply and help expand vaccine coverage to rural areas. **5** Notably, there are several countries that have a low primary series vaccine coverage and have not increased their coverage substantially in the past few months. In general, these are low or low-middle income countries that have been impacted by war or domestic turmoil, or in some cases, have not received an adequate supply of vaccines or have not received advance notice of supply leading to lack of national planning. **6** A few examples of these countries include the Democratic Republic of the Congo, Haiti, Jamaica, Madagascar, Senegal, Somalia, Uganda, and Ukraine. Most countries in Europe and North America, and some countries in Asia and South America currently have the highest vaccine coverage globally and did not observe large increases in their primary series coverage. Though vaccines are less effective at preventing transmission of Omicron subvariants than they were prior to the emergence of Omicron, completion of a primary series of COVID-19 vaccines remains a highly effective tool to prevent severe disease,

Since the last vaccine administration update report (April 29, 2022), primary series vaccine coverage in several countries has increased, while coverage in other countries has remained stagnant. Figure 1A displays how vaccine uptake over the last four months has changed in countries, along with their current overall coverage. In Figure 1A, the countries displayed in dark pink, which indicates countries that have some of the lowest global vaccine coverage rates with the highest absolute increase in vaccine coverage, are concentrated in Africa.

These include countries that have received large amounts of the vaccine or have launched a vaccination campaign in recent months. For example, Zambia received a large shipment (approximately 4.5 million doses) of the Johnson and Johnson vaccine in June 2022 through the COVAX program, and the country has rapidly increased its vaccine coverage. **4** In June, Ethiopia received a grant from the World Bank to support Ethiopia's COVID-19 Emergency Response Project, which would help scale up the country's

**Booster Coverage**  
 How has total booster coverage changed globally in the past four months?



**Figure 1B.** Absolute change in cumulative percent of population with a COVID-19 booster dose\*, as of August 22, 2022 compared to April 19, 2022. Source: BlueDot Data Suite.  
 \*Note: Booster coverage data includes the total number of all booster doses administered and does not differentiate between 1<sup>st</sup> or 2<sup>nd</sup> booster doses.

hospitalization, and death among those infected.

Figure 1B displays the increase in booster dose administration globally in the past four months. In a contrast to Figure 1A, most countries in Africa have either not begun to administer boosters, or have had minimal increases recently, while countries with the largest increases are concentrated in North America, South America, and Europe as well as parts of Asia. Although the data does not differentiate between first and second boosters, the map displays countries which have had the most increases in any booster over the past four months, and hence, more recent vaccine-acquired immunity. As seen through Figures 1A and 1B, while some countries are increasing uptake of their first or second booster or are even moving towards Omicron-targeted vaccines, several countries have yet to achieve the 70% vaccine coverage goal created by the WHO.

### Spotlight on Omicron-Targeted Vaccines

Data from phase 2/3 trials conducted for Omicron BA.1-targeted vaccines by both Pfizer-BioNTech and Moderna indicated that a significantly higher neutralizing antibody response was produced by both vaccines against Omicron BA.1, as compared to current vaccines.

The UK, USA, and Canada have approved Moderna's BA.1-targeted vaccine, and the USA has also approved Pfizer-BioNTech's BA.4/BA.5 targeted vaccine. Real world vaccine effectiveness and the clinical impact remains undetermined, while a modelling study suggests there may be limited impact of updated vaccines at the population level beyond what is achieved with pre-existing vaccines when provided as booster doses.

The current approach of developing variant-specific vaccines may not be sustainable due to several factors, including the time lag of vaccine development following spread of a new variant, anticipated low uptake with each recommended additional dose of the vaccine, as well as increasing heterogeneity among populations in prior variant exposure.

### Update on Second-Generation Vaccines

Of all the second-generation vaccines currently in clinical trials globally, two (Bharat-Biotech's intranasal vaccine candidate in India and CanSino Bio's inhaled vaccine candidate in China) have successfully completed phase 3 trials and have been approved for emergency use. The potential real-world impacts of intranasal/inhaled vaccines, designed to stimulate mucosal immunity and provide superior protection against infection when compared to injectable vaccines, are yet to be determined.

### mRNA vaccines targeted for Omicron

Details on Pfizer-BioNTech's Omicron vaccine

In a press release on June 25, 2022, Pfizer-BioNTech released preliminary results of its monovalent (i.e., targeting one variant) Omicron vaccine against the BA.1 variant, as well as a bivalent vaccine candidate which targeted the BA.1 as well as the ancestral strain of SARS-CoV-2.34 The phase 2/3 trial was carried out among 1,234 participants aged 56 or older. Administered as a fourth dose (second booster), 30µg of the monovalent candidate elicited a 2.23-fold (95% CI: 1.65, 3.00) increase in neutralizing geometric mean titres (GMT), a measure of the level of antibodies, against Omicron BA.1, when compared to neutralizing GMT elicited by the current Pfizer-BioNTech vaccine administered as a fourth dose; and 60µg of the vaccine elicited a 3.15-fold (95% CI: 2.38, 4.16) increase in GMT against Omicron BA.1. The bivalent candidate elicited a 1.56-fold (95% CI: 1.17, 2.08; 30µg of the vaccine) and 1.97-fold (95% CI: 1.45, 2.68; 60µg of the vaccine) increase in neutralizing GMT against Omicron BA.1, when compared to the current Pfizer-BioNTech wildtype-based vaccine. Both vaccines appeared to have met the pre-specified threshold for superiority, which was determined to be the lower bound of the confidence interval being greater than 1, indicating the Omicron vaccine produced a significantly higher level of antibodies against BA.1 compared to the current vaccine. These vaccines were also tested against the currently dominant BA.4 and BA.5 variants in individuals 56 and over, and according to the press release, both candidates neutralized both variants, although to a lesser extent, with the GMT being 3-fold lower than as compared to the response against BA.1

# COVID-19 situation updates II

## Spotlight on Omicron-Targeted Vaccines



Source  
<https://www.medrxiv.org/content/10.1101/2022.06.24.22276703v1.full.pdf>  
<https://www.biorxiv.org/content/10.1101/2022.07.14.500148v1.full.pdf>  
<https://ir.novavax.com/Novavax-Initiates-Phase-3-Trial-of-its-COVID-19-Omicron-Strain-Vaccine-as-a-Booster>  
<https://ir.novavax.com/Novavax-Statement-on-Prototype-Vaccines-Broad-Immune-Responses-and-Accelerated-Focus-on-Omicron-BA-4-5-as-Recommended-by-the-FDA>

### Details on Moderna's Omicron vaccine

On June 8, 2022, Moderna indicated the success of its bivalent vaccine (targeting the BA.1 Omicron variant as well as the ancestral strain of SARS-CoV-2) in a press release [35](#), and later that same month, preliminary study results were released in a pre-print article. [36](#) In its phase 2/3 clinical trial, 50µg of the vaccine was administered as a fourth dose (second booster) to adults who had previously received a full primary series of the Moderna vaccine as well as one Moderna booster (third) dose at least three months prior, and results were compared with adults who received 50µg of the original vaccine as a fourth dose (control). The trial was conducted at 23 locations across the USA, and individuals who had been infected with SARS-CoV-2 within three months of the study were excluded. A total of 437 participants received the Omicron-targeted bivalent booster, while 377 participants received the current ancestral-based Moderna booster. Vaccine safety and immune response (defined as the neutralizing antibody response) were the two primary outcomes that were compared between both groups. The safety profile for the group that received the Omicron-specific booster was similar to the group that received the control, with injection site pain being the most commonly reported adverse reaction within 7 days after administration in both groups. Other adverse reactions included fatigue (55% in the Omicron-specific group and 51% in the control group), headache (44% and 41%), myalgia or muscle ache (40% and 39%), and arthralgia or joint stiffness (31% and 32%). No significant differences in adverse effects were reported between the two vaccines. With regards to the immune response, the GMT elicited by the Omicron-specific booster against the BA.1 variant was 1.75-fold (95% CI: 1.49 – 2.04) greater than the GMT elicited by the currently authorized Moderna booster, as measured 28 days after the administration of the booster. This was greater than the pre-specified superiority threshold, which was determined as the lower bound of the CI being higher than 1, indicating that the Omicron-specific booster produced a significantly higher immune response against BA.1, compared to the current vaccine. Four weeks after administration of the booster, the antibody response of the Omicron-specific booster was also assessed against the emerging BA.4 and BA.5 variants. It was found that the GMT levels after the Omicron specific booster were 5.4 times higher compared to levels before the booster administration; however, results on the comparison with the current booster were not included. Overall, the study indicated that the preliminary outcomes of safety and immunogenicity were met.

**Novavax vaccine and its effectiveness** against Omicron In a preprint study carried out on the effectiveness of the third dose (booster) of the current Novavax vaccine, it was reported that a third dose is effective at producing high neutralizing antibodies against Omicron BA.4/BA.5. As a primary series, the Novavax COVID-19 vaccine (targeted against the original SARS-CoV-2 strain) observed a reduced immune response against the BA.1 and BA.4/BA.5 Omicron sub-lineages compared to the response against the ancestral strain after 14 days; however, neutralizing antibodies recovered following a third dose, indicating that three doses of the current Novavax vaccine produced an enhanced antibody response against the BA.4/BA.5 variants. [37](#) The company has also announced in May 2022 the start of phase 3 trials of Omicron specific boosters for mRNA vaccine recipients using the original protein-based technology. [38](#) Trials will assess the monovalent vaccine targeting the BA.1 strain as well as the bivalent vaccine (containing the ancestral and BA.1 strains) depending on whether the participant had completed a primary or booster mRNA series. Initial results are expected before the end of 2022. The FDA has recommended prioritizing vaccines targeting Omicron BA.4/BA.5, preclinical data for which will be available late summer or fall 2022. [39](#)

### Updates on Second-Generation Vaccines

In a preprint study, researchers in China assessed the safety and antibody response produced by the aerosolized (inhaled) vaccine, named Convidecia Air, as a booster compared to the CoronaVac injectable vaccine administered as a booster. The study included 419 participants recruited in Jiangsu province, China, all of whom had received a primary series (2 doses) CoronaVac vaccine. Of these participants, 140 individuals received an intramuscular CoronaVac booster (control group), 140 individuals received a low dose (0.1mL) of the aerosolized vaccine (low-dose group), and 139 individuals received a high dose

(0.2mL) of the aerosolized vaccine (high-dose group), and the antibody levels for each group were measured after 28-days, 3 months, and 6 months of receiving the vaccine. Overall, the low-dose and high-dose aerosolized vaccine groups developed higher antibody levels, compared to the control CoronaVac booster group. Against the ancestral strain of SARS-CoV-2, the antibody titres in the low-dose and high-dose groups were 26.4 and 18.4-fold higher than the antibody titres in the control group, after 28 days of booster administration, 26.0 and 22.4-fold higher than the antibody titres in the control group after 3 months, and 30.1 and 24.1-fold higher than the antibody titres in the control group after 6 months, respectively. Though antibody levels in the low-dose and high-dose aerosolized vaccine groups waned throughout the 6-month period, they remained higher than the antibody levels in the control CoronaVac group. Additionally, the aerosolized vaccines also produced an antibody response against the Omicron variant, although it was considerably lower than the response against the ancestral strain; however, nearly all participants in the control CoronaVac group had no detectable antibodies against Omicron, indicating that the aerosolized vaccine is likely more effective against the currently dominant Omicron variant.

Table 1: Updates on second-generation (intranasal or oral) vaccines currently in clinical development <sup>40, 41, 42</sup>

Developer/Manufacturer	Vaccine Candidate and Type*	Progress and Location Details
Bharat Biotech International Limited	<b>BBV154 (iNCOVACC)</b> ; Adenovirus-vectored vaccine	Phase 3 trial complete in India; vaccine approved
CanSino Bio and Beijing Institute of Biotechnology	<b>Convidecia Air</b> ; Adenovirus-vectored vaccine	Phase 3 trial complete in China; vaccine approved
Gamaleya National Center of Epidemiology and Microbiology	<b>Sputnik</b> ; adenovirus-vectored vaccine	N/A
University of Hong Kong, Xiamen University, and Beijing Wantai Biological Pharmacy	<b>DeINS1-2019-nCoV-RBD-OPT1</b> ; live-attenuated influenza virus-vectored vaccine	Phase 3 trials ongoing in Ghana and Philippines; Booster trial ongoing in China for individuals who have received Pfizer/BioNTech's mRNA vaccine
Razi Vaccine and Serum Research Institute	<b>Razi Cov Pars</b> ; Protein subunit vaccine	Phase 3 trial underway in Iran for nasal spray as a booster after two vaccines
Icahn School of Medicine at Mount Sinai	<b>NDV-HXP-S</b> ; Newcastle disease virus-vectored vaccine	Phase 2 trial ongoing in Mexico; Phase 1 trial ongoing in the USA
Center for Genetic Engineering and Biotechnology (CIGB)	<b>Mambisa</b> ; Protein subunit vaccine	Phase 1/2 trial ongoing in Cuba
Codagenix	<b>CoviLiv</b> ; Live attenuated vaccine	Phase 1 booster trial underway in the UK
AstraZeneca	<b>Vaxzevria</b> ; Adenovirus-vectored vaccine	Phase 1 trial ongoing in the UK
Meissa Vaccines	<b>MV-014-212</b> ; respiratory syncytial virus-vectored vaccine	Phase 1 trial ongoing in the USA
CyanVac	<b>CVXGA1</b> ; parainfluenza virus-vectored vaccine	Phase 1 trial ongoing in the USA
Tetherex Pharmaceuticals	<b>SC-Ad6-1</b> ; Adenovirus-vectored vaccine	Phase 1 trial ongoing in Australia

\*Viral vectored vaccines – Viral vectored vaccines use a modified and harmless version of a virus (such as adenovirus) that helps produce the spike protein for SARS-CoV-2, once injected in the body.

Please find the full focus report [here](#)

# COVID-19 situation updates III

## Additional Evidence Supporting Protective Effect of Vaccination against Long COVID



According to the WHO, it is estimated that **at least 17 million people in the European region alone** (out of over 100 million infections) **developed long COVID during the first two years of the pandemic**. [1, 2] As an emerging health issue, there is limited understanding and consensus involving the definition of long COVID. The WHO defines long COVID as the collective symptoms, experienced typically three months following a probable or confirmed SARS CoV-2 infection with a duration of at least two months, that cannot be explained by an alternative cause. [3] Prior studies, before mass vaccination, have estimated that at least 10% to 35% of mild infections developed long COVID with large variability across locations. Along with reducing disease severity, vaccination strategies may be a critical mitigator of long COVID symptoms. [see initial assessment in Intelligence Report: [The Long-Term Impact of Long COVID](#)]

**A recently published cross-sectional study in Israel suggests that vaccination may reduce the likelihood of long COVID symptoms up to 80%**, a larger protective effect than previously described. [4]

The self-report study recruited individuals, between March 2020 to November 2021, over the age of 18 with a PCR-confirmed SARS-CoV-2 infection. The study groups of interest included: Vaccinated individuals with a prior SARS-CoV-2 infection (single dose n=340, two or more doses n = 294), Unvaccinated individuals with a prior SARS-CoV-2 infection (n = 317), and Never-infected individuals with varying vaccination status (n= 2,447) as a baseline comparison. The association between vaccination status and long-term symptoms was analyzed after adjusting for age, time between symptom onset and survey response, and proportion of asymptomatic infections between groups. At least 39 unique symptoms were reported across the participants of which only 10 symptoms occurred frequently enough for analysis.

### Key Findings Indicated

- Two-thirds of the cases in the study were symptomatic (67%, 636/951), with a greater proportion of asymptomatic cases in the vaccinated group (69% vs 57%). The majority of cases across both groups were mild and did not require hospitalization.
- In line with prior accounts, 35% of the infected participants (337/951) reported persisting symptoms after the initial SARS-CoV-2 infection.
- The most commonly reported symptoms were fatigue (22%), headache (20%), weakness in arms or legs (13%), and persistent muscle pain (10%).
- **Individuals vaccinated with two doses were 50% to 81% less likely to report seven of the 10 most commonly reported long-term symptoms, when compared to unvaccinated individuals and adjusted for possible confounders, such as age and baseline symptoms. Notably, the risk of long COVID symptoms was comparable between vaccinated and uninfected individuals. A limited protective effect was observed in individuals with a single dose.**

Significant effects ( $p < 0.05$ ) were observed among seven out of 10 of the most commonly reported symptoms in two-dose vaccinated individuals compared to unvaccinated individuals when adjusted for confounders.

Reported Symptoms	Risk Ratio [95% CI]	Relative Effect*
Fatigue	0.40 [CI: 0.30-0.80]	60%
Headache	0.50[CI: 0.30-0.90]	50%
Weakness of limbs	0.40[CI: 0.20-0.90]	60%
Persistent muscle pain	0.30[CI:0.10-0.90]	70%
Hair loss	0.20[CI: 0.10-0.70]	80%
Dizziness	0.30[CI:0.10-0.90]	70%
Shortness of breath	0.20[CI:0.10-0.90]	80%

\*Interpreted as X% reduction in risk of symptom among vaccinated (two-dose) individuals compared to unvaccinated.

### Challenges in Interpreting the Literature in the Context of Previous Studies

While several studies have observed a reduced probability of long COVID symptoms with vaccination, the magnitude of the effect described in other studies is more conservative than observed in the current study; however, differences in measures of association (such as risk ratio, odds ratio, hazard ratio) create minor challenges in comparing effects across different studies. The reduced likelihood across other studies has ranged as low as 15% to 50% reduction in the risk of long COVID. [5]

Variability in population characteristics and study design likely also contributes to the contrasting results across studies. Additionally, symptoms of interest reported across studies are not standardized due to the open definition of long COVID. It should be noted that the described study above explores reduced risks for individual symptoms that were frequent in the study population, whereas other studies specify an overall risk reduction or the likelihood of reporting at least one symptom, thus are not comparable.

### What Does This Mean?

This study adds to the evidence that vaccination provides a degree of protection against long-term symptoms of COVID-19, and can help reduce the cumulative disease burden. Further research into the most prevalent or consequential symptoms after infection with SARS-CoV-2 as well as contributing risk factors in progression to long COVID are required to identify at-risk groups.



# Notable Public Health Events



## Vaccine-derived poliomyelitis in the United States

**SUBLOCATIONS AFFECTED:** New York (Nassau County, New York City, Orange County, Rockland County, Sullivan County).

In a **follow-up** on the cVDPv-2 outbreak in the USA, the New York State Department of Health **declared a state of emergency** as another county (Nassau County), confirmed the detection of the virus in **wastewater samples**. From our previous assessments, poliovirus has now been identified in sewage samples from **New York City as well as four counties across New York State**: Rockland, Orange, Sullivan, and Nassau. **These findings indicate geographic expansion and ongoing circulation of poliovirus.**

**CONCERN LEVEL: MEDIUM.** The level of concern and assessment remain **the same as previously indicated**: New sewage sampling suggests that the virus continues to be circulating in areas of NYC and further outside of the city **where vaccination coverage is not at optimal levels**. It is estimated that only 86.2% of NYC children between the ages of 6 months and 5 years have received three doses of the polio vaccine, with the remaining ~14% not being fully protected. More importantly, the **coverage is not the same across all neighbourhoods** as there are areas where vaccination coverage (of three doses) in children in this age group is less than 70%, increasing their risk of contracting polio. As of August 1, official information indicates that vaccination rates across affected counties are Rockland (60.34%), Orange (58.68%), Sullivan (62.33%), and Nassau (79.15%); **all below the recommended target** of 89% for herd immunity. While this finding is concerning, it is not surprising. The current risk to the **general public remains moderate**, the risk for developing the disease among **under-vaccinated subpopulations is higher**.

**Source:** [New York State Department of Health](#)

## Malaria in Parkistan

**SUBLOCATIONS AFFECTED:** Sindh. BlueDot has updated this assessment with a correction in the description of concern. This was previously described as medium concern and has **been corrected to high concern**. Health authorities are calling on non-governmental organizations (i.e., UNICEF) for aid due to the increased **risk of large outbreaks of water-borne diseases** (i.e., cholera and diarrhea) and **vector-borne diseases** (i.e., malaria and dengue). Official information indicates that Pakistan has been affected by incessant monsoon rainfall with significant flooding that has claimed the lives of nearly 1,300 people so far, including 453 children. More than 12,500 people have been injured in the disaster that has affected an estimated 33 million people since mid-June when the seasonal monsoon rains begin, and the level of devastation so far is assessed to be more severe than previous floods. More than 600,000 people are sheltering in relief camps, according to the National Disaster Management Authority (NDMA), and more than 134,000 cases of diarrhea and 44,000 cases of malaria have been reported in Sindh province so far. Additionally, more than 100,000 skin-related conditions have also been reported, along with 101 snake bites and 500 dog bites so far among flood victims.

**CONCERN LEVEL: HIGH.** BlueDot Intelligence team considers this event of high concern due to the following reasons: 1. The massive scale of the flooding, impacting an estimated 33 million people across a large number of regions. 2. The risk of transmission of other infectious diseases can increase due to suboptimal hygiene, sanitation, and overcrowding which is often seen as a result of humanitarian crises. 3. Service disruptions to healthcare/public health systems along with physical destruction of healthcare infrastructure make it challenging to maintain disease surveillance, disease prevention and control, and provide healthcare. 4. There is increased exposure to infectious diseases and disease vectors (such as mosquitoes) when large populations are displaced into temporary settlements or camps – settings, which are often overcrowded, are rudimentary shelters, and have inadequate safe water and sanitation, and 5. The rapid displacement of many refugees during this humanitarian crisis increases the risk of importation of communicable diseases in destination countries and the potential for subsequent domestic spread.

**Source:** [TravelHealtProUK](#); [Reliefweb](#); [OCHA](#)

## Unknown Encephalitis in Taiwan

In a **follow-up study** in the International Journal of Infectious Diseases on the unknown encephalitis syndrome observed in children in Taiwan in May, 2022, a **specific Omicron BA.2.3.7 lineage with a new mutation (K97E) in the S protein N-terminal domain was identified among some of the cases**. This variant is thought to have contributed to the **rise in pediatric cases of encephalitis by causing severe inflammation** following infection. This specific lineage was observed during the epidemic wave that began in April. Currently, the predominant strain circulating in Taiwan and the surrounding region is the BA.5 Omicron sublineage.

**CONCERN LEVEL: LOW.** BlueDot continues to consider this event of low concern given; 1. Eight sequences from affected children were identified with a new Omicron BA.2.3.7 sublineage containing a K97E mutation at the region encoding the S protein. 2. Currently, the sublineage no longer appears to be circulating although variants with the K97E mutation at the S protein may arise in the future. 3. The multi-systemic effects of SARS-CoV-2 infections are a well-studied occurrence, although the frequency of neurologic involvement in children following infection requires further evaluation.

**Source:** [International Journal of Infectious Diseases](#)

## Ebola in Uganda

**SUBLOCATIONS AFFECTED:** Central Region (Mubende District)

**An Ebola outbreak has been declared in Uganda as of** September 20, 2022, following confirmation of a fatal case of Ebola virus disease (EDV) infected with the Sudan ebolavirus strain. The individual was a 24-year-old male from the Ngabano village in Mubende District, Central Uganda who received medical care in a local clinic before being isolated at the referral hospital on September 15. Confirmation for EDV was received on September 19 and the deceased is currently being held in the Mubende mortuary for safe burial. **Several other individuals** are now **suspected** to also have EVD after they were initially treated for malaria due to having compatible symptoms (including high fever, diarrhea, and abdominal pain) that progressed to seizures and bleeding. Currently, there are eight suspected cases being monitored in a local health facility, in addition to the confirmed fatal case, for a total of nine reported cases. Unofficial reports also indicate that within the last month, six additional deaths have occurred in the Mubende district across different localities, including three adults and three children, some of whom were initially diagnosed with malaria but are suspected of having had compatible symptoms. The **country has observed at least three Ebola outbreaks attributed to the Sudan strain** with the most recent outbreak reported prior to this event occurring in 2012. The current event would be the **country's 6th Ebola outbreak**, with the largest occurring in the year 2000 (with the Sudan strain) reporting 425 cases and 224 deaths.

**CONCERN LEVEL: HIGH.** The BlueDot Intelligence team considers this event to be of high concern to the local region given 1) The number of suspected cases and deaths spread across the district (>100,000 population) in a number of villages. These cases likely represent a larger outbreak than detected due to the historically lower case fatality for the Sudan strain compared to the Zaire strain of ebolavirus. 2) As a region with a high malaria burden, diagnostic challenges exist that may contribute to misdiagnosis/underdetection of cases. The true number of cases is uncertain but expected to be higher than reported. 3) Existing vaccination and treatment that have been approved for the Ebola Zaire species have limited investigation against the Sudan strain. However, Uganda has demonstrated adequate disease management procedures in previous outbreaks prior to the availability of vaccines. Investigations are currently underway to determine the source and potential scope of the outbreak, including laboratory testing of the suspected cases. 4) The affected district is within 150 km of Kampala (closest city center with accessible transportation) and less than 300 km to the border with the Democratic Republic of Congo.

**Source:** [WHO](#); [Ministry of Health Uganda](#)

## Marburg Virus Disease in Ghana -Declared over -

**SUBLOCATIONS AFFECTED:** Ashanti Region

Ghana's Ministry of Health declared that after **no new cases** were reported over the **past 42 days**, or two incubation periods, the outbreak has been **declared officially over**. In total, three confirmed cases, including two deaths, were recorded in the outbreak that was declared on 7 July 2022 after laboratory confirmation of the virus that affected the country's Ashanti, Savannah, and Western regions. A total of 198 contacts were identified, monitored, and completed their recommended initial 21-day observation period which was then extended for another 21 days by the Ghanaian health authorities. **While animal reservoirs of the virus are present in the region and sporadic cases can still occur, there is no immediate risk of further human disease spread.**

**Source:** [Reliefweb](#)

## Earthquake in Papua New Guinea

**At least 12 people** died after a 7.6-magnitude earthquake struck Papua New Guinea last weekend, **injuring 42 and 389 houses collapsed (all in Madang Town)**. Primary observations conclude that damages were mostly limited to dwellings and other structures made from light materials. The remote nature of the impacted highland villages, many of which **lack medical facilities**, has made for a **slow aid response** that has been heavily reliant on **airlifts**.

**Source:** [Reliefweb](#)

## Cholera in Syria

On 10 September, the Syrian Ministry of Health (MoH) **declared an outbreak of cholera in Aleppo Governorate** following 15 confirmed laboratory cases, including one death. Between 25 August and 10 September, the surveillance data showed that a **total of 936 severe acute watery diarrhoea cases** were reported in Syria, including at least **eight deaths**. Most of the cases were reported from Aleppo (72.2%, 676 cases), Deir-ez-Zor (21.5%, 201 cases), Ar-Raqqa (1.8% 17 cases), Al Hasakeh (4.1%, 38 cases), Hama (0.2%, 2 cases) and Lattakia (0.2%, 2 cases). The number of **confirmed cholera cases so far is 20 in Aleppo**, four in Lattakia and two in Damascus (people coming from Aleppo). Based on a rapid assessment conducted by health authorities and partners, the **source of infection** is believed to be linked to **people drinking unsafe water from the Euphrates River** and using contaminated water to irrigate crops, resulting in food contamination.

**Source:** [Reliefweb](#)



## BlueDot detected Significant Events during August 2022



Date of report	Disease	Location of event	Species affected	Description of event	Level of Concern	Description of Concern	Level of Data Confidence
05/08/2022	Vaccine-derived Poliomyelitis in United States	Rockland County, New York, United States	Human	On July 21, 2022, health authorities in Rockland County, New York state confirmed a human case of circulating-vaccine-derived poliomyelitis type 2 (cVDPV-2). Given the strain identification, New York state health officials have indicated that the affected individual is an unvaccinated young adult who presented with symptoms of paralysis about a month ago and has not travelled internationally. Thus, the likely source of infection is another individual who may have received the oral polio vaccine (OPV) abroad, since OPV hasn't been given in the United States since 2000. Officially available information indicates that the last case of poliomyelitis that was locally acquired in the United States was in 1979 while the last imported case was reported in a traveller in 1993. Health authorities are conducting surveillance of family members and close contacts.→	Medium	This event is noteworthy as the more recent detection indicates that there is ongoing circulation in the region. According to New York State Department of Health, as of July 1, 2022, Rockland County reports has a vaccination coverage of 60.5% among two-year-old and a statewide coverage of 79.1%, which is substantially lower than the recommended coverage of 95%. This provides a greater risk for a larger outbreak and the potential for more cases with severe outcomes in the unvaccinated child population. The County Health Department asks health authorities to remain vigilant and to encourage those due for vaccinations to ensure their regular vaccinations are complete and up-to-date.	High
08/08/2022	Swine Influenza H3N2 in United States	West Virginia, United States	Human	On August 4, 2022, the West Virginia Department of Health and Human Resources (DHHR) indicated that they were investigating reports of some individuals who have developed the influenza-like illness (ILI) after working closely with pigs that exhibited respiratory symptoms and fever at the Jackson County Fair (agricultural fair). In addition, the DHHR's Office of Laboratory Services confirmed the first human case of swine influenza A H3N2v for 2022. After the case was forwarded to the Centres for Disease Control and Prevention (CDC), laboratory confirmation was released on August 5, 2022. Officially available information indicates that the affected individual was 18 years old, participated in the aforementioned agricultural fair, and had contact with pigs. The infected person was not hospitalized and is recovering from the illness. Epidemiological investigations also confirmed that pigs at this fair tested positive for the same strain of influenza A. There have been reports of respiratory illness among an unspecified number of people who attended the same agricultural event. Laboratory specimens from these suspected cases have been forwarded to the CDC for additional testing. To date, no human-to-human transmission has been confirmed.	Medium	Every year, there are rare sporadic human infections with flu viruses that usually spread in pigs. When found in people, they are called 'variant flu virus' infections. While these types of infections usually cause mild illness, they are concerning because they can cause severe illness, especially among people at higher risk of serious flu complications, and have the potential to cause a flu pandemic if they are able to spread person-to-person. Agricultural fairs occur across the United States annually, primarily during the summer and early fall. Many fairs have swine exhibitions, where pigs from different places come into close contact with each other and with people. These venues may increase the risk of flu viruses spreading among pigs, and between pigs to human due to these interactions. BD Intelligence team considers it as a medium level of public health disruption among those who attended the fair given that: this occurred at a gathering where there may have been additional exposures, several individuals exhibiting ILI symptoms are still under investigation, and insufficient information on the potential for human-to-human transmission at this time	High
09/08/2022	Marburg Virus Disease in Ghana	Ghana	Human	On July 7, 2022, in a press release from the Ghana Health Service (GHS), officials announced that there are two cases of Marburg virus disease under investigation within the Ashanti region. The Ashanti region is located in the south of the country and is the third largest of Ghana's 16 administrative regions. The presence of the disease was suspected after blood samples taken two weeks ago from two individuals from different locations in the Ashanti region showed preliminary results of Marburg virus following testing at the Noguchi Memorial Institute for Medical Research. With support from the World Health Organization (WHO), as per procedure, the samples have been sent to the Institute Pasteur in Dakar, Senegal for further testing and confirmation. Preliminary testing indicated the patients were infected with a hemorrhagic infection; however, there are no details available on whether Ebola or Lassa fever infections have been ruled out. The WHO states that both patients were unrelated and presented to a district hospital in the Ashanti region with symptoms of diarrhea, fever, nausea, and vomiting. Both patients are now reported to be deceased. GHS states that in the two weeks since samples were collected, there have been no new reported cases. Furthermore, 34 contacts of the two cases have been identified and are currently in quarantine and being monitored for symptoms. The Ashanti Regional Health Directorate and GHS are actively conducting further investigations to identify additional cases and contacts.	High	The WHO's regional health office for Africa and the local government, have expressed concern about the situation and have begun responding immediately as the outbreak could evolve quickly becoming hard to contain if proper measures are not implemented. So far, more than 90 contacts, including health workers and community members, have been identified and are being monitored. No more cases have been reported since two infected individuals died on June 27 and June 28.	High





## BlueDot detected Significant Events during August 2022

10/08/2022	Vaccine-derived Poliomyelitis in United Kingdom	United Kingdom	Human	Public health officials have declared a national incident after routine surveillance of wastewater in London found evidence of community transmission of vaccine-derived poliovirus for the first time since being declared polio-free in 2003. The virus detected has now been classified as vaccine-derived poliovirus type 2 (VDPV2) which has the potential to spread in communities where immunization coverage is low. This event is believed to have originated from an individual returning to the UK after receiving the oral polio vaccine in another country and potentially spreading the weakened live virus locally.	Low	Following the identification of isolates of type two poliovirus (PV2) in sewage samples in London, UK, BlueDot,Âs Intelligence Team assesses that the current risk to the general public remains low due to the following reasons: 1) Immunization coverage in the UK is high among five-year-olds at 95% overall (although coverage is lower at 91.2% within London), 2) Of 116 samples, only a few isolates have been classified as VDPV2, which is the mutated form of the vaccine-derived virus that can cause severe illness and paralysis, 3) A booster dose of inactivated polio vaccine will be offered to all children between the ages of one and nine within all London boroughs, prioritized to children in boroughs with virus detection and sub-optimal vaccination rates.	High
12/08/2022	Vaccine-derived Poliomyelitis in United States	Rockland County, New York, United States	Human	On July 21, 2022, health authorities in Rockland County, New York state confirmed a human case of circulating-vaccine-derived poliomyelitis type 2 (cVDPV-2). Given the strain identification, New York state health officials have indicated that the affected individual is an unvaccinated young adult who presented with symptoms of paralysis about a month ago and has not travelled internationally. Thus, the likely source of infection is another individual who may have received the oral polio vaccine (OPV) abroad, since OPV hasn't been given in the United States since 2000. Officially available information indicates that the last case of poliomyelitis that was locally acquired in the United States was in 1979 while the last imported case was reported in a traveller in 1993. Health authorities are conducting surveillance of family members and close contacts.â	Medium	The sewage sampling suggests that the virus might be circulating in areas of NYC where vaccination coverage is not at optimal levels. It is estimated that only 86.2% of NYC children between the ages of 6 months and 5 years have received three doses of the polio vaccine, with the remaining ~14% not being fully protected. More importantly, the coverage is not the same across all neighbourhoods as there are areas where vaccination coverage (of three doses) in children in this age group is less than 70%, increasing their risk of contracting polio. While this finding is concerning, it is not surprising. In previous assessments, BlueDot has highlighted how low vaccination coverage across the globe has driven the resurgence of vaccine-preventable diseases in different regions. For this reason, while the Intelligence Team assesses that the current risk to the general public remains moderate, the risk for developing the disease among under-vaccinated subpopulations is higher.	High
12/08/2022	Usutu Virus Infection in Italy	Friuli Venezia Giulia, Italy	Human	The first two human infections of the Usutu virus (USUV) in 2022 have been identified in Italy. The infections were identified in asymptomatic individuals through virus isolation, although further details are limited. A significant increase in bird infections recorded throughout Europe within recent years indicates the virus may be increasing in circulation, with subsequently higher risk to humans. The recent spread to many European countries and co-circulation of different genetic strains deserves increased awareness and characterization.	Medium	BlueDot Intelligence team considers this event as a medium concern given: 1) the limited study of this virus with respect to the ecology, transmission and clinical impacts of the infection among animals and humans, 2) the evidence of rapid expansion in geographic distribution and circulation in the European region in recent years, 3) potential for neuroinflammatory disease in both immunocompetent and immunosuppressed individuals and 4) increased reports of human cases of the closely related West Nile Virus (WNV) in Italy this summer, indicating there may be an elevated risk of USUV infections in the region.	High
20/08/2022	Ebola in Democratic Republic of the Congo	Beni, Nord Kivu, Democratic Republic of the Congo	Human	The World Health Organization (WHO) announced on August 20, 2022, that health authorities are investigating the death of a suspected case of Ebola virus disease in the Democratic Republic of Congo,Âs (DRC) eastern province of North Kivu. As reported in a press release from the WHO, the suspected case is a 46-year-old woman who died on August 15, 2022, in the town of Beni. The woman received care at the Beni Referral Hospital for other ailments before exhibiting symptoms consistent with Ebola virus disease. Patient samples are in the process of being tested and sequenced at the country,Âs National Institute of Biomedical Research.	Medium	This suspected case is of medium concern. If confirmed to be Ebola, it is unknown how many other individuals in the hospital and city have been affected. The health system is currently strained with ongoing outbreaks of cholera, measles, monkeypox, and COVID-19. Additionally, the region has a history of armed conflict, which has previously led to unstable conditions and healthcare accessibility in the past. The risk of Ebola resurgence is high, due to existing animal reservoirs and environmental factors, however, no large-scale Ebola outbreaks have occurred in the past two years and the country has developed processes for emergency outbreak operations. If confirmed, this will mark the fifteenth outbreak of Ebola in the DRC, roughly two months ago on July 4, 2022, the fourteenth outbreak was declared officially over. The WHO has stated that investigations are ongoing and preparations for a possible outbreak have begun.	High
22/08/2022	Ebola in Democratic Republic of the Congo	Beni, Nord Kivu, Democratic Republic of the Congo	Human	The World Health Organization (WHO) announced on August 20, 2022, that health authorities are investigating the death of a suspected case of Ebola virus disease in the Democratic Republic of Congo,Âs (DRC) eastern province of North Kivu. As reported in a press release from the WHO, the suspected case is a 46-year-old woman who died on August 15, 2022, in the town of Beni. The woman received care at the Beni Referral Hospital for other ailments before exhibiting symptoms consistent with Ebola virus disease. Patient samples are in the process of being tested and sequenced at the country,Âs National Institute of Biomedical Research.	Medium	The BlueDot Intelligence team continues to consider this event to be of medium concern for the following reasons: 1) As of August 17, 2022, 131 contacts of the patient had been identified, of which the vaccination status of the patient and 71 co-patients is unknown; however 59 of the 60 healthcare workers listed as contacts are vaccinated. Follow-up with the 71 co-patients is ongoing; 2) New details provided regarding the patient's 23-day hospital stay state that following the deterioration of her health and subsequent death on August 15, 2022, her family collected the body for burial on the same day, before confirmation of her Ebola diagnosis. No details are provided about when the patient's sample was collected for testing, as such, it is unclear how infectious the patient was at the time of death. Furthermore, the family,Âs vaccination status has not been described; 3) Epidemiological investigations to establish the source of infection are ongoing, and it is possible that there are previous cases and/or persistently infected survivors who have not been detected; 4) The DRC has experienced 14 EVD outbreaks to date. The most recent outbreaks in the DRC have been relatively smaller in size when compared to those that took place prior to the availability of a vaccine and a developed program for surveillance and management; 5) The DRC has experienced challenges to control EVD in the region in the past due to conflict and distrust of medical entities.	High



## BlueDot detected Significant Events during August 2022

27/08/2022	Vaccine-derived Poliomyelitis in United States	Rockland County, New York, United States	Human	<p>On July 21, 2022, health authorities in Rockland County, New York state confirmed a human case of circulating-vaccine-derived poliomyelitis type 2 (cVDPV-2). Given the strain identification, New York state health officials have indicated that the affected individual is an unvaccinated young adult who presented with symptoms of paralysis about a month ago and has not travelled internationally. Thus, the likely source of infection is another individual who may have received the oral polio vaccine (OPV) abroad, since OPV hasn't been given in the United States since 2000. Officially available information indicates that the last case of poliomyelitis that was locally acquired in the United States was in 1979 while the last imported case was reported in a traveller in 1993. Health authorities are conducting surveillance of family members and close contacts.→</p>	Medium	<p>The level of concern and assessment remain the same as previously indicated: sewage sampling suggests that the virus might be circulating in areas of NYC where vaccination coverage is not at optimal levels. It is estimated that only 86.2% of NYC children between the ages of 6 months and 5 years have received three doses of the polio vaccine, with the remaining ~14% not being fully protected. More importantly, the coverage is not the same across all neighbourhoods as there are areas where vaccination coverage (of three doses) in children in this age group is less than 70%, increasing their risk of contracting polio. While this finding is concerning, it is not surprising. In previous assessments, BlueDot has highlighted how low vaccination coverage across the globe has driven the resurgence of vaccine-preventable diseases in different regions. For this reason, while the Intelligence Team assesses that the current risk to the general public remains moderate, the risk for developing the disease among under-vaccinated subpopulations is higher.</p>	High
29/08/2022	West Nile in Italy	Piemonte, Italy	Human	<p>In 2022, the start of West Nile virus (WNV) activity in Europe was detected as early as the beginning of June in the Veneto region, north-eastern Italy, though WNV season usually begins in July, with peaks in the number of cases between August and September. In Italy, WNV risk is present throughout the country, especially in the northern region. The country is currently experiencing significant upward trends in cases and deaths and there is an expanded geographical range of typical cases.</p>	Medium	<p>BlueDot Intelligence team considers this event as a medium concern given the following key reasons:</p> <ol style="list-style-type: none"> <li>1) WNV has recently emerged as a major public health concern in Europe, and its recent expansion to this continent has mostly been attributed to rapid environmental changes;</li> <li>2) WNV appears to be expanding its geographical range overall within Europe, spreading in northerly regions that had not previously reported cases, and causing increasing numbers of epidemics associated with human morbidity and mortality;</li> <li>3) Temperatures in the summers are increasing, with the warmest temperatures on record for 2022, which could have contributed to the early start of the WNV season this year. The warmer summer temperatures are also benefiting mosquitoes, influencing their hatching rate and development time, and shortening the extrinsic incubation period (EIP) of WNV, making interventions and control more difficult;</li> <li>4) Infection with WNV is asymptomatic in around 80% of infected people, which challenges diagnosis and assessment of the true extent of affected individuals;</li> <li>5) One in 150 persons infected with WNV will develop a more severe form of the disease. Serious illness can occur in people of any age, however, people over the age of 50 and some immunocompromised persons (for example, transplant patients) are at the highest risk of getting severely ill when infected with WNV, and</li> <li>6) the return of tourism in the region is likely to increase the size of the susceptible population over recent years</li> </ol>	Medium
31/08/2022	Unknown Respiratory Illness in Argentina	Tucuman Province, Argentina	Human	<p>A cluster of unknown pneumonia cases has been identified in the Tucuman region in Argentina. Health officials have stated that six people have been affected, of which five are health care workers. Four of the affected healthcare workers are in an intensive care unit requiring mechanical ventilatory assistance. One individual died on August 28, and the other individual is isolated at home. Detailed information regarding the timeline of case appearance, symptom onset, and epidemiological features such as travel history and shared close contacts is limited.</p>	High	<p>Officials highlighted that the reason for concern, in addition to the predominance of cases being among health care workers, is that the tests for the most plausible causes of infection (including COVID-19, influenza A and B, hantavirus infection, and 17 common respiratory pathogens screened for using the FilmArray respiratory panel) have all been negative. Unknown pneumonia events require close monitoring and rapid public health action due to their risk of rapid spread. While awaiting confirmation of the cause(s), the Intelligence Team considers this event of high concern due to the various unknowns including whether, and to what degree, the cause may have the potential for human-to-human transmission through the respiratory route, the potential risk to healthcare workers, and the risk of disruption to local and regional public health.</p>	High

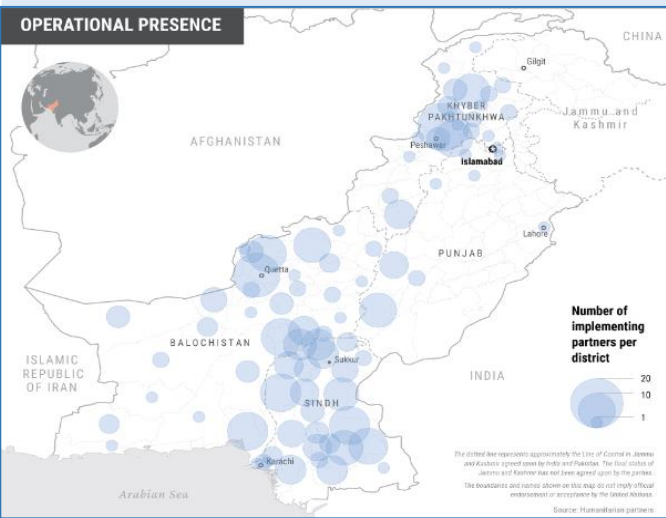


## BlueDot detected Significant Events during August 2022



31/08/2022	Unknown Respiratory Illness in Argentina	Tucuman Province, Argentina	Human	A cluster of unknown pneumonia cases has been identified in the Tucuman region in Argentina. Health officials have stated that six people have been affected, of which five are health care workers. Four of the affected healthcare workers are in an intensive care unit requiring mechanical ventilatory assistance. One individual died on August 28, and the other individual is isolated at home. Detailed information regarding the timeline of case appearance, symptom onset, and epidemiological features such as travel history and shared close contacts is limited.	Medium	The Intelligence Team considers this event of medium concern due to recent epidemiological findings, including links among the cases to the same workplace, no new cases among close contacts, and a highly plausible cause under investigation (i.e., Legionellosis), which can be prevented through improved sanitation. BlueDot will continue monitoring this event for a confirmed diagnosis which is anticipated in the coming days following laboratory test results.	High
31/08/2022	Poliomyelitis in Brazil	Rorainopolis, Roraima, Brazil	Human	On August 30, 2022 health officials from the city of Rorainópolis located in the south of Roraima indicated in a statement that they are investigating a suspected case of poliomyelitis in a child who presented with paralysis. There are no further details about the affected individual, history of immunizations, or travel. The case remains under investigation and has not been confirmed. Thus, the poliovirus type (i.e., wild poliovirus or circulating vaccine-derived poliovirus (cVDPV)) is also not available.	Medium	BlueDot Intelligence team highlights that a confident assessment of risk is not possible until there is laboratory confirmation of the presumptive diagnosis. However, if a case of poliomyelitis is confirmed this would represent a medium level of concern with higher risks amongst unimmunized populations given: 1. There has been a reduction in vaccination coverage among the most vulnerable age group (< 5 years old) in Brazil as a result of the COVID-19 pandemic, with one estimate suggesting 30% of infants born in 2021 are unvaccinated and only 52% of children have received booster doses of the oral vaccine. 2 While poliomyelitis has been officially eliminated from Brazil and the Americas since 1994, Brazil has not met the goal of immunizing 95% of the population since 2015, which is the level necessary for the population to be considered protected against the disease, and 3. According to the National Immunization Program Information System (SI-PNI), vaccination coverage with the three initial doses of the vaccine is very low at 67% of the country's population in 2021. Regions in the Northeast and North are more susceptible, with only 42% and 44% coverage, respectively, for complete immunization (five doses), and 4. A case of paralytic polio, if confirmed, indicates circulation in the region with many more subclinical cases.	High
01/09/2022	Unknown Respiratory Illness in Argentina	Tucuman Province, Argentina	Human	In a recent update from the Public Health Ministry of Tucuman, it was stated that an additional death and three more new cases of unknown pneumonia have been identified. Overall, as of September 1, 2022, there are nine cases, inclusive of three associated deaths. Information about the potential first case has been provided in the update - this was a 70-year-old patient hospitalized for unrelated reasons who later developed pneumonia on August 20, coinciding with the approximate symptom onset of all other reported cases. So far all identified cases besides the 70-year-old patient have work links with the same health centre, had symptoms onset between August 18-22, and developed bilateral pneumonia. All of the diagnostic tests performed including for COVID-19, hantavirus, and some species of Legionella have returned negative, and the etiology of this outbreak has not yet been found. Samples for further testing inclusive of toxins have also been sent to the Malbrán Institute in Buenos Aires.	HIGH	BlueDot Intelligence team has updated the assessment from medium to high level of concern given: 1. Laboratory analyses for the most plausible causes including species of Legionella have thus far been negative, 2. The symptoms described are not compatible with many other known causes 3. The increase in the number of cases and deaths, and the severity of illness described, and 4. The possibility that there are further unascertained cases and/or potential for further spread is unknown. BlueDot continues to closely monitor this event and further information will be provided as it becomes available.	High
02/09/2022	Unknown Respiratory Illness in Argentina	Tucuman Province, Argentina	Human	In a recent update from the Public Health Ministry of Tucuman, it was stated that an additional case of the unknown pneumonia cluster has been identified. Overall, as of September 2, 2022, there are ten cases, inclusive of three associated deaths. Details of the most recent identified individual have also been provided: an 81-year-old man with an underlying health condition who required surgery at the Sanatorio Luz Médica (where all cases so far have been linked to), was sent home afterwards and was admitted recently to a public hospital where he remains in critical condition and ventilatory support. The timing of surgery or symptom onset has not been specified. Earlier today, health officials have also confirmed that further laboratory investigations are ongoing. This includes untargeted metagenomic sequencing, which allows investigators to search for genetic material from a wide variety of pathogens, and could help determine the cause of illness.	High	BlueDot Intelligence team considers that the event remains of high concern since a common source exposure in the mentioned private hospital where all cases are linked (sanatorium) has not been identified. Without a common source of exposure and known pathogen, person-to-person transmission cannot be ruled out. BlueDot continues monitoring this event closely and will provide daily updates while awaiting confirmation of a cause.	High
03/09/2022	Unknown Respiratory Illness in Argentina	Tucuman Province, Argentina	Human	An official statement from the Public Health Ministry of Tucuman indicated that multiple laboratory specimens sent to the Malbrán Institute (National Microbiological Reference Laboratory in Buenos Aires, Argentina) from the affected individuals have yielded positive results for Legionella pneumophila. Furthermore, one additional case and one additional death have now been reported, bringing the total number of cases to eleven (11), inclusive of four (4) deaths.	Low	The BlueDot Intelligence team believes this event can now be downgraded to "Low Concern". While Legionella is a serious and potentially life-threatening disease, it does not spread from person to person and can be effectively treated with widely available antibiotics when diagnosed early. Consequently, this outbreak does not pose a risk to the broader region. Today's finding suggests that affected individuals were exposed to the Legionella bacterium in the Tucuman sanatorium via a contaminated water source. However, given that some features of this outbreak are unusual, BlueDot will continue to closely monitor and assess the situation.	High

# Other Infectious Disease Outbreaks/ Conflicts



## Pakistan: 2022 Monsoon Floods – Situation as of 16 September 2022

### HIGHLIGHTS

- Roads reported damaged or destroyed nearly doubles in the past week, to over 12,700 km.
- Reported number of damaged or destroyed bridges increases 40 per cent in a week.
- Preliminary estimates based on currently available data indicate that around 7.6 million people may be temporarily displaced. Efforts to verify the extent of displacement are ongoing.
- Food security and nutrition situation in Pakistan expected to also deteriorate in areas not directly affected by the floods.
- Children and marginalised groups facing increased vulnerability due to exposure to new risks and hazards as well as disrupted access to essential services.

### Needs:

- Early recovery and resilient restoration of Health services.
- Essential medicines and equipment to set up emergency triage, medical tents, mosquito nets, beds, facemasks, and hand sanitizers outside health facilities.
- Mitigation of the risk of outbreaks of communicable/infectious diseases, particularly in camps and where WASH facilities have been damaged.
- Prevention of transmission of diseases in camps and communities through information and hygiene campaigns.

### Response:

- Medical camps for over 7,000 people in Balochistan, over 10,100 people in Sindh, nearly 3,700 people in Punjab and nearly 2,300 people in Khyber Pakhtunkhwa.
- Provision of medicines and medical supplies to benefit nearly 86,400 people in Balochistan, over 12,000 people in Sindh, over 5,000 people in Khyber Pakhtunkhwa and some 790 people in Punjab.
- Support to outreach activities or temporary health facilities, benefiting over 25,600 people in Balochistan and over 4,000 people in Sindh.
- Inter-agency reproductive health (IARH) kits, clean delivery kits, newborn baby kits and dignity kits have been distributed to 495 people in Khyber Pakhtunkhwa.
- Integrated sexual and reproductive health (SRH) and gender-based violence (GBV) information and service deliver in health facilities, mobile health units and makeshift hospitals have benefited 150 people in Balochistan.

### Gaps and challenges:

- Access issues continue to inhibit the replenishment of Health supplies in affected areas.
- Increasing prevalence of waterborne and vector-borne diseases.
- Responding to the acute needs of the flood-affected population while ensuring the continuation of regular Health services, including prevention and treatment of measles, COVID-19 and polio.

Source: <https://reliefweb.int/report/pakistan/pakistan-2022-monsoon-floods-situation-report-no-6-16-september-2022>

## Circulating vaccine-derived poliovirus type 2 (cVDPV2) - Algeria

On 8 July 2022, WHO was notified of a case of circulating vaccine-derived poliovirus type 2 (cVDPV2) with acute flaccid paralysis (AFP) from Tamanrasset province, southern Algeria. This represents the **first cVDPV2 case identified in the country**. Local public health authorities are conducting a field investigation, and an active search for additional AFP cases; a reactive Immunization campaign is also planned.

### Description of the outbreak

On 8 July 2022, a case of circulating vaccine-derived poliovirus type 2 (cVDPV2) in Algeria was notified to WHO through the Global Polio Laboratory Network (GPLN). The case is a **child under two years old** from Tamanrasset province, southern Algeria, with onset of acute flaccid paralysis (AFP) on 11 April 2022. Stool specimens tested positive for cVDPV2 by the Pasteur Institute of Algeria and were confirmed by Pasteur Institute of Paris. Genomic sequencing analysis indicates that the isolated virus is **genetically linked to a virus previously isolated in Kano, Nigeria**. **The child had not received any polio vaccine doses and has no history of travel outside Tamanrasset province.**

This **represents the first cVDPV2 case identified in Algeria**, where, according to the 2021 WHO-UNICEF immunization coverage estimates, **Pol3** (3rd dose of polio-containing vaccine) **coverage was 91%** and **IPV1** (one dose of the inactivated polio vaccine) **coverage was 94%**.

### Public health response

- Surveillance has been strengthened for active search for additional AFP cases in and around the immediate area of the detected case.
- A Detailed field investigation has been initiated in coordination with the GPLN to identify the extent of the virus circulation (including potentially in neighboring countries).
- A response plan has been prepared in accordance with the revised international polio outbreak response SOPs.
- A reactive Immunization campaign is planned.

### WHO risk assessment

WHO considers there to be a continued **high risk of international spread of cVDPV2**, due to persisting suboptimal immunity, surveillance gaps, and large-scale population movements. The risk is magnified by decreased immunization rates related to the ongoing COVID-19 pandemic.

The current isolate in Algeria is linked to a **virus originating in Kano, Nigeria, demonstrating the potential for the international spread of this disease.**

### WHO advice

It is important that all countries, in particular those with frequent travel and contacts with polio-affected countries and areas, **strengthen surveillance** for AFP cases and commence planned expansion of **environmental surveillance** in order to rapidly detect any new virus importation and to facilitate a rapid response. Countries, territories and areas should also maintain **uniformly high routine immunization coverage** at the district level to minimize the consequences of any new virus introduction.

WHO's [International travel and health](#) recommends that all travellers to polio-affected areas be **fully vaccinated against polio**. Residents (and visitors for more than 4 weeks) from infected areas should receive an **additional dose of oral polio vaccine** (OPV) or inactivated polio vaccine (IPV) within four weeks to 12 months of travel.

**2** ENDEMIC COUNTRIES

**33** OUTBREAK COUNTRIES

**8** KEY AT-RISK COUNTRIES

Polio remains endemic in two countries – Afghanistan and Pakistan. Until poliovirus transmission is interrupted in these countries, all countries remain at risk of importation of polio, especially vulnerable countries with weak public health and immunization services and travel or trade links to endemic countries.

# Ukraine

## Situation Report Last updated: 14 September 2022

### Highlights

- The war in Ukraine has passed the **200-day mark**, with the humanitarian needs of affected people only continuing to grow.
- Missile strikes hit a power and heating plant in Kharkiv, leading to wide-scale electricity and **water supply disruptions in six oblasts** of Ukraine.
- In newly accessible areas of Kharkivska and Khersonska oblasts, humanitarians are working with authorities to help them support the people who endured months of heavy fighting.
- Across Ukraine, over 580 humanitarian partners have provided life-critical aid and protection services to 13.3 million people.
- And 2.7 million tons of grain and other foodstuffs have been shipped from Ukraine's ports under the Black Sea Grain Initiative.

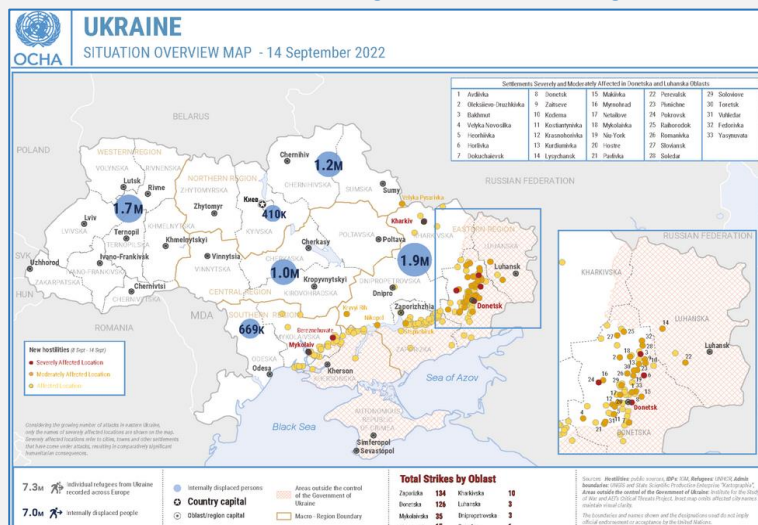
### General security and humanitarian situation

As the war passed the 200-day mark on 11 September, active hostilities continued in eastern and southern Ukraine, with more reports of civilian casualties and damage to civilian infrastructure – and wider-scale disruptions in power and water supplies. And with the Ukrainian Government reportedly regaining control over most of the eastern Kharkivska oblast and parts of the southern Khersonska oblast, there was also increasing concern for the needs of the people living in these newly accessible territories and how best to support them with winter approaching.

The main fighting continued in the eastern Donetsk oblast, where more than 100 civilian casualties – 34 killed and 72 more injured – were reported following missile strikes and shelling on both sides of the front line during the weekend, 9-11 September. They included 29 casualties just on 10 September in Government-controlled areas and (GCA) of the oblast, with the cities of Bakhmut, Krasnohorivka and Pokrovsk most seriously impacted.

In non-Government-controlled areas (NGCA), 35 civilian casualties were reported on 9 September in Donetsk city and Horlivka. Commenting on the tragic milestone of 200 days of the war, Donetsk Governor Pavlo Kyrylenko reported that some 78,000 houses and apartment buildings had so far been damaged or destroyed in the GCA of the oblast, as well as almost 600 kindergartens and schools. In NGCA, it was reported that almost 7,000 residential buildings had so far been damaged, 300 educational facilities hundreds of other civilian objects and infrastructure.

Meanwhile, a city councillor from Izium, which has been among the cities reported to be retaken by Ukraine, said on 12 September that an estimated 1,000 residents had died there, and 80 per cent of the city's infrastructure had been destroyed. He described an urgent need for health care and medicine and added that, while most of the 30,000-plus residents who had fled the city were now looking forward to returning, "the situation with critical infrastructure is very difficult." Most of the now-former NGCA of Kharkivska oblast was reportedly heavily impacted by the war – with water, electricity and other basic services interrupted and much of the land mined, impeding the delivery of aid.



Further, on 11 September, the Ukrainian authorities and a humanitarian partner that missile strikes had damaged a combined power and heating plant in Kharkiv and resulted in interruptions to both the electricity and water supply – not only in Kharkivska but also in Donetsk oblast, north-eastern Sumska oblast, central Dnipropetrovska and Poltavaska oblasts, and south-eastern Zaporizka oblast. Four energy workers were reported to have been killed in the attacks, and three more injured as thousands of households were left without power and water.

Concerning the Zaporizhzhia Nuclear Power Plant (ZNPP) – located in the NGCA of Zaporizka oblast – the International Atomic Energy Agency (IAEA), in its latest update from 13 September, said that, despite progress on repairs to power infrastructure, the overall situation “remains precarious.” IAEA informed that, while Ukrainian personnel had made progress repairing power lines to provide

the plant with the external electricity it needs for cooling and other safety functions, all six reactors were currently shut down, and ZNPP's four main external power lines were also down – so that the plant was not providing electricity to households, factories and other users. IAEA Director General Rafael Mariano Grossi, speaking on 12 September, reiterated his call for the establishment of a nuclear safety and security protection zone around ZNPP.

### Cluster Status on Health and Hygiene Needs

- Some **14.5 million people in Ukraine are estimated to need health assistance**.
- Access to health care continues to be severely impacted by security concerns, restricted mobility, broken supply chains and mass displacement.
- According to the WHO Surveillance System for Attacks on Health Care, there have been 531 attacks on health care, resulting in 129 injuries and 100 deaths, reported between 24 February and 14 September. Attacks on health care deprive people of urgently needed care, endanger health-care providers and undermine health systems.
- Some **16 million people in Ukraine are in need of water, sanitation and hygiene** assistance between March and December 2022. These include internally displaced people in collective centres and host communities, in addition to communities affected by hostilities-related damages to systems and limitations in water treatment consumables.

### Gaps

- According to the Round 8 of the International Organization for Migration Internal Displacement Report, slightly over a **quarter (26 per cent)** of people living in villages in Ukraine do **not have access to operational medical facilities**. For the **displaced people** currently living in villages, this figure rises to **30 per cent**.
- REACH published the results of the fifth round of the Humanitarian Situation Monitoring initiative. REACH's key informants (NGOs, local authorities and civil society) reported concerns surrounding access to health-care services in 16 per cent of the assessed settlements (306 towns or villages in Government-controlled areas across Ukraine).
- In **12 per cent of settlements in affected areas**, REACH key informants reported that most people did **not have access to health-care facilities** in the 14 days prior to data collection (4 July – 26 July).

Source: <https://reports.unocha.org/en/country/ukraine>

### KEY FIGURES

**17.7M**  
People in need

**13.3M**  
People reached as of 15 September 2022

**7.3M**  
Refugees in European countries

**11.5M**  
People targeted

**7M**  
Internally displaced people