Force Health Protection Branch
NATO MilMed COE
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Update 119
FHP-Update
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GLOBAL ↘
552 387 632
confirmed cases
534 400 000
recovered
6 346 671 deaths

IMN
7-days incidence
3 107,0 ↗

SMR
7-days incidence
1 750,0 →

BRN
7-days incidence
1 474,0 ↗

News:

- **WHO:** After the meeting of the International Health Regulations (2005) (IHR) Emergency Committee regarding the multi-country monkeypox outbreak, held on 23 June 2022 the committee advised that at present, it is not determine that the event constitutes a Public Health Emergency of International Concern (PHEIC). However, the Committee unanimously acknowledged the emergency nature of the event and that controlling the further spread of outbreak requires intense response efforts.
- **WHO**: Announced the World Health Summit 2022: Registration now opened and key speakers have been announced.
- **WHO/ECDC**: Announced a statement of the thirty-second Polio IHR Emergency Committee
- **ECDC**: Published considerations for contact tracing during the monkeypox outbreak in Europe. Emphasising that early diagnosis, isolation, and effective contact tracing are key for the effective control of this outbreak. They also produced a technical guidance on risk communication and community engagement approaches during the monkeypox outbreak in Europe.
- **World Bank's Board**: approved the establishment of a financial intermediary fund (FIF) that will finance critical investments to strengthen pandemic PPR capacities at national, regional, and global levels, with a focus on low- and middle-income countries.
- **CDC**: endorsed the Advisory Committee on Immunization Practices' (ACIP) recommendation that all children 6 months through 5 years of age should receive a COVID-19 vaccine. This expands eligibility for vaccination to nearly 20 million additional children and means that all Americans ages 6 months and older are eligible for vaccination.
- **ECDC:**

- **Topics:**
- Poliovirus outbreaks (slide 2)
- Information on Monkeypox (slide 3 – 5)
- Global situation: COVID-19 (slide 6 – 10)
- Acute Hepatitis of Unknown Origin Among Children (slide 11)
- Other infectious diseases (slide 12)
- Risk assessment - Mass Gatherings for the Hajj Pilgrimage 2022 (slide 13)

Training Materials available on ECDC Virtual Academy (EVA) supporting countries neighbouring Ukraine

ECDC has curated three sets of training materials related to public health emergency preparedness and response to complex emergencies, for the use of public health authorities and other sectors.

Chemical, Biological, Radiological and Nuclear Threats (CBRN)

Training materials designed for participants to understand the principles and processes for response to threats caused by Chemical, Biological, Radiological and Nuclear agents to the human health.
As these materials are based on the use of video-lectures, they can also be used as a direct learning activity

Key content

- CBRN Preparedness and Response
- C of CBRN - Chemical
- B of CBRN - Biological
- RN of CBRN - Radiological and Nuclear
- Cross-cutting issues: Laboratory
- Cross-cutting issues: Health & Safety
- Simulation exercises

Cross-sectoral biorisk awareness and mitigation

Training materials developed to support the training on biorisk awareness and mitigation of a cross sectoral audience composed by first responders in the areas of civil protection, health emergency services and law enforcement.

Key content

- Biological hazards and biorisk
- Transmission of biological agents
- Biological risk assessment and occupational safety
- Entry- and exit screening and border control
- Essentials in personal protective equipment for biohazards
- Principles in barrier management and zones in biological emergencies
- Preparedness for deliberate releases of biological agent
- Principal decontamination strategies
- Risk management at transport of infectious substances

Rapid assessment and survey methods

Course developed to prepare field epidemiologists and public health professionals to contribute to the multidisciplinary and international response to complex emergencies situations, use sampling methods and techniques adapted to the population, contribute to surveillance, outbreak alert and response in mass gathering events and to apply epidemiological skills to serve public health interventions.

Key content

- Rapid Health Assessment in Emergency and Complex Emergency Situations (CES)
- Rapid Health Assessment at the European level
- Sampling and survey methodology
- Surveillance and response in mass gathering events

Access to these training packages is provided upon request through the ECDC Competent Bodies (National Correspondents or National Focal Points for Training or Preparedness and Response); please contact courses@ecdc.europa.eu for more information.

EUROPE ↗
222 828 493
confirmed cases
215 400 000
recovered
1 959 218 deaths

FRA
7-days incidence
1 279,0 ↗

NZL
7-days incidence
1 080,0 ↗

GRC
7-days incidence
1 057,0 ↗

Poliovirus outbreaks

Source: WHO

Polio update Polio IHR Emergency Committee

The Emergency Committee reviewed the data on wild poliovirus (WPV1) and circulating vaccine derived polioviruses (cVDPV) in the context of global eradication of WPV and cessation of outbreaks of cVDPV2 by end of 2023. Technical updates were received about the situation in the following countries and territories: Afghanistan, Democratic Republic of the Congo, Israel, Malawi, the occupied Palestinian territory and Pakistan, and written updates were provided by Eritrea and Yemen.

Wild poliovirus

A second WPV1 had been detected in south-eastern **Africa**, in Mozambique, close to the border with Malawi where the first case was detected. Furthermore, genetic sequencing analysis of the two wild polioviruses indicates a single importation event from Pakistan / Afghanistan into southeastern Africa; the importation event is estimated to have occurred between July 2019 (date of the common node between Pakistan viruses and Malawi/Mozambique viruses) and December 2020 (date of the common node between Malawi and Mozambique viruses). COVID19-related severe movement restrictions implemented in March 2020 in Pakistan and Afghanistan means it is less likely exportation could have occurred between March and December 2020. The Malawi and Mozambique viruses independently evolved for about 0.9 and 1.2 years respectively until first detected and are both considered orphan viruses, and the absence of detection of circulating WPV1 viruses in Malawi and Mozambique between 2019 and 2021 suggests surveillance gaps in southeastern Africa. The original WPV1 cluster in south Asia has not been detected there since December 2020.

A multi-country response to the WPV1 outbreak is continuing, with four immunization rounds being conducted in Malawi, Mozambique, Tanzania, Zambia; Zimbabwe will join the response for rounds 3 and 4. Additionally, retrospective case searching, surveillance strengthening and improving essential immunization are all ongoing.

It is noted that the certification of polio eradication African Region was not affected by the outbreak, as it is due to importation rather then endemic transmission. The committee also noted the importance of cross border activities in the outbreak response.

There is a recent outbreak of WPV1 in the North Waziristan district of southern Khyber Pakhtunkhwa (KP) province in **Pakistan**. Since the last Emergency Committee (EC) meeting in February 2022, Pakistan has reported ten WPV1 cases from North Waziristan and two WPV1 positive environmental samples from the neighboring district of Bannu. With the ongoing WPV1 circulation in South KP, the risks to the rest of Pakistan has escalated.

There has been continuous / steady progress in the rest of Pakistan with no WPV1 detection in last 11 months. Last WPV1 case and positive environmental sample outside of South KP were detected in January 2021 and July 2021 respectively.

Circulating vaccine derived poliovirus (cVDPV)

Eritrea has reported detection of cVDPV2 for the first time, and the virus is most closely linked to a virus found in Sudan in 2020, indicating that both new international spread and missed transmission has occurred. Furthermore, the detection of cVDPV2 in Ghana, Togo and Côte d'Ivoire appears to have resulted from new spread from Nigeria. A new outbreak of cVDPV3 has been detected in Israel in a population sub-group who refuse vaccination. Environmental detection has also occurred in sites in the occupied Palestinian territory. High levels of transmission of cVDPV2 are occurring in northern Yemen, northern Nigeria, and eastern DR Congo, which have reported 115 out of 127 cases to date in 2022. Because of the conflict, no immunization rounds have been conducted in northern Yeme

Despite the ongoing decline in the number of cases and lineages circulating, the risk of international spread of cVDPV2 remains high as evidenced by recent spread from Nigeria to West Africa. The outbreak in Israel again shows that even countries with high immunization coverage can have pockets of high risk children which can sustain an outbreak.

Conclusion

Although heartened by the apparent progress, the Committee unanimously agreed that the risk of international spread of poliovirus remains a Public Health Emergency of International Concern (PHEIC) and recommended the extension of Temporary Recommendations for a further three months.

Vaccine-derived poliovirus type 2 (VDPV2) detected in environmental samples in London, UK

The Global Polio Laboratory Network (GPLN) has confirmed the isolation of type 2 vaccine-derived poliovirus (VDPV2) from environmental samples in London, United Kingdom (UK), which were detected as part of ongoing disease surveillance. It is important to note that the virus has been isolated from environmental samples only – no associated cases of paralysis have been detected. Recent coverage for the primary course of DTaP/IPV/Hib/HepB vaccination, which protects against several diseases including polio, in London suggests immunization coverage of 86.6%.

Initially, vaccine-like type 2 poliovirus (SL2) had been isolated from samples taken from the same site between February and May 2022. Genetic analysis suggests that the new VDPV2 and previous SL2 isolates have a common origin, still to be identified, but the technical definition and criteria for 'circulation' of VDPV2 are not met at this time. Additional sewage samples collected upstream from the main waste-water treatment plant's inlet are being analysed.

Investigations and response by the UK Health Security Agency are ongoing to:

- assess both origin and risk of circulation associated with these isolates;
- strengthen poliovirus surveillance including enterovirus and environmental;
- explore routine immunization catch-up of children who are under-immunized, including of families that have recently arrived in the UK from countries with recent use of type 2-containing oral polio vaccine; and,
- enhance communications about this incident to health professionals and caregivers.

It is important that all countries, in particular those with a high volume of travel and contact with polio-affected countries and areas, strengthen surveillance in order to rapidly detect any new virus importation and to facilitate a rapid response. Countries, territories, and areas should also maintain uniformly high routine immunization coverage at the district level and at the lowest administrative level to protect children from polio and to minimize the consequences of any new virus being introduced.

Any form of poliovirus anywhere is a threat to children everywhere. It is critical that the GPEI Polio Eradication Strategy 2022-2026 is fully resourced and fully implemented everywhere, to ensure a world free of all forms of poliovirus can be attained.

Source: WHO; GOV.UK

Wild poliovirus type 1 (WPV1) - Mozambique

On 15 May 2022, a case of **wild poliovirus type 1 (WPV1)** was reported in Mozambique through the Global Polio Laboratory Network (GPLN). Results of the genomic sequencing analysis indicate that the current WPV1 isolate is genetically linked to a strain detected in Pakistan in 2019 and similar to a case of WPV1 reported in Malawi in February 2022.

As part of response measures following the confirmation of the case in Malawi, two rounds of bivalent oral poliovirus vaccine (bOPV) campaigns have been conducted in the country, with more than 4.5 million children vaccinated.

The risk of international spread, particularly across the South East region of Africa remains high, due to persisting sub-optimal immunity and surveillance gaps, and large-scale population movements.

Mozambique is also affected by a concurrent outbreak of **circulating vaccine-derived poliovirus type 2 (cVDPV2),** with seven cases reported in the country since 2021, the most recent on 25 March 2022.

According to the WHO-UNICEF national immunization coverage estimate, the oral poliovirus vaccine third dose (OPV3) and inactivated poliovirus vaccine first dose (IPV1) coverage was 73% and 78% respectively in Mozambique in 2020.

Risk assessment

Detection of a case of WPV1 in Mozambique, and the second case in the South East region of Africa, confirms ongoing WPV1 transmissions in the sub-region.

WHO considers that there is a continuous high risk of international spread of WPV1, particularly across the South East sub-region of Africa, due to persisting sub-optimal national immunity and surveillance gaps, and large-scale population movements. The risk is further increased due to the decreased immunization rate related to the ongoing COVID-19 pandemic.

The risk of spread associated with the concurrent cVDPV2 outbreak is currently assessed as moderate due to historical and epidemiological evidence suggesting that WPVs have a significantly higher propensity for geographic spread than cVDPVs. However, a comprehensive outbreak response to both strains is urgently being implemented, as both strains have the capacity to cause paralytic disease in children.

Source: WHO

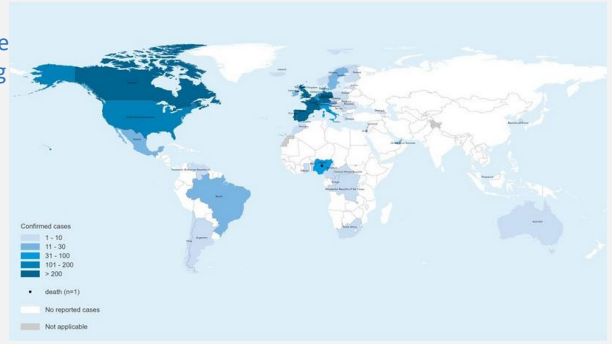
Multi-country monkeypox outbreak: situation update by WHO as of 24 June

Source: https://www.who.int/emergencies/disease-outbreak-news/item/2022-DON396

This Disease Outbreak News on the multi-country monkeypox outbreak is an update to the previously published editions and provides an update on the epidemiological situation, further information on the use of therapeutics, as well as on the outcomes of the International Health Regulations (2005) Emergency Committee regarding the multi-country monkeypox outbreak held on 23 June.

Description of the outbreak

The majority of laboratory confirmed cases (2933/3413; 86%) were reported from the WHO European Region. Other regions reporting cases include: the African Region (73/3413, 2%), Region of the Americas (381/3413, 11%), Eastern Mediterranean Region (15/3413, <1%) and Western Pacific Region (11/3413, <1%). One death was reported in Nigeria in the second quarter of 2022. The case count is expected to change as more information becomes available daily and data are verified under the International Health Regulations (2005) (IHR 2005) (Table below).



WHO Region	Country / area / territory	Confirmed cases
African Region	Benin	3
	Cameroon	3
	Central African Republic	8
	Congo	2
	Democratic Republic of the Congo	10
	Ghana	5
	Nigeria	41 (including 1 death)
	South Africa	1
Region of the Americas	Argentina	3
	Brazil	11
	Canada	210
	Chile	3
	Mexico	11
	United States of America	142
	Venezuela (Bolivarian Republic of)	1
Eastern Mediterranean Region	Lebanon	1
	Morocco	1
	United Arab Emirates	13
European Region	Austria	12
	Belgium	77
	Czechia	6
	Denmark	13
	Finland	4
	France	277
	Georgia	1
	Germany	521
	Gibraltar	1
	Greece	3
	Hungary	7
	Iceland	3
	Ireland	24
	Israel	13
	Italy	86
	Latvia	2
	Luxembourg	1
	Malta	2
	Netherlands	157
	Norway	4
	Poland	7
	Portugal	317
	Romania	5
	Serbia	1
	Slovenia	8
	Spain	520
	Sweden	13
	Switzerland	46
	The United Kingdom	793
Western Pacific Region	Australia	9
	Republic of Korea	1
	Singapore	1
Cumulative	50 countries/territories	3413

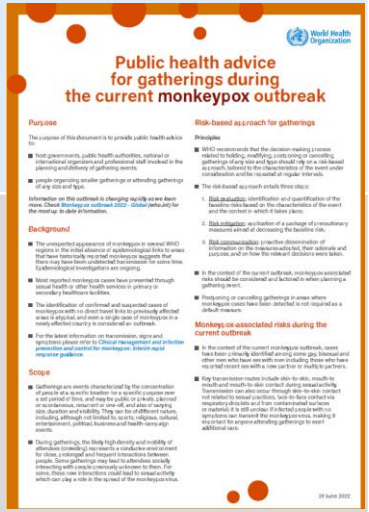
Confirmed cases of monkeypox by WHO region and country from 1 January 2022 to 22 June 2022, 17:00 CEST

Overall response

WHO continues to closely monitor the situation, and support international coordination and information sharing with Member States and partners. Clinical and public health incident response have been activated by Member States to coordinate comprehensive case finding, contact tracing, laboratory investigation, isolation, clinical management and implementation of infection and prevention and control measures. Genomic sequencing of viral deoxyribonucleic acid (DNA) of the monkeypox virus found in the current outbreak is ongoing, where available; preliminary data from polymerase chain reaction (PCR) assays indicate that the monkeypox virus genes detected belong to the West African clade.

Vaccines

WHO has strongly encouraged Member States to consider the context of the current multi-country outbreak of monkeypox and convene their national immunization technical advisory groups (NITAGs) to review the evidence and develop policy recommendations for the use of vaccines as relevant to the national context. All decisions around immunization with smallpox or monkeypox vaccines (pre-emptive or post-exposure) should be by shared clinical decision-making, based on a joint assessment of risks and benefits, between a health care provider and prospective vaccinee, on a case-by-case basis. Member States using vaccines against monkeypox are encouraged to do so within a framework of collaborative clinical studies using standardized design methods and data collection tools for clinical and outcome data to rapidly increase evidence generation, especially on vaccine effectiveness and safety.


Public health advice for gatherings during the current monkeypox outbreak

WHO risk assessment

- The **overall risk** is assessed as **moderate** at global level considering this is the first time that cases and clusters are reported concurrently in five WHO Regions.
- At the **regional level**, the risk is considered to be **high in the European Region** due to its report of a geographically widespread outbreak involving several newly-affected countries, as well as a somewhat atypical clinical presentation of cases.
- In **other WHO Regions**, the risk is considered **moderate** with consideration for epidemiological patterns, possible risk of importation of cases and capacities to detect cases and respond to the outbreak. In newly-affected countries, this is the first time that cases have mainly, but not exclusively, been confirmed among men who have had recent sexual contact with a new or multiple male* partners.

The unexpected appearance of monkeypox and the wide geographic spread of cases indicate that the monkeypox virus might have been circulating below levels detectable by the surveillance systems and sustained human-to-human transmission might have been undetected for a period of time. Routes of monkeypox virus transmission include human-to-human via direct contact with infectious skin or mucocutaneous lesions, respiratory droplets (and possibly short-range aerosols) or indirect contact from contaminated objects or materials, also described as fomite transmission. Vertical transmission (mother-to-child) has also been documented. While it is known that close physical contact can lead to transmission, it is unclear whether sexual transmission via semen/vaginal fluids occurs, research is currently underway to understand this. In addition, the likelihood of sustained community transmission cannot be ruled out and the extent to which pre-symptomatic or asymptomatic infection may occur as the infectious period is unknown, as well as the further spread of monkeypox virus among persons with multiple sexual partners in interconnected networks and the likely role of mass gatherings.

The clinical presentation of monkeypox cases associated with this outbreak has been atypical as compared to previously documented reports: many cases in newly-affected areas are not presenting with the classically described clinical picture for monkeypox (fever, swollen lymph nodes, followed by centrifugal rash).

Atypical features described include:

- presentation of only a few or even just a single lesion
- absence of skin lesions in some cases, with anal pain and bleeding
- lesions in the genital or perineal/perianal area which do not spread further
- lesions appearing at different (asynchronous) stages of development
- the appearance of lesions before the onset of fever, malaise and other constitutional symptoms (absence of prodromal period).

The actual number of cases is likely to be underestimated, in part due to the lack of early clinical recognition of an infection previously known in only a handful of countries, and limited enhanced surveillance mechanisms in many countries for a disease previously 'unknown' to most health systems. Health care-associated infections cannot be ruled out (although unproven to date in the current outbreak). There is a potential for increased health impact with wider dissemination in vulnerable groups as the mortality was previously reported as higher among children and young adults, and immunocompromised individuals, including people living with uncontrolled HIV infection, are especially at risk of severe disease.

The risk is also represented by the difficulties involved in widespread lack of availability of laboratory diagnostics, antivirals and vaccines and as well as in ensuring adequate biosafety and biosecurity in diagnostic, clinical and referral laboratories everywhere that cases have occurred.

https://www.who.int/emergencies/diseases/novel-coronavirus-2019/media-resources/science-in-5/monkeypox

Monkeypox outbreak: situation update II

A large part of the population is vulnerable to monkeypox virus, as smallpox vaccination, which is expected to provide some protection against monkeypox has been discontinued since the 1980s. Only a relatively small number of military, frontline health professionals and laboratory workers have been vaccinated against smallpox in recent years. A third-generation vaccine MVA received authorization of use by the European Medicines Agency for smallpox. The authorization of use provided by Health Canada and the United States Food and Drug Administration (FDA) includes an indication for the prevention of monkeypox. An antiviral agent, tecovirimat, has been approved by the European Medicines Agency, Health Canada, and the United States FDA for the treatment of smallpox. It is also approved for use in the European Union for the treatment of monkeypox.

WHO advice

All countries should be on the alert for signals related to patients presenting with a rash that progresses in sequential stages – macules, papules, vesicles, pustules, scabs, at the same stage of development over all affected areas of the body – that may be associated with fever, enlarged lymph nodes, back pain, and muscle aches. In addition, during this current outbreak, many individuals are presenting with atypical symptoms which includes a localized rash that may include as little as one lesion. The appearance of lesions may be asynchronous, and persons may have primarily or exclusively peri-genital and/or peri-anal distribution associated with local, painful swollen lymph nodes. Some patients may also present with sexually transmitted infections and should be tested and treated appropriately. These individuals may present to various community and health care settings including, but not limited to, primary and secondary care, fever clinics, sexual health services, infectious disease units, obstetrics and gynaecology, emergency departments, surgical specialties and dermatology clinics.

Clinical management and Infection Prevention and Control (IPC) in health care and community settings

Caring for patients with suspected or confirmed monkeypox requires early recognition through screening protocols adapted to local settings, prompt, isolation and rapid implementation of appropriate IPC measures (standard and transmission-based precautions, including the addition of respirator use for health workers caring for patients with suspected /or monkeypox, and an emphasis on safe handling of linen and management of the environment), testing to confirm diagnosis, symptomatic management of patients with mild or uncomplicated monkeypox and monitoring for and treatment of complications and life-threatening conditions such as progression of skin lesions, secondary bacterial infection of skin lesions, ocular lesions, and rarely, severe dehydration, severe pneumonia or sepsis. Patients with less severe monkeypox who isolate at home require careful assessment of the ability to safely isolate and maintain required IPC precautions in their home to prevent transmission to other household and community members. To enable reliable evaluations of interventions, randomized trials using CORE protocols are the preferable approach. Unless there are compelling reasons not to do so, every effort should be made to implement randomized trial designs. It is feasible to conduct placebo-controlled studies, especially in low-risk individuals. Harmonised data collection for safety and clinical outcomes using WHO's Global Clinical Platform for Monkeypox, would represent a desirable minimum dataset in the context of an outbreak, including the current event. Precautions (isolation and IPC measures) should remain in place until lesions have crusted, scabs have fallen off and a fresh layer of skin has formed underneath.

Laboratory testing and sample management

Any individual meeting the definition for a suspected case should be offered testing. The decision to test should be based on both clinical and epidemiological factors, linked to an assessment of the likelihood of infection. Due to the range of conditions that cause skin rashes and because clinical presentation may more often be atypical in this outbreak, it can be challenging to differentiate monkeypox solely based on the clinical presentation.

Risk communication and community engagement

Communicating monkeypox-related risks and engaging at-risk and affected communities, community leaders, civil society organizations, and health care providers, including those at sexual health clinics, on prevention, detection and care, is essential for preventing further secondary cases and effective management of the current outbreak.

For further information on risk communication for contacts, suspected and confirmed cases, and individuals who develop symptoms suggestive of monkeypox, please see the Disease Outbreak News published 17 June 2022.

Anyone caring for a person infected with monkeypox should use appropriate personal protective measures. As a precaution, WHO suggests the use of condoms consistently during sexual activity (receptive and insertive oral/anal/vaginal) for 12 weeks post-recovery to reduce the potential transmission of monkeypox for which the risk is currently not known.

Misinformation: The public is reminded that rumors and incorrect information continue to circulate on social media and other platforms regarding the current outbreak, and that it is important to check facts with credible sources such as WHO or national health authorities.

One Health

Various wild mammals have been identified as susceptible to monkeypox virus in areas that have previously reported monkeypox. These include rope squirrels, tree squirrels, Gambian pouched rats, dormice, non-human primates, among others. Some species may have asymptomatic infection. Other species, such as monkeys and great apes, show skin rashes typical of those found in humans. Thus far, there is no documented evidence of domestic animals or livestock being affected by monkeypox virus. There is also no documented evidence of human-to-animal transmission of monkeypox. However, this remains a hypothetical risk. Therefore, appropriate measures should be taken, such as:

- physical distancing between people infected with monkeypox and domestic pets
- proper waste management to prevent the disease from being transmitted from infected humans to susceptible animals at home (including pets), in zoos and wildlife reserves, and to peri-domestic animals, especially rodents.
- residents and travellers to countries that have previously reported monkeypox should avoid contact with sick mammals such as rodents, marsupials, non-human primates (dead or alive) that could harbor monkeypox virus and should refrain from eating or handling wild game (bush meat).

International travel and points of entry

Based on available information at this time, WHO does not recommend that States Parties adopt any measures that restrict international traffic for either incoming or outgoing travellers.

- Any individual feeling unwell, including having a fever with rash-like illness, or who is considered a suspected or confirmed case of monkeypox by jurisdictional health authorities, should avoid undertaking non-essential travel, including international, until declared as no longer constituting a public health risk.
- Any individual who has developed a rash-like illness during travel or upon return should immediately report to a health professional, providing information about all recent travel, immunization history including whether they have received smallpox vaccine or other vaccines (e.g., measles-mumps-rubella, varicella zoster vaccine, to support making a diagnosis), and information on close contacts as per WHO interim guidance on surveillance, case investigation and contact tracing for monkeypox.

Public health officials should work with travel operators and public health counterparts in other locations to contact passengers and others who may have had contact with an infectious person while travelling. Health promotion and risk communication materials should be available at points of entry, including information on how to identify signs and symptoms consistent with monkeypox; on the precautionary measures recommended to prevent its spread; and on how to seek medical care at the place of destination when needed.

WHO urges all Member States, health authorities at all levels, clinicians, health and social sector partners, and academic, research and commercial partners to respond quickly to contain local spread and, by extension, the multi-country outbreak of monkeypox. Rapid action must be taken before the virus can be allowed to establish itself as a human pathogen with efficient person-to-person transmission in areas that have previously reported monkeypox, as well as in newly affected areas.

Latest country reports
-Monkeypox New Activity-

Turkey - The Ministry of Health of Turkey reported the first case of monkeypox in the country on June 30 via Twitter. According to the statement, the individual is an adult male with a medical history of immunosuppression and is currently isolated at home. Further details about the individual and epidemiological features of the event such as travel history, contact with other confirmed cases, as well as the time of symptom development were not disclosed. However, they added that contact tracing has begun and so far, no other close contacts have been identified. The statement did not mention if Turkey has access to vaccines or approval for prevention use. **Source: NEWSMEDIA**

Puerto Ricco - Health authorities reported the first case of monkeypox in Puerto Rico on June 29. According to the statement, the individual is an adult male who began experiencing symptoms after recently returning from a state in the United States that has recently reported cases of monkeypox. Further details about the individual and epidemiological features of the event such as detailed travel history, including the timeframe of the trip and the state the individual visited, as well as the time of symptom development were not disclosed. However, health authorities added that contact tracing has begun and the individual is in stable condition, isolated at home. The statement did not mention if Puerto Rico has access to vaccines or if they were approved for use as a prevention measure. **Source: NEWS MEDIA**

Estonia - A news media article reported the first case of monkeypox in Estonia on June 28. According to the statement, the individual is a middle-aged man who acquired the infection abroad. The health agency cited in the article mentioned that no close contacts were identified. Further details about the individual and epidemiological features of the event such as recent travel history and time of symptom development were not disclosed. The statement did not mention whether Estonia has access to vaccines. **Source: NewsMedia**

Peru - The Peruvian Ministry of Health (MINSA) reported the first confirmed case of monkeypox in Peru's capital city of Lima, on June 27, 2022. MINSA states that the affected individual is a foreign national who lives in Peru and may have had contact with individuals from other countries. The patient is reported to be in stable condition and isolating at home after having received treatment at the Santa Rosa Hospital in Lima. Health authorities report that the patient has presented with symptoms for 10 days, and additional contact tracing is underway to follow up with the patient's contacts. Since June 14, 2022, Peru implemented a process whereby the National Reference Laboratory for Respiratory and Immuno-preventable Viruses is responsible for testing and reporting the outcome of suspected monkeypox samples within 48 hours of receiving the sample. The Pan American Health Organization has delivered primers, probes, and controls in order for the country to utilize time-lapse PCR testing. **Source: NEWS MEDIA**

Saint Lucia - The Ministry of Health of Saint Lucia reported the first case of monkeypox on the island on June 27. According to the statement, the individual is part of a flight crew who developed symptoms before arriving on the island. Health authorities added that the individual did not disembark from the aircraft when it arrived. Further details about the individual and epidemiological features of the event such as flight origin and travel history were not disclosed. The samples were taken to Trinidad and Tobago for testing and close contact tracing is being conducted by public health. The statement did not mention whether Saint Lucia has access to vaccines. **Source: NEWS MEDIA**

Colombia - The National Institute of Health (INS) in Colombia reported the first three cases of monkeypox in the country on June 24. According to the statement, all three affected individuals are male adults who had recently returned from Europe. Two of the individuals reside in Bogota and the other in Medellin, however, there is no indication of an epidemiological link between them. Furthermore, there is also limited information regarding travel details including locations the individuals visited in Europe as well as the time frame of their visit. The INS indicated that the individuals were in isolation and close contacts were being traced. The statement did not describe how accessible the vaccine is currently in the country.
Source: NewsMedia

Bulgaria - The Bulgarian Ministry of Health has confirmed two cases of monkeypox in the country on June 23, 2022. According to the statement, the individuals are two men (a 41-year-old and a 44-year- old) who had travelled within the past two weeks to the United Kingdom and Spain and are both currently in stable condition in a hospital in the country's capital, Sofia. Both the UK and Spain are currently reporting increasing cases and community transmission primarily among men who have sex with men networks. No further details about the event have been released including Bulgaria's access to vaccines. Monkeypox is a neglected tropical disease endemic to western and central African countries. It is considered to spread primarily through animal contact in endemic regions but can also spread between people through direct contact with skin lesions and/or exposure to infectious respiratory droplets. This event is noteworthy not only because of the number of cases reported in a short timeframe across multiple countries but also because some cases in the current outbreak have been associated with travel to non-endemic countries reporting cases. **Source: NewsMedia**

Croatia - The first case of monkeypox has been confirmed in Croatia. There is limited information available regarding the affected individual; however, the man has a recent travel history to Italy, where several confirmed cases have been identified, as well as Spain, where associated exported cases have been reported. The patient remains in a stable condition and is observing an at-home-isolation. Identified cases are being isolated, however, there is no other available information involving containment measures, including access to vaccination and tracing of close contacts. **Source: NewsMedia**

Taiwan - The Taiwan Ministry of Health announced the first case of monkeypox in Taiwan on June 24, 2022. According to the statement, the individual is a 20-year-old male who sought medical attention on June 22 after developing symptoms two days prior. The statement highlighted that the man had been attending school in Germany since January and returned to Taiwan on June 16. No other travel history was reported. The man is currently hospitalized but is in a stable condition. Public health began contact tracing and has identified 19 close contacts so far. Media sources highlighted that Taiwan began discussing the supply of the latest third-generation smallpox vaccine with the vaccine company, and while the country has reserves of the first-generation vaccine, they are part of a stockpile reserved for warfare and they are not currently being considered for use.
Source: NewsMedia

Bahamas - The first case of monkeypox has been confirmed in the Bahamas. Officially available information indicates that the affected individual is a man in his 40's who is a visitor to the Caribbean island. He travelled from London, United Kingdom on June 9, displayed symptoms, was placed under isolation, and tested on June 24 when the National Reference Laboratory confirmed monkeypox. The Bahamas is the third Caribbean country to confirm a case of monkeypox. In addition, official information indicates that an additional case is under investigation. This case is a Bahamian who had recent contact with a foreigner with confirmed monkeypox and has been placed in quarantine for 21 days while awaiting final results. The statement did not mention if the Bahamas has access to vaccines or approval for prevention use.
Source: NewsMedia

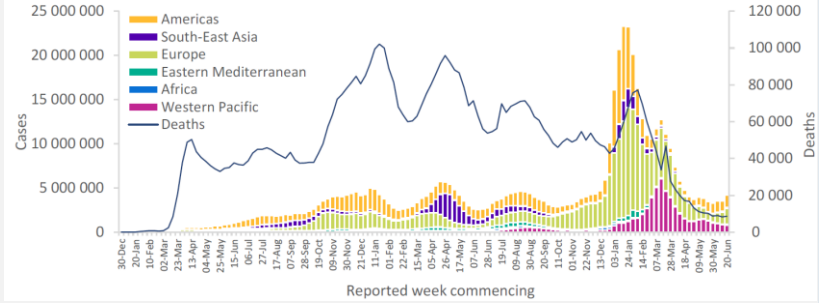
France - Public Health France reported the first case of monkeypox in a child in Île-de-France on June 25, 2022. The report highlighted that the child is in no serious condition. However, there is limited information regarding specific location of the case, travel history, or epidemiological links to other cases in France. This follows the country's report of the first female case on June 21. To date, cases have only previously been identified in people between the ages of 19 to 71. While a probable case has been identified in a sibling, further investigations are ongoing to identify all possible close contacts and messaging has been sent to at-risk contacts at the affect child's school. This epidemiological feature is worrisome as this is the first reported case in a child outside of endemic countries in central and west Africa. As the vast majority of cases in the current outbreak in non-endemic countries have occurred among men who have sex with men (MSM) networks, this case suggests possible wider spread community transmission in France. **Source: NewsMedia**

COVID-19 Situation by WHO Region, as of 29 June

Global epidemiological situation overview; WHO as of 29 June 2022

Globally, the number of weekly cases has increased for the third consecutive week, after a declining trend since the last peak in March 2022. During the week of 20 to 26 June 2022, over 4.1 million new cases were reported, an 18% increase as compared to the previous week (Figure 1). The number of new weekly deaths remained similar to that of the previous week, with over 8500 fatalities reported. At the regional level, the number of new weekly cases increased in the Eastern Mediterranean Region (+47%), the European Region (+33%), the South-East Asia Region (+32%), and the Region of the Americas (+14%), while it decreased in the African Region (-39%) and the Western Pacific Region (-3%). The number of new weekly deaths increased in the Eastern Mediterranean Region (+22%), the South-East Asia Region (+15%), and the Region of the Americas (+11%), while decreases were observed in the Western Pacific Region (-6%), the European Region (-5%) and the African Region (-1%). As of 26 June 2022, over 541 million confirmed cases and over 6.3 million deaths have been reported globally. These trends should be interpreted with caution as several countries have been progressively changing COVID-19 testing strategies, resulting in lower overall numbers of tests performed and consequently lower numbers of cases detected.

Figure 1. COVID-19 cases reported weekly by WHO Region, and global deaths, as of 26 June 2022**



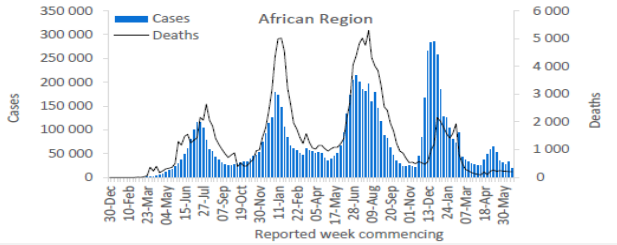
WHO regional overviews:

Epidemiological week 20-26 June 2022**

African Region

The African Region reported a decline in the number of new weekly cases, with over 20 000 new cases reported, a 39% decrease as compared to the previous week. Fourteen (29%) countries reported an increase in the number of new cases of 20% or greater, with some of the greatest proportional increases seen in Equatorial Guinea (44 vs six new cases; +633%), Gabon (82 vs 31 new cases; +165%) and the Seychelles (184 vs 88 new cases; +109%). The countries that reported the highest numbers of new cases were South Africa (6843 new cases; 11.5 new cases per 100 000 population; -14%), Ethiopia (3092 new cases; 2.7 new cases per 100 000; -40%), and Kenya (2859 new cases; 5.3 new cases per 100 000; +21%).

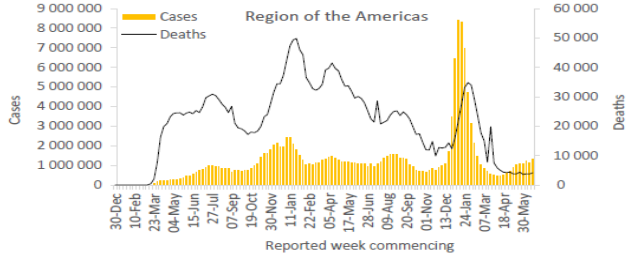
The number of new weekly deaths in the Region was similar as compared to the previous week, with over 200 new deaths reported. The highest numbers of new deaths were reported from South Africa (133 new deaths; <1 new death per 100 000 population; +10%), Democratic Republic of the Congo (17 new deaths; <1 new death per 100 000; +325%), and Zimbabwe (15 new deaths; <1 new death per 100 000; +15%).



Region of the Americas

The Region of the Americas reported an increase in the number of new weekly cases, with over 1.3 million new weekly cases, a 14% increase as compared to the previous week. Sixteen (29%) countries reported increases in the number of new cases of 20% or greater, with some of the greatest proportional increases observed in Canada (15 051 vs 6515 new cases; +131%), the Falkland Islands (Malvinas) (51 vs 23 new cases; +122%) and Bolivia (Plurinational State of) (5485 vs 2617 new cases; +110%). The highest numbers of new cases were reported from the United States of America (701 855 new cases; 212.0 new cases per 100 000; +5%), Brazil (349 791 new cases; 164.6 new cases per 100 000; +37%), and Mexico (76 407 new cases; 59.3 new cases per 100 000; +47%).

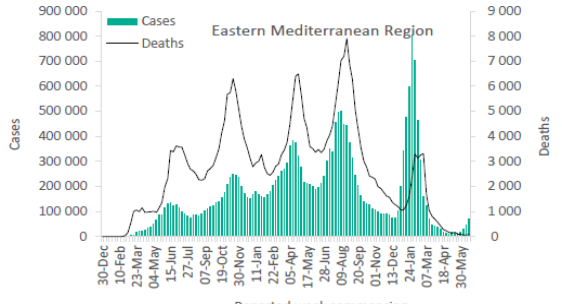
The number of new weekly deaths in the Region increased by 11% as compared to the previous week, with over 4100 new deaths reported. The highest numbers of new deaths were reported from the United States of America (1997 new deaths; <1 new death per 100 000; -2%), Brazil (1313 new deaths; <1 new death per 100 000; +37%), and Chile (159 new deaths; <1 new death per 100 000; +6%).



Eastern Mediterranean Region

The Eastern Mediterranean Region reported over 74 000 new weekly cases, representing a 47% increase as compared to the previous week. Ten (45%) countries reported increases in the number of new cases of 20% or greater, with the greatest proportional increases observed in Iraq (6237 vs 2210 new cases; +182), Tunisia (2277 vs 886 new cases; +157%), and Pakistan (1652 vs 718 new cases; +130%). The highest numbers of new cases were reported from Morocco (17 729 new cases; 48.0 new cases per 100 000; +84%), Bahrain (12 740 new cases; 748.7 new cases per 100 000; +38%), and the United Arab Emirates (11 139 new cases; 112.6 new cases per 100 000; +15%).

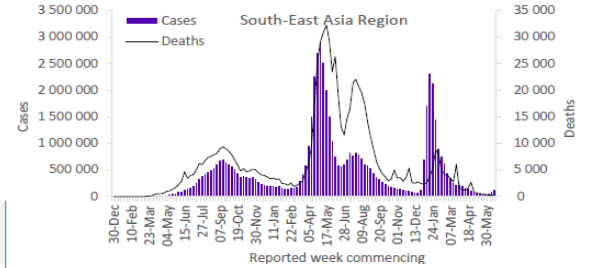
The number of new weekly deaths in the Region increased by 22% as compared to the previous week, with 83 new deaths reported. The highest numbers of new deaths were reported from the Islamic Republic of Iran (20 new deaths; <1 new death per 100 000; +43%), Tunisia (15 new deaths; <1 new death per 100 000; +114%), and Saudi Arabia (13 new deaths; <1 new death per 100 000; -13%).



South-East Asia Region

After the declining trend in new cases observed since mid-January 2022, the South-East Asia Region has reported increases over the last four weeks, with over 131 000 new cases reported, a 32% increase as compared to the previous week. Eight of ten countries (80%) for which data are available showed increases in the number of new cases of 20% or greater, with some of the greatest proportional increases observed in Bangladesh (8846 vs 2212 new cases; +300%), the Maldives (1043 vs 528 new cases; +98%) and Sri Lanka (83 vs 47 new cases; +77%). The highest numbers of new cases were reported from India (93 281 new cases; 6.8 new cases per 100 000; +25%), Thailand (15 111 new cases; 21.6 new cases per 100 000; +7%), and Indonesia (12 376 new cases; 4.5 new cases per 100 000; +63%).

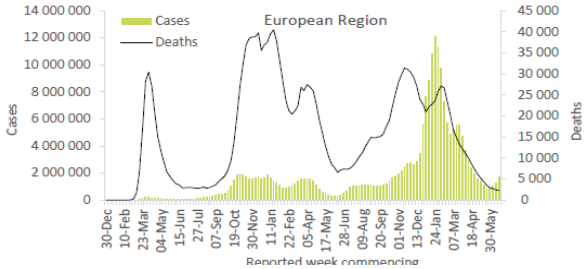
The number of new weekly deaths in the Region increased by 15% as compared to the previous week, with over 300 new deaths reported. The highest numbers of new deaths were reported from India (144 new deaths; <1 new death per 100 000; +53%), Thailand (125 new deaths; <1 new death per 100 000; -6%), and Indonesia (30 new deaths; <1 new death per 100 000; -32%).



European Region

After reporting decreases in the number of new weekly cases since mid-March 2022, an increase has been reported for the third consecutive week in the European Region, with over 1.8 million new cases reported, a 33% increase compared to the previous week. Thirty-three (54%) countries in the Region reported increases in new cases of 20% or greater, with the greatest proportional increases observed in Romania (2609 vs 341 new cases; +665%), Spain (118 421 vs 18 757 new cases; +531%) and Kazakhstan (299 vs 112 new cases; +167%). The highest numbers of new cases were reported from Germany (504 655 new cases; 606.8 new cases per 100 000; +23%), Italy (340 012 new cases; 570.1 new cases per 100 000; +61%), and France (331 843 new cases; 510.2 new cases per 100 000; +37%).

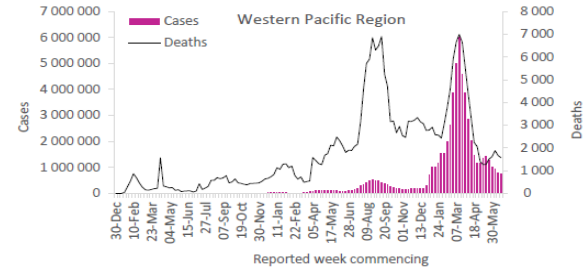
Over 2200 new weekly deaths were reported in the Region, a 5% decrease as compared to the previous week. The highest numbers of new deaths were reported from the Russian Federation (429 new deaths; <1 new death per 100 000; -3%), Italy (355 new deaths; <1 new death per 100 000; a +5%), and Spain (317 new deaths; <1 new death per 100 000; +45%).



Western Pacific Region

The Western Pacific Region continues the decreasing trend observed since mid-May 2022, with over 799 000 new cases reported last week, which is similar to the number of new cases reported during the previous week. Twelve (36%) countries reported increases in new cases of 20% or greater, with some of the largest proportional increases observed in Samoa (346 vs 75 new cases; +361%), French Polynesia (102 vs 60 new cases; +70%) and the Philippines (4376 vs 2738 new cases; +60%). The highest numbers of new cases were reported from China (333 926 new cases; 22.7 new cases per 100 000; -18%), Australia (196 360 new cases; 770.0 new cases per 100 000; +8%), and Japan (109 520 new cases; 86.6 new cases per 100 000; +20%).

The Region reported over 1500 new weekly deaths, representing a 6% decrease as compared to the previous week. The highest numbers of new deaths were reported from China (925 new deaths; <1 new death per 100 000; -11%), Australia (331 new deaths; 1.3 new deaths per 100 000; +6%), and the Republic of Korea (87 new deaths; <1 new death per 100 000; +43%).



Source: https://www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19---29-june-2022

COVID-19 Global Situation

Omicron BA.5 Global Update

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As of June 29, 2022, **BA.5 has been detected in at least 69 countries globally** [1]. In several parts of the world, such as the United Kingdom and Canada, the BA.5 sub-lineage is currently growing faster than any other lineage. **BA.5 has shown a growth advantage over all other variants**, including BA.2 and BA.4. Many countries predict that BA.5 will be the dominant variant in the coming months causing their next wave of the pandemic, as has been previously detailed in the COVID-19 Brief Report sent on June 17.

BA.5 presents the possibility to infect vaccinated individuals, as well as cause a high number of reinfections in the near future. This is due to the variant's immune escaping properties including having a **higher relative growth rate and transmissibility** compared to BA.2 and BA.4. This possibility is augmented by the reduction or elimination of most non-pharmaceutical interventions across several countries and the low uptake of first and second boosters globally. Although there is still little indication of increased severity of cases, with **an increase in the number of cases, there is an expected corresponding increase in the number of hospitalizations and severe cases**.

Below BlueDot has provided a summary of select countries currently experiencing or beginning their respective BA.5 induced wave. Overall, to date, it is seen that BA.5 is either **already the dominant variant** or **quickly becoming the dominant variant** and lagging indicators such as hospitalizations and deaths have slowly increased in some countries. Please note, that the percent of COVID-19 genomic sequencing data has been included where possible. As these values are based on sample data, they are interpreted as an estimate. A confidence interval (CI) is included to represent the range of values that the true value may lie within.

Canada

- As of the week of June 5 – 11, 2022, BA.5 made up 14.6% of all new COVID-19 cases across Canada, up from 7.1% the week before. [2]
- **Ontario Specific**
  - **% of Sequencing:** Among data reported from all provinces, Ontario has the highest prevalence of BA.5, accounting for 14.4% of all cases in the week of June 5-11, 2022. This was up from 6.8% during the week before,
  - **Growth Rate:** The weekly growth of BA.5 was 3.11 times greater (95% CI: 2.79 - 3.48) compared to BA.2 over the past 12 weeks. This is currently the fastest comparative growth rate of any lineage in Ontario.
  - **Projection:** Based on Ontario's modelling data, the proportion of BA.5 is projected to have become dominant on June 29, 2022, accounting for 52.9% (95% CI: 41.0% - 64.4%) of all cases in Ontario. [3]

Portugal

- The Instituto Nacional de Saúde Doutor Ricardo Jorge (INSA) reports that BA.5 was first detected during the week of March 27, 2022 to April 2, 2022.
- **% of Sequencing:** The BA.5 sub-lineage continues to be the dominant sub-lineage in Portugal during the week of June 13 to June 19. During this week, BA.5 made up 94.8% of the random genomic sampling sequenced. BlueDot previously reported that for the week of May 30 to June 5, BA.5 made up 84% of the random genomic sampling completed. [4]
- Nationally, the number of new COVID-19 cases is showing a decreasing trend.
- **Hospitalizations:** The number of people with COVID-19 hospitalized in Intensive Care Units is also decreasing, dropping to 33.3% (percent of critical threshold of ICU bed occupancy currently occupied by a COVID-19 patient) from 38.4% the previous week. [5]

Singapore

- The first case of locally-transmitted BA.5 was announced on May 15, 2022. [6]
- **% of Sequencing:** BA.4/BA.5 (data not separated) accounted for approximately 45% of community COVID-19 cases in the last week, as of June 27 2022 compared to 30% in the week prior. BA.5 is estimated to have contributed to 40% of all cases in the past week.
- **Hospitalizations:** Singapore Ministry's of Health (MOH) indicated that the number of COVID-19 infections remained manageable, as of June 27 2022. As cases have increased, the MOH have indicated that their hospitals and COVID-19 Treatment Facilities are prepared to handle the anticipated surge with contingency plans to increase capacity if needed. [7]

South Africa

- The National Institute for Communicable Diseases (NICD) first detected BA.5 on February 25, 2022 in KwaZulu-Natal. [8]
- **% of Sequencing:** As of June 24, 2022, BA.5 made up 28% of the COVID-19 genomes sequenced in the country. This was an increase from April and May 2022, when BA.5 made up 19% and 27% of samples, respectively. The Omicron sub-lineages BA.4 and BA.5 together are the dominant lineages in the country, together making up 96% of the genome samples sequenced by June 24, 2022. [9]
- **Hospitalizations and Deaths:** According to the NICD COVID-19 Weekly Hospital Surveillance report, during the week of June 19 to June 25, there was a 41% decrease in the number of new hospital admissions. [10] The NCID National Daily COVID-19 Hospital Surveillance report for June 28, 2022 shows that hospital admissions in both the private and public health systems continue to report a downward trend since the last peak during the week of May 8, 2022. The number of new deaths in the country shows the same downward trend, following the last peak which occurred during the week of May 22, 2022. Of the total number of patients receiving care in a hospital facility, 12.1% are currently in an Intensive Ward Unit (ICU). [11] This is an increase from two weeks ago on June 14 and a month ago on May 30, when 11.0% and 9.74% of hospitalized patients were receiving treatment in an ICU. [12]

United Kingdom (UK)

- **% of Sequencing:** BA.4/BA.5 are the dominant variants circulating in the UK where COVID-19 is increasing. It is estimated that 39.5% (95% CI: 32.2% - 51.3%) of cases are BA.5.
- **Vaccine Effectiveness (VE):** Insufficient data to understand VE against mild and severe disease caused by BA.5
- **Growth Rate:** Using data sampled between April 8 – June 8 2022, BA.5's median growth rate was estimated to be 65.6% per week higher than BA.2
- **Projection:** BA.5 is anticipated to become the dominant variant across all UK regions given that modelling suggests that BA.5 (35.2%, 95% CI: 30.7-40.3%) has a larger relative growth rate than BA.4 (35.14%, 95% CI: 16.9% – 21.8%). [13]

United States of America (USA)

- **% of Sequencing:** In the most recent week of June 19-25, BA.5 made up 36.6% (95% CI: 32.8 % - 40.6%) of all new covid cases in the states. This is a relative increase of almost 46% from the week before, when BA.5 made up about 25.1% (95% CI: 22.7% - 27.6%) of all cases. [14]
- **Projection:** BA.4 and BA.5 together are the dominant variants in the USA, accounting for 52% of all cases in the most recent week, with BA.5 predicted to become the dominant variant before the end of the summer. [15]

Hospitalizations and Deaths: As of the most recent week, cases in the US have increased by 21%, hospitalizations by 8%, and deaths by 41%. [16]

COVID-19 Global Situation

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Omicron Immunity Influenced by Initial SARS-CoV-2 Infections in Vaccinated Individuals

Although the impact of multiple reinfections is not fully understood, a recent study [1] suggests that previous exposure to specific variants may be detrimental to our immune response to subsequent variant infections because of impaired cross recognition. The findings of this study indicated that **overall antibody levels and B and T cell response against the Omicron variant are reduced**. This is different to what was observed in the earlier waves of the pandemic, when a prior infection against the ancestral Wuhan strain conferred a high level of immunity against a possible future reinfection with the same strain. Additionally, **not all cases of hybrid immunity provide enhanced protection**. Specifically, boosted individuals previously infected with the ancestral Wuhan strain as well as the Omicron variant conferred low levels of immunity against a subsequent Omicron reinfection. This implies that a person's past infection history may affect their response to a future infection or re-infection, along with increasing other risks such as long COVID. These factors may increase the likelihood of multiple reinfections with the Omicron variant.

Further hospitalizations, deaths, and an increased proportion of populations affected by post-COVID sequelae is to be expected with subsequent infection waves. Real-world observations are needed to understand the clinical implications and severity of the conflicting immune response due to a previous infection. Vaccination, in addition to preventative measures, including increased indoor ventilation and masking, may prevent severe outcomes in vulnerable populations. The study (ahead of print) was published in the journal *Science* with the UK COVIDsortium HCW cohort assessing the immune response against Omicron (B.1.1.529) in individuals with differing SARS-CoV-2 infection histories, all of whom received three mRNA vaccine doses. The cohort consists of healthcare workers in London who were uninfected or those who were infected with the ancestral strain (Wuhan Hu-1), Alpha (B.1.1.7), Delta (B.1.617.2), or Omicron (B.1.1.529) variants between March 2020 to January 2022.

Overall Omicron immunity is impacted with a reduced antibody and T cell response regardless of previous infection history.

- People previously infected with the ancestral strain had a reduced antibody response to Beta, Gamma, and Omicron variants compared to an individual with no infection history. Across infection histories, the memory B cell response against Omicron was reduced compared to the other variants of concern, whereas the response against the ancestral strain and Delta were similar.
- **54% of participants (27/50) produced no detectable T cell response against Omicron** (S1 antigens) including some uninfected individuals and those previously infected with the Omicron variant. 92% of participants (42/50) produced a detectable T cell response against the ancestral strain and 66% (33/50) against the Delta variant.
- Animal models (transgenic mice) suggest T cell priming ("teaching" immune cells specificity in order to produce stronger and rapid subsequent responses) against the ancestral strain produces a poor response against the Omicron variant and vice versa. This implies that an individual previously infected with the ancestral strain may have a reduced T cell response against a subsequent Omicron infection due to the previous infection.

Differential declines in antibody response against Omicron variant across infection history compared to the ancestral strain.

Level of immunity against Omicron infection (or re-infection)

Vaccination status → / Prior infection ↓	No vaccination	2-3 weeks after first dose	2-3 weeks after second dose	20-21 weeks after second dose	2-3 weeks after third dose	14 weeks after third dose
No prior infection	No antibody response	No antibody response	Similar response across all infection histories	Antibody response waned	Similar antibody response as 2-3 weeks after second dose; similar across all infection histories	Similar levels of immunity as those with a prior Omicron infection; second highest antibodies compared to all infection histories
Ancestral Wuhan strain	No antibody response	Higher antibodies compared to those with no prior infection	Similar response across all infection histories	Antibody response waned but remained highest among all infection histories	Similar antibody response as 2-3 weeks after second dose; similar across all infection histories	Lowest antibodies compared to all infection histories

Vaccination status → / Prior infection ↓	No vaccination	2-3 weeks after first dose	2-3 weeks after second dose	20-21 weeks after second dose	2-3 weeks after third dose	14 weeks after third dose
Alpha variant	No antibody response	Higher antibodies compared to those with no prior infection	Similar response across all infection histories	Majority of people (19/21) did not produce detectable antibodies, and was lowest among all infection histories	Similar antibody response as 2-3 weeks after second dose; similar across all infection histories	N/A
Omicron variant	N/A	N/A	N/A	N/A	N/A	Highest antibodies compared to all infection histories
Delta variant	N/A	N/A	N/A	Antibody response waned and was similar to those with no prior infection	Similar antibody response as 2-3 weeks after second dose; similar across all infection histories	N/A
Ancestral Wuhan strain + Omicron variant	N/A	N/A	N/A	N/A	N/A	Lowest antibodies compared to all infection histories

COVID-19 Global Situation

Relative vaccine effectiveness

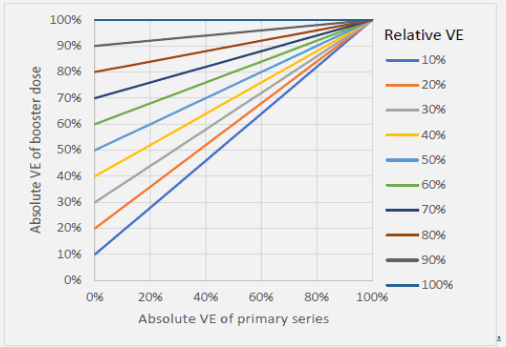
Vaccine effectiveness (VE) is a measure of how well vaccines work in the real world. Most VE studies compare the risk of a clinical outcome among vaccinated persons to the risk among unvaccinated persons, referred to as absolute VE (aVE).

$$aVE = 1 - \frac{risk\ among\ vaccinated}{risk\ among\ unvaccinated}\ x\ 100\%$$

However, as vaccine coverage reaches a high rate (e.g., >90%), the unvaccinated population can become quite different from the vaccinated population in terms of SARS-CoV-2 exposure and/or disease risk, leading to a bias in the aVE results. To help mitigate this bias and compare more similar risk groups, one can compare vaccine effectiveness within the group of vaccinated individuals alone, specifically comparing by the number of doses received. For example, one can compare recipients of one booster dose to recipients of only the primary series, or compare recipients of two booster doses to recipients of one booster dose or the primary series, and so on. This type of comparison is called a relative VE (rVE) and has been done for several vaccines, such as those for influenza. For COVID-19 vaccines, rVE has been reported in studies from multiple countries including Israel, Brazil and Canada. The relationship between absolute and relative VE can be expressed in the following mathematical terms (using boosted versus primary series as an example), which is demonstrated in Figure 4.

$$rVE = \frac{aVE_{boosted} - aVE_{primary\ series}}{1 - aVE_{primary\ series}}\ x\ 100\%$$

Figure 4. Relationship between absolute vaccine effectiveness to relative vaccine effectiveness[a]

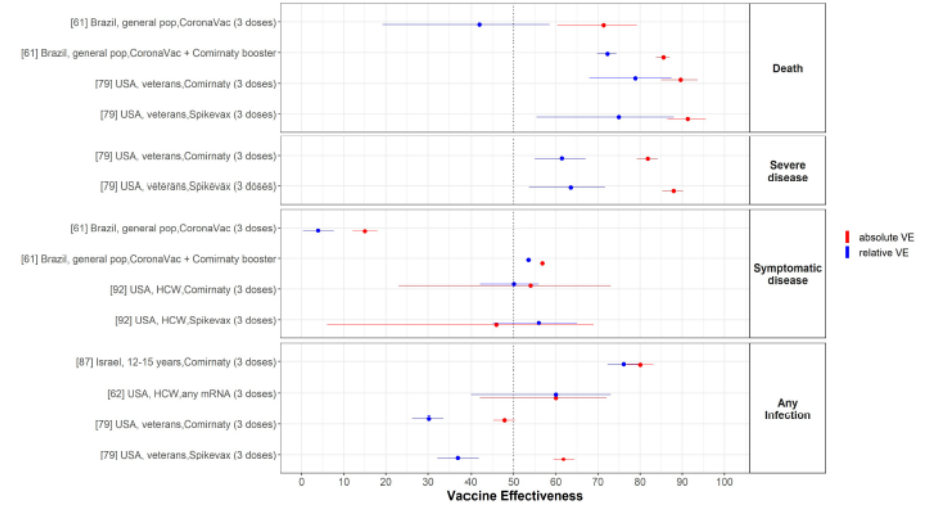


[a]The figure can be applied to any relative VE comparison (i.e., three doses versus two doses; four versus two doses etc.). In this figure, booster dose versus primary series have been used as an example.

At low aVE of the primary series (whereby primary series recipients are compared to unvaccinated persons), the rVE of the booster dose (whereby booster dose recipients are compared to primary series recipients) approximates the aVE of the booster dose (whereby booster dose recipients are compared to unvaccinated persons). However, at high aVE of the primary series, the rVE of the booster dose can vary quite dramatically while the incremental gain in aVE of the booster dose is small.

For example, if the aVE of the primary series is 90%, and the rVE of the booster dose is 50%, then the aVE of the booster dose is 95%. This rVE of 50% makes it appear like a significant increase in protection, but the gain in absolute VE is only 5%. Meanwhile, if the aVE of the primary series is 0%, and rVE of the booster dose is 50%, then the aVE of the booster dose is 50%. The true aVE of the booster dose should always be higher than the rVE, but by how much will depend on the true aVE of the primary series, which is determined by a variety of factors. However, in real-world VE studies, this is not always the case due to issues such as confounding bias (e.g. due to behavioral differences, history of a prior SARS-CoV-2 infection) and uncertainty of the estimates.

Figure 5. Absolute and relative vaccine effectiveness of the first booster dose against Omicron VOC[a]



A few studies have evaluated both the aVE and the rVE of the booster dose. The results of these evaluations are summarized in Figure 5. Because persons in the comparison group potentially have some vaccine-induced immunity, the rVE is lower or equal to the aVE of the booster dose. If investigators do not provide the aVE of the booster dose, then one cannot calculate it from the rVE alone. One would need both the rVE and the aVE of the primary series at the same time in the same population to calculate the aVE of the booster dose.

The rVE provides a way to quantify the additional preventive benefit of a booster dose versus a primary series. The rVE must be interpreted with the understanding that the comparison group has potentially some residual protection from the vaccine. Interpreting the rVE requires knowing the population and vaccine being evaluated, the timing of the last dose, the clinical outcome, and the epidemiologic situation, including the circulating SARS-CoV-2 variants. Because these are context and time-specific, one cannot use an aVE of the primary series from one study to calculate the aVE of a booster dose in another study. Furthermore, the rVE of a given vaccine cannot be compared across studies as rVE is dependent on aVE, signifying that averted events can vary widely from study to study.

Second booster dose VE

To date, nine studies have assessed the rVE against the Omicron VOC over time of a second booster vaccine dose relative to either the first booster dose or the primary series. In five studies evaluating the protection of mRNA boosters against COVID-19 severe disease (hospitalization, ICU admission, and/or death), the rVE of a second mRNA booster dose compared to the first booster dose ranged from 40% to 86.5% (Table 2). The follow-up time was limited in all studies. Only one study was able to calculate the absolute and relative VE of a second booster dose against severe disease, finding an aVE of the second booster dose of 86%, an aVE of the first booster dose of 77%, and an rVE of 40%.2 Also presented is the absolute risk reduction to show the impact of the addition of a second booster dose.

Source: https://www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19---29-june-2022

COVID-19 Global Situation

Relative vaccine effectiveness

				Infection with SARS-CoV2	Severe Disease/Mortality with COVID-19			
Study	**Country**	**Population studied**	**Vaccine Evaluated**	**Relative VE against Infection (95% CI)**	**Relative VE against Severe disease (95% CI)**	**Rate among comparator group**	**Rate among 2nd booster dose recipients**	**Rate difference**
Cohen et al [6]	Israel	HCWs	Pfizer-BioNTech-Comirnaty	44% (37-50%) ≥7 days after second booster dose versus ≥4 months after first booster dose				
Regev-Yochay et al [7]	Israel	HCWs	Pfizer-BioNTech-Comirnaty	30% (-9 to55%) ≥7 days after second booster dose versus ≥4 months after first booster dose				
			Moderna-Spikevax	11% (-43 to 44%) ≥7 days after second booster dose versus ≥4 months after first booster dose				
Amir et al [4]	Israel	≥60 years	Pfizer-BioNTech-Comirnaty		89% (87-91%) 0-2 months after second booster dose versus ≥4 months after primary series.	11.6 (10.6-12.9) / 100 000 person days at risk	1.3 (1.1-1.4) / 100 000 person days at risk	10.3 cases / 100 000 person days at risk
Arbel et al [8]	Israel	≥60 years	Pfizer-BioNTech-Comirnaty		78% (72-83%) ≥7 days after second booster dose versus ≥4 months after first booster dose (mortality)	99.2 / 100 000 persons at risk	28 / 100 000 persons at risk	71.2 / 100 000 persons at risk*
Bar-On et al [9]	Israel	≥60 years	Pfizer-BioNTech-Comirnaty	52% (50-52%) 15-21 days after second booster dose versus ≥4 months after first booster dose	66% (57-72%) 15-21 days after second booster dose versus ≥4 months after first booster dose	5.5 (5.2-5.9) / 100 000 person days at risk	2.3 (1.9-2.8) / 100 000 person days at risk	3.2 (2.7-3.7) / 100 000 person days at risk
				9% (0-17%) 50-56 days after second booster dose versus ≥4 months after first booster dose	77% (62-86%) 36-42 days after second booster dose versus ≥4 months after first booster dose	5.5 (5.2-5.9) / 100 000 person days at risk	1.3 (0.8- 2.2) / 100 000 person days at risk	4.2 (3.4–4.9) / 100 000 person-days at risk
Magen et al [10]	Israel	≥60 years	Pfizer-BioNTech-Comirnaty	52% (49-54%) 14-30 days after second booster dose versus ≥4 months after first booster dose	64% (48-77%) 14-30 days after second booster dose versus ≥4 months after first booster dose	85.2 / 100 000 persons	30.4 / 100 000 persons	54.8 (34.7–75.9) / 100 000 persons
Gazit et al [11]	Israel	≥60 years	Pfizer-BioNTech-Comirnaty	65.1% (63-67.1% 14-20 days after second booster dose versus ≥4 months after first booster dose	77.5% (69.7-83.2%) 7-27 days after second booster dose versus ≥4 months after first booster dose			
				22% (4.9-36.1%) 63-69 days after second booster dose versus ≥4 months after first booster dose	86.5% (63.4-95%) 49-69 days after second booster dose versus ≥4 months after first booster dose			
Muhsen et al [12]	Israel	Residents of LTCFs	Pfizer-BioNTech-Comirnaty	34% (30%-37%) ≥7 days after second booster dose versus ≥4 months after first booster dose	67% (57%-75%) against severe hospitalization and 72% (54%-83%) against death ≥7 days after second booster dose versus ≥4 months after first booster dose			
Grewal et al [2]	Canada	≥60 years living in LTCFs	Pfizer-BioNTech-Comirnaty Moderna-Spikevax	19% (12-26%) ≥7 days after second booster dose versus ≥84 days after first booster dose	40% (24-52%) ≥7 days after second booster dose versus ≥84 days after first booster dose			

HCW = healthcare workers
LTCF = long-term care facilities
*Unadjusted rates

Source: https://www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19---29-june-2022

Update on
Acute Hepatitis of Unknown Origin Among Children

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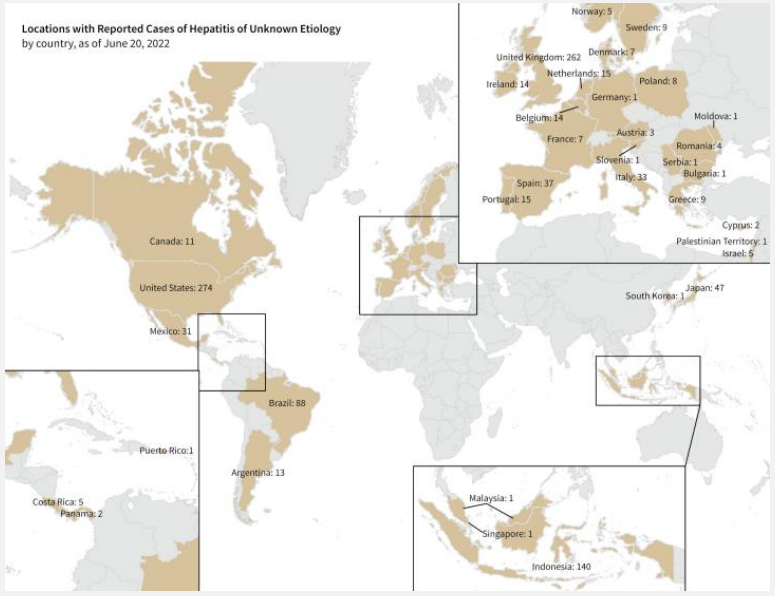
Since the previous Intelligence Report on April 27, the number of probable cases of severe hepatitis of unknown origin among previously healthy children has risen to **1,070 across 33 countries as of June 20, 2022**, with the majority of these cases reported in the United States and the United Kingdom (Figure 1).



While some jurisdictions are in the process of determining whether cases exceed baseline expected rates, **the frequency in a number of affected countries and severity of cases are considered unusual.** Surveillance/ascertainment bias may also be contributing to the relatively higher rates in some countries whereas other countries may have more limited detection ability.

SARS-CoV-2 is under consideration as a contributing cause either directly due to inflammation or as a predisposing factor for autoimmune dysfunction. Experts **considers a previous infection with SARS-CoV-2 to be a highly plausible contributory cause** due to the scientifically-supported potential mechanisms, correlation between the rate of cases and Omicron epidemic waves in a subset of affected countries, and lack of strong supportive evidence for alternate hypotheses. Studies that compare the rate of SARS-CoV-2 seropositivity among the affected in comparison with the rate in a comparable population of the same age group would be highly valuable to support this hypothesis.

Adenovirus (AdV) infections continue to be considered as a potential underlying cause of the syndrome.**1** Experts consider that **adenovirus infections could be contributing to a proportion of cases, but are not likely the primary cause**, based on available evidence provided to date.

Distinguishing between an inflammatory or auto-immune condition versus acute direct viral infection in affected children is important as the appropriate treatment depends on the underlying cause. Prompt treatment with immunosuppressants for post-viral inflammation or auto-immune hepatitis improves outcomes and reduces the risk of liver transplantation need.**2** Conversely, treatment with antivirals may be warranted for cases where an viral infection is more likely a direct cause of hepatopathy.

If SARS-CoV-2 infections are predisposing some young children to severe hepatitis, **we expect an increase in cases to follow epidemic waves of COVID-19 in affected countries at a level that coincides with community infection rates.**

While cases of acute severe hepatitis of unknown cause in children are rare, the severity of disease and the increased rate of detection in some countries is concerning. **A precautionary mitigation approach is warranted that considers the various known and still unknown risks of COVID-19 in children.** Vaccination of young children against COVID-19 may reduce the impact of future epidemic waves on rates of severe hepatitis if SARS-CoV-2 is a contributing cause.

As of June 20, 2022, 1,070 cases of hepatitis of an unknown etiology have been reported with the majority of these cases reported in the United States and the United Kingdom. Since the last intelligence report on April 27, 2022, there has been an increase of 177 cases across the world with a decline in the rate of new case reports observed over recent weeks (previously 893 cases). The countries that experienced the largest increase since the last report include United States (+58), Brazil (+41), and United Kingdom (+40) which may also have included the reassignment of cases from other countries to improve accuracy. Reassignment of cases since April 27, 2022 occurred in Israel (-15), Italy (-2), and Ireland (-2).

A survey-based study suggests that hospitals in UK, Israel, Italy, Spain, Sweden, and Ukraine have identified a notable increase in cases of acute severe hepatitis of unknown cause in children between Jan 1, 2022 - April 18, 2022, based on a small number of participating hospitals. Hospitals in 12 other EU countries and 6 non-EU nations have not noted an unusual increase.**3** Some countries are continuing to investigate nationally whether cases exceed what is expected in the study population. The US has recently reported that there does not appear to be an unusual increase in undiagnosed severe hepatitis in children compared to pre-pandemic levels, although baseline statistics are difficult to establish.**4** Regardless of whether countries are observing increasing cases, the underlying cause(s) may differ during different time periods.

As of May 15, Indonesia ranks now as one of the countries with the highest number of cases and deaths identified.**5** It is noteworthy that in Indonesia, the rate of mortality associated with the syndrome is higher when compared to other countries, and some considerations that may explain this discrepancy are:

1. Potential delayed diagnosis and reduced population healthcare seeking behaviour
2. Likely fewer resources for liver transplantations when compared to the healthcare systems among other countries reporting cases requiring transplant surgery.

There are several hypotheses under investigation to explain the cases observed by some countries, including the involvement of adenovirus and a potential role of SARS-CoV-2. **An infectious aetiology is currently considered the most likely explanation across multiple jurisdictions compared to toxicological or other environmental exposures.**

Liver histopathology on biopsy and explanted livers has not been reported to show any direct evidence of infection with any pathogen(s). The overall pattern seen is non-specific and there is no clear identifiable cause from the available histopathology results.

Exposure investigations: no common exposures have been observed in travel, family structure, parental occupation, diet, water source or potential exposures to toxicants, and no association with prior immunosuppression.

Other Infectious Disease Outbreaks/ Conflicts

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Earthquake southeastern Afghanistan

Afghanistan: A 5.9-magnitude earthquake struck a remote area of southeastern Afghanistan near the Pakistani border early on 22 June, killing more than 1,000 people and destroying thousands of homes. The quake, the deadliest in more than two decades, is the first major natural disaster to hit Afghanistan since the Taliban takeover in August 2021, and comes amid an ongoing humanitarian crisis, with much of the country suffering from extreme poverty and hunger. International sanctions coupled with poor governance have raised concerns over the rescue effort and the treatment of thousands of injured, especially as the United States and other Western donors refuse to provide the Taliban with financial assistance. The UN's emergency aid coordination agency, OCHA, is overseeing a foreign aid response that has been badly hampered by mountainous terrain, poor weather, and a lack of phone signals. **Source: Reliefweb**

Measles

Afghanistan - Measles cases have been rising sharply since July 2021. From the beginning of January until 14 May this year, 46,632 cases were reported, including 270 deaths – compared with 156 confirmed deaths in all of 2021. MSF reported that one of its projects in Herat province was seeing two children dying from measles each day. Poor vaccine coverage (66%) coupled with widespread economic hardship in the wake of the Taliban takeover have created the perfect conditions for the virus to thrive. The political upheaval, alongside the effects of the pandemic, has also impacted access to healthcare. The WHO estimated that 23 million more babies worldwide missed routine vaccinations – including the two recommended measles doses – in 2020 than in 2019. **Source: The new Humanitarian**

Ebola

Congo - The Democratic Republic of the Congo declared the end of the Ebola outbreak on July 4th, 2022. The outbreak began three months ago in Mbandaka, the capital of Equateur Province in the northwest. It was the third outbreak in the province since 2018 and the country's 14th outbreak overall. There were four confirmed cases and one probable case; unfortunately, all five individuals died. In the previous outbreak that occurred between June and November 2020 in Equateur Province, there were 130 confirmed cases and 55 deaths.
Source: United Nations

Meningococcal Menigitis

USA – The CDC has reported an outbreak of meningococcal meningitis that has primarily been reported among gay and bisexual men in Florida. As of June 24, 2022, at least 26 cases and seven deaths have been linked to the outbreak which the CDC has stated is "one of the worst outbreaks of meningococcal disease among gay and bisexual men in U.S. history". In total, the Florida Department of Health (FDOH) has reported 44 cases of the disease and 10 associated deaths across 16 counties since January 2022. This represents more than double the annual average number of cases reported in the state over the last five years. According to the CDC, the current outbreak reported among gay and bisexual men (which accounts for at least 26 of the 44 cases reported this year) represents a substantial number of the total cases reported in Florida, as typically only 2-3% of cases are related to outbreaks. The CDC, in collaboration with the FDOH, continue to investigate the outbreak as it is considered ongoing. Meningococcal meningitis is highly preventable through vaccination. Health authorities are recommending all gay and bisexual men who live in Florida, or are travelling to the state, to be vaccinated against the disease especially considering the number of Pride events that are being held across the state in the coming weeks. In May 2022, the FDOH reported that 78% of people with confirmed infections were not up-to-date on their shots or had an unknown vaccination status. Authorities are stressing the importance of vaccination against the disease, especially among college students, those with compromised immune systems, and those with HIV, as this disease can affect anyone, regardless of sexual orientation. The FDOH has been actively engaged in prevention and vaccination efforts with additional vaccination events planned across the state. **Source: CDC**

Flooding

Bangladesh - Flooding continued last week in two districts, raising fears for even more displacement. Already, floods have impacted more than 7 million people, with nearly half a million residing in shelters. While the death toll has been low, officials fear waterborne illnesses are beginning to spread. Severe damage to crops and livestock will likely take a toll on food security in coming months.
Source: TheNewHumanitarian

Crimean-Congo Hemorrhagic Fever (CCHF)

Uzbekistan - According to news media, cases of suspected Crimean-Congo Haemorrhagic Fever (CCHF) were identified in Uzbekistan in 2022. The affected individuals, now deceased, were two young children from the south-eastern region of Kashkadarya. The last outbreak of CCHF in the Kashkadarya region was in 2017 with two fatalities. Notably in the current report, the individuals had clinical presentations atypical of CCHF including encephalopathy and acute renal failure. Additional symptoms included upper respiratory tract inflammation, hyperthermia, convulsive syndrome, and cardiac and respiratory failure. Thus, the cause of death has not been determined; at this time other causes such as exogenous intoxication have not been ruled out. The nine identified close contacts will undergo isolation and monitoring as a few individuals report similar symptoms. CCHF is transmitted to people by tick bites or contact with infected animal blood or tissues during or immediately after slaughter. Although limited information is available, health officials are implementing preventative measures around the affected residence. Cases of CCHF have been reported in bordering countries (Kazakhstan and Tajikistan) annually and is thought to be endemic to parts of Central Asia. **Source: ProMed**

Iran - Cases of Crimean-Congo haemorrhagic fever (CCHF) and related deaths have been reported in Iran since the beginning of 2022. Official available information indicates that there are between 100-150 CCHF cases every year. There were 119 cases and 11 deaths through 2019. Health officials are raising awareness and public education campaigns to promote timely diagnosis and appropriate prevention measures. **Source: ProMed**

Anthrax

Mongolia – A case of anthrax has been reported in the province of Uvs in western Mongolia in 2022. There is limited information on the type of anthrax that the individual is experiencing (cutaneous, gastrointestinal or inhalational). However according to media sources, the affected individual is a 37-year-old nomadic herder and thus has possible exposure to animals. In Mongolia, exposure to animals is one of the major sources of human anthrax infections. Anthrax is endemic in the country with sporadic cases in humans following the seasonal infection peaks in animals (June to September). Livestock vaccinations and vaccinations of humans within high-risk regions has contributed to a decline in cases, however, there are currently challenges in implementing a coordinated response for disease control.
Source: Insights by BlueDot – **NewsMedia**

Pertussis

Kazakhstan – The first case of pertussis (whooping cough) of this year in the North Kazakhstan region was reported in the city of Petropavlovsk on June 27. According to the media article, the affected is a three-year-old child whose vaccination history is unknown. The article also highlighted that the region did not report any cases of pertussis in 2021 and only reported 15 cases in 2020. However, the percentage of one-year-olds in the country with immunization coverage was 88% as of 2020 according to the WHO, which is under the 95% coverage goal.
Source: Insights by BlueDot – **NewsMedia**

Cholera

Iran - Cases of cholera have been reported in Iran in 2022. Media reports are raising concerns over increasing case counts in the Kurdistan province in northwestern Iran. In the previous weeks, cases have been identified in several other western provinces, although exact number of patients is unknown. Confirmation of cases is pending approval from a reference laboratory. According to the Ministry of Health several suspected cases have had recent travel to neighbouring countries; however, cholera is endemic to Iran with declining trends in the last couple decades. Notably the boarding region northern Kurdistan in Iraq is recently experiencing an outbreak of cholera cases concurrently with drought conditions and possible disruptions to sanitation measures. **Source:** Insights by BlueDot – **News Media**

Malaria

Israel - According to news media the Laniado Hospital located in Netanya, Israel reported an imported case of malaria into Israel on June 22, 2022. The case is described as a five-year-old boy, who experienced symptoms including a high fever and seizure after returning to Israel from a two-week trip to Ethiopia. After presenting to the Laniado Hospital Emergency Department, the child was diagnosed and began treatment in the pediatric ward. The child is reported to be in good condition. Please note, only one news media source describing this event has been found at this time. Cases of malaria have been imported into Israel in the past, mainly due to those travelling to countries where malaria is endemic. Malaria is endemic in parts of Ethiopia, and this event is not unexpected.
Source: Insights by BlueDot – **NewMedia**

Risk Assessment - Mass Gatherings for the Hajj Pilgrimage 2022

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The upcoming Hajj Pilgrimage will be held in Mecca and surrounding areas of **Saudi Arabia between July 7th – July 12th , 2022**. **One million pilgrims** have been invited to participate, of which 85% will be international pilgrims from countries around the world. **1** This international mass gathering presents an opportunity for importation, transmission, and exportation of infectious diseases amidst various ongoing outbreaks globally. This report, highlights diseases that are relevant to the mass gathering of the Hajj due to arrival of international pilgrims and population mixing among international/domestic pilgrims. Second, it highlights the relevant diseases that may present the highest importation risk from the 21 countries with the most international pilgrims and diseases that may present the highest exportation risk following the Hajj. Lastly, it highlights the public health measures that will be implemented leading up to, during, and after the Hajj Pilgrimage.

Background

One million pilgrims are expected to participate in Hajj 20222 ; **15% will be domestic pilgrims** and **85% will be international pilgrims** (i.e., from countries apart of Saudi Arabia). **3** Saudi Arabia has allocated a maximum number of visas, by country, for international pilgrims attending the Hajj (Figure 1). In this report, it is assumed that all visa quotas will be met given the significant interest in participating in the Hajj, particularly after limited attendance due to COVID-19 in 2021 (60,000 domestic pilgrims fully-vaccinated against COVID-19) compared to pre-pandemic years (over 2 million international/domestic pilgrims).

- 21 countries have each been allocated ≥10,000 visas by Saudi Arabia (labelled in Figure 1). Together, these countries account for 78.5% (651,148/829,546) of visas allocated for international pilgrims.
- The 10 countries with the higher number of allocated visas for pilgrims are: Indonesia, Pakistan, India, Bangladesh, Nigeria, Iran, Turkey, Egypt, Ethiopia, and Algeria; they account for 61.6% (510,955/829,546) of visas allocated for international pilgrims.

Executive Summary

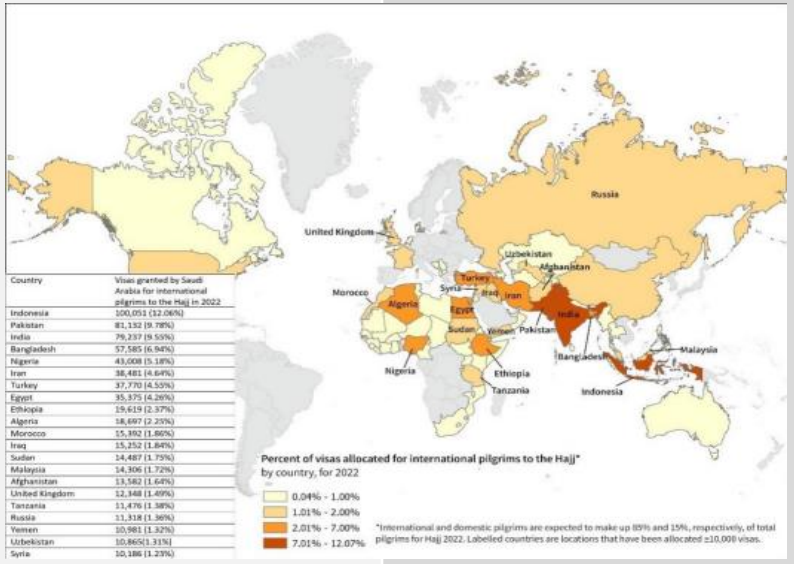
Origin country of international pilgrims - In total, 21 countries have been allocated ≥10,000 visas each for pilgrims. The 10 countries with the most allocated visas for pilgrims account for 61.6% of visas allocated for international pilgrims (510,955/829,546). They are (in descending order): Indonesia, Pakistan, India, Bangladesh, Nigeria, Iran, Turkey, Egypt, Ethiopia, and Algeria.

Diseases relevant to the Hajj – infectious diseases of interest in the context of the Hajj sorted into one of three categories:

1. Diseases with risk of immediate transmission during the Hajj (including but not limited to: COVID-19, measles, monkeypox, MERS, etc.)
2. Diseases that can have high consequence but typically reported sporadically (i.e., anthrax, avian influenza, Crimean-Congo hemorrhagic fever, Ebola, botulism, Kyasanur Forest disease, Marburg virus disease)
3. Diseases that do not present as an immediate transmission risk during the Hajj, but have a risk of long term establishment in Saudi Arabia due to the presence of a competent vector (i.e., Chikungunya, malaria, yellow fever, Zika, dengue)

Diseases with an importation risk concern – The risk assessment focus on the aforementioned relevant infectious diseases in the 21 countries allocated ≥10,000 visas for international pilgrims and highlighted diseases with the highest incidence rate between the last 6 calendar months (Dec 1, 2021 – May 31, 2022):

- Origin countries of the majority of pilgrims have reported cases of Category 1 diseases: cholera (particularly Bangladesh, Afghanistan, Nigeria); measles (particularly Afghanistan, Nigeria, Ethiopia, Sudan, Pakistan); and monkeypox (United Kingdom, Nigeria).
- Very few cases of category 2 diseases have been reported, though Iraq had reported the most Crimean Congo Haemorrhagic Fever cases (n=236) between Dec 1, 2021 – May 31, 2022.
- For category 3 diseases, cases of Malaria (particularly Nigeria, Pakistan, Sudan), dengue (particularly Malaysia, Indonesia), and to a lesser degree, chikungunya (particularly Malaysia, India), yellow fever (in Nigeria only), and Zika (in India) have been reported in recent months.
- COVID-19 – Among the countries with ≥10,000 visas, UK, Malaysia, Russia, Iraq, and Turkey had the most reported COVID-19 cases in the last 30 days per 100,000, as of June 27. Meanwhile, countries that have seen the largest increase in reported COVID-19 cases per 100,000 in the last 30 days (June 27 vs. May 27, 2022) are: Bangladesh, Morocco, Ethiopia, Iraq, and Indonesia. These countries are within the top 12 countries with the most visas allocated for international pilgrims. Of these locations, the UK, Malaysia, Morocco, Turkey, Russia, and Indonesia have reported presence of the SARS-CoV-2 Omicron BA.5 VoC that has immune escape properties and is driving resurgences in a number of countries.
- Monkeypox – Nigeria accounts for the 5th most allocated visas for pilgrims and has sub-optimal surveillance of monkeypox despite known outbreak(s). SME´s estimated that the true outbreak size in Nigeria (country with the fifth most visas allocated for international pilgrims) is 120 – nearly 360 times larger than confirmed cases based on reported travel-related cases and global connectivity



Country	Visas granted by Saudi Arabia for international pilgrims to the Hajj in 2022
Indonesia	100,051 (12.06%)
Pakistan	81,132 (9.78%)
India	79,237 (9.55%)
Bangladesh	57,585 (6.94%)
Nigeria	43,008 (5.18%)
Iran	38,481 (4.64%)
Turkey	37,770 (4.55%)
Egypt	35,375 (4.26%)
Ethiopia	19,619 (2.37%)
Algeria	18,697 (2.25%)
Morocco	15,392 (1.86%)
Iraq	15,252 (1.84%)
Sudan	14,487 (1.75%)
Malaysia	14,306 (1.72%)
Afghanistan	13,582 (1.64%)
United Kingdom	12,348 (1.49%)
Tanzania	11,476 (1.38%)
Russia	11,318 (1.36%)
Yemen	10,981 (1.32%)
Uzbekistan	10,865(1.31%)
Syria	10,186 (1.23%)

Figure 1. The percent of visas allocated by the Kingdom of Saudi Arabia for international pilgrims, by country. Datasource: Full list of visa quotas

Diseases with an exportation risk concern –MERS (Middle Eastern Respiratory Syndrome), measles, COVID-19, and monkeypox as diseases with high exportation risk from Saudi Arabia due to risk of human-to-human transmission and outbound travel following the Hajj.

Public health measures for the Hajj

Saudi Arabia has implemented various strict public health precautions to mitigate risk of infectious disease outbreaks and importation. These include: a limited number of pilgrims participating in the Hajj (1 million compared to >2 million in pre-pandemic years); mandatory masking in indoor/outdoor religious areas; mandatory vaccination against yellow fever, meningitis, poliomyelitis, COVID-19; vector control through insecticide spraying campaign; safe water supplies and sanitation.

Find the fully report here

Other sources: https://www.ecdc.europa.eu/sites/default/files/documents/Communicable-disease-threats-report-2-jul-2022-corrected.pdf

Source: https://www.who.int/publications/i/item/WHO-EURO-2022-5152-44915-65208

Emergency in Ukraine

WHO external situation report #156, published 30 June 2022: reporting period: 16–29 June 2022

8.2 million REFUGEES | **5.5 million** INTERNALLY DISPLACED | **10 631** CIVILIAN CASUALTIES | **4731** CIVILIAN DEATHS

Key updates

- According to WHO's Surveillance System for Attacks on Health Care, there have been 323 attacks on health care, resulting in 59 injuries and 76 deaths, reported between 24 February and 29 June. Attacks on health care include those against health facilities, transport, personnel, patients, supplies and warehouses. These attacks deprive people of urgently needed care, endanger health-care providers, and undermine health systems.
- As of 28 June approximately 6.2 million people remain internally displaced, whilst 5.5 million people who were previously displaced within Ukraine or moved to other countries have now returned to their homes in Ukraine, according to the sixth round of a rapid representative assessment of the general population in Ukraine conducted by the International Organization for Migration.
- Damage and destruction to medical facilities as well as a shortage of service providers and critical supplies have severely compromised the delivery of essential health services, including access to maternal care for the estimated 265 000 women who were pregnant when the conflict erupted, and specialized services for survivors of gender-based violence.
- Due to an ongoing risk of cholera outbreak, particularly in Mariupol, where drinking water supplies are significantly affected, WHO is working with the Ministry of Health (MoH) to prepare a request to access cholera supplies and the global oral cholera vaccine (OCV) stockpile, if needed. WHO has also provided guidance on outbreak preparedness.

Health Information and operations

The health sector response continues to prioritize saving lives and protecting mental health. Actions focus on ensuring access to emergency health care and priority essential health services for wounded people and others affected by the armed conflict, COVID-19, poliomyelitis (polio), and other health threats – including technological, industrial, and chemical, biological, radiological, and nuclear hazards. Continuity of treatment and care for people with NCDs – including diabetes and cancer – is a top priority.

- As many countries worldwide report cases of monkeypox, as of 29 June no cases of monkeypox have been detected in Ukraine. WHO continues to provide situation updates and various guidance documents, including clinical management, RCCE, laboratory testing, gatherings, case reporting and surveillance etc. For more information, please see the 27 June report on the multi-country monkeypox outbreak.
- To improve infection control measures in Ukrainian hospitals, the WHO CO in Ukraine, with financial support from the EU, has provided equipment for disinfecting medical institutions as part of an initiative to strengthen the health system in the Odesa Regional Clinical Hospital.
- WHO is preparing for a potential cholera outbreak in Mariupol as the risk remains present. It is reported that water supply is limited and people are forced to resort to drinking from puddles. WHO is working with the MoH to prepare a request to access the global OCV stockpile if needed, and has provided guidance on prevention, preparedness, case definitions, detection (including in wastewater monitoring), standards of care and case management. WHO has prepositioned medical supplies, including WHO cholera supplies and rapid diagnostic tests.
- On 16 June WHO in Ukraine prepared an informative video explaining how to obtain data on vaccinations for IDPs and people who have left the country because of the conflict. The EU is donating patient monitors, infusion pumps, ventilators and personal protective equipment such as gowns and masks. The EU also provided additional supplies, including 300 000 specialized protective suits, 5600 litres of decontaminants, and 850 pieces of equipment for decontamination efforts. All these items were donated following a request from the Government of Ukraine for donation of specialized equipment for public health risks such as chemical, biological, radiological and nuclear threats.
- In partnership with USAID's Bureau for Humanitarian Assistance, WHO will deliver oxygen concentrators to 500 primary health-care centres, with a key focus on southern and eastern parts of Ukraine.
- WHO completed the translation and adaptation of technical handouts on the Johnson & Johnson/Janssen COVID-19 vaccine. The printed materials will be delivered to each vaccination team, to be included in the vaccine implementation process in Ukraine.
- On 17 June a Ukraine Polio Outbreak Response Strategy Planning Meeting was hosted by WHO under the Global Polio Eradication Initiative in Rzeszów, Poland, to review the pre-conflict polio outbreak response plan, conduct in-depth analysis and a technical discussion on gaps, re-strategize based on the status of the conflict and discuss the way forward.

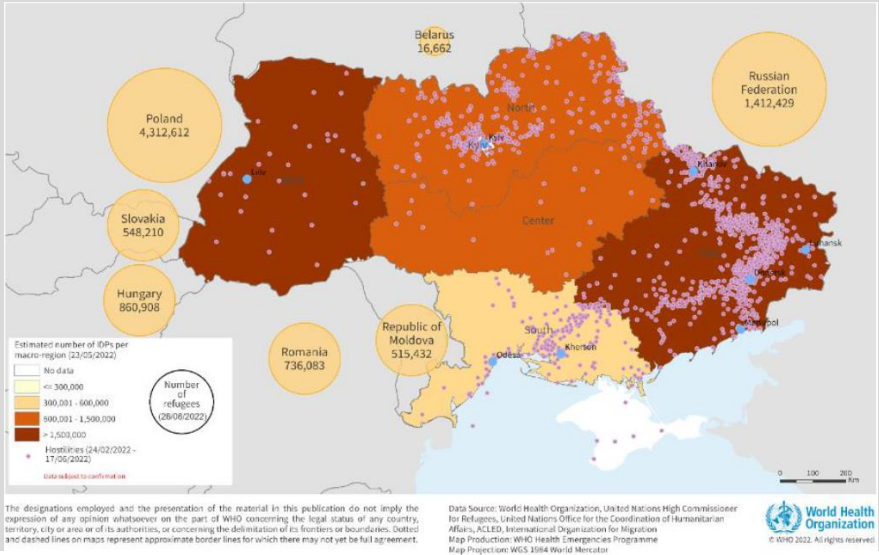


Figure 1. Distribution of Internally Displaced Persons (IDPs) and refugees in Ukraine and in refugee-hosting countries as of 28 June 2022