



GLOBAL

↘  
647 688 080  
confirmed cases  
633 000 000  
recovered  
6 649 231 deaths

BRN

7-days incidence  
1.032  
➔

HKG

7-days incidence  
907  
↗

PRY

7-days incidence  
832  
↗

News:

- **WHO:** [recommends new name for monkeypox disease](#). Following a series of consultations with global experts, WHO will begin using a new preferred term “mpox” as a synonym for monkeypox. Both names will be used simultaneously for one year while “monkeypox” is phased out.
- **WHO :** carried out a [measles-rubella vaccination campaign](#), focusing on displaced populations living in temporary shelters, often beside main roads, motorways and the banks of the canals in the flooding areas in Pakistan. Poor access to vaccination services and population displacement have contributed to measles outbreaks in 31 districts in the country since the floods started
- **WHO:** [Republic of Korea achieves the highest WHO level for regulation of medicines and vaccines](#). The country achieved maturity level four (ML4) for both locally produced as well as imported medicines and vaccines.
- **WHO/CDC:** discovered in a [joint report](#), that nearly 40 million children are dangerously susceptible to growing measles threat as measles vaccination coverage has steadily declined since the beginning of the COVID-19 pandemic.
- **WHO/ECDC:** a [new report reveals increasing numbers living with undiagnosed HIV](#) in the EU Region. Means hundreds of thousands are not getting the care they need when they need it.
- **ECDC:** published a guidance [Models of good practice for community-based testing, linkage to care and adherence to treatment for hepatitis B and C, HIV, and tuberculosis and for health promotion interventions to prevent infections among people who inject drugs](#).
- **ECDC:** [Flu Awareness Campaign 2022](#).
- **WHO/ECDC:** publish a monthly joint surveillance bulletin that provides an overview of the cases of hepatitis of unknown origin in children aged 16 years and below reported to ECDC and the WHO Regional Office for Europe, through The European Surveillance System (TESSy).
- **CDC:** will strategically [expand wastewater testing for poliovirus](#) in select jurisdictions across the country. The findings will help jurisdictions prioritize vaccination efforts in identified communities of concern.

Topics:

- Global situation: COVID-19 (slide 2-3)
- Global Mpox outbreak (slide 4)
- Other infectious diseases (slide 5)
- Ebola Situation Update for South Sudan and Uganda (slide 6)
- Mass Gathering Risk Assessment - FIFA World Cup in Qatar (slide 7-8)
- Ukraine Situation Report (slide 9)
- Force Health Protection Event 2022 (slide 10-11)

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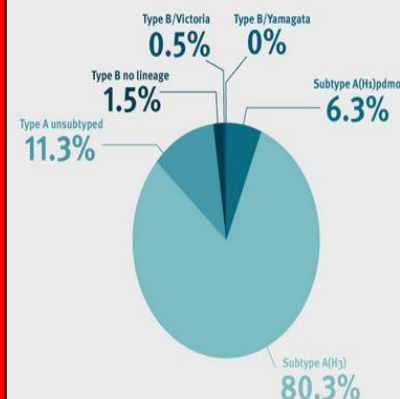
## Influenza in Europe

Data from EU and EEA countries for the 2022–2023 season  
Week 47 (21 Nov – 27 Nov 2022)



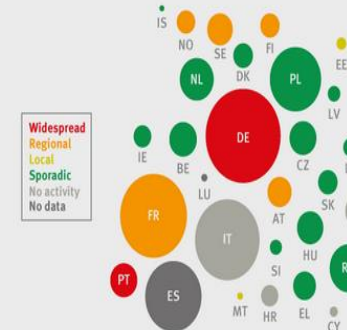
### Influenza viruses circulating in 2022–2023

Only sentinel specimens are included



### Influenza geographic spread

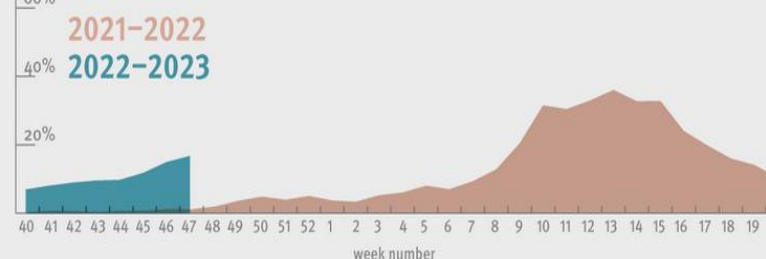
based on sentinel reports of influenza-like illness and/or acute respiratory infections



Bubble size is indicative of country population

### Influenza trend

based on the percentage of sentinel specimens found positive, by week



EUROPE

↘  
258 637 899  
confirmed cases  
253 800 000  
recovered  
2 086 480 deaths

SMR

7-days incidence  
708



FRA

7-days incidence  
622



MCO

7-days incidence  
533



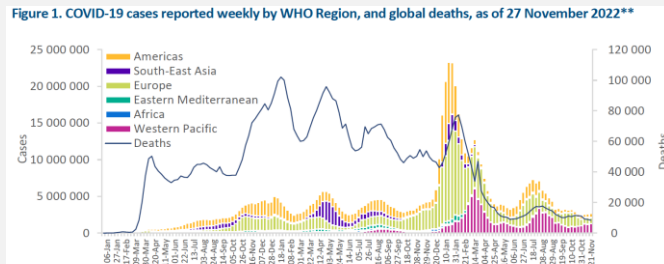
# COVID-19 Situation by WHO Region, as of 30 November

## Global epidemiological situation overview; WHO as of 27 November 2022

Globally, the number of new weekly cases remained stable (+2%) during the week of 21 to 27 November 2022 as compared to the previous week, with just under 2.7 million new cases reported (Figure 1, Table 1). The number of new weekly deaths decreased by 5% as compared to the previous week, with over 8400 new fatalities reported. As of 27 November 2022, over 637 million confirmed cases and over 6.6 million have been reported globally.

At the regional level, the number of newly reported weekly cases decreased across four of the six WHO regions: the African Region (-18%), the Eastern Mediterranean Region (-17%), the European Region (-14%), and the South-East Asia Region (-8%); while case numbers increased in two WHO regions: the Region of the Americas (+19%) and the Western Pacific Region (+8%). The number of newly reported weekly deaths decreased across three regions: the African Region (-79%), the European Region (-35%), and the Eastern Mediterranean Region (-20%); while death numbers increased in three WHO regions: the Region of the Americas (+21%), the Western Pacific Region (+9%), and the South-East Asia Region (+5%).

At the country level, the highest numbers of new weekly cases were reported from Japan (698 772 new cases; +18%), the Republic of Korea (378 751 new cases; +4%), the United States of America (296 882 new cases; +8%), France (230 871 new cases; -1%), and Italy (161 454 new cases; -27%). The highest numbers of new weekly deaths were reported from the United States of America (2611 new deaths; +16%), Japan (1000 new deaths; +42%), Brazil (535 new deaths; +113%), Italy (419 new deaths; -22%), and China (395 new deaths; -17%).



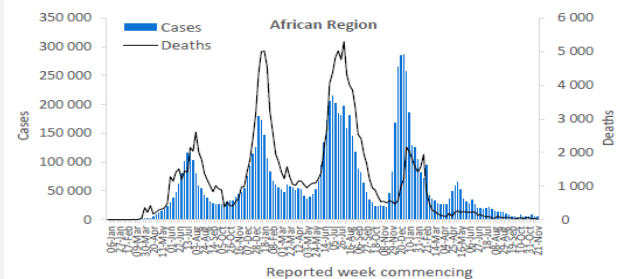
## WHO regional overviews:

### Epidemiological week 21-27 November 2022

#### African Region

The African Region reported 6082 new cases, an 18% decrease as compared to the previous week. Three (6%) of the 49 countries for which data are available reported increases in new cases of 20% or greater, with the highest proportional increases observed in Zambia (35 vs 11 new cases; +218%), Mayotte (564 vs 197 new cases; +186%), and Réunion (893 vs 575 new cases; +55%). The highest numbers of new cases were reported from South Africa (2637 new cases; 4.4 new cases per 100 000; -35%), Angola (1360 new cases; 4.1 new cases per 100 000; no cases reported the previous week), and Réunion (893 new cases; 99.7 new cases per 100 000; +55%).

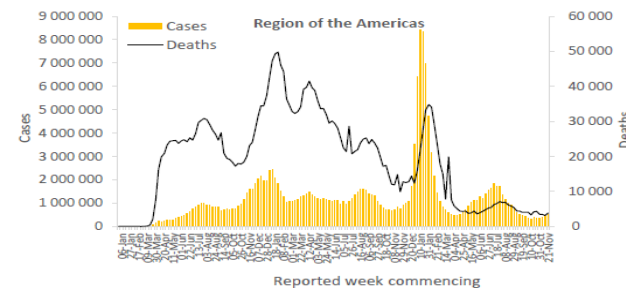
The number of new weekly deaths in the region decreased by 79% as compared to the previous week, with nine new deaths reported. The highest numbers of new deaths were reported from Angola (six new deaths; <1 new death per 100 000; no deaths reported the previous week), Zambia (two new deaths; <1 new death per 100 000; no deaths reported the previous week), and Cabo Verde (one new death; <1 new death per 100 000; the same number of deaths reported the previous week).



#### Region of the Americas

The Region of the Americas reported just under 551 000 new cases, a 19% increase as compared to the previous week. Sixteen (29%) 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 Saint Pierre and Miquelon (17 vs three new cases; +467%), Honduras (515 vs 102 new cases; +405%), and Paraguay (93 vs 22 new cases; +323%). The highest numbers of new cases were reported from the United States of America (296 882 new cases; 89.7 new cases per 100 000; +8%), Brazil (150 008 new cases; 70.6 new cases per 100 000; +64%), and Chile (33 684 new cases; 176.2 new cases per 100 000; -14%).

The number of new weekly deaths in the region increased by 21% as compared to the previous week, with 3821 new deaths reported. The highest numbers of new deaths were reported from the United States of America (2611 new deaths; <1 new death per 100 000; +16%), Brazil (535 new deaths; <1 new death per 100 000; +113%), and Canada (268 new deaths; <1 new death per 100 000; -10%).

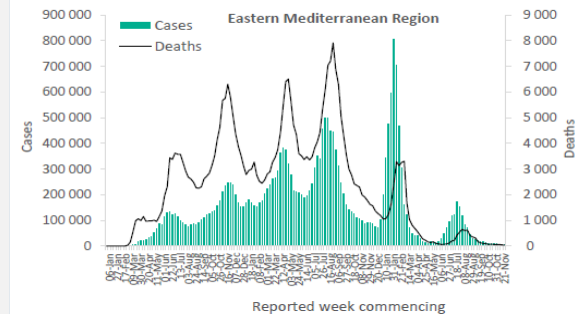


Updates from the [Region of the Americas](#)

#### Eastern Mediterranean Region

The Eastern Mediterranean Region reported 7633 new cases, a 17% decrease as compared to the previous week. Three (14%) 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 Tunisia (192 vs 97 new cases; +98%), Morocco (1029 vs 705 new cases; +46%), and Egypt (11 vs eight new cases; +38%). The highest numbers of new cases were reported from Qatar (1794 new cases; 62.3 new cases per 100 000; -18%), the United Arab Emirates (1458 new cases; 14.7 new cases per 100 000; -4%), and Morocco (1029 new cases; 2.8 new cases per 100 000; +46%).

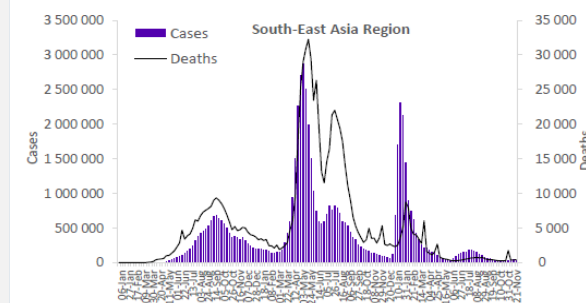
The number of new weekly deaths in the region decreased by 20% as compared to the previous week, with 40 new deaths reported. The highest numbers of new deaths were reported from Saudi Arabia (11 new deaths; <1 new death per 100 000; -21%), the Islamic Republic of Iran (eight new deaths; <1 new death per 100 000; -47%), and Lebanon (seven new deaths; <1 new death per 100 000; the same number of deaths reported the previous week).



#### South-East Asia Region

The South-East Asia Region reported over 49 000 new cases, an 8% 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 highest proportional increases observed in Sri Lanka (133 vs 88 new cases; +51%), and Thailand (4914 new cases; 7 new cases per 100 000; +24%). The highest numbers of new cases were reported from Indonesia (41 877 new cases; 15.3 new cases per 100 000; -11%), Thailand (4914 new cases; 7 new cases per 100 000; +24%), and India (2547 new cases; <1 new case per 100 000; -3%).

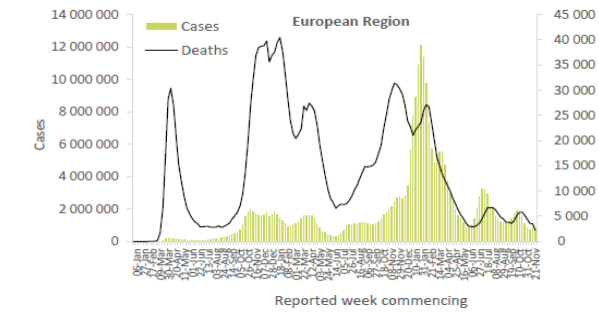
The number of new weekly deaths in the region increased by 5% as compared to the previous week, with 420 new deaths reported. The highest numbers of new deaths were reported from Indonesia (297 new deaths; <1 new death per 100 000; +8%), Thailand (74 new deaths; <1 new death per 100 000; +7%), and India (38 new deaths; <1 new death per 100 000; -12%).



#### European Region

The European Region reported just under 772 000 new cases, a 14% decrease as compared to the previous week. Eight (13%) 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 Kosovo<sup>[1]</sup> (11 vs one new cases; +1000%), Uzbekistan (692 vs 428 new cases; +62%), and Kyrgyzstan (28 vs 19 new cases; +47%). The highest numbers of new cases were reported from France (230 871 new cases; 355 new cases per 100 000; -1%), Italy (161 454 new cases; 270.7 new cases per 100 000; -27%), and Germany (151 867 new cases; 182.6 new cases per 100 000; -10%).

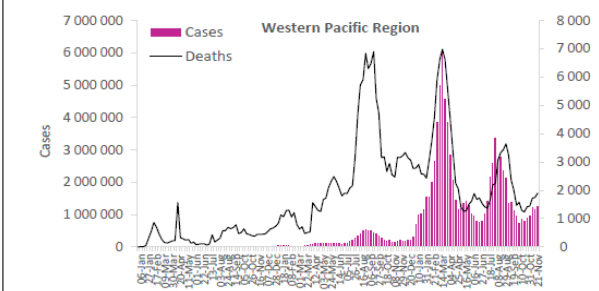
The number of new weekly deaths in the region decreased by 35% as compared to the previous week, with 2254 new deaths reported. The highest numbers of new deaths were reported from Italy (419 new deaths; <1 new death per 100 000; -22%), France (387 new deaths; <1 new death per 100 000; -25%), and the Russian Federation (386 new deaths; <1 new death per 100 000; -10%).



#### Western Pacific Region

The Western Pacific Region reported over 1.2 million new cases, an 8% increase as compared to the previous week. Four (12%) 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 Fiji (68 vs 20 new cases; +240%), Singapore (13 800 vs 10 918 new cases; +26%), and Lao People's Democratic Republic (132 vs 105 new cases; +26%). The highest numbers of new cases were reported from Japan (698 772 new cases; 552.5 new cases per 100 000; +18%), the Republic of Korea (378 751 new cases; 738.7 new cases per 100 000; +4%), and China (144 205 new cases; 9.8 new cases per 100 000; -9%).

The number of new weekly deaths in the region increased by 9% as compared to the previous week, with 1898 new deaths reported. The highest numbers of new deaths were reported from Japan (1000 new deaths; <1 new death per 100 000; +42%), China (395 new deaths; <1 new death per 100 000; -17%), and the Republic of Korea (338 new deaths; <1 new death per 100 000; -8%).



# Global COVID-19 Trends and Influenza News

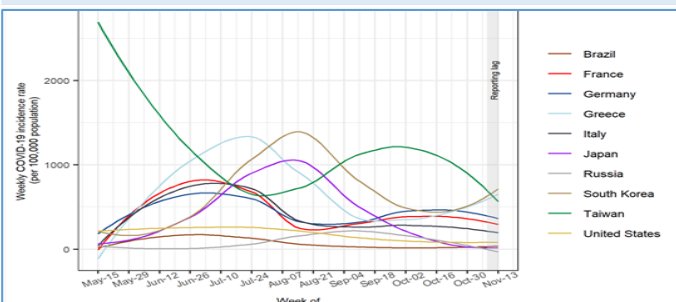


Fig. 1 Outlines the new weekly COVID-19 cases per 100,000 population between the weeks of May 15 and November 13, 2022 for the top 10 countries reporting the highest number of cases in the past 30 days. A locally weighted smoothing (LOESS) curve has been applied to the data. The most recent epidemiological week may not represent accurate trends due to reporting lags.

- Overall, several countries in Europe are reporting a decline in their weekly trends of COVID-19 incidence rates. This was most notable in Germany and Italy as their most recent COVID-19 wave is subsiding.
- In Greece, cases appear to be stabilizing but have not decreased.
- In Asia, there was a downward trend of cases in Taiwan, while South Korea and Japan are beginning to report increasing trends.
- Lastly, in South America, Brazil is also reporting an increase in the weekly COVID-19 case trends.

## Risk for Newly Diagnosed Diabetes After COVID-19

A study published by BioMed Central (BMC) Medicine on November 15, 2022 discusses the **risk of developing new-onset diabetes mellitus (DM) after recovering from COVID-19**. A systematic review and meta-analysis of nine cohort studies were conducted from the inception of COVID-19 on December 31, 2019 until June 10, 2022.

- There is a potential bi-directional relationship between DM and COVID-19. Previous studies have shown that DM is associated with an increased risk of severe COVID-19.
- The nine cohort studies used were conducted in the United States (6), England (2), and Germany (1).
- **At all ages, there was a statistically significant positive correlation between COVID-19 infection and the risk of developing DM.**

## Results from the Study:

- The **relative risk of DM post-COVID-19 was high** compared to non-COVID-19 patients, even when confounding factors (i.e. age, gender, BMI, race, and co-morbidities) were considered.
- The incidence of DM post-COVID-19 was 15.53 (7.91-25.64) per 1000 person-years.
- There was a **1.2-fold increased risk of developing diabetes after COVID-19** compared to patients with general upper respiratory tract infections.
- Patients with **severe COVID-19 were at higher risk** of DM after COVID-19, compared to non-severe cases.
- The **risk of DM was highest in the first 3 months after COVID-19**.
- Although the risk was higher in all age groups, the highest increase in risk was in the <18 years age group and in males.

## Key Takeaways:

- **Overall, the risk of developing DM was increased regardless of age, gender, type of DM, follow-up time or level of COVID-19 severity.**
- Particular attention should be given to potential new-onset DM during the **first three months** of follow-up after COVID-19.
- These findings underscore the potential **long-term healthcare impacts** due to the increased risk of DM following COVID-19, including **among children**.

While this study did not evaluate the effect of vaccination on risk of DM, it underscores the **importance of COVID-19 vaccination to protect against severe disease, particularly among those most at risk.**

Source: <https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-022-02656-y>

## Joint EC, WHO and ECDC statement: Influenza season epidemic kicks off early in Europe as concerns over RSV rise and COVID-19 is still a threat

The 2022-2023 influenza (flu) season epidemic is off to an early start in the European region as concerns over Respiratory syncytial virus (RSV) rise and COVID-19 is still being a threat.

The region is currently experiencing increasing circulation of influenza and RSV. Together with COVID-19, these viruses are expected to have a high impact on our health services and populations this winter. This highlights how important it is for vulnerable groups to get vaccinated against influenza and COVID-19 as well as for everyone to protect themselves and others from infections.

We are already seeing influenza viruses (A and B) circulating in different parts of the region. While circulating among all age-groups and particularly in children of school-age, influenza A viruses usually cause severe disease mostly for older people and those with chronic conditions.

An increasing number of people is being admitted to hospitals due to influenza, with hospital admissions rising since October. Our populations 55 years and older account for almost half of reported influenza hospital admissions.

In 23 countries reporting Severe Acute Respiratory Infection (SARI) data, hospitalised patients have been diagnosed mostly with type B viruses (85%), with children aged four years and younger being the most often affected.

RSV has also been on the rise since October, with some 20 countries and areas experiencing intensified RSV activity.

COVID-19 case rates, hospital- and intensive care unit (ICU) admissions, and death rates are currently low compared to the past 12 months, but this situation could change as new variants emerge, and the disease continues to strain healthcare resources.

With the continued impact of the COVID-19 pandemic and the circulation and health impact of other respiratory pathogens, it is challenging to predict how the new winter period will develop.

In view of this, we cannot afford to become complacent. We must step up vaccination programmes and preparedness measures across the region. The need to protect our populations' health, especially the most vulnerable, is as strong as ever.

We continue to encourage the most vulnerable - older people, pregnant women, people with underlying health conditions such as heart disease, and health workers – to get vaccinated against seasonal influenza and COVID-19.

We cannot say it enough: Vaccination saves lives. It decreases the chances of being infected and reduces the risk of severe illness from COVID-19 and seasonal influenza.

Personal protective measures also help us keep all respiratory viruses – seasonal influenza, COVID-19 and RSV – at bay. We continue to urge everyone to protect themselves by taking simple but effective measures – from cleaning hands regularly, wearing well-fitting masks, particularly when in crowded, closed settings with inadequate ventilation, to staying away from others when ill with a respiratory virus.

It is also important for countries to monitor not only SARS-CoV-2, but also how influenza and RSV viruses are spreading and affecting people and health care systems. Reporting these findings to WHO/Europe and ECDC will help better understand the impact of several respiratory viruses co-circulating widely, and to further strengthen our prevention and control measures.

We also recommend clinicians to consider early antiviral treatments and prophylaxis for influenza, RSV and COVID-19, according to national guidance, for those who are at risk of severe disease, to prevent severe outcomes and reduce the burden on healthcare systems.

Source: <https://www.ecdc.europa.eu/en/news-events/joint-ec-who-and-ecdc-statement-influenza-season-epidemic-kicks-early-europe-concerns>

# Global Mpox (Monkeypox) Outbreak 2022



## Mpox to be Used as a Synonym for Monkeypox

On November 28, 2022, the World Health Organization announced that **mpox will be the new preferred synonym, replacing monkeypox** after a transition period of one year. [1] Since the global monkeypox outbreak began in early May 2022, several individuals and countries have raised concerns about the stigmatizing language used against individuals who acquired the disease and regions where it is prevalent. Following extensive consultations, the WHO made the decision to adopt the new term, to reduce any ongoing negative impact associated with the term 'monkeypox'.

## Global Update

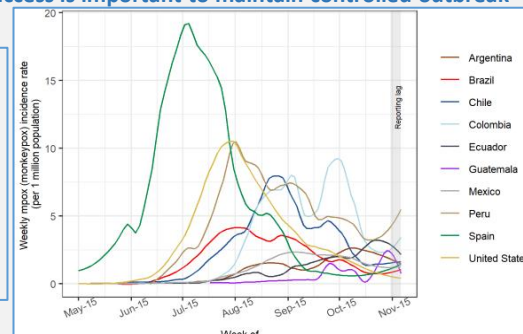
According to the WHO, there have been **81,608 laboratory-confirmed cases and 59 deaths** attributed to mpox between **January 1 and November 30, 2022**. There were **620 new cases** reported during the week of November 21 to November 27, which is a **43% decrease** compared to the previous week. Out of the 110 countries reporting cases to the WHO, **71 countries have not reported new cases in the past 21 days**, while 11 countries are reporting increases in weekly new cases, with the largest increases reported in Peru. **Deaths attributed to mpox have been reported across 16 countries**, with the largest number reported by the United States.

**Globally, the number of new cases has been trending downwards since mid-August, possibly due to greater public awareness, behavioral changes, and vaccination efforts.** However, the expected persisting low-level transmission may contribute to stagnating trends or subsequent increases in regions with limited prevention measures. Additionally, **inequitable responses shift the burden of disease to vulnerable and marginalized populations** where historic mistreatment has fostered mistrust and vaccine hesitancy.

**In the United States (U.S.), the racial disparity in the distribution of vaccines and cases highlights the inequitable response.** By September 23, the rate of cases was five-times greater among the Black demographic compared to their White counterpart. [2] According to data from the U.S. CDC, the number of cases (7-day rolling average) among Black or African American individuals exceeded in all other reported race categories since early August. [3]. Black individuals accounted for 41% of the cases in week of November 22, compared to 31% for their White counterparts. [4] Racialized individuals also accounted for a smaller proportion of all vaccines administered (Black: approximately 11%; Hispanic or Latino: 20%) than White individuals (48%). [5] The remaining racial categories each received less than 10% of the share of vaccines.

It is difficult to predict the long-term outcome of the mpox outbreak given the inconclusive understanding of transmission dynamics and intervention effectiveness. Reported cases will continue to be underestimated due to varying surveillance and testing capacities, as well as underreporting of cases due to the social stigma associated with infection and diagnostic challenges. There is a continued risk for resurgence or re-introduction from endemic countries. Therefore, **strong public health messaging surrounding individual risk mitigation and equitable vaccine access is important to maintain controlled outbreak management, inclusive of endemic countries.**

**Fig. 1 shows the weekly mpox incidence rate per one million population between the weeks of May 15 and November 20, for the top 10 countries reporting the highest number of cases in the most recent four epidemiological weeks.** A locally weighted smoothing curve has been applied to the data. Spain as well as several countries in South America (Brazil, Colombia, and Chile) are reporting increasing trends in their weekly mpox incidence rates, while the USA continues to report a decrease. The presented data should be interpreted with caution as recent data may be influenced by reporting lags, access, type, and timeliness of testing among countries.



## Presence of Mpox Viral DNA in Saliva, Droplets and Aerosols

A study published by The Lancet on November 24, 2022 discusses **the presence of mpox virus DNA in saliva or exhaled droplets and aerosols in Spain.**

- The large increase in cases in the global outbreak of mpox outside of endemic African countries suggests a possibly more efficient human-to-human transmission of the disease, which might have been spreading undetected.
- **A cross-sectional study was conducted in 44 patients** with PCR-confirmed mpox who attended two health centres in Madrid, Spain (Hospital Clínico San Carlos and Centro Sanitario Sandoval) between June 7 – 26, 2022. Of the cases, 41 of 44 (94%) of patients self-identified as MSM (men who have sex with men).
- Samples of saliva, exhaled droplets within a mask, and aerosols captured by air filtration through newly developed nanofiber filters were collected from patients and analyzed for the presence of mpox viral DNA.

## Results from the Study:

- There were **high viral loads of mpox in the saliva** of infected individuals and in droplets and aerosols.
- PCR analysis revealed that 35 of 41 (85%) saliva samples collected had tested positive for mpox virus.
- **Systemic symptoms** (such as non-inguinal lymphadenopathy, asthenia, myalgia, and skin lesions) **were associated with high mpox viral loads in saliva.**
- **There was a linear relationship between the mpox viral load in saliva and the number areas on the body affected.** For each new area affected (face, upper extremities, trunk, lower extremities, palms and soles, anal and genital area), the viral load increased by a mean of 48% (Interquartile range: 16% - 88%).
- There was no difference in mpox viral load or viability in saliva between patients living with HIV, those with a concurrent sexually transmitted infection, and those previously vaccinated against smallpox.

## Key Takeaways:

- These findings suggest that **saliva might contribute, together with droplets and aerosols, to surface contamination with the virus.**
- **Results do not prove transmission of mpox via saliva.** Further investigation is required to evaluate whether the high viral loads in saliva, droplets and aerosols are present for longer periods and sufficient for disease transmission.
- This study has implications for preventive actions and health polices to control transmission of the mpox virus.
- **Further studies are required to fully understand when airborne transmission of mpox may occur and how often the virus spreads through respiratory secretions.**
- Most cases in the current multi-country outbreak are linked via having had intimate contact with another infected individual. This study adds evidence that some spread may be occurring through the respiratory route, rather than solely through contact with skin lesions. **Masking and sanitary measures should continue to be recommended to aid in the prevention of spread for those in contact with suspected or confirmed cases.**

# Other Infectious Disease Outbreaks/ Conflicts



## **Pertussis in Afghanistan**

A total of 300 people mostly children have been affected by pertussis, or whooping cough, in Afghanistan's southern Zabul province, and two children have died of the disease according to the provincial public health director. An emergency team of health officials has been sent to the district to treat those with the disease. The public health office of the province asked the people not to leave their areas for few days to avoid further outbreak of the transmissible illness.

CONCERN LEVEL: **LOW**

SOURCE: [MediaNews](#)

## **Dengue in Sudan**

Sudan is witnessing its worst outbreak of dengue fever in over a decade, especially in North and South Kordofan and Red Sea state, according to Director General of Emergencies at the Ministry of Health Muntasir Osman. 23 patients have died since the outbreak of dengue fever began in 12 Sudanese states, meanwhile. The Sudanese Ministry of Health reported 3,326 cases of dengue fever across Sudan on Tuesday. North Kordofan is most affected, with 11 deaths and 1,164 patients, followed by West Kordofan, which recorded six deaths and 938 affected patients, while North Darfur registered one death and 655 patients. Red Sea state, Kassala, White Nile state, South Kordofan, East Darfur, and West Darfur have also reported dengue cases. Vector-borne diseases are on the rise in Sudan after recent floods.

CONCERN LEVEL: **MEDIUM**

Source: [Reliefweb](#)

## **Diphtheria in Europe**

According to ECDC since the beginning of 2022, and as of 30 November 2022, there have been 153 cases of diphtheria among migrants reported by eight EU/EEA countries: Austria (42), Belgium (18), France (14), Germany (64), Italy (3), the Netherlands (4), Norway (7) and Spain (1). Cases have also been reported in Switzerland (25) and the United Kingdom (53), bringing the overall number for Europe to 231. While diphtheria is a rare disease in EU/EEA countries due to high immunization rates, the recent increase in diphtheria cases among migrant populations is unusual and requires close monitoring alongside necessary public health measures to avoid further spread. There have been reporting's on multiple recent outbreaks of diphtheria that occurring globally, likely following the disruption of vaccination programs amid the ongoing COVID-19 pandemic. Recent research has also shown the *Corynebacterium diphtheriae* bacteria has been evolving to acquire resistance to routine antimicrobials. While the source(s) of these outbreaks is unclear, vaccine-preventable disease outbreaks are likely to be an ongoing risk to migrating populations due to conflict and disruption to healthcare services in the origin regions.

CONCERN LEVEL: **MEDIUM**

Source: [ECDC](#)

## **Poliomyelitis in Indonesia; Follow Up**

**SUBLOCATIONS AFFECTED: Nanggroe Aceh Darussalam Province (Mane)**

In a follow-up on the poliomyelitis outbreak in Indonesia, official information indicates that laboratory results have confirmed the paralysis case reported on November 18, 2022, in Mane district, Aceh province is due to circulating vaccine-derived poliovirus type-2 (cVDPV-2). Additionally, the affected child has no history of immunizations or recent history of travel. Health authorities are conducting further investigations and testing children and wastewater sampling across the district to try to identify the source and extent of the outbreak. Lastly, health authorities have planned to carry out mass immunization for all children aged 13 and below in two stages, the first stage on November 28, 2022, and the second on January 4, 2023, across the Mane district.

CONCERN LEVEL: **Medium Concern**

Source: [MediaNews](#)

## **Cholera in Kuwait**

Kuwait detected cholera in a citizen arriving from a neighbouring country where there is an outbreak, the health ministry said in a statement on Friday. According to the World Health Organization, Lebanon is the latest phase of a outbreak that began in Afghanistan in June before spreading to Pakistan, Iran, Iraq and Syria.

CONCERN LEVEL: **LOW**

Source: [MediaNews](#)

## **Ebola in Uganda; Follow Up**

**SUBLOCATIONS AFFECTED:** Central Region (Kampala Capital City, Kassanda, Mityana District, Mubende District, Wakiso District), Eastern Region (Jinja District), Western Region (Bunyangabu District, Kagadi District, Kyegegwa District)

**Situational Update:**

- One new fatal case was reported during the tenth week of the Sudan Ebolavirus Disease (SUDV) outbreak.
- The case was a 32-week male stillbirth who was delivered on 27 November 2022, by a previously confirmed case.
- As of November 30, the total number of cases is 164 (142 officially confirmed and 22 probable). The number of reported deaths is 77 (55 confirmed and 22 probable).

**Local Situation:**

- The Mubende Ebola unit discharged the last four patients on December 1. The unit does not have any hospitalized patients as of that date.
- Only two out of the nine affected districts (Mubende and Kampala) have reported cases within the past 21 days.
- On November 27, the local government extended the lockdowns in Mubende and Kassanda, for another 21 days. This is the second time the lockdown has been extended.
- Two districts (Bunyangabu and Kagadi) have not reported cases for over 50 days (> 2 incubation periods), and five (Kyegegwa, Kassanda, Musaka, Wakiso, Jinja) for over 21 days (1 incubation period).
- The bed occupancy rate is 0% as of December 1.
- The overall follow-up rate of close contacts is 73% (411/565 contacts). The district with the lowest rate of case contact follow-up is Jinja with 64% (244/395).

CONCERN LEVEL: **HIGH**

Source: [WHO](#), [Reliefweb](#), [EpiWeb](#), [Africa CDC](#)

## **Influenza Europe;**

Source: [Flu News Europe](#)

**Weeks 47/2022 (21 November - 27 November 2022)**

- The percentage of all sentinel primary care specimens from patients presenting with ILI or ARI symptoms that tested positive for an influenza virus increased to 14% from 13% in the previous week.
- The epidemic threshold is set at 10% and week 47/2022 was the third consecutive week above this level with the start of the epidemic in the European Region being declared based on week 46/2022 data.
- Germany, Kazakhstan, Kyrgyzstan, Malta, Portugal, Romania, Russian Federation, Türkiye and United Kingdom (Scotland) reported widespread influenza activity and/or at least medium intensity.
- Germany, Spain, France, Israel, Italy, Kyrgyzstan, Kazakhstan, Luxembourg, Republic of Moldova, Portugal and Uzbekistan reported seasonal influenza activity above 10% positivity in sentinel primary care.
- Both influenza type A and type B viruses were detected with A(H3) viruses being dominant in sentinel and non-sentinel surveillance systems.
- Hospitalized cases with confirmed influenza virus infection were reported from ICU wards (2 type A viruses), other wards (64 type A viruses and 2 type B viruses) and SARI surveillance (60 type B viruses and 39 type A viruses). When comparing the different influenza type distributions by system, it is important to consider that different sets of countries report to each system.

# Ebola Situation Update for South Sudan and Uganda

## THERE IS NO EVD REPORTED IN SOUTH SUDAN

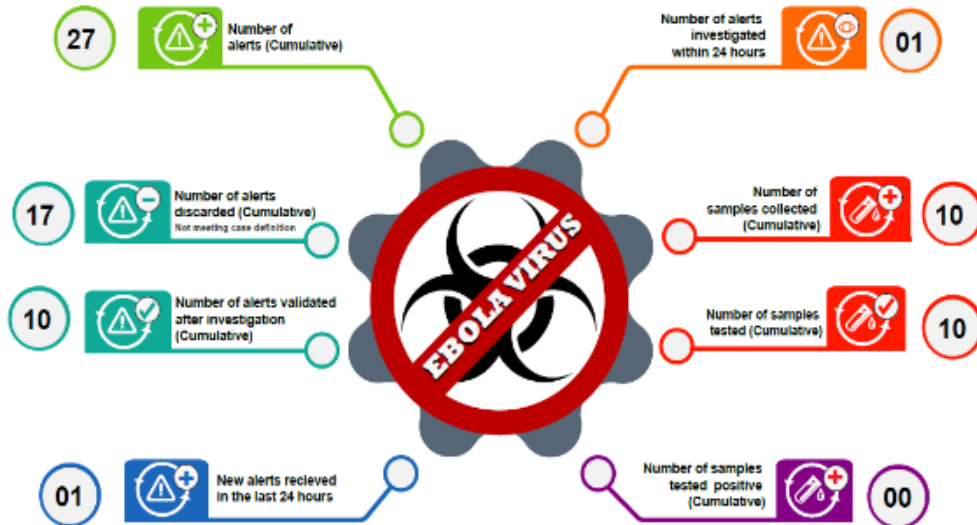
South Sudan Ebola Readiness Update as of 2 December 2022

### Republic of South Sudan



Ministry of Health

### Daily Ebola Virus Disease Readiness Update 2 December, 2022



There is no EVD reported in South Sudan. Stay Vigilant and alert!

Report all suspected cases to the nearest health facility immediately.  
OR Send a free sms to update on 8888 / 2222 or call +211925851682/+211917235355

Uganda Ebola Outbreak Update as of 1 December 2022

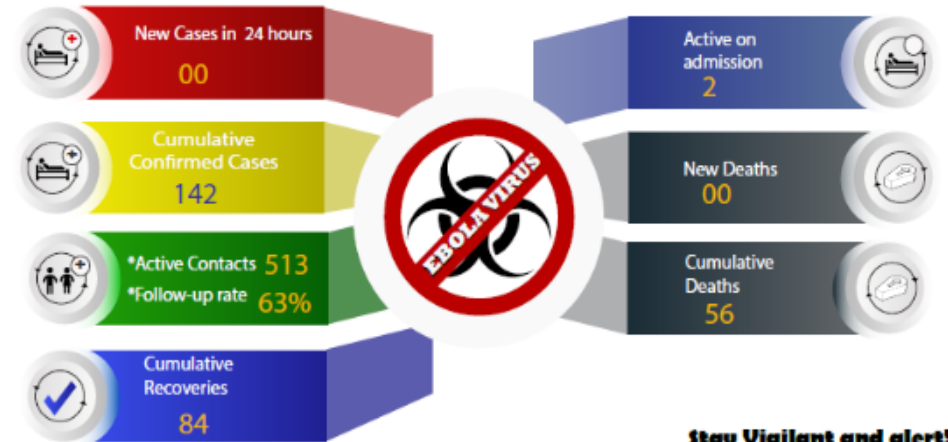


THE REPUBLIC OF UGANDA  
MINISTRY OF HEALTH

### UGANDA EBOLA VIRUS

Outbreak Update  
1 December, 2022

Ministry of Health



Stay Vigilant and alert!

Report all suspected cases to the nearest health facility immediately.  
OR Send a free sms to update on 8500 or call 0800100066/ 0800203033

<https://reliefweb.int/report/south-sudan/daily-ebola-situation-update-south-sudan-and-uganda-2-december-2022>

# Other Infectious Disease Outbreaks/ Conflicts

## Mass Gathering Risk Assessment - FIFA World Cup in Qatar



The FIFA World Cup 2022 is currently underway in Qatar until December 18th, 2022 with the support of neighbouring Gulf countries to accommodate spectators. As of October 17, 2022, nearly three million tickets were sold to spectators internationally and from Gulf Region countries. This event presents an opportunity for the importation, transmission, and exportation of infectious diseases due to population mixing of international spectators with local and regional residents. Diseases most relevant to mass gatherings are often ones with highest risk of human-to-human transmission, such as respiratory infections. These are particularly pertinent given the ongoing COVID-19 pandemic and return of seasonal influenza globally. In this report we highlight infectious diseases that may present the highest importation risk to the Gulf region from countries with the highest volume of ticket sales and diseases that may present the highest exportation risk following the World Cup. We also assess the degree to which public health measures in place may reduce the risk of infectious disease spread. We leveraged BlueDot's A.I-driven surveillance, API endpoints, and subject matter expertise to generate this report.

### Executive Summary

Diseases relevant to the FIFA World Cup (FIFA WC) –BlueDot leveraged its in-house subject matter expertise to identify a list of infectious diseases that could be relevant to the context of the World Cup (Table A2 in the Appendix 1), sorted into one of three categories:

- Category 1:** Diseases with risk of immediate transmission including but not limited to: COVID-19, measles, monkeypox, MERS (Middle Eastern Respiratory Syndrome), and several respiratory diseases (not actively tracked by BlueDot) including respiratory syncytial virus (RSV), seasonal influenza, nonCOVID-19 coronaviruses, rhinoviruses and more.
- Category 2:** Diseases that can have high consequence but typically reported sporadically including anthrax, avian influenza, Crimean-Congo hemorrhagic fever, Ebola, botulism, Kyasanur Forest disease, Marburg virus disease.
- Category 3:** Diseases that do not present as an immediate transmission risk but have a risk of long-term establishment in the region due to the presence of a competent vector including Chikungunya, dengue, malaria, yellow fever, West Nile virus, and Zika.

Diseases with an importation risk concern – We focused the scope of this risk assessment of the relevant infectious diseases from the 7 non-Gulf Region countries among the top 10 countries with the known highest FIFA WC ticket sales (i.e., United States (US), England, Mexico, Argentina, France, Brazil, and Germany) (Appendix, Table A3). The incidence rate of any relevant diseases between May 20, 2022 (6 months prior to the start of FIFA WC) and November 1, 2022 (date of data extraction) are listed in Table A3 of Appendix 1 (next page).

| Rank | Country                 | Number of tickets sold, as of October 5, 2022. |
|------|-------------------------|--|
| 1    | Qatar                   | 947,846  |
| 2    | United States           | 146,616  |
| 3    | Saudi Arabia            | 123,228  |
| 4    | England, United Kingdom | 91,632   |
| 5    | Mexico                  | 91,173   |
| 6    | United Arab Emirates    | 66,127   |
| 7    | Argentina               | 61,083   |
| 8    | France                  | 42,287   |
| 9    | Brazil                  | 39,546   |
| 10   | Germany                 | 38,117   |
|      | <b>Total</b>            | <b>1,647,655</b>                               |

For Category 1 diseases, we provided an in-depth highlight of:

- COVID-19** where emerging Omicron sublineages are being monitored, including XBB (in the US), UK, Argentina, France, Germany) and BQ1.1 (reported in the US);
- Influenza** – Argentina, Mexico, and the US are all experiencing a surge in cases. In the Gulf Region, Qatar, Saudi Arabia, and the United Arab Emirates (UAE) are reporting high volumes of cases.
- RSV** in the US – marked early rise in hospitalizations (comparable to levels usually seen in December) and a test positivity rate exceeding that of pre-pandemic levels (2018/2019).
- An increase in COVID-19, influenza, and RSV infections** in the Gulf region should be anticipated, with subsequent impacts on healthcare. Countries in the Gulf region with lower vaccination coverage for COVID-19 and influenza are at highest risk.
- Meningococcal Meningitis:** Argentina, Brazil, and the US reported cases in 2022. o To acknowledge that spectators will also be arriving from other un-specified countries, BlueDot also provided a summary of other notable outbreaks of infectious diseases in this category occurring globally including: monkeypox, polio, cholera, typhoid.

There is **low importation risk of high consequence (Category 2) diseases**. Cases of anthrax (n=2) and tularemia (n=105) were reported in the US between May 20, 2022 – November 1, 2022, but they were all sporadic infections due to animal exposure. We also provided an update on the Ebola outbreak in Uganda for awareness. While the importation risk is unknown given the limited information on ticket sales from Uganda, BlueDot currently considers the outbreak to be of high concern only at the local/regional level around Uganda.

**For diseases with risk of establishment (Category 3)**, Brazil has reported the most cases of dengue and chikungunya. Cases of dengue have also been reported in Mexico, and to a much lesser degree, the incidence rates of chikungunya (France, the US, Mexico) and malaria (in the US, Mexico, Argentina, Brazil, Germany) between May 20, 2022 – November 1, 2022 have been low. There appears to be low risk of establishment of dengue and chikungunya in Qatar, but the risk exists for malaria, West Nile virus, and Rift Valley Fever based on recent mosquito surveillance studies.

Diseases with an exportation risk concern – BlueDot has identified MERS as the most concerning disease endemic to the Gulf Region with exportation risk due to high disease severity and lack of available vaccine currently.

### Public health measures

Due to the stability of Qatar's current COVID-19 situation (relatively low disease activity and high vaccination rates), there are no measures to reduce the risk of importation of COVID-19 aside from recommendations for vaccination against any infectious diseases. Qatar's Ministry of Public Health has implemented active, passive, event-based, and environmental surveillance to detect infectious diseases hazards. There are plans to protect World Cup participants from the public/spectators should the COVID-19 situation worsen. Strong surveillance and planning alongside the WHO and other partners, advanced healthcare and high healthcare capacity in Qatar are likely to be robust in response to outbreaks of infectious disease related to FIFA World Cup should they occur.

Please find the full report [here](#)

# Other Infectious Disease Outbreaks/ Conflicts

## Mass Gathering Risk Assessment - FIFA World Cup in Qatar



Table A3. Reported cases of diseases of interest between May 20, 2022 (6 months prior to FIFA WC) – November 1, 2022 (inclusive, date of data pull) in the 7 non-Gulf countries that were among the top 10 countries with highest ticket sales. Data source: Case data extracted from BlueDot's Human Case Counts API; population size extracted from BlueDot's COVID-19 DataSuite.

| Category 1: Infectious diseases with risk of immediate transmission during FIFA WC   |                |   |   |
|--|----------------|---|---|
| Disease  | Country        | Number of Reported Cases (May 20 - Nov 1, 2022) | Number of Reported Cases per 100,000 (May 20 - Nov 1, 2022) |
| Cholera  | Mexico         | 5   | <0.01   |
| COVID-19   | Argentina      | 586,410   | 1,304.91  |
|  | Brazil         | 4,155,972                                       | 1,962.63  |
|  | France         | 7,808,872                                       | 11,644.62   |
|  | Germany        | 9,884,830                                       | 11,890.41   |
|  | Mexico         | 1,363,983                                       | 1,069.16  |
|  | United Kingdom | 1,721,815                                       | 2,576.24  |
|  | United States  | 15,099,427                                      | 4,600.12  |
| Diphtheria   | Germany        | 3   | <0.01   |
|  | United Kingdom | 35  | 0.05  |
| Hepatitis A  | United States  | 1,001   | <0.01   |
| Measles  | Argentina      | 1   | 0.01  |
|  | Brazil         | -   | 0.30  |
|  | Germany        | 19  | <0.01   |
|  | United States  | 39  | <0.01   |
| Meningococcal Meningitis   | Argentina      | 4   | 0.02  |
|  | Brazil         | 191   | 0.01  |
|  | United States  | 143   | <0.01   |
| Monkeypox  | Argentina      | 746   | 0.09  |
|  | Brazil         | 9,541   | 0.04  |
|  | France         | 4,096   | 1.66  |
|  | Germany        | 3,669   | 4.51  |
|  | Mexico         | 3,007   | 6.11  |
|  | United Kingdom | 3,405   | 4.41  |
|  | United Kingdom | 3,692   | 2.36  |
|  | United States  | 28,879  | 5.09  |
| Mumps  | Brazil         | 5   | 5.52  |
|  | United States  | 164   | 8.80  |
| Paratyphoid  | United States  | 54  | <0.01   |
| Pertussis  | France         | 5   | 0.05  |
|  | United States  | 1,404   | 0.02  |
| Poliomyelitis  | Brazil         | 1   | <0.01   |
| Rubella  | Brazil         | 1   | 0.43  |
|  | United States  | 10  | <0.01   |
| Typhoid  | Mexico         | 4,233   | <0.01   |
|  | United States  | 203   | <0.01   |
| Varicella  | Mexico         | 14,602  | 3.32  |
|  | United States  | 1,776   | 0.06  |
| Category 2: Infectious diseases that can have high consequence but typically reported sporadically   |                |   |   |
| Disease  | Country        | Number of Reported Cases (May 20 - Nov 2, 2022) | Number of Reported Cases per 100,000 (May 20 - Nov 2, 2022) |
| Anthrax  | United States  | 2   | 11.45   |
| Tularemia  | United States  | 111   | 0.54  |
| Category 3: Infectious diseases that do not present with an immediate risk of transmission during FIFA WC, but have a risk of long-term establishment in the Gulf Region |                |   |   |
| Disease  | Country        | Number of Reported Cases (May 20 - Nov 2, 2022) | Number of Reported Cases per 100,000 (May 20 - Nov 2, 2022) |
| Chikungunya  | Brazil         | 93,821  | <0.01   |
|  | France         | 13  | 0.03  |
|  | Mexico         | 1   | 44.31   |
|  | United States  | 31  | 0.02  |
| Dengue   | Argentina      | 206   | <0.01   |
|  | Brazil         | 717,067   | <0.01   |
|  | France         | 171   | 0.46  |
|  | Mexico         | 40,328  | 338.63  |
|  | United States  | 920   | 0.25  |
| Malaria  | Argentina      | 1   | 31.61   |
|  | Brazil         | 364   | 0.28  |
|  | Germany        | 2   | <0.01   |
|  | Mexico         | 28  | 0.17  |
|  | United States  | 916   | <0.01   |
| Yellow Fever   | Brazil         | 7   | 0.02  |
| Zika   | Brazil         | 9,912   | 0.28  |
|  | France         | 2   | <0.01   |
|  | Mexico         | 1   | 4.68  |
|  | United States  | 4   | <0.01   |



# Ukraine – Escalation of Attacks Across the Country

## Situation Report (29 November 2022)

### Highlights

- Ukraine saw this season's first snow in November, just days after new attacks on energy infrastructure caused widespread blackouts and disruption of heating and water supplies.
- The onset of winter brings new dimensions to the humanitarian crisis, as attacks and damage to homes leave millions at risk of deadly temperatures that can drop below -20°C..
- Disruption of utilities and lack of vital supplies continue to impose enormous challenges to people in Kherson and other areas where Ukraine has recently regained control..
- Humanitarians continue working against the clock to support people with services and supplies for the winter, as well as to bring much-needed aid to areas retaken by Ukraine..
- Aid organizations are providing generators in coordination with the authorities to ensure energy supply to critical facilities such as hospitals, schools and heating points.



A man pulling the slides with humanitarian aid he has just received. Borshchova, Kharkivska oblast, Ukraine Photo: Proliska/ Arsen Masalitin

### Attacks and destruction decimate access to health care in Ukraine.

The war in Ukraine has severely impacted the country's capacity to provide health care to its people, decimating health services in some areas where they need it the most. By the end of November, the World Health Organization (WHO) had verified 715 attacks on health care in Ukraine in 2022, more than 70 per cent of all attacks on health-care infrastructure reported worldwide this year. This massive destruction adds to the impact of the war on the production and procurement of medical supplies, the challenges created by the displacement, including doctors and nurses, and, most recently, the energy crisis. Due to power outages, there have been reports about doctors having to perform emergency surgeries with flashlights and barely meeting the hygiene protocols due to lack of water.

Access to health services was disrupted in Kherson city and other villages and towns across areas of the oblast recently retaken by Ukraine at the beginning of November. Pharmacies were empty, and hospitals lacked basic medicines or essential medical supplies to treat patients. According to the Ministry of Health, some 23 medical facilities had reportedly been destroyed in the oblast, while other 43 centres need urgent medical equipment and personnel.

### Winter arrives, bringing new dimensions to the humanitarian crisis in Ukraine

Among other challenges, the freezing temperatures arrived at a moment when the country is facing a serious energy crisis, following almost weekly waves of attacks on Ukraine's energy infrastructure. Despite ongoing repairs, on 28 November, the Ukrainian energy system was able to cover only 70 per cent of the peak demand to generate power. As a consequence, people in all regions of the country have constant power outages, also affecting civilians' access to water and heating, as the pumping system needs electricity to operate. The situation is more critical in the west of the country and the capital Kyiv, the worst affected by the latest attacks on energy infrastructure. The level of damage or destruction to other civilian infrastructure since the war started, including homes, hospitals or schools, also opens new dimensions and concerns during the winter months. Many people who returned to their villages and towns live in damaged houses or have no access to essential supplies, including water, heating and electricity.

### KEY FIGURES



### Health Needs

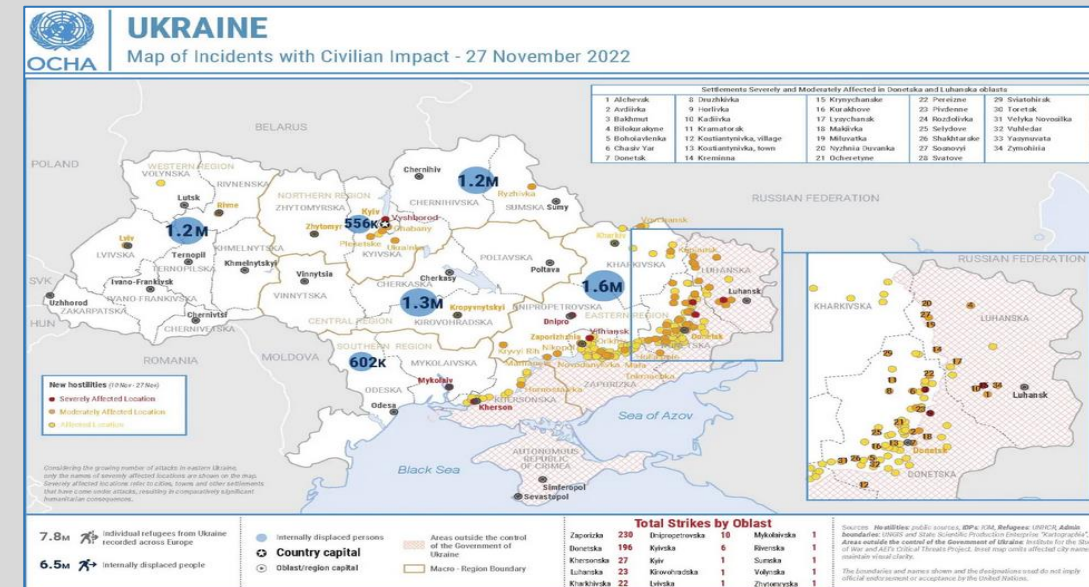
- Some 14.5 million people in Ukraine are estimated to need health assistance.
- The situation is particularly critical in areas of Donetsk, Kharkivska and Khersonska oblasts, where the Government of Ukraine regained control in the past months.
- Health Gaps**
- According to the [WHO Surveillance System for Attacks on Health Care](#), as of 24 November, 703 attacks on health care have been reported since the start of the war, including 70 recorded in the last two weeks. In total, these attacks led to at least 100 deaths and 129 injuries.

### Water, Sanitation and Hygiene (WASH) Needs

- Approximately 16 million people in Ukraine need water, sanitation and hygiene assistance. These include internally displaced people and their host communities, people living in areas with conflict-damaged water and waste-water infrastructure and areas experiencing disruptions of water supply caused by the energy crisis.
- As a consequence of the impact on services, there is an elevated risk of WASH-related diseases in affected areas.

### Water, Sanitation and Hygiene (WASH) Gaps

- The small number of partners with contingency supplies and/or funds for rapid interventions – notably generators, pipe fittings and household water treatment – limits the capacity to provide essential WASH assistance in areas recently retaken by the Government.
- More sustainable approaches must be found for water-scarce settlements near the front line and in retaken areas.
- Few organizations are prepared to respond to potential damage to district heating networks during winter.
- A new wave of attacks across Ukraine on 24 November highlighted the need to reinforce the contingency capacities of service providers.



Source: [UNOCHA WHO](#)

# Abstracts from the Force Health Protection Event 2022 (1)

## Yanfang Guo

**Affiliation:** Directorate of Force Health Protection, Canadian Forces Health Services Headquarters, Department of National Defence, Government of Canada

**Title:** Cervical Cancer Screening Participation Rate in the Canadian Armed Forces: a Study Protocol

### Abstract:

**Background:** Cervical cancer is the fourth most common cancer in women worldwide. The Canadian Task Force on Preventive Health Care (CTFPHC) recommends routine cervical cancer screening for women aged 25-69 every three years. Currently, the Canadian Armed Forces (CAF) health care system lacks formal cancer screening programs, and processes rely on ad hoc, or patient-initiated opportunistic screenings. Therefore, it is critical to monitor and evaluate cervical cancer screening indicators to ensure that females in the CAF receive high-quality cancer prevention services. The participation rate is the most important indicator for screening coverage. To date, there are limited findings available for cervical cancer screening rates within the CAF. This study will use the Canadian Armed Forces Health Evaluations and Reporting Outcomes system to validate and monitor the cervical cancer screening participation rate in the CAF from 2012 to 2020, and address methodological challenges noted in a previous report.

**Methods:** All Regular Force CAF females from 25-65 years who qualified for a routine Pap screening test from January 1st, 2012 to December 31st, 2020 with at least three consecutive years of service will be included. Four extracts will be linked through the unique member service number: the Canadian Forces Health Information System (CFHIS) Scanned Documents extract, the CFHIS Clinical extract, the Master Patient Index extract, and the CFHIS Physical Health Examination (PHE) extract. The CFHIS Scanned Documents and PHE extracts will be used to identify a Papanicolaou (Pap) test event. Percentage of eligible females who completed at least one Pap test in a three-year period will be estimated for 2012-2014, 2015-2017 and 2018-2020. Age-standardized participation rates will be calculated overall, and by age, rank, and command, from 2012 to 2020. In addition, hysterectomy-corrected and non-hysterectomy-corrected rates will be presented. Validation of the cervical cancer screening participation rates using the CFHIS scanned documents extracts and PHE extracts will be conducted by comparing the rate calculated via medical chart review. Sensitivity, specificity, positive predictive value and negative predictive value of Pap testing identification will be calculated.

**Results:** Exploration of the data extracts began in February 2022. The estimated completion date is March 2023.

**Discussion:** The trends in cervical cancer screening participation rates will inform preventive care practices in the CAF, identify subgroups who would benefit from targeted interventions to increase screening rates and inform the need for a population-based screening program.

## Flt Lt David Pennisi

**Affiliation:** Australian Defence Force - Joint Health Command

**Title:** The importance of vector surveillance to inform overall health surveillance during a time of environmental change

### Abstract

Health surveillance is a useful tool in detecting the presence of diseases to assess the risk to a population, including diseases transmitted between individuals through an intervening vector species. Vector surveillance assists in developing the knowledge base of which disease vectors are present, enabling a potential chain of transmission to occur. As such vector surveillance is an important component of health surveillance to determine if a vector borne disease introduced to a population will be capable of spread, and what interventions may be required to prevent this. As a vector borne diseases require their vectors in order to be transmitted, the vector threat and the presence of the diseases' host animals plays a major role in determining the risk of the spread of vector borne disease and drive mitigation and targeting strategies. As such there is little value in focusing limited resources on a vector borne disease where its vectors are absent.

Australia has not had a locally acquired case of Japanese Encephalitis since 1998. Despite having the vectors, environmental conditions, host and amplifying animals across the country, JEV vector surveillance only continued in the most northern areas of Queensland. As of April 2022, Australia has reported more JEV cases (40) than all but four individual countries where JEV is endemic in 2021. Retroactive serological studies are beginning to reveal that number may be much higher.

The detection of JEV in Australia was found via clinical surveillance from an ill person, and not through vector surveillance. While the specifics are still unclear, it is thought that JEV was re-introduced via migratory birds traveling farther south than normal as a result of climate change. With the third consecutive La Nina right before the summer season, JEV has the right conditions to explode.

While JEV is not a high risk to the Australian Defence Force as a whole, this event showcases the importance of vector surveillance in complimenting overall health surveillance. The issue of changing vectors is not limited to the Australian environment, and the incidence of climate change may find tropical vector and vector borne disease incursion into European, Asian and American environments making this lesson of value for all.

In this presentation we seek to reinforce the importance of vector surveillance in complementing clinical health surveillance, as well as the understanding of the changing pattern of vectors for climate change and other reasons.

# Abstracts from the Force Health Protection Event 2022 (2)

**Col PD DR. med. Ralf Matthias Hagen**

**LtCol Prof. Dr. rer. nat. Patrick Leander Scheid**

**Affiliation:** Central Military Hospital Koblenz, Dep. XXI Mikrobiology and Hygiene, Rheinkaserne, Andernacherstr. 100, 56070 Koblenz

**Title:** From “Syndromic surveillance” to Surveillance : Inclusion of laboratory network to enhance the specificity of the surveillance systems

## **Abstract**

For a long time it was concluded that the submission of patient laboratory diagnoses (with a certain delay for confirmation) are only suited for retrospective epidemiological analysis. Due to several changes and the rapid developments in diagnostics a re-evaluation may be necessary nowadays...

Tele-Health applications allow a fast approach to laboratory-based and evidenced results. Results from the (lead) laboratories in missions or from Rapid Deployable Outbreak Investigation Teams (RDOIT) are validated very rapidly using Tele-Health. Even results from “reach-back laboratories” (including molecular data or sequence data) are available in a very short period of time using Tele-Health.

More and more PCR instruments are available that run syndromic infectious disease tests. One multiplex assay simultaneously tests for the most common pathogens and antimicrobial resistance genes associated with a particular syndrome (“syndromic surveillance”?). The test panels like “intestinal panel or respiratory panel” mirror this approach. These systems enable and simplify test ordering, faster turnaround times, and increased accuracy by minimizing manual data entry. These tests are used predominantly in the field laboratory (and the reach back laboratory)

Another approach (also highlighted during the COVID-19 pandemic) is the rapid, near-patient, molecular in vitro diagnostic test utilisation of a real-time reverse transcription polymerase chain reaction (RT-PCR) amplification technology. It is used for the rapid, qualitative detection and discrimination of infectious disease agents as a Point of Care Test (POCT) outside a central lab. The tests allow the detection of targeted infectious agents (e.g. SARS-CoV-2) in approximately 20 minutes. These test systems are robust and provide immediate results, thus allowing treatment decisions to be made more quickly and precisely – inside or outside the hospital.

**Conclusion/proposal:** Integration with laboratory services and use of appropriate testing methods is essential to gain valuable information. To enhance the specificity of the surveillance systems and to provide a justification (complimentary to syndromic surveillance), the inclusion of laboratory network into the DSS data seems to be expedient and should therefore be considered additionally.

**Dr. Steve Guillouzic**

**Affiliation:** Defence Research and Development Canada – Centre for Operational Research and Analysis (DRDC CORA)

**Title:** Estimation of prevalence of COVID-19 and other influenza-like illnesses

## **Abstract**

**Background:** The COVID-19 Point Prevalence Map (PPM) of Defence Research and Development Canada (DRDC) has informed the response to the COVID-19 pandemic in the Department of National Defence (DND) and the Canadian Armed Forces (CAF) since October 2020 by providing decision makers with estimates of the prevalence of COVID-19 in the various parts of Canada and the United States, as well as many other countries around the world.

**Method:** For the first one and a half years, the prevalence reported by the PPM was determined from case data published by public health authorities using a compartmented epidemiological model that simulated how individuals go from being susceptible to an infection, to having been exposed, to being infectious, and to having recovered. This model was based on Bayesian statistics, requiring substantial computing power to estimate parameters for each of thousands of regions. In March 2022, we transitioned to a simpler weighted geometric mean model that takes into account test positivity rate in addition to case data but no longer considers the transition of individuals between various states of infection.

**Results:** The new model has allowed us to continue providing prevalence estimates to DND/CAF despite the increasing importance of reinfections and the reductions in COVID-19 testing and reporting.

**Discussion:** The PPM played an important role in the DND/CAF response to COVID-19. As the pandemic evolves, there continues to be a requirement for it. In this presentation, we will describe the new prevalence model, as well as our efforts to apply it to other influenza-like illnesses.