Force Health Protection Branch
NATO MilMed COE
Munich

Update 128
FHP-Update
21 December 2022

info.dhsc@coemed.org

Branch Chief
Phone: +49 89 1249 4003
Branch Admin
Phone: +49 89 1249 4001

GLOBAL
↗
655 771 837
confirmed cases
640 100 000
recovered
6 674 102 deaths

HKG
7-days incidence
1.465
↗

KOR
7-days incidence
907
↗

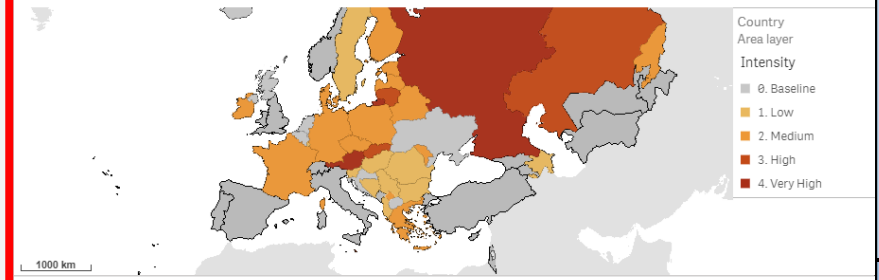
NZL
7-days incidence
887
↗

News:

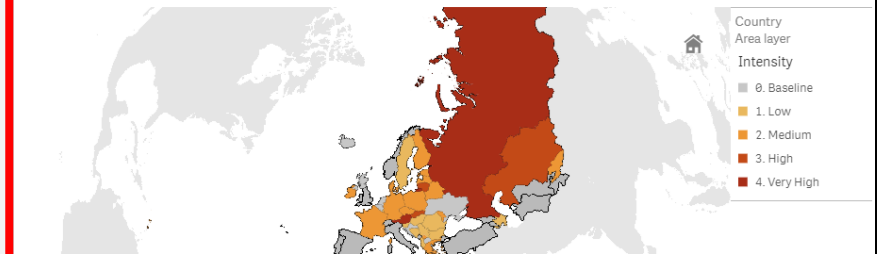
- **WHO:** has published the WHO AWaRe (Access, Watch, Reserve) antibiotic book, to provide concise, evidence-based guidance on how to optimize use of antibiotics included on WHO's Model Lists of Essential Medicines. It includes information on the choice of antibiotic, dose, route of administration, and duration of treatment for more than 30 of the most common clinical infections in children and adults in both primary health care and hospital settings.
- **WHO:** announces landmark changes in treatment of drug-resistant tuberculosis. This includes a new recommendation on the use of a novel all-oral 6-month regimen composed of bedaquiline, pretomanid, linezolid and moxifloxacin (BPaLM) in people suffering from MDR/RR-TB or MDR/RR-TB with additional resistance to fluoroquinolones (pre-XDR-TB).
- **WHO/UN:** announced that urgent action is needed globally and locally to achieve safe and sustainably managed water, sanitation and hygiene for all in order to prevent devastating impacts on the health of millions of people and to achieve the UN Sustainable Development Goal (SDG) 6 – water and sanitation for all by 2030.
- **Bangladesh**: has used lessons learnt during the COVID-19 pandemic to build emergency preparedness capacities by training rapid response teams (RRT) that can be deployed during any public health event due to influenza or any other respiratory pathogen.
- **ECDC/EFSA:** released the latest annual EU One Health zoonosis report that showed that in 2021 there was an overall increase in reported cases of zoonotic diseases and foodborne outbreaks compared to the previous year, but levels are still well below those of the pre-pandemic years.
- **ECDC:** published a new report on the prevention of hepatitis B and C in the EU.
- **ECDC:** monitored the Avian influenza from September to December 2022

Topics:

Intensity of influenza activity (WHO layout map), 2022-W49



Intensity of influenza activity (EU layout map), 2022-W49



EUROPE
↘
255 242 383
confirmed cases
251 000 000
recovered
2 073 707 deaths

GRC
7-days incidence
539
↘

SMR
7-days incidence
345
↗

CYP
7-days incidence
300
↗

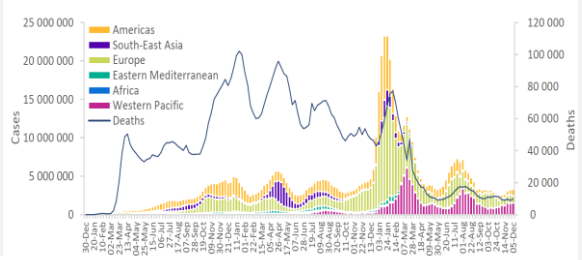
COVID-19 Situation by WHO Region, as of 14 December

Global epidemiological situation overview; WHO as of 14 December 2022

Globally, the number of new weekly cases remained stable (+2%) during the week of 5 to 11 December 2022 as compared to the previous week, with over 3.3 million new cases reported (Figure 1). The number of new weekly deaths increased by over 10% as compared to the previous week, with over 9700 new fatalities reported. As of 11 December 2022, over 645 million confirmed cases and over 6.6 million deaths have been reported globally. At the regional level, the number of newly reported weekly cases decreased or remained stable across five of the six WHO regions: the African Region (-73%), the South-East Asia Region (-33%), the European Region (-11%), the Eastern Mediterranean Region (-2%), and the Western Pacific Region (+3%); while case numbers increased in one WHO region: the Region of the Americas (+27%). The number of newly reported weekly deaths increased across three WHO regions: the African Region (+975%; partly due to batch reporting from South Africa), the Region of the Americas (+37%), and the Eastern Mediterranean Region (+81%); while death numbers decreased in three WHO regions: the European Region (-17%), the South-East Asia Region (-10%), and the Western Pacific Region (+5%).

At the country level, the highest numbers of new weekly cases were reported from Japan (849 371 new cases; +13%), the United States of America (448 634 new cases; +50%), the Republic of Korea (420 392 new cases; +13%), France (366 699 new cases; -5%), and Brazil (194 170 new cases; +3%). The highest numbers of new weekly deaths were reported from the United States of America (2934 new deaths; +62%), Japan (1358 new deaths; +28%), Brazil (603 new deaths; -5%), France (478 new deaths; +4%), and Italy (475 new deaths; -29%).

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



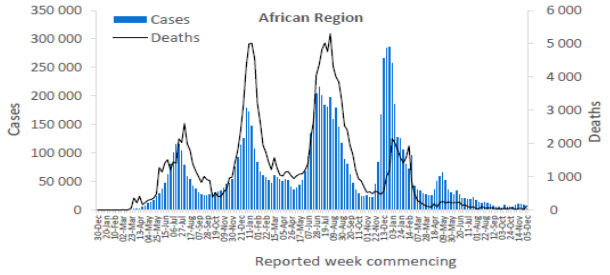
WHO regional overviews:

Epidemiological week 5 to 11 December 2022

African Region

The African Region reported over 2800 new cases, a 73% decrease as compared to the previous week. Four (8%) of the 50 countries for which data are available reported increases in new cases of 20% or greater, with the highest proportional increases observed in Comoros (nine vs three new cases; +200%), Côte d'Ivoire (four vs two new cases; +100%), and Mali (three vs two new cases; +50%). The highest numbers of new cases were reported from Réunion (1366 new cases; 152.6 new cases per 100 000; +12%), Mauritius (447 new cases; 35.1 new cases per 100 000; -89%), and Kenya (288 new cases; <1 new case per 100 000; +64%).

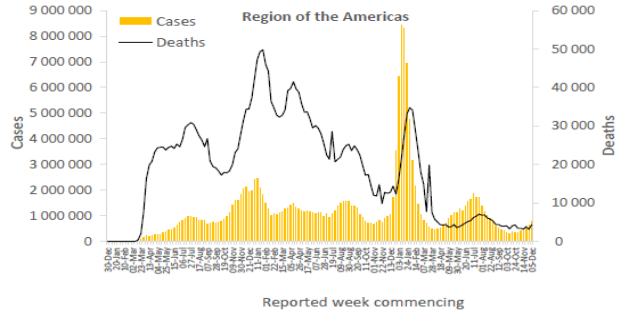
The number of new weekly deaths in the region increased by 975% as compared to the previous week (partly due to batch reporting from South Africa), with 129 new deaths reported. The highest numbers of new deaths were reported from South Africa (122 new deaths; <1 new death per 100 000; no deaths reported the previous week), Mozambique (three new deaths; <1 new death per 100 000; no deaths reported the previous week), and Réunion (two new deaths; <1 new death per 100 000; +100%).



Region of the Americas

The Region of the Americas reported over 836 000 new cases, a 27% increase as compared to the previous week. Fourteen (25%) of the 56 countries for which data are available reported increases in new cases of 20% or greater, with the highest proportional increases observed in Bolivia (Plurinational State of) (5786 vs 1038 new cases; +457%), Bonaire (37 vs 11 new cases; +236%), and Argentina (27 119 vs 12 609 new cases; +115%). The highest numbers of new cases were reported from the United States of America (448 634 new cases; 135.5 new cases per 100 000; +50%), Brazil (194 170 new cases; 91.3 new cases per 100 000; +3%), and Peru (71 516 new cases; 216.9 new cases per 100 000; +15%).

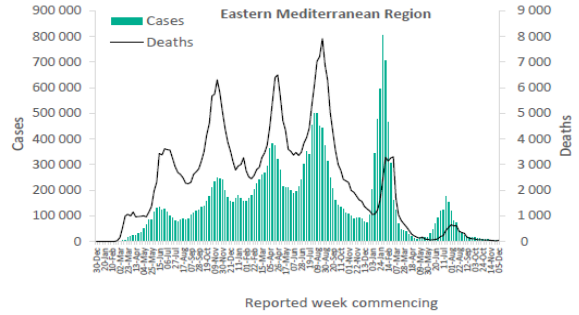
The number of new weekly deaths in the region increased by 37% as compared to the previous week, with 4347 new deaths reported. The highest numbers of new deaths were reported from the United States of America (2934 new deaths; <1 new death per 100 000; +62%), Brazil (603 new deaths; <1 new death per 100 000; -5%), and Canada (242 new deaths; <1 new death per 100 000; -7%).



Eastern Mediterranean Region

The Eastern Mediterranean Region reported over 7200 new cases, a 2% decrease as compared to the previous week. Four (18%) of the 22 countries for which data are available reported increases in new cases of 20% or greater, with the highest proportional increases observed in Libya (16 vs six new cases; +167%), Saudi Arabia (435 vs 316 new cases; +38%), and Lebanon (430 vs 329 new cases; +31%). The highest numbers of new cases were reported from Qatar (3722 new cases; 129.2 new cases per 100 000; +39%), Morocco (823 new cases; 2.2 new cases per 100 000; -18%), and the United Arab Emirates (719 new cases; 7.3 new cases per 100 000; -21%).

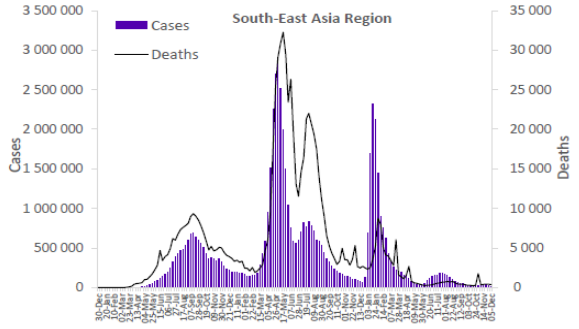
The number of new weekly deaths in the region increased by 81% as compared to the previous week, with 49 new deaths reported. The highest numbers of new deaths were reported from the Islamic Republic of Iran (21 new deaths; <1 new death per 100 000; +425%), Saudi Arabia (11 new deaths; <1 new death per 100 000; -21%), and Afghanistan (five new deaths; <1 new death per 100 000; +400%).



South-East Asia Region

The South-East Asia Region reported over 24 000 new cases, a 33% decrease as compared to the previous week. Two (20%) of the 10 countries for which data are available reported increases in new cases of 20% or greater, with the higher proportional increases observed in Bangladesh (169 vs 110 new cases; +54%) and the Maldives (19 vs 14 new cases; +36%). The highest numbers of new cases were reported from Indonesia (18 587 new cases; 6.8 new cases per 100 000; -38%), Thailand (3961 new cases; 5.7 new cases per 100 000; -8%), and India (1430 new cases; <1 new case per 100 000; -22%).

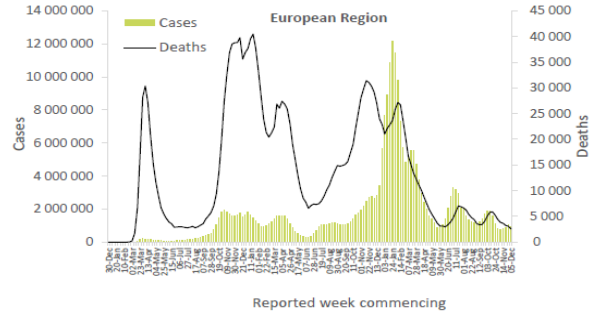
The number of new weekly deaths in the region decreased by 10% as compared to the previous week, with 388 new deaths reported. The highest numbers of new deaths were reported from Indonesia (246 new deaths; <1 new death per 100 000; -19%), Thailand (107 new deaths; <1 new death per 100 000; +2%), and India (30 new deaths; <1 new death per 100 000; +88%).



European Region

The European Region reported over 962 000 new cases, an 11% decrease as compared to the previous week. Nine (15%) of the 61 countries for which data are available reported increases in new cases of 20% or greater, with the highest proportional increases observed in Albania (130 vs 69 new cases; +88%), Montenegro (267 vs 165 new cases; +62%), and Denmark (9918 vs 6266 new cases; +58%). The highest numbers of new cases were reported from France (366 699 new cases; 563.8 new cases per 100 000; -5%), Germany (179 336 new cases; 215.6 new cases per 100 000; -2%), and Italy (153 948 new cases; 258.1 new cases per 100 000; -32%).

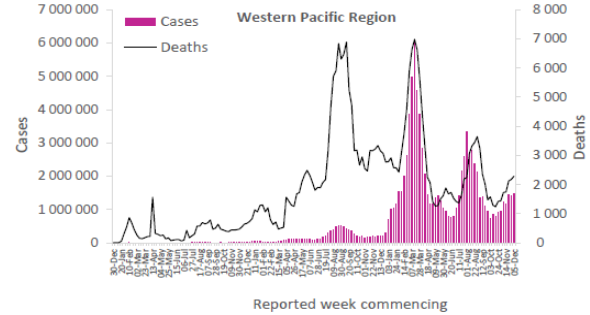
The number of new weekly deaths in the region decreased by 17% as compared to the previous week, with 2586 new deaths reported. The highest numbers of new deaths were reported from France (478 new deaths; <1 new death per 100 000; +4%), Italy (475 new deaths; <1 new death per 100 000; -29%), and the Russian Federation (380 new deaths; <1 new death per 100 000; -3%).



Western Pacific Region

The Western Pacific Region reported over 1.4 million new cases, a 3% increase as compared to the previous week. Three (9%) of the 34 countries for which data are available reported increases in new cases of 20% or greater, with the highest proportional increases observed in the Lao People's Democratic Republic (335 vs 218 new cases; +54%), Cambodia (107 vs 72 new cases; +49%), and Fiji (102 vs 76 new cases; +34%). The highest numbers of new cases were reported from Japan (849 371 new cases; 671.6 new cases per 100 000; +13%), the Republic of Korea (420 392 new cases; 820 new cases per 100 000; +13%), and China (149 674 new cases; 10.2 new cases per 100 000; +2%).

The number of new weekly deaths in the region increased by 5% as compared to the previous week, with 2283 new deaths reported. The highest numbers of new deaths were reported from Japan (1358 new deaths; 1.1 new deaths per 100 000; +28%), the Republic of Korea (340 new deaths; <1 new death per 100 000; -6%), and China (337 new deaths; <1 new death per 100 000; -6%).



Source: https://www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19---14-december-2022

SARS-CoV-2 variants of concern and Omicron subvariants under monitoring

Geographic spread and prevalence

Globally, from 24 October to 20 November 2022, 204 995 SARS-CoV-2 sequences were shared through GISAID. Among these, 204 042 sequences were the Omicron variant of concern (VOC), representing 99.5% of sequences reported globally.

BA.5 descendent lineages remain predominant, with a prevalence of 73.7% as of epidemiological week 46 (14 to 20 November 2022), followed by BA.2 descendent lineages, with a prevalence of 10.4%. BA.4 descendent lineages have declined in prevalence, accounting for 2.0% of sequences within the same reporting period. XBB and descendent lineages account for 3.9%, a trend that is rising. Unassigned sequences (presumed to be Omicron subvariants) account for 9.9% of sequences submitted to GISAID in week 46.

The evolution of Omicron descendent variants continues to show genetic diversification and has resulted in more than 540 descendent lineages, and more than 61 recombinants. However, only some of these descendent lineages continue to increase in prevalence, while others remain at only a few sequence detections. Among the more relevant variant lineages, specific substitutions are accumulating, a genetic pattern referred to as convergent evolution.

Five Omicron subvariants are under monitoring due to relevant genetic variation, rise in prevalence, and/or an observed and continued impact on case incidence in more than one country.5 As of week 46, these five pooled Omicron subvariants under monitoring have replaced previous BA.5 descendent lineages and account for 63.5% of prevalence at a global level. The replacement pattern of these subvariants points to a potential role of specific mutations in growth advantage, probably by immune escape properties (Figure 5).

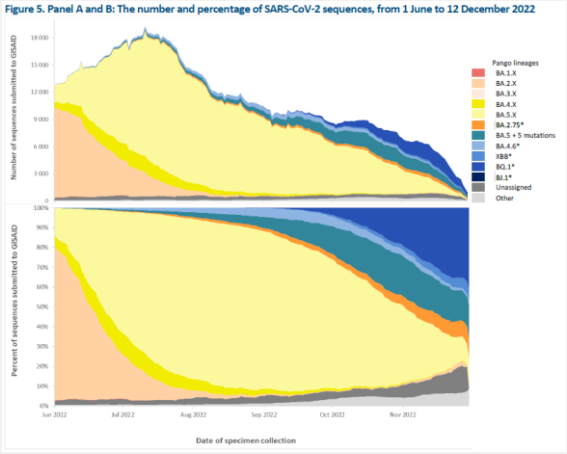


Figure 5 Panel A shows the number, and **Panel B** the percentage, of all circulating variants since June 2022. Omicron sister-lineages and additional Omicron VOC descendent lineages under further monitoring are shown. *BA.1.X, BA.2.X, BA.3.X, BA.4.X* and *BA.5.X* include all BA.1, BA.2, BA.3, BA.4 and BA.5 pooled descendent lineages, except the Omicron subvariants under monitoring shown individually. The *Unassigned* category includes lineages pending for a PANGO lineage name, whereas the *Other* category includes lineages that are assigned but not listed in the legend. Source: SARS- CoV-2 sequence data and metadata from GISAID, from 1 June to 12 December 2022.

BA.2.75* carries the substitutions S:D339H, S:G446S, S:N460K and the S:Q493R reversion. Two notable BA.2.75 variants with additional mutations of interest within the Spike protein are BA.2.75.2 (BA.2.75 + S:R346T, S:F486S, and S:D1199) and CH.1.1 (BA.2.75 + S:R346T, S:K444T, S:L452R, and S:F486S). BA.2.75 was first identified on 31 December 2021 and began to spread in a few countries in the South-East Asia Region. Since its emergence, BA.2.75 has been reported from 85 countries. The five countries reporting the highest prevalence of BA.2.75 are Thailand (53.8%), Australia (25.1%), Malaysia (22.5%), China (18.8%), and New Zealand (16.3%). BA.2.75* became rapidly dominant in India and in Bangladesh; but was then replaced by XBB* without an indication of a significant rise in reported case incidence. From currently available evidence, BA.2.75* has not shown a significantly different phenotype as compared to other Omicron variants in countries where it has become widespread.

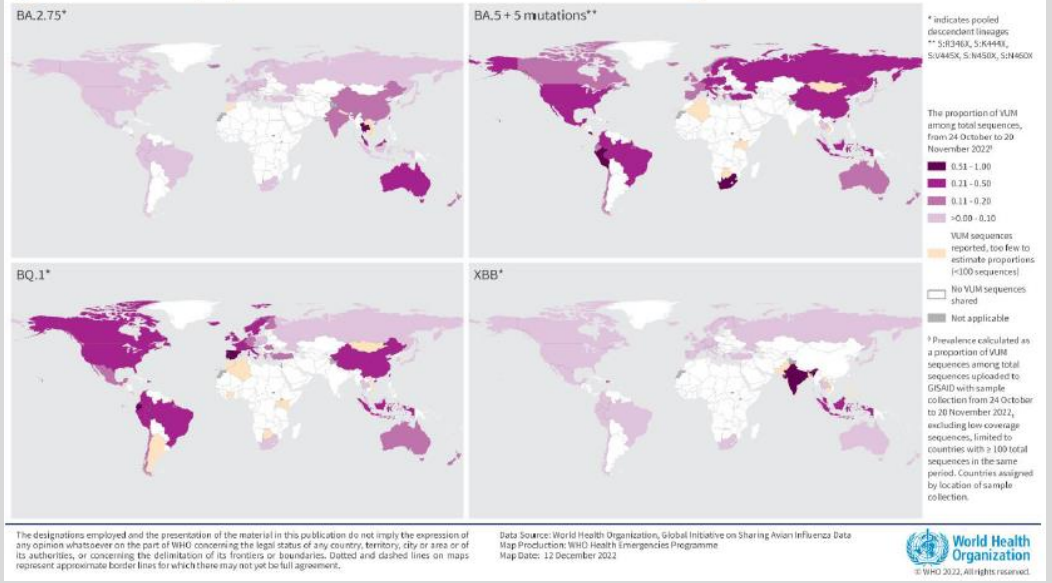
BA.5 with one or several of the **5 mutations** S:R346X, S:K444X, S:V445X, S:N450X, and/or S:N460X is monitored as these mutations have been associated with or are suspected to have an important functional role to the virus (e.g., resistance to neutralization, increased transmissibility). This class of variants has risen rapidly and is detected in 119 countries, accounting for a global prevalence of 15.0%. The five countries reporting the highest prevalence of BA.5 are South Africa (75.4%), Costa Rica (70.9%), Peru (53.5%), Mexico (49.8%), and Brazil (42.4%).

- **BQ.1*** is a BA.5 descendent lineage with additional substitutions S:K444T and S:N460K. The BQ.1 descendent lineage with the highest prevalence is BQ.1.1, and carries the additional mutation S:R346T. BQ.1* is one of the fastest growing variants and has spread to 90 countries, with a prevalence of 33.9% as of week 46. The five countries reporting the highest prevalence of BQ.1* variants are Ecuador (65.5%), Portugal (56.7%), Spain (54.1%), France (48.7%), and Colombia (46.8%).
- **XBB*** is a recombinant of the BA.2.10.1 and BA.2.75 sublineages, first reported on 13 August 2022. Relevant mutations in this recombinant are S:G339H, S:R346T, S:L368I, S:V445P, S:G446S, S:N460K, S:F486S and S:F490S. As of week 46 , XBB* has a global prevalence of 3.8% and it has been detected in 70 countries. The five countries with the highest prevalence of XBB* are India (62.5%), the Dominican Republic (48.2%), Singapore (47.3%), Malaysia (40.9%), and Indonesia (29.3%).
- **BA.2.30.2** carries the mutations S:K444R, S:N450D, S:L452M, S:N460K and S:E484R. As of week 46, BA.2.30.2 has a global prevalence of 0.3%. Countries with the highest prevalence are Iceland (4%), Slovenia (2%), Australia (1.1), Colombia (0.9%) and the Republic of Korea (0.6%).

As presented above, Omicron subvariants under monitoring share several relevant mutations but show different patterns of geographic spread. **BA.2.75** and **XBB** emerged and increased in prevalence mainly in countries in the South-East Asia and Western Pacific regions. Both variants are rising slowly in prevalence, but current data do not suggest a consistent association with an increase in new infections. Co-circulation of BA.2.75 and XBB occurs in multiple countries. **BQ.1** and **BA.5 + 5 mutations** have emerged, risen in prevalence, and spread to many countries rapidly.

Whether the increased immune escape capacity of this new series of Omicron descendent variants is sufficient to drive new infection waves appears to depend on the regional immune landscape, the size and timing of previous Omicron waves, and the COVID-19 vaccination coverage. While further studies are needed, the current data do not suggest that there are substantial differences in disease severity for BA.2.75, BA.5 + 5 mutations, BQ.1, and XBB.

Figure 4. Presence and proportion of selected Omicron subvariants under monitoring, from 24 October to 20 November 2022



SARS-CoV-2 variants of concern and Omicron subvariants under monitoring

Table 2. Relative proportions of SARS-CoV-2 sequences from 24 October to 20 November 2022, by specimen collection date

Lineage	Countries	Sequences	2022-43	2022-44	2022-45	2022-46
BA.1*	186	2 209 253	0.03	0.02	0.02	0.01
BA.2.3.20*	48	1190	0.29	0.36	0.30	0.30
BA.2.75*	85	34 728	4.60	5.58	6.57	7.21
BA.2*	171	2 036 989	0.54	0.97	1.09	1.44
BA.3*	32	799				0.00
BA.4.6*	94	50 301	3.23	3.00	2.43	1.77
BA.4*	131	117 870	0.49	0.35	0.30	0.25
BA.5 + 5 mutations	119	123 378	20.61	19.69	17.82	16.87
BQ.1*	90	72 044	17.93	22.35	27.76	33.89
BA.5*	150	1 278 809	40.81	33.49	26.80	18.26
XBB*	70	9988	1.80	2.64	3.65	3.77
Unassigned	89	124 702	5.34	7.00	7.50	9.93
Other	205	6 661 808	4.33	4.55	5.78	6.29

Table 2 shows the number of countries reporting the highlighted lineages, the total number of sequences reported and the prevalence of the lineages for the last four weeks. *BA.1.X, BA.2.X, BA.3.X, BA.4.X* and *BA.5.X* include all BA.1, BA.2, BA.3, BA.4 and BA.5 pooled descendent lineages. The *Unassigned* category includes lineages pending for a PANGO lineage name, whereas the *Other* category includes lineages other than those listed in the legend. Data source: sequences and metadata from GISAID, retrieved on 12 December 2022. Proportions are shown as percent.

Vaccine effectiveness (VE) of primary series and booster vaccination against the Omicron variant of concern

Forest plots displaying the effectiveness of COVID-19 vaccines against Omicron are available on View-hub.org and updated regularly (last updated 8 December 2022). All data are collected as part of an ongoing systematic review of COVID-19 vaccine effectiveness studies (methods described here). The following plots are available:

- Primary series and booster dose vaccine effectiveness for all vaccines with available data;
- Vaccine effectiveness for various sub-populations of interest;
- Absolute and relative vaccine effectiveness of a second booster dose (for more information on interpreting relative VE, see the special focus on relative vaccine effectiveness from the June 29th Weekly Epidemiological Update);
- Duration of vaccine effectiveness over time for vaccines with available data.

Neutralizing antibody studies can provide early insights into vaccine performance against new and emerging variants of concern and their subvariants. For more information about the capacity of COVID-19 vaccines to neutralize various Omicron subvariants, please see a recent systematic review of post-vaccination neutralization responses to Omicron BA.1, BA.2, BA.3, and BA.4/BA.5. In addition, results of a living systematic review of neutralization studies are updated regularly on VIEW-hub.org (last updated 1 December 2022).

Source: https://www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19---14-december-2022

COVID-19 in China

bluedot

Since January 2020, China's "Zero-COVID Policy" has used public health measures such as detailed contact tracing, mass testing, strict quarantine policies, and nationwide lockdowns to maintain limited, sporadic community transmission within the country. The goal was to reach zero new infections whenever outbreaks arose.

With the lifting of restrictions and low baseline immunity, it is expected that further outbreaks will occur. The major challenge will be to strike a balance between the relaxation of some restrictions with expected rapid transmission.

On December 7, 2022, the National Health Commission held a press conference to announce that the country will remove the centralized quarantine mandate and relax some measures across the nation. This includes:

- No COVID-19 testing requirements in public places such as bars, restaurants and other establishments (apart from medical and educational facilities).
- No longer checking for negative COVID-19 test results among all incoming travellers.
- No longer requiring negative tests to ride public transport.
- No more mandatory hospitalization or mass quarantines.

On November 30, 2022, Guangzhou, the fifth populous city in the nation, was one of the first cities to cancel mass testing, lift lockdown measures, and resume public transport.

In addition, Beijing exempted COVID-19 testing requirements for certain groups, which include long-term, homebound older adults, students attending online classes, and individuals working from home. [1]

Hospital Capacity in China

As China moves away from its Zero-COVID policy and expects a surge in both COVID-19 and other respiratory illnesses, health authorities plan to strengthen the healthcare system. The country aims to build more hospitals that focus on treating moderate to severe COVID-19 patients. [15] Going forward, there will be no more mandatory hospitalization or mass quarantines.

Guangzhou, the capital and largest city of Guangdong province in southern China, reports it will be increasing the construction of outpatient departments and clinics specifically for residents with febrile illness. The facilities are meant to mitigate against an overburdened healthcare system during the fall and winter months, when Guangdong usually experiences a peak in respiratory illnesses. [16]

News media reports that residents of Guangzhou are encouraged to use the available telehealth options for non-emergency medical consults. [17] All individuals in the country with mild or asymptomatic COVID-19 infections are encouraged to isolate at home, which will alleviate additional pressure on healthcare systems. [18]

What affects might the policy changes in China have globally?

Throughout the global pandemic China's Zero-COVID measures have resulted in supply chain bottlenecks and disruptions which have had effects around the world. [19] As China lifts restrictions, cases are expected to increase rapidly. This may cause additional workplace absences with the potential for future lockdowns for affected buildings which, depending on scale, could have further effects on the global supply chain.

Impact on supply chains will depend on various factors including: the real-world efficacy of the vaccines under deployment, whether vaccines which cover more recent subvariants are deployed, whether newer vaccines prove more effective at preventing infection, and the rate and extent of vaccine uptake among the older adult population.

Please find further information here

Global COVID-19 Trends and Influenza News

bluedot

Global Overview:

1. Since October 2022, **116 countries have reported influenza cases**, 99 of which are within the northern hemisphere.
   - Of the countries reporting data to the WHO, **54 countries are reporting increasing trends over the last 6 weeks** starting October 3 to November 7, 2022. 91% are located within the northern hemisphere.
   - **90 countries are observing declining or stable influenza activity**, of which 15% are located within the southern hemisphere.
   - The classification of influenza activity by hemisphere can be inconsistent due to the variations observed in regions closer to the equator. The WHO describes 18 influenza transmission zones (regions that share similar transmission patterns and seasonality). [2]
   - **It should be noted that changes in trends can be influenced by volume and testing behaviours.**
2. Among countries with strain information (n=94), fewer are reporting influenza B (56) in comparison with influenza A (84).
   - **75 countries are reporting a predominance (>50%) of influenza type A** in the most recently available weekly data (weeks 41 to 47) compared to 21 countries reporting a predominance of influenza type B. The majority of countries reporting a higher proportion of influenza B have lower case volumes.

Country-level Trends:

The top 5 countries reporting the **highest increase in activity** over 6 weeks are the **United States, Canada, Spain, Ukraine, and Mexico**.

The most recent peak case values for the above countries are slightly higher than the average peak (mean) observed in previous seasons (2012-2020) but none have surpassed the recorded maximum levels. The above countries maintained a steep increase in activity within the timeframe. However, United States, Canada, and Spain report a recent decrease in the percent test positivity, which may be an early sign of slowing epidemic growth. Mexico is reporting a steep increase in percent test positivity, and may continue to observe increasing epidemic growth. **Overall activity so far is not significantly greater than pre-pandemic levels, although some countries are demonstrating epidemics that began earlier than usual.**

The top 5 countries/regions reporting the largest decrease in activity over 6 weeks are Argentina, Iran, Qatar, England (United Kingdom), and Kazakhstan.

17 countries have reported a peak in cases since October. Of these, four countries (Chile, Iran, Argentina, and Laos) observed unusually high influenza activity (**high cases and percent test positivity**) that has since begun to decline.

As countries in the southern hemisphere, Chile and Argentina observed extended out-of-season activity with both early reports of cases and longer seasonal activity. Chile observed at least two distinct peaks in activity. The later peak, occurring near the tail of the season, was larger than peak activity reported in previous seasons (2012-2020). Argentina also observed two distinct peaks outside of the expected seasonal timeline.

Some of the countries with high percent positivity (in the past 180 days) include Mexico, Belgium, Italy, Bolivia, Suriname, Maldives.

High percent test positivity indicates there may be a higher burden of illness than what is being captured by case data, relative to other countries or previous years with comparable cases and lower test positivity.

Mexico is reporting increasing test positivity paired with a slightly early increase in cases that continues to trend upwards.

Bolivia is reporting increasing percent positivity, however reported cases are within range of previous years.

The remaining countries are reporting current decreasing or sporadic trends for percent positivity.

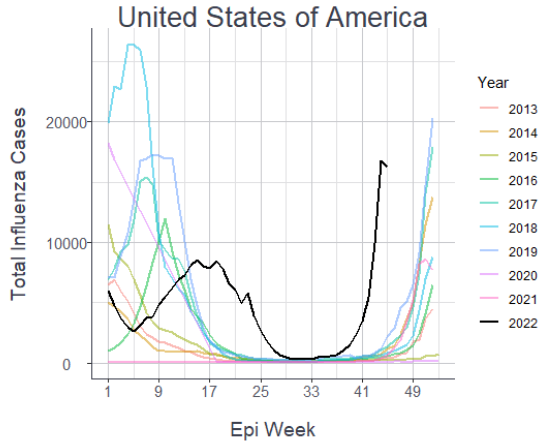


Figure 1. Influenza trends (weekly cases) in the United States. Solid dark line encompasses cases for the 2021-2022 and 2022-2023 season.

Along with several other countries, **the United States is observing out-of-season influenza trends**. In North America, the season spans the fall and winter months (peak December to February). However, the **2021-2022 season occurred later than expected** (February to July) peaking in April. This is followed by an **earlier start to the 2022-2023 season mid-September with reported cases reaching pre-pandemic levels**. The percent positivity indicates that the current case burden is comparable in severity to previous years. Case burden and other indicators of severity as of December 3 are comparable to levels observed during peak activity pre-pandemic. The most recent observation (epi week 45) suggests **early signs of peaking trends** (decreasing percent positivity rates); however, additional observations are required to infer further trends.

OUTLOOK

Increasing circulation of influenza can be expected across several countries, extending the existing burden on healthcare systems due to the concurrent high burden of several respiratory illnesses and depleted workforces. Regions observing disruptions in healthcare delivery due to high burdens of disease and insufficient resources may continue to experience these challenges, especially in the northern hemisphere. **While some countries may be observing earlier-than-usual seasonal trends, it is too early to determine whether activity will exceed pre-pandemic years, or peak earlier-than-usual.** With the upcoming holiday season, public health communication and preventative measures (i.e., vaccination, masking, improving indoor air quality, strategic use of testing, and supporting stay-home/sick policies) are important to limit the spread of respiratory viruses, and protect vulnerable populations and the healthcare sector.

Case burden and severity indicators in the United States

	December 03, 2022 *(Week 48)*	December 04, 2021 *(Week 48)*	Peak Pre-pandemic Mean Activity *(2018 - 2020)*
Weekly Percent Positivity	24.8%	2.6%	25%
Cumulative Influenza Hospitalization Rate	26 hospitalizations per 100,000 population	0.7 hospitalizations per 100,000	28.5 hospitalizations per 100,000
Pediatric Deaths *(week total/ seasonal total)*	7 deaths/21 cumulative deaths	0 deaths / 29 cumulative deaths	9 deaths / 39 cumulative deaths
Mortality Surveillance *(includes deaths due to Pneumonia, Influenza, and COVID-19)*	10.3% *above threshold* (968 COVID, 246 influenza)*	17.5% *above threshold* (2,374 COVID, 5 influenza)*	7.50%

*threshold refers to the epidemic threshold based on seasonal baselines for expected mortality. [3,4,5,6,7]

Other Infectious Disease Outbreaks/ Conflicts

bluedot

Imported Cholera cases in United States in 2022

The United States Centers for Disease Control and Prevention (CDC) report that there has been a cumulative total of eight imported cholera cases into the country since the start of 2022. The CDC notes that infected travellers have returned from Pakistan, Iraq, and Bangladesh and have experienced mild to no symptoms. Imported cases remain rare and there is low risk of community transmission in the United States. However, due to the multiple cholera outbreaks occurring globally in the recent months, the CDC advise American clinicians and medical facilities to be on alert for possible cases to ensure prompt treatment. Individuals travelling or living in areas with high risk and cholera transmission are advised to receive vaccination.

CONCERN LEVEL: **LOW**

SOURCE: CDC

Scarlet fever and invasive Group A Streptococcus infection - multi-country

As of 8 December 2022, at least five Member States in the European Region, reported to WHO an increase in cases of invasive group A streptococcus (iGAS) disease and in some cases also scarlet fever. An increase in iGAS-related deaths has also been reported in some of these countries. Children under 10 years of age represent the most affected age group. The observed increase may reflect an early start to the GAS infection season coinciding with an increase in the circulation of respiratory viruses and possible viral coinfection which may increase the risk of invasive GAS disease. This is in the context of increased population mixing following a period of reduced circulation of GAS during the COVID-19 pandemic. In light of the moderate increase in cases of iGAS, GAS endemicity, no new emm gene sequence type identified and no reports of increased antibiotic resistance, WHO assesses that the risk for the general population posed by iGAS infections is low at present.

CONCERN LEVEL: **LOW**

Source: WHO, ECDC

Vaccine-derived Poliomyelitis in United States –FOLLOW UP NOTE-

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

This is a follow-up on the cVDP-2 outbreak in New York State, USA. It was first detected in Rockland County in July 2022 in a patient with paralysis. What is new in this report?: On December 12, 2022, the New York State Department of Health announced that the state's disaster emergency order, which began on September 9, 2022, will not be renewed as wastewater surveillance shows that the detection of polio has decreased over time. However, the state reports that wastewater surveillance initiatives and vaccination campaigns will continue.

CONCERN LEVEL: **LOW**

Source: Department of Health NYS; GOV NY

Measles Ohio, United States **Source: Colombus GOV**

SUBLOCATIONS AFFECTED: Colombus, Franklin Country, Ohio

The first case of measles in Colombus, Franklin County, in the state of Ohio was confirmed in early June 2022. Since then cases have been growing and have nearly tripled since November. Confirmed cases have risen from 18 in mid-November to 50 as of December 2. Official information indicates that at least 20 out of the 50 cases have required hospitalization, although no deaths have been reported. Thus far, all cases are in children without history of measles immunization. Health officials are trying to identify the geographic spread of the outbreak and expect the number of cases to grow for months. In a press conference, health officials stated that at least 25% of the county's 2-year-olds have not been vaccinated against measles, indicating that tens of thousands of children in the county are vulnerable to the highly infectious virus that can easily turn severe and even life-threatening in young children. Local health officials are now working closely with the CDC and the Nationwide Children's Hospital to address the cases and try to curb the outbreak.

CONCERN LEVEL: **High Concern**

Unknown Meningitis in Mexico

In November the Department of Health of the state of Durango in Mexico issued an alert regarding several cases of meningitis in the state. According to the statement, all cases have been identified in patients with a recent history of surgical procedures in private clinics and the use of a specific sedative agent that has been recalled in all institutions. Investigations showed the fungal pathogen Fusarium solani has been identified through microscopy in an anesthesia agent used in private clinics linked with the reported cases. After several more cases in November in December cases of meningitis have been unofficially reported in an additional state, Guanajuato. According to news media, at least 15 cases and 4 deaths were allegedly identified via anonymous comments from private health clinics in the state. It is unclear whether these cases are related to the meningitis outbreak associated with contaminated anesthetic agents in the state of Durango. The Federal Commission for the Protection against Health Risks stated that following PCR testing, Fusarium solani has not been found in the medications used in relation to the reported meningitis cases but according to a report from the Mexican Federal Health Secretariat, of the 71 cases of meningitis, 21 have positive PCR tests for F. solani, indicating that individuals have become infected during their hospital stays. Investigations to identify at what point during the anesthesia procedures F. solani contamination may have occurred are ongoing.

CONCERN LEVEL: **LOW**

Source: MediaNews; GOVMexico

Influenza Europe;

Weeks 49/2022 (05 December - 11 December 2022)

- The percentage of sentinel primary care specimens from patients presenting with ILI or ARI symptoms that tested positive for an influenza virus remained above the epidemic threshold (10%) and increased to 23% from 22% in the previous week.
- Influenza activity is increasing across the Region with 27 countries reporting widespread activity and/or medium to very-high intensity.
- Georgia, Germany, Italy, Kyrgyzstan, Lithuania, Portugal and Slovakia reported seasonal influenza activity above 40% positivity in sentinel primary care.
- Both influenza type A and type B viruses were detected with A(H3) viruses being dominant in sentinel surveillance systems but with A(H1)pdm09 viruses dominating in non-sentinel surveillance systems.
- Hospitalized patients with confirmed influenza virus infection were reported from ICU wards, other wards and SARI surveillance. Infections due to type A viruses dominated. Among 126 SARI cases, 17% were due to A(H3) and 57% due to A(H1)pdm09. The proportion of infections due to type A viruses continued to increase. This trend is driven largely by countries in the Eastern part of the region, in which the proportion of type B viruses is decreasing.
- When comparing the different influenza type distributions by system, it is important to consider that different sets of countries report to each system.

Source: Flu News Europe

Other Infectious Disease Outbreaks/ Conflicts

Polio Outbreaks (Part 2): Global Wildtype Poliovirus-1 Outbreaks

Background:

Poliomyelitis, or 'polio', caused by the poliovirus (a single-stranded RNA enterovirus), is a vaccinepreventable disease that can cause damage to motor neurons, result in permanent paralysis or death. Children under the age of five are most affected.1 According to the WHO, up to 90% of individuals infected with polio are asymptomatic or experience mild symptoms, while the CDC indicates that 70% of infected children in the USA are asymptomatic; however, approximately one in 200 infected individuals can develop paralysis. 2,3 For more information on poliovirus transmission and clinical manifestations, please see our previous Intelligence Report on Polio (2021).

The risk of international spread of poliovirus remains a Public Health Emergency of International Concern (PHEIC), as determined at the 33 rd meeting of the Polio International Health Regulations (2005) (IHR) Emergency Committee that took place on October 12, 2022. 4 Throughout 2022, BlueDot has noted substantial setbacks to ending the PHEIC, with at least five new countries reporting cases and/or environmental samples of polio, following years of eradication.

Three poliovirus serotypes exist: Poliovirus Type 1, 2, and 3 (PV1, PV2, and PV3). Wild poliovirus type 1 (WPV1) is endemic in Pakistan and Afghanistan, whereas wild poliovirus type 2 (WPV2) and wild poliovirus type 3 (WPV3) were globally eradicated in 2015 and 2019, respectively.

There is no cure or specific treatment for paralytic polio, however it can be prevented by vaccination. Vaccine immunity is serotype specific and there is no cross protection conferred between serotypes. The level of immunity required in a population to prevent further disease spread (herd immunity) has previously been estimated as 80% by the WHO.5

Polio surveillance 6 – The Global Polio Eradication Initiative (GPEI) carries out three main types of surveillance, two of which are pertinent to this report:

1. Acute Flaccid Paralysis (AFP) Surveillance is the primary surveillance used to identify potential polio cases in children under the age of 15. Individuals with symptoms of AFP undergo testing, and if polio is identified, genotype information can also be used to determine the likely origin location of the strain based on the degree of similarity to known circulating strains.
2. Environmental Surveillance (ES) consists of testing wastewater and other select environmental samples for the presence of poliovirus. ES is used to supplement AFP surveillance as an early warning indicator of community circulation of poliovirus, before the emergence of a case of AFP, and may be performed in a systematic/frequent basis or ad-hoc determined by the level of risk in the location.

Currently, there are two major ongoing polio outbreaks globally – one involving wildtype poliovirus 1 (WPV1), and one involving circulating vaccine-derived poliovirus 2 (cVDPV2). This report is part 2 of 2 reports and will focus on the countries reporting WPV1 outbreaks. Please see Part 1 of this report for information on current cVDPV2 outbreaks.

Situation overview:

WPV1 outbreaks in endemic countries

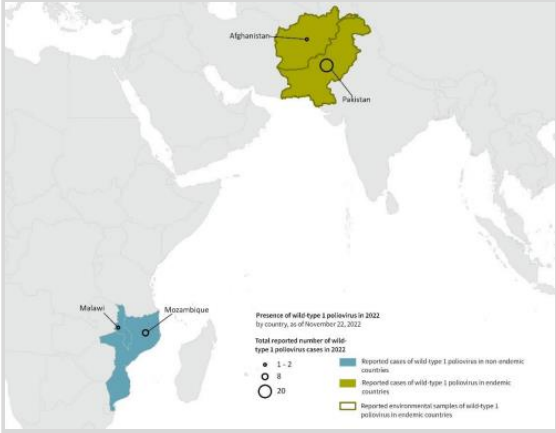
Only two countries in the world are currently considered endemic for polio as they have had uninterrupted transmission – Afghanistan and Pakistan; these countries will be referred to as "endemic countries". All other countries will be referred to as "non-endemic countries", though some are at risk of re-emergence.

Approximately 6% of all detected cases of AFP in 2022 have been attributed to WPV1. Endemic countries made up approximately 71% of all WPV1 cases, as of November 22 this year.

During the COVID-19 pandemic, mass vaccination campaigns were disrupted and concerns of a probable resurgence of polio cases were continuously raised. However, the reported number of cases decreased for both endemic countries throughout 2021.

This is likely due to several reasons:

- Local operational circumstances during the COVID-19 pandemic, including compliance with physical distancing measures and travel restrictions imposed to slow spread of COVID-19, may have contributed to a decline in AFP cases.
- Overall polio vaccine coverage at the beginning of the COVID-19 pandemic may have been high enough due to global eradication efforts.
- While underdetection of cases during the pandemic is possible, it is unlikely a major contributing factor to the decline in cases reported, as any individual that presents with AFP is required to undergo testing (as part of the polio eradication initiative).



Afghanistan7 : The country confirmed four cases in 2021, and two cases in 2022, as of November 22. The first case in 2022 was detected in Paktika province and the second in Kunar province; both provinces are in the East, sharing a land border with Pakistan.

Pakistan 8 : Pakistan reported one case in 2021, but reported a large increase in 2022, with 20 reported cases, as of November 22. In addition to the human cases, there has been a geographic expansion of positive environmental samples. Official information indicates that WPV1 environmental samples have been detected across the districts of Khyber Pakhtunkhwa (KP), Punjab, Sindh, and Islamabad, bringing the total to 36 environmental samples as of November 29.9 However, no cases of paralytic polio have been reported outside of southern KP province.

Multi-country outbreak of WPV1 in non-endemic countries

Malawi10: In 2022, as of November 22, one human case has been reported. It was reported on February 17, 2022 and is the first human case of WPV1 in almost 30 years in the country. The case was identified in a 5-year old child and was first notified as a case of circulating vaccine-derived poliovirus type-2 (cVDPV) in January 2022. However, genome sequencing carried out in February 2022 confirmed that the virus was WPV1 and is genetically linked to the strain circulating in Sindh province, Pakistan.

Mozambique11: In 2022, as of November 22, eight cases of WPV1 have been detected in the country, all in Tete province. On May 18, 2022, health authorities confirmed the first human case of WPV1 in almost 30 years in Tete province, Mozambique. Genomic sequencing indicated that the case is genetically linked to the strain circulating in Pakistan since 2019 and the case of WPV1 in Malawi. On July 30, 2022, three additional cases of paralytic polio were confirmed in Tete province. The virus strains in two of these cases were closely genetically linked to the first case detected in the country earlier in the year, indicating community circulation of WPV1 within the province. The virus strain from the remaining case was more closely linked to the strain found in Malawi.

Public Health Response: Following the detection of WPV1 cases in Malawi, a mass polio vaccination campaign was launched in Malawi as well as several neighbouring countries, including Mozambique, Tanzania, and Zambia.12 As of July, all four countries had completed at least two rounds of vaccinations, with over 36 million doses administered, and all countries went on to complete a third and fourth round of vaccinations. 13 Additionally, Zimbabwe also launched a mass vaccination campaign later in the year, aiming to vaccinate at least 95% of the country's children that are under the age of five (approximately 2.6 million children).14

Other Infectious Disease Outbreaks/ Conflicts

Polio Outbreaks (Part 2): Global Wildtype Poliovirus-1 Outbreaks

bluedot

Reasons for Concern

2022 is the first year since at least 2016 when cases of WPV1 have been detected in non-endemic countries. Africa was declared free of all types of wild poliovirus in August 2020, and the last cases of WPV1 in Malawi and Mozambique were detected in 1992 and 1993, respectively.[15] The re-emergence of WPV1 in non-endemic countries is due to several reasons, including the disruption of mass vaccination campaigns during the COVID-19 pandemic.

As long as WPV1 is prevalent in any part of the world, there will always be a risk of importation to other parts of the world and subsequent spread. There is evidence of polio importation into non-endemic countries from an endemic country, highlighting disease spread via population movement. The origin of the multi-country WPV1 outbreak in non-endemic countries (Malawi and Mozambique) is likely to have been in Pakistan, given the close genomic links of the strains detected in Malawi and Mozambique with the strains in Pakistan. The risk of subsequent spread upon importation is increased for regions with suboptimal vaccine coverage and poor sanitation.

There is now evidence of community circulation within Mozambique. There are likely two transmission chains of WPV1 in the country – one is represented by the genomic links between the case in Malawi and one of the cases in Mozambique; and the other transmission chain is within Mozambique, as represented by the genetic similarities between the other three cases detected in the country.[16]

Historically, Mozambique has had challenges with reaching near-universal vaccine coverage.[17] This is partially, due to the country's large geographic spread with a substantial proportion of individuals living in remote regions, which renders it difficult for vaccination campaigns to reach these locations. While the country has carried out four rounds of vaccination campaigns and the quality of the immunization response is improving, coverage has been insufficient to halt local transmission, as evident by cases being reported as recently as August.

Additionally, the administration of the oral polio vaccine (OPV) in response to the re-emergence of WPV1 may also pose a risk of cVDPV in regions with low vaccine coverage. As noted in our previous report on cVDPV outbreaks, when OPV is administered to children, the weakened vaccine virus is excreted in their stools and can spread from person to person, which can give further immunity in the population. However, in regions with low vaccine coverage, the vaccine-derived virus can also accumulate mutations as it passes from one person to another over time. If enough mutations arise, the virus can develop into a neurovirulent form that can cause paralysis and continue to spread as circulating vaccine-derived poliovirus (cVDPV).

Outlook

Countries most connected to locations reporting WPV1 are at high risk of importation of polio, and those with the lowest vaccine coverage are at highest risk of paralytic polio outbreaks.

Globally, 54 countries have an estimated vaccine coverage below 80% (herd immunity threshold defined by the WHO), as of 2021. Most of these countries are in Africa, South America, and Southeast Asia. Several countries in Africa are likely at highest risk for the regional spread of polio as they have reported cases of cVDPV and the re-emergence of WPV1 (Figure A2 in Appendix 2) in 2022 and have some of the lowest immunization estimates.

Due to porous international borders, neighbouring countries of Mozambique, where there is community circulation of WPV1, are at high risk of importation of WPV1 via land border and ground-based movement (Figure 2). These countries include: Eswatini, South Africa, Tanzania, Zambia, and Zimbabwe, among which both Eswatini and Tanzania have an estimated vaccine coverage of less than 80%, putting them at high-risk for cases of paralytic polio.

There is likely a lower risk of spread via ground-based travel between Afghanistan or Pakistan and their neighbouring countries, due to their land borders being more restrictive for travellers.

International spread of polio via air travel from Pakistan, Afghanistan, and Tete province (Mozambique)

As a proactive approach to identify locations at highest risk of polio importation via air travel, BlueDot carried out an analysis using air travel data to assess the international spread of polio from countries with evidence of community circulation of WPV1.

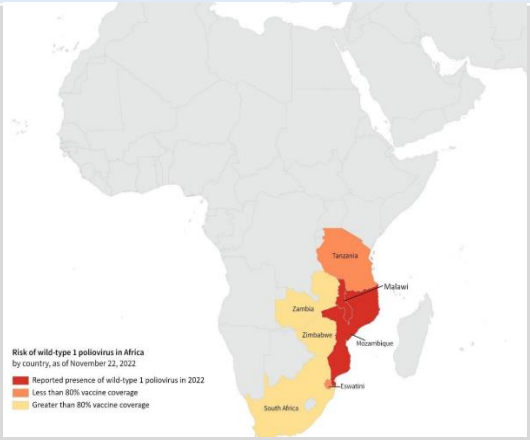


Figure 2: Map of Africa, highlighting countries that share a land border with countries that have reported the presence of WPV1 in 2022. Countries that have reported an estimated vaccine coverage of less than 80% are indicated in orange. Countries that have reported an estimate vaccine coverage of over 80% are indicated in yellow.

To assess locations that may be at highest importation risk of WPV1 and risk of paralytic polio, BlueDot examined national vaccine coverages and outbound air travel volumes from the three locations of interest from the time period of one month before the detection of a WPV1 case in the region until the most recently reported case of WPV1 (Figure 3). Malawi was not included in this analysis because there is no evidence of community circulation. The single case reported in 2022 was imported from Pakistan and no other cases or positive environmental samples have been subsequently reported in the country.

The top three countries that are most connected to Pakistan, Afghanistan, and Tete province via air travel are: the United Arab Emirates, Saudi Arabia, and the United Kingdom (Table 1). Though these countries have not reported cases of WPV1 in at least two decades and have a high estimated national vaccine coverage, there can be variability in coverage across countries, and any communities with suboptimal coverage are at risk.

Iraq is among the top 25 countries most connected to countries reporting WPV1 and has a vaccine coverage estimate of lower than 80% (herd immunity threshold determined by the WHO) and hence, may be more susceptible to paralytic polio outbreaks following importation.

South Africa and India are also among the most connected countries to the three locations of interest and have an estimated vaccine coverage of 86% and 85%, respectively. While their estimated national vaccination coverage is above the 80% threshold, they would be relatively more susceptible to cases of paralytic polio following importation should there be communities with suboptimal vaccine coverage.

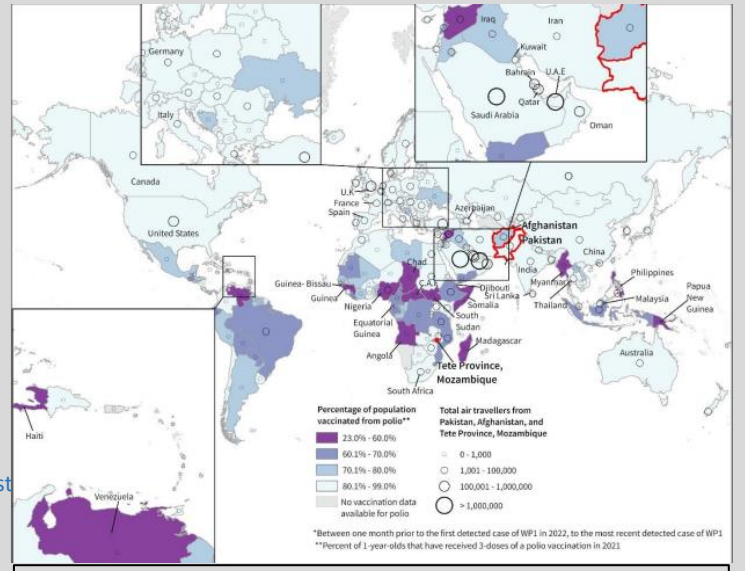


Figure 3: World map of total volume of air travellers from select locations that have reported community circulation of WPV1 in 2022, including Pakistan, Afghanistan, and Tete province (Mozambique), and national polio vaccination coverage estimates, reported in 2021 (as of September 28, 2022). The top 25 most connected countries as well as countries that have the lowest vaccine coverage globally (in purple) have been labelled. Flight data source: OAG.

Other Infectious Disease Outbreaks/ Conflicts

Polio Outbreaks (Part 2): Global Wildtype Poliovirus-1 Outbreaks

bluedot

Rank of countries receiving highest volume of air travellers	Country	Total air passengers received from Pakistan, Afghanistan, Tete province	National vaccine coverage estimates (%)
1	United Arab Emirates	1,432,799	96
2	Saudi Arabia	1,311,147	97
3	United Kingdom	307,251	93
4	Qatar	252,433	98
5	Oman	159,095	99
6	Turkey	142,611	95
7	United States	122,833	92
8	Bahrain	113,091	99
9	Canada	68,421	92
10	Kuwait	65,122	94
11	Thailand	58,838	97
12	Malaysia	54,515	95
13	Italy	45,620	94
14	Spain	37,586	92
15	Iraq	33,792	78
16	Germany	28,843	91
17	Australia	27,796	95
18	Azerbaijan	24,293	93
19	Iran	24,149	98
20	France	23,631	96
21	Sri Lanka	22,496	96
22	Pakistan	21,660	83
23	China	20,396	99
24	South Africa	19,036	86
25	India	18,917	85

Table 1: Top 25 countries that received the largest volume of cumulative travellers from Pakistan, Afghanistan, and Tete province (Mozambique) for the time period from one month before the detection of the first WPV1 case in 2022 until the month of the most recent case, and their national polio vaccine coverage estimates, as of 2021. Flight data source: OAG.

Figure A1: Timeline of detection of poliovirus human cases or environmental samples (wildtype and circulating vaccinederived poliovirus) in countries that are observing a resurgence in 2022. Source: BlueDot surveillance.

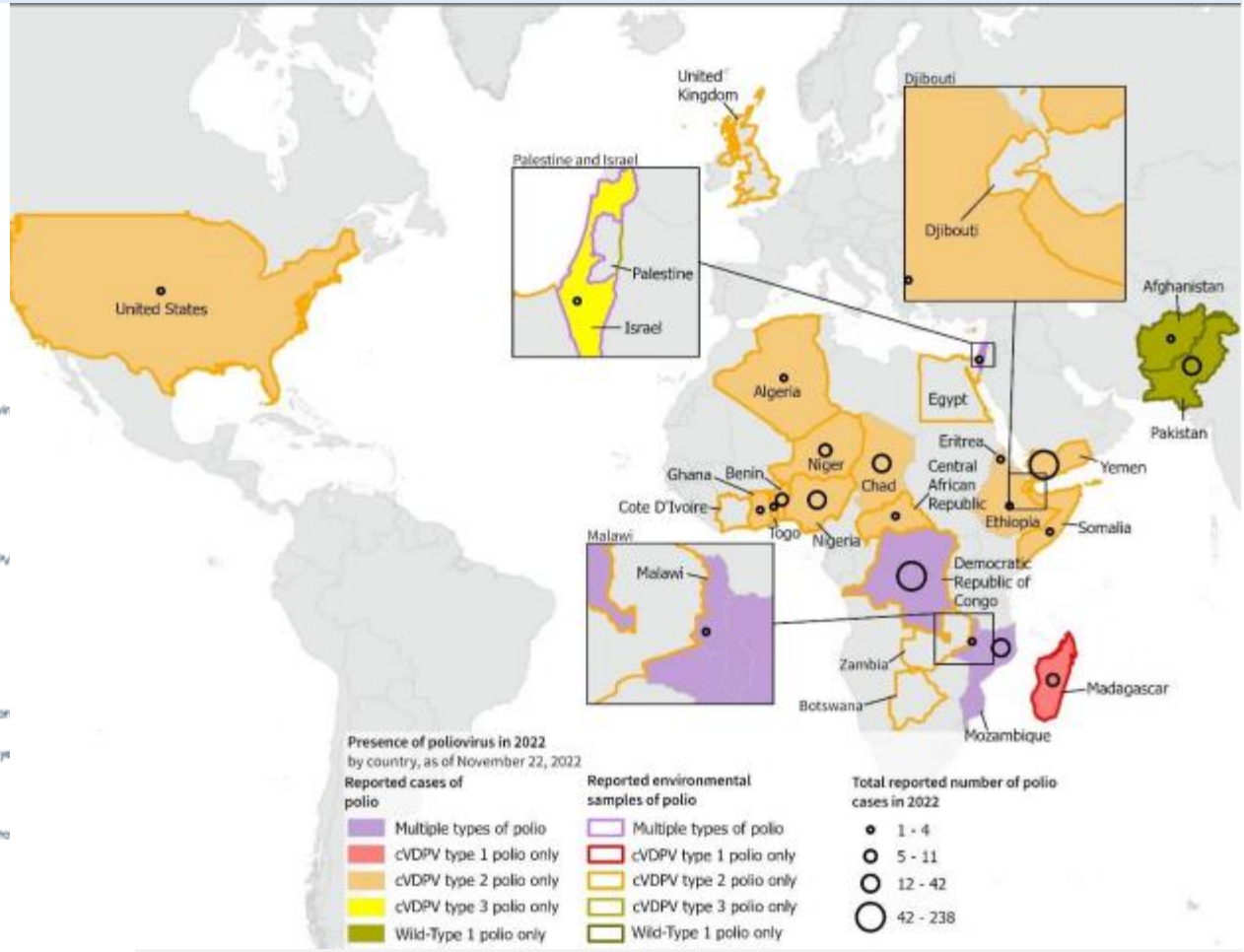


Figure A2: Global map of countries that have reported presence of wildtype poliovirus and circulating vaccinederived poliovirus in humans or in environmental samples in 2022 (as of November 22, 2022), by strain. Source: GPEI and BlueDot surveillance.

Source: https://mcusercontent.com/ab84a833923e562d0999bf440/files/f840f768-10f4-a9d3-992e-c39262a28146/BlueDot_IntelligenceReport_Polio2022_Part2_1_.pdf

Ukraine – Situation Report

Situation Report (19 December 2022)

Highlights

- Aid worker killed during an attack that hit an aid distribution point in Kherson on 15 December.
- Waves of attacks on energy infrastructure continued across Ukraine, leaving millions of people without electricity, disrupting water supply and heating systems.
- Hostilities in the east and south continued unabated, affecting civilians, including aid workers, in Khersonska and Donetska oblasts.
- Incidents of reported mine accidents are increasing in Kharkivska, Khersonska and Mykolaivska oblasts.
- Humanitarians have reached 5 million people with cash assistance worth US$1 billion.

KEY FIGURES

17.7M
People in need

11.5M
People targeted

13.6M
People reached as of 19 December 2022

5.59M
Internally displaced people

7.83M
Refugees in European countries

Humanitarian situation overview

Regular waves of attacks on energy infrastructure continue to cause destruction and leave millions of people across Ukraine with no electricity, disrupting water supply and heating systems, while temperatures have fallen below zero in most parts of the country. The attacks have also damaged other civilian infrastructure, including homes, as well as killed and injured civilians across Ukraine over the past couple of weeks.

The most recent attack in the early hours of 19 December, reportedly hit infrastructure in at least 6 of Ukrainian's 24 oblasts – mainly in the centre and south of the country, injuring at least two civilians, and damaging several buildings in Kyivska oblast, according to the authorities. The authorities have implemented emergency power outages in 10 oblasts and in Kyiv. Earlier on 16 December, as another series of attacks swept over Ukraine, a baby and the mother were killed as a building was hit in Krivyi Rih, central Dnipropetrovska oblast. The strikes also damaged homes and other civilian infrastructure in several parts of the country, including during three reported explosions in Kyiv. Large-scale disruptions of water, power, heating, railway connections and mobile communications were reported all over the country. On 5 December, attacks resulted in power outages in 40 per cent of the capital Kyiv and disconnected the Internet due to the lack of power. Water in Odesa was cut as the main water pipe station was without power; damages also led to a full blackout across the city. Other parts of the country were also affected.

Hostilities and heavy fighting in the country's east and south continued to impact civilians and humanitarian workers in Khersonska oblast and on both sides of the front line in Donetska oblast. In Kherson, attacks have intensified over the past two weeks, and on 15 December, an aid distribution centre was hit, killing at least two people, including a humanitarian worker in the line of duty. Across the oblast, damages to schools, sports and community centres, medical facilities, residential buildings and energy systems have been reported. Attacks on humanitarian aid distribution points have also been reported in all Khersonska oblast rayons, according to humanitarian security reports. While the authorities have restored parts of the energy infrastructure in the city, continued attacks slow down the process and leave thousands without power, heating and water. The humanitarian situation for almost 183,000 people in Kherson and other parts recently retaken by Ukraine remains critical. Many houses require urgent repairs, which is especially dangerous as winter temperatures are keeping low. People need food, warm clothes, basic household and personal items, beds, mattresses and heating solutions. Access to safe water and hygiene is limited, which leads to an elevated risk of associated diseases.

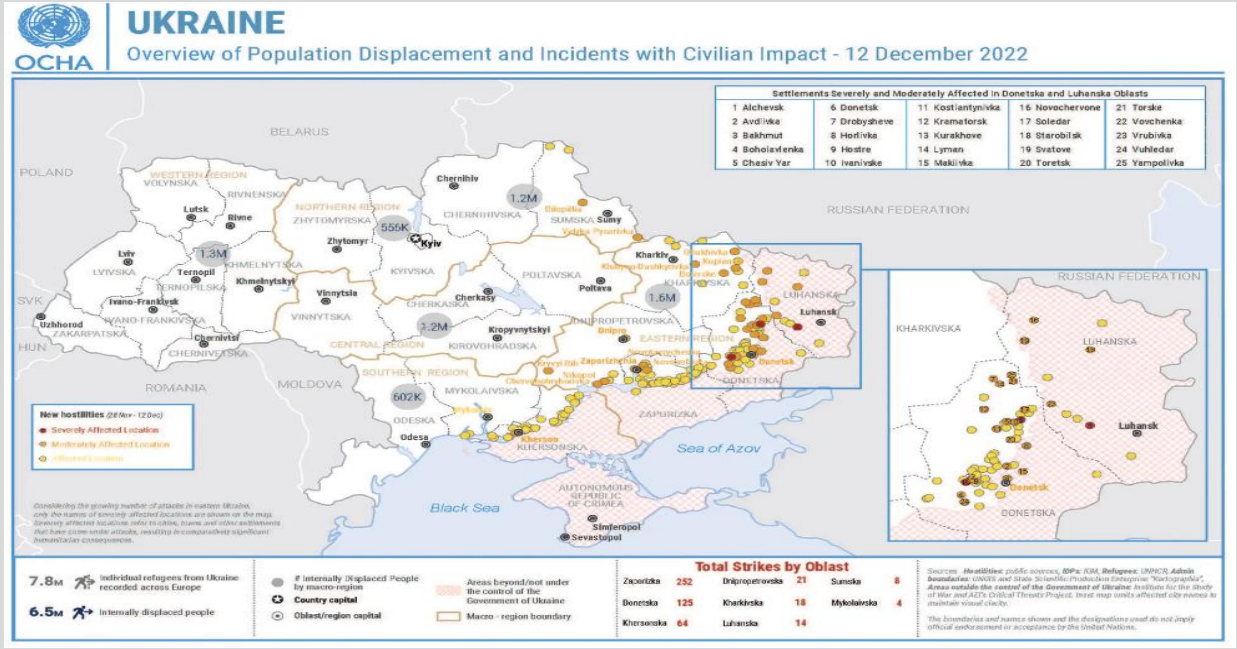
In Donetsk, in the areas under the temporary military control of the Russian Federation, the offices of two humanitarian NGOs were damaged during attacks on 5 and 6 December. The attacks not only caused damages to the premises, normally used for aid distribution but also vehicles belonging to the organizations. There were no casualties inside the buildings, civilians nearby were reportedly injured. Attacks are also regularly reported in Luhanska oblast, signifying the intensification of hostilities along the front line, as well as in Kharkivska and Zaporizka oblasts, with civilian casualties and damaged infrastructure reported.

Health Needs

- Some 14.5 million people in Ukraine are estimated to need health assistance.
- The situation is particularly critical in areas of Donetska, Kharkivska and Khersonska oblasts, where the Government of Ukraine regained control in the past months.

Water, Sanitation and Hygiene (WASH) Needs

- Approximately 16 million people in Ukraine need water, sanitation and hygiene assistance. Communities near the front line are most affected, as their water and wastewater infrastructure has been severely damaged. Moreover, they are facing constant disruptions to energy supply, limited regular maintenance and inability to access emergency and hygiene supplies.
- Internally displaced people in collective centres face limitations in accessing basic water, sanitation and hygiene services.
- There is an elevated risk of diseases related to poor sanitation and hygiene and lack of safe water.
- Contingency capacities of water and wastewater service providers need to be reinforced to support communities with access to safe water.



Source: UNOCHA
WHO

Abstracts from the Force Health Protection Event 2022 (1)

Dr. Anthony C. Fries

Affiliation: United States Air Force School of Aerospace Medicine

Title: Overview of the Department of Defense Global Respiratory Pathogen Surveillance Program: 2021-2022 Influenza Season

Abstract

Respiratory diseases constantly impact military populations. In 1976, the U.S. Air Force initiated a global influenza surveillance program called Project Gargle, which focused on monitoring influenza activity and detecting novel influenza. The DoD Global Respiratory Pathogen Surveillance Program (DoDGRPSP), a sentinel-based program funded by the Defense Health Agency, has expanded beyond the initial goals of Project Gargle and conducts surveillance on all respiratory pathogens.

The DoDGRS program around 104 sentinel sites worldwide that send specimens to the United States Air Force School of Aerospace Medicine (USAFSAM) Epidemiology Laboratory, located at Wright-Patterson Air Force Base (WPAFB) in Dayton, Ohio. Sites send 6-10 specimens, weekly, from patients meeting influenza-like illness (ILI) or Coronavirus Disease-2019-like illness (CLI). The program collects a questionnaire including demographic, clinical, and vaccination information. Specimens are tested via multiplex PCR (20+ respiratory pathogens) and/or viral culture. Select specimens positive for influenza or SARS-CoV-2 go through sequencing for characterization.

Influenza returned in the 2021-2022 season after relative absence the previous season; however, SARS-CoV-2 continued as the dominant virus circulating among this DoD population. This season, 58,978 specimens were tested from 108 locations. These samples came from 33,632 service members, 11,950 children, 12,654 adults, and 741 individuals aged 65 years or older. Of these, 839 tested positive for influenza: 719 influenza A(H3N2) (including 49 coinfections), 119 influenza A not/subtyped, and one influenza B coinfection. There were 18,834 specimens positive for SARS-CoV-2 (including 54 coinfections). Six specimens tested positive for SARS-CoV-2 & influenza [two SARS-CoV-2 & influenza A(H3N2), three SARS-CoV-2 & influenza A/not subtyped, and one SARS-CoV-2 & influenza A/not subtyped & influenza B & RSV]. Additionally, 3,803 specimens tested positive for other respiratory pathogens.

USAFSAM sequenced 739 A(H3N2) specimens in clade 3C.2a1b.2a2. The 2021-2022 Northern Hemisphere influenza vaccine A(H3N2) strain is a clade 3C.2a1b.2a1 virus. Antibodies raised against this strain inhibit 3C.2a1b.2a2 viruses less well than antibodies raised against a 3C.2a1b.2a2 virus, such as the one chosen for 2022-2023 Northern Hemisphere influenza vaccine A(H3N2) strain. 8,610 SARS-CoV-2 positive specimens were sequenced; 1 Alpha (B.1.1.7), 1,844 Delta (B.1.617.2/AY), and 5,488 Omicron (B.1.1.529/BA) lineages. The Omicron sub-lineage BA.2 became predominant by March 2022.

DoDGRPSP's ability to characterize specimens helps monitor circulating pathogens and measures the incidence of ILI/CLI among military populations. The program performs vaccine effectiveness studies and shares data and specimens with the CDC and the World Health Organization to assist in their recommendation for the composition for the next season's vaccine.

Dr Saurabh Kwatra Resolve

Affiliation: Trimmed Innovations

Title: Sound Sleep Surveillance System

Abstract

Both duty (work) & sleep are of equal importance in a soldier's daily schedule. In particular, deep sleep or slow-wave sleep that occurs in the third stage of non-rapid eye movement (N R E M) sleep performs functions of physical replenishment & mental restoration, both of which prepare the soldier for next day's tasks. Enhancement of this period under constraints of duty-hours, challenge levels, weather conditions (especially temperature range), etc. would automatically boost health & productivity of soldier.

By filling a very simple post-sleep form, everyday or regularly and comparing it with a distributed standard data sheet, the soldier detects shortfalls, if any, in quality & quantity of overall sleep in all four phases, especially in above-mentioned deep sleep one. The standard data sheets are given after customization to a group of soldiers experiencing a particular type and intensity of challenge in their duties', living in a particular weather condition (especially if temperature at night is in excess of comfort threshold mark of 25 degrees Celsius) and subject to particular range of disturbances such as firing sounds and lights. All this information can be given, self-read (and pondered!), filled and exchanged, either electronically or in print. Conveniences, schedules and preferences may decide this choice. Feedback loop is formed in sense that output information in form of 'filled-in forms' averaged over a time period (such as week) and weighed against standard charts is inputted in form of iterative changes by soldier to stabilize and improve sleep patterns. The beauty of this technique is that it 'can' and 'does' take into account all existing and prospective constraints – situational, administrative, logistic, technical, environmental including climate changes'.

Research was carried out on some groups, and empirical results were astonishing and encouraging. Over 65% admitted sleep had become deeper and refreshing over a period of two months only. This 'sound sleep surveillance system', as we call it, not only tracked improvements and at times undesired or unavoidable perturbations but also corrected them quickly.

Alongside, guides to good sleep, resources to act on feedback and follow the above system to enable it help the soldier optimally can be distributed for dissemination.

Abstracts from the Force Health Protection Event 2022 (2)

Bernadette Gergonner, Médecin en Chef

Affiliation: Deputy Head of Unit, Health Surveillance and Outbreak Investigation Unit
Epidemiology and Public Health Centre of the French Forces Health Service (CESPA)

Title: Surveillance and beyond: Operational epidemiology and complex public health emergencies.

Abstract

The NATO's Chemical, Biological, Radiological and Nuclear (CBRN) Defence Policy, recently released, emphasize that NRBC threat remains and is evolving. Deployed forces and allied population face the prospect of deliberate use or accidental release of NRBC agents, and considering the "B " threats they might face both existing and modified pathogens, but also contact with endemic and imported diseases. Scientific, medical and technical collaboration, as well as civil military interaction are key aspects of the response and NATO and allied nations have developed guidelines and plans to organise cooperation in response to CBRN incidents.

In these plans, the possible event is mostly described as single point episode, rapidly detected. Laboratory networks and forensics provide a rapid determination of the causative agent, which orientate medical care and control measures. Civilian and military actors work together under a joint coordination body and regular trainings are implemented according to these plans.

However, experience in communicable disease surveillance, investigation and response shows that unusual biological events might not be immediately detected or identified. Number of cases might initially be low and disseminated across large area and multiple health facilities. Early and accurate detection of such events is the main difficulty faced by epidemiological surveillance and permanent developments are made to improve timeliness, sensitivity and specificity of these detections. The NATO "Near real time surveillance" (NRTS) is part of that process. For such events, information sharing amongst civil and military actors could be decisive and would hasten identification of potential threats, in particular when a large number of forces are deployed in a region.

Once the event detected, the causative agent might be isolated in patient's biological samples but uncovering the origin of the contamination can be long and complex. In France, the recent outbreak of haemolytic and uremic syndrome in toddlers related to a severe E.coli infection is an example of the form that could take a deliberate release of CBRN agents (biological or not). Cases were disseminated across 12 regions and a thorough 4-week investigation was needed to identify the source of infection (frozen pizzas). In such contexts, operational epidemiology tools are key components of the response. In addition, in the occurrence of mass casualties, timely and appropriate care and follow up of individual patients is provided thanks to the training and professionalism of actors. Yet, when it takes place, victims can be dispatched among various point of care. Timely reporting the magnitude, severity and evolution of the event to decision makers and, at later stage, following-up the cohort of victims proved to be challenging on several recent terrorist attack or industrial accident. Planning for the rapid implementation of specific response monitoring systems could also be beneficial in the management of disasters.

In conclusion, epidemiological surveillance is the first step when facing public health threats but other operational epidemiological tools could also be valuable in the response to complex emergencies.

LTC Mark w. Lehman

Affiliation: Health Promotion Consultant, Office of the Command Surgeon (USAFE-AFARICA) HQ USAFE-AFAFRICA/SGMP

Abstract

In the Autumn of 2022, the United States Government transported over 35,000 Afghans through Ramstein AFB. At the height of the movement, nearly 21,000 displaced persons were housed on or near Ramstein AFB. Many challenges regarding force health protection were identified and mitigated throughout the entire campaign. The purpose of this talk is to highlight some of the challenges in identifying at risk populations, identifying actual risks versus perceived risks and mitigation measures. This was a unique situation in terms of speed and scope, and required cooperation at many levels.

Mr Gary Holden

Affiliation: Defence Public Health Unit, Defence Medical Services, UK

Title: Development of surveillance reporting for notifiable diseases

Abstract

In 2018 Defence Public Health Unit (DPHU) worked with Public Health England (now UKHSA) to adapt methodology from the existing in-hours primary care GP syndromic surveillance system for England to allow Primary Health Care Information System (PHCIS) based reporting of the top notified condition within the DMS (Non-Specific gastrointestinal illness). The resulting Gastroenteritis Automated Surveillance Tool Reporting by Individual Centre (GASTRIC) uses pseudonymised data to calculate a gastroenteritis weekly incidence rate for each DPHC medical facility.

Following a one-year trial running GASTRIC concurrently with the normal reporting procedure the GASTRIC report replaced reporting of non-specific GI Illness in the Firm Base with an associated reduction in clinical administrative burden. In deployed locations with PHCIS access the system works equally well.

Success with the GASTRIC system led to similar reports being implemented for Influenza Like Illness (ILI) and Panton-Valentine Leucocidin (PVL). In 2020 SARS-CoV-2 reporting requirements for COVID-19 led to the development of a bespoke daily COVID-19 report from the PHCIS live data warehouse. The combination of patient identifiable information and daily (or as required) reporting meant that a PH response could be mounted to a named case. The system became a proxy for COVID-19 disease notification, ensuring situational awareness without impinging on clinical capacity. This process has evolved and remains in place, recently providing 'early warning' of rising BA.2 Variant case rates in Defence through March 21.

DPHU plan to use similar methodology to widen the scope of this system to include notifiable diseases, such as Malaria and Meningococcal disease, where earlier case awareness would allow a faster PH and ID response to be mounted. Further expansion might also offer the opportunity to explore whether a system of near Real Time surveillance reporting could be established using clinical Read code groupings.