



# Monthly Epidemic Intelligence Report

Issue 12

December 2024



# Definitions

The below is a list of commonly referred to terms and keywords in the monthly reports.

## **Gulf Public Health Emergency Network (PHEN)**

A group of technical individuals within GCC health authorities, nominated to represent each GCC country. The composition typically includes International Health Regulations Focal Point, Ministry of Health Communicable Disease Directors and National Public Health Laboratory Directors or appointed representatives on their behalf. The Gulf CDC serves as the Network's secretariat with the PHE Department Director chairing the network meetings.

## **Hazard**

A source/incident that has the potential to cause morbidity (including injury) or mortality in an exposed human population.

## **Signal**

An incident/situation involving a hazard that has occurred. Signals are typically news/updates identified through Event-Based Surveillance and Indicator-Based Surveillance, utilizing both official and non-official sources. Signals can be of a disease origin or a CRNE (Chemical, Radiological, Nuclear, or Environmental) origin.

## **Potential Threat**

Any threat that has been confirmed by the PHEN to have the potential to pose a near-future risk to the GCC countries' populations and could be monitored closely by Gulf CDC for 2 weeks.

## **Event of Regional Interest**

Any threat, inside or outside the GCC, that has been identified by the Public Health Emergency Network to pose a certain type of risk for the GCC countries' public health. For these threats, Gulf CDC produces regular risk assessments and recommendations for their control, as well as enhances daily monitoring of it to provide regular situational updates to the GCC countries.

## **Rapid Risk Assessment**

A prompt evaluation of the level of health risk in relation to a verified acute event within a short time frame, mainly for situation update, risk level determination and recommendation to support the GCC countries in risk communication and management.

GULF CDC Risk Scale					
Negligible	Very Low	Low	Moderate	High	Critical

*Country names in this report are as per the UN list*

# Summary of the Month

This monthly report provides an overview of the signals, potential threats, and specifically Events of Regional Interest detected and identified through the Gulf CDC Epidemic Intelligence system during the month of **December 2024** (November 24, 2024 – December 23, 2024).\*

**85**  
Disease  
Signals

**4**  
CRNE  
Signals

**1**  
Potential  
Threats

**2**  
Events of  
Regional Interest

## Executive Summary

**Disease Signals** This month, the epidemic intelligence team at Gulf CDC detected 85 infectious disease signals. Of these, 12% were of mpox, 10.6% were of dengue, 9% were of malaria, and 4.7% were animal signals. No signals were detected in the GCC countries.

**CRNE Signals** 4 CRNE signals with potential public health consequences were identified, including 3 environmental signals related to poliovirus in Europe, and 1 environmental signal related to dengue in the Philippines.

**Potential Threats** the Gulf CDC identified 1 potential threat in December: Malaria in Yemen and Sudan.

**Events of Regional Interest** the Gulf CDC continued monitoring 2 events of regional interest in the month of December: Highly Pathogenic Avian Influenza H5N1 globally and Mpox globally.

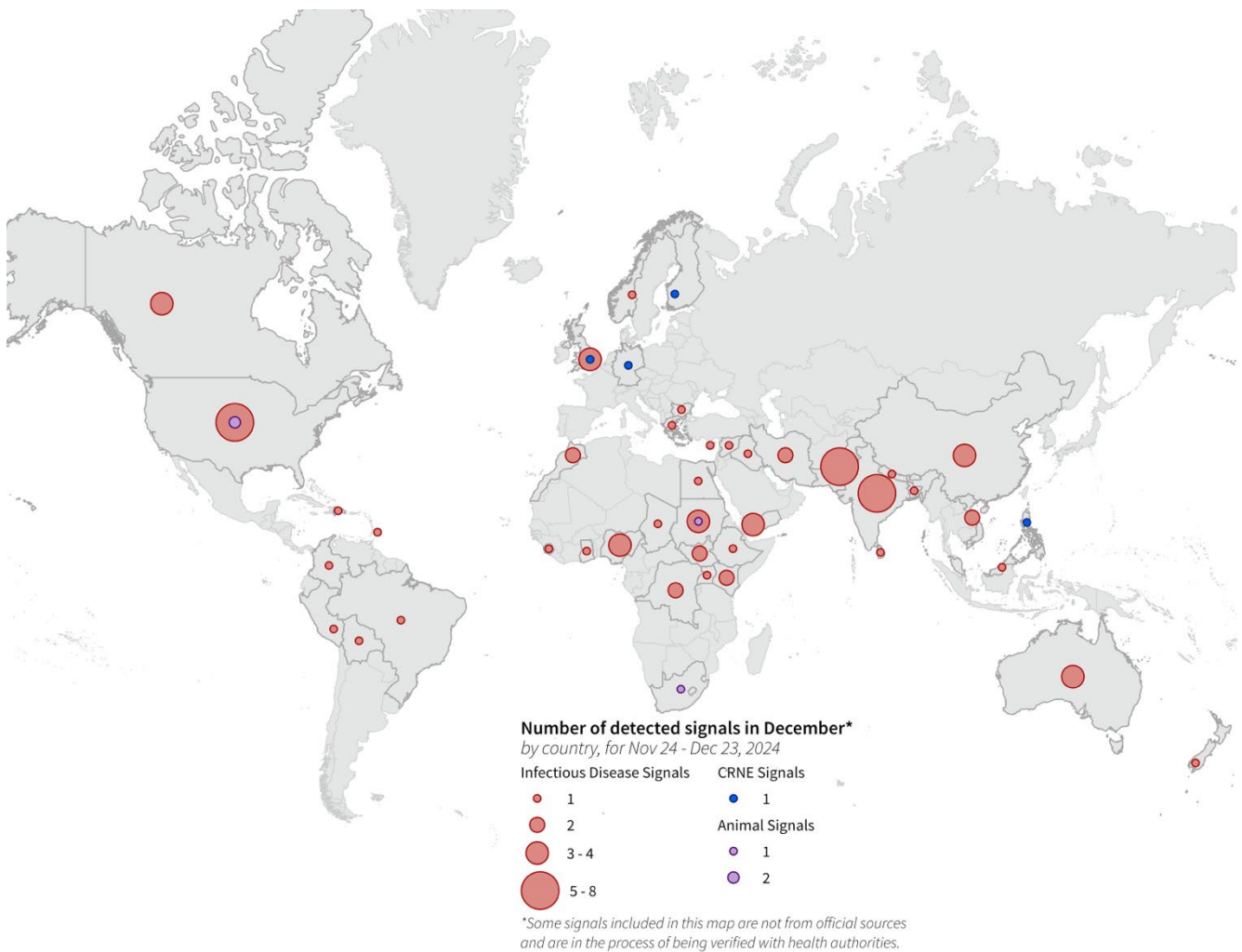
\* Monthly reports cover data from the 24<sup>th</sup> of the previous month to the 23<sup>rd</sup> of the reported month, ensuring there is no gap in reported data.

*The details of the detected signals and identified threats are shared weekly with the GCC Member States' technical representatives in the Gulf Public Health Emergency Network (PHEN) (available on this [link](#)) and are presented and discussed in weekly roundtable discussions. These are often verified through secondary research or communication with regional and international partners. In consultation with the PHEN members, a potential threat is escalated to an Event of Regional Interest based on its anticipated potential for causing a public health emergency in the GCC region.*

# Signals

The Gulf CDC monitors the globe for daily, weekly, and monthly disease signals. Based on Gulf CDC analysis, certain signals may be designated as threats and/or events of regional concern, depending on their risk level, impact, and likelihood. As outbreaks evolve, new diseases may be added to this list. Some diseases may also be removed if the risk they pose reduces below our threshold.

Potential threats are identified based on several considerations such as high connectivity between reporting country and the GCC countries, level of transmissibility of pathogens, vulnerability degree of GCC populations to the identified hazard, capacity levels of GCC health systems to respond to the identified hazard.



- Number of detected signals and potential threats by the Gulf CDC from November 24 to December 23, 2024

## Highlights of Signals Identified in December 2024

- **Poliovirus in wastewater found in EU countries:** The [Global Polio Eradication Initiative](#)(1) reported on 12 December that poliovirus had been detected through routine surveillance of wastewater systems in 5 countries in Europe: Finland, Germany, Poland, the United Kingdom and Spain.
  - In the UK, as of 13 December, there have [been no confirmed human cases of cVDPV2](#)(2), nor is there evidence of community transmission. The UKHSA stated that these are one-off detections, and do not require any public health action.
  - The last reported wastewater detection of cVDPV2 in the UK was in November 2022 and was tied to community transmission. The event was believed to be associated with an individual returning to the UK after receiving the oral polio vaccine.
- Similarly, cVDPV2 has been detected in wastewater samples in Finland, Germany and Poland, through routine wastewater sampling in November.
- According to the GPEI the detected virus is genetically linked to a strain that emerged in Nigeria and is circulating in several countries in North and West Africa.
- **Malaria in Pakistan:** In [Kyber Pakhtunkhwa](#)(3), Pakistan, there have been over 54,000 malaria cases as of 23 September, marking a significant public health crisis in the province.
  - The most affected districts are Khyber (10,000 cases), Shanal (6,000 cases for the first time), and Battagram (3,000) cases. Other districts affected are Dera Ismail Khan (4,000 cases), Tank and Karak (2,000 cases). Additionally, Lakki Marwat has seen 3,000 cases.
  - It is noted that climate change has been a contributing factor to the rise in vector-borne diseases such as malaria across the region.
- **Biosafety breach in Australia:** In [Queensland, Australia](#)(4), nearly 100 live samples of Hendra virus, Hantavirus, and Lyssavirus have been lost. The breach was uncovered in August 2023, and it is unclear if the samples were removed or destroyed.
  - According to Chief Health Officer Dr John Gerrard, the breach in record keeping is serious, but the risk to the community was very low. Unless properly stored, the virus samples would degrade rapidly and become non-infectious.
  - Queensland, to date, has not reported any [human cases of Hendra](#)(5) or Lyssavirus in the past 5 years. Additionally, there have been no confirmed cases of Hantavirus in Australia to date.
- **Undiagnosed illness in Iraq:** According to social media posts, [in Baghdad, Iraq](#)(6), an unknown virus causing symptoms that last for several days (cough, fever, headache, diarrhea) has been spreading amongst families. The virus especially affects children and leads to significant hospitalization and death.
  - Currently, it is unknown if the virus is a new variant of the coronavirus, norovirus, or mycoplasma bacteria.

# Potential Threats

## Malaria

### Yemen & Sudan

This threat is being monitored closely by Gulf CDC.

#### Situational Highlights

- Both Yemen and Sudan are experiencing surges in malaria cases in recent weeks.
- **Yemen:** according to the World Health Organization (WHO), Yemen has reported over [1 million malaria cases](#)(7) since the start of 2024.
  - The western coastal regions have been disproportionately affected by the outbreak.
  - The increase in cases is partly attributable to heavy flooding that occurred in August in Yemen, damaging infrastructure.
  - The WHO, alongside the European Civil protection and Humanitarian Aid Operations (ECHO), collaborated with the Yemeni Ministry of Health and Environment and the National Malaria Control Programme to conduct a [spraying campaign](#)(8) in September.
  - On 16 December, the [King Salman Humanitarian Aid and Relief Center](#)(9) launched an 11-day campaign to combat malaria-carrying mosquitos in Yemen.
    - The initiative is part of a water supply and environmental sanitation project for displaced persons. The campaign aims to eliminate mosquito breeding sources in residential neighborhoods and displacement camps while educating the community on the importance of removing mosquito reproduction sites.
- Amid the increase in malaria cases, Yemen is also experiencing high case numbers of other communicable diseases, including cholera and measles.
  - In 2024, Yemen has reported nearly 250,000 suspected cholera cases, accounting for [35% of the global cholera burden](#)(10), according to the WHO.
- **Sudan:** in the eastern state of Gedaref, a [malaria outbreak is affecting thousands](#)(11), with nearly 5,000 cases recorded in a single week, according to health officials.
  - In response, the Sudanese Ministry of Health launched its first vaccination campaign in November, targeting 15 areas in Gedaref and the Blue Nile region.
  - Sudan received [186,000 doses](#)(12) meant to be distributed among 15 health facilities, targeting over 148,000 children under 12 months.
  - The ministry plans to expand the accessibility of the malaria vaccine in 129 additional facilities in the next 2 years.



# Events of Regional Interest

## Highly Pathogenic Avian Influenza H5N1

### Globally

Negligible	Very Low	Low	Moderate	High	Critical
<b>Gulf CDC Risk Assessment of this Event – 6 August 2024</b>					
<ul style="list-style-type: none"> <li>• <b>Risk Question:</b> What is the likelihood of HPAI H5N1 human-to-human transmission occurring in the GCC countries and what is the impact of that transmission?</li> <li>• <b>Impact:</b> Moderate. Despite the global unavailability of specific antiviral drugs for HPAI H5N1, case management capacities of the GCC countries for influenza infections are generally high.</li> <li>• <b>Likelihood:</b> Unlikely. The likelihood of HPAI H5N1 importation to the GCC countries from the United States is unlikely given the low number of cases. Further, there is no evidence of human-to-human transmission at this time.</li> </ul> <p><i>Please refer to the Gulf CDC Rapid Risk Assessment: Highly Pathogenic Avian Influenza H5N1 from 6 August 2024 further details.</i></p>					



### Why is this Notable?

The Gulf CDC EI team escalated the Avian Influenza H5N1 outbreaks in the United States to an event of regional interest on 3 August 2024. The Gulf CDC has detected new signals of Highly Pathogenic Avian Influenza H5N1 (HPAI H5N1) infections caused by contact with infected cattle in multiple states within the United States of America.



### Key Stats

**68 reported cases**  
 of HPAI H5N1 in humans in the US in 2024

**89 reported cases**  
 of HPAI H5N1 in humans globally in 2024



## Key Factors of Concern for Avian Influenza H5N1



### Disease severity

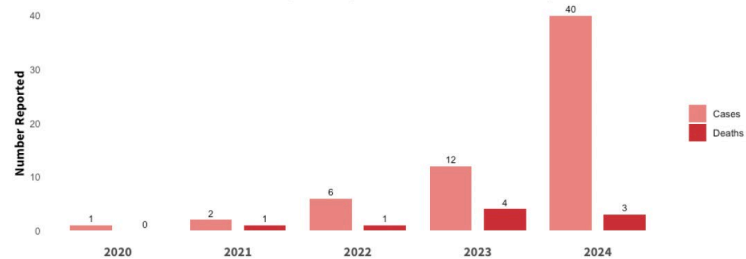
Avian Influenza H5N1 with a severe pathogen severity level. The mortality rate for this infection can be as high as 60%. Infection is mainly through contact with infected poultry, however there are growing concerns that this virus could mutate and cause more efficient person-to-person transmission.



### Trends from previous outbreaks

In 2023, there were [12 reported human infection cases of H5N1](#) across 4 countries (Cambodia, China, Chile, United Kingdom). In years prior, there have been small numbers of sporadic reported human infection cases of H5N1 across several countries.

Global Number of HPAI A(H5N1) Cases and Deaths by Year



### Healthcare capacity

All GCC countries have set up infectious disease programs or services for zoonosis, but lack strategic plans or programs needed to control and prevent the spread of avian influenza. For example, there are limited systems in place developed for ensuring regular collaboration and coordination between the Health and Agricultural sectors. This detection delay may lead to the infected individual seeking healthcare at a later stage of the infection, risking further complications and severe symptoms. While recent clades of the H5N1 virus have not been detected in Gulf countries, the connectivity to other countries through agricultural trade and bird migration increases the likelihood of importation of the virus, and the possibility of spillover to humans (particularly those in close contact with poultry). *Please refer to the Gulf CDC Rapid Risk Assessment on Avian Influenza H5N1 (6 August 2024) for further details.*

In November 2024, the Gulf CDC and GCC Member states conducted a regional simulation exercise, using H5N1 as the scenario to simulate and test the Public Health Emergencies Response Coordination Plan and identify areas of cooperation, communication channels, and potential gaps.





### Connectivity to the Gulf Region

While the United States is highly connected via air travel to the Gulf Region, the low number of cases in humans and the lack of evidence thus far regarding human-to-human transmission makes the likelihood of importation 0%.

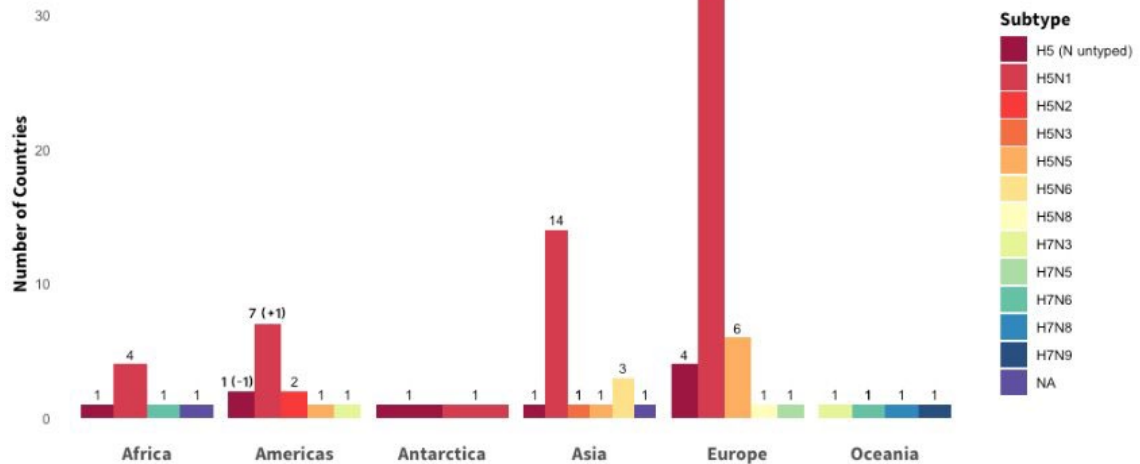


### Situational Highlights for Avian Influenza H5N1

- **There have been 89 human cases of HPAI H5N1 reported across 6 countries.**
  - The United States (68) continues to have the highest number of reported human cases in 2024, then Cambodia (16), and Vietnam (2). Canada, China and Australia continue to have one reported case of HPAI H5N1.
  - On 04 December, the Centre for Disease Control of [Long An province in southern Vietnam](#)(13) reported a confirmed human case of influenza A (H5N1). Officials were initially notified of this case on 14 November. Reported symptoms include fever, headache and muscle pain. The case is currently hospitalized in Ho Chi Minh City Hospital. Dead poultry were found at the family's home.
  - In California, [United States](#)(14), HPAI A (H5N1) has been detected in raw milk from Raw Farm LLC between 24 November and 27 November.
    - Between 02 December and 15 December, three cases of influenza A (H5N1) have been reported in California. All three cases are individuals worked on affected dairy farms and reported mild symptoms.
    - The California Department of Public Health (CDPH) has recalled raw whole milk and cream products from Raw Farm LLC.
  - On 06 December, the Arizona Department of Health Services reported two human cases of influenza A (H5Nx, subtype pending) in poultry workers at a commercial facility in Pinal County.
    - Both individuals reported mild symptoms, received treatment, and have recovered.

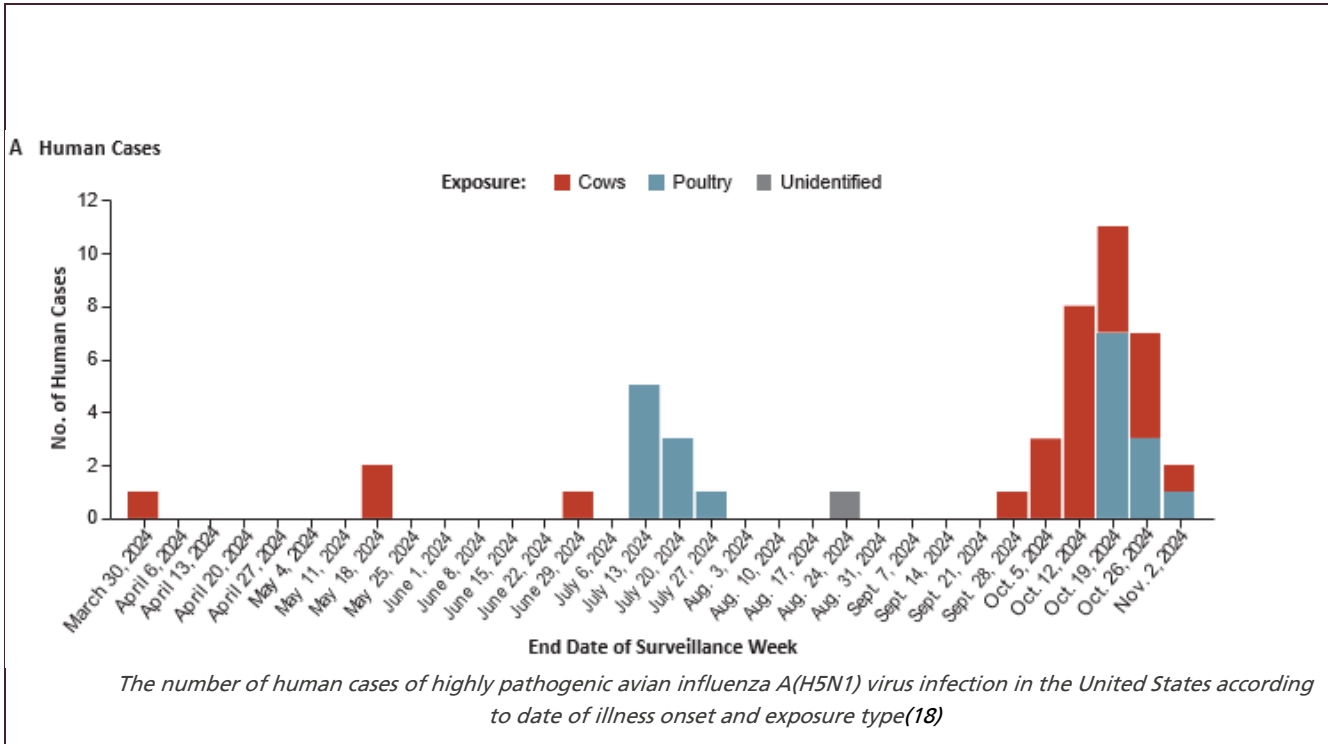
### Number of Countries Reporting HPAI Subtypes by Region

Including poultry and non-poultry species, from 01-Jan-2024 - 13-Dec-2024

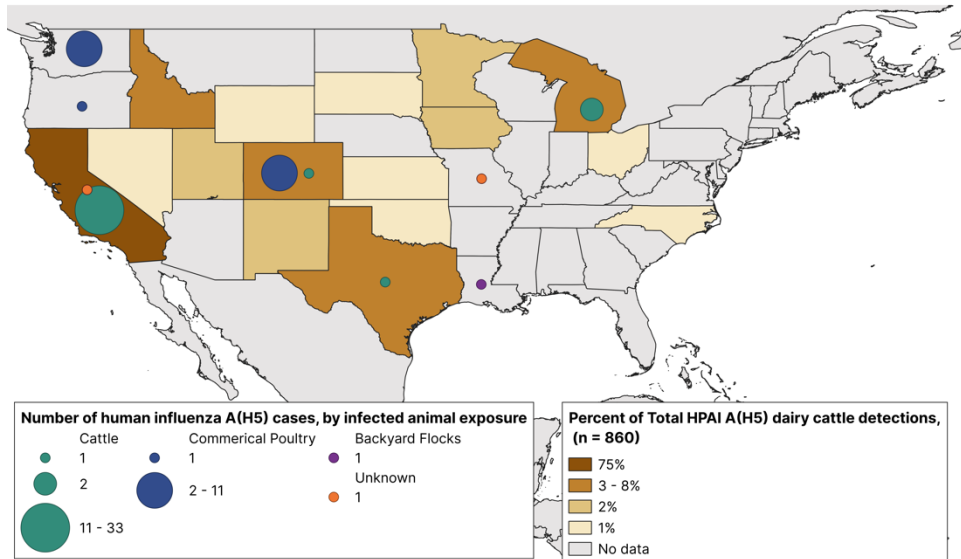


#### Recent findings:

- [Researchers evaluated health outcomes](#)(15) from AIV infections in pregnant people (30 cases across 8 studies) to emphasize the importance of inclusive/ accessible vaccine and therapeutic trials. The study emphasizes that pregnant individuals are a high-risk population for severe outcome (27 out of 30 deaths among the infected individuals with 26 neonatal deaths). Additional insights are needed to generalize the findings to current circulating virus, given that the study included infections due to a range of subtypes prior to the emergence of clade 2.3.4.4b.
- Researchers explored whether the [interferon-induced innate immune protein](#),(16) human myxovirus resistance protein 1 (MxA) suppressed replication of mammalian H5N1 clade 2.3.4.4b strains. Key virus assessed includes H5N1 strains from Finland in 2023 (white mink, blue fox), Poland in 2023 (cat), and the United States in 2024 (bovine). Both in vitro and in vivo (transgenic mice model) experiments suggested that human MxA maintained its replication restriction against mammalian strains; however, changes to the PB2 or PA genes may overcome this barrier. The study highlighted the importance of genomic surveillance to monitor the potential emergence of MxA escape variants.
- [A recent study](#)(17) provides additional genomic details for the first-ever reported influenza A(H5N1) human case in Australia. Preliminary information indicated clade 2.3.2.1a. Phylogenetic analysis indicated a novel reassortant of clade 2.3.2.1a and clade 2.3.4.4b. Four gene segments were similar to virus (clade 2.3.2.1a) circulating in Bangladesh. The matrix gene segment was similar to clade 2.3.4.4b HPAI A(H5N1), while the PB2, PB1 and PA segments clustered with low pathogenic avian influenza viruses circulating in wild bird and poultry in Asia since 2020. The identified virus contained no markers of mammalian adaptation and still maintained preferential binding to avian-type receptors.
- [A recent study](#)(18) shows that the HPAI A(H5N1) cases in the USA presented mild illness (conjunctivitis) in adults exposed to infected animals, with no evidence of human-to-human transmission. The figure below shows the number of human HPAI A(H5N1) cases in the USA from March through October 2024 based on exposure type.



Number of Influenza A(H5) Human Cases and Percent of Total HPAI A(H5) Dairy Cattle Detections, in the United States in 2024



Number of [influenza A\(H5\) human cases](#)(14) and percent of total [HPAI A\(H5\) dairy cattle detections](#), (19) in the United States in 2024.

# Mpox

## Globally

Negligible	Very Low	Low	Moderate	High	Critical
<b>Gulf CDC Risk Assessment of this Event – 16 December 2024</b>					
<ul style="list-style-type: none"> <li>• <b>Risk Question:</b> What is the likelihood of importing a mpox clade 1b case into the GCC causing an occurrence of subsequent cases in the GCC in the next 3 months?</li> <li>• <b>Impact:</b> Moderate, With the low transmission potential of the virus in the Gulf communities, and the high national capacities established for mpox prevention and control, the level of potential impact of mpox has been characterized as moderate.</li> <li>• <b>Likelihood:</b> Likely, as there is a large volume of travelers to the Gulf from countries reporting mpox Clade 1b cases, it is likely that unlinked cases/clusters to be detected within the next 3 months.</li> </ul>					



### Why is this Notable?

The Gulf CDC EI team escalated the global mpox to an event of regional interest on 14 August 2024 due to an increase in the expected incidence of epidemic activity. Furthermore, On 14-Aug-2024, the WHO declared mpox as a public health emergency of international concern (PHEIC) for the second time.



### Key Stats

**15 Clade 1b cases**  
 Reported outside the African continent

**65,900+**  
 Reported suspected cases in African countries in 2024






### Key Factors of Concern for Mpox



#### Disease severity

Severe complications of mpox may include secondary bacterial infections, pneumonia, sepsis, and encephalitis; immunocompromised individuals are particularly susceptible to severe infections. Mpox is divided into two distinct clades, clade I and Clade II, with Clade II being further divided into the Clade IIa and Clade IIb subclades. Clade I is predominantly found in central Africa around the Congo basin while Clade Ia is found in West Africa. Clade IIb however, was able to spread and cause outbreaks globally in 2022.

	<p>Clade I has been shown to cause more severe disease than clade II, with case fatality rates (CFRs) of approximately 10% and 1% respectively.</p>																																										
 <p><b>Trends from previous outbreaks</b></p>	<p>Although ongoing human-to-human transmission of <a href="#">mpox in the DRC</a> has been documented since the 1970s, there are still gaps in knowledge of all the dynamics involved. Initially, infections happened within minor domestic or local clusters, believed to be predominantly caused by the transmission from animals to humans, as sexual transmission of the MPXV clade I was not officially reported until April 2023. Most cases in the multi-country outbreak (non-endemic) in 2022 were Clade II, lineage B.1, and its descendants, while the current outbreaks in several countries in Africa (DRC, Uganda, Kenya, Rwanda, Burundi) are primarily Clade I.</p>																																										
 <p><b>Healthcare capacity</b></p>	<p>In 2024, the majority (96%) of mpox cases have been reported from the DRC and Burundi. The current outbreak in the DRC (started in 2023) is due to mpox clade I with at least one new strain of clade I, proposed as clade Ib, and around 70% of cases reported in children under 15. However, within the DRC, testing in rural areas is limited and just 24% of the clinically compatible (reported as suspected) cases in the country have been tested in 2024. Of those tested, the positivity is approximately 65% at the national level. Surveillance and response capacity have been strengthened within the DRC by government initiatives with the aid of institutions such as the WHO, particularly in the most affected provinces such as South Kivu. Risk communication has also been updated and increased to inform the population about the risks and precautions to take to avoid acquiring Mpox. The <a href="#">Interim Medical Countermeasures Network (i-MCM-Net)(20)</a>, that the Gulf CDC participates in, established an access and allocation mechanism for the mpox response. As of 27 September, 2.7 million MBA-BN, 3 million LC16 and 50,000 ACAM2000 vaccines had been pledged y both public and private donors.</p>																																										
 <p><b>Connectivity to the Gulf Region</b></p>	<p>Of the 8 African countries reporting cases of mpox Clade 1b, the GCC has the highest connectivity with Kenya. Below are the passenger volumes between the 5 highest connected countries in Africa to the Gulf region from December 2023(21):</p> <table border="1" data-bbox="576 1417 1339 1642"> <thead> <tr> <th></th> <th>DRC</th> <th>Kenya</th> <th>Rwanda</th> <th>Uganda</th> <th>Zimbabwe</th> </tr> </thead> <tbody> <tr> <th>UAE</th> <td>3,280</td> <td>16,407</td> <td>2,703</td> <td>15,584</td> <td>3,877</td> </tr> <tr> <th>Bahrain</th> <td>45</td> <td>345</td> <td>22</td> <td>79</td> <td>79</td> </tr> <tr> <th>Saudi Arabia</th> <td>266</td> <td>5,938</td> <td>95</td> <td>1,411</td> <td>198</td> </tr> <tr> <th>Oman</th> <td>49</td> <td>852</td> <td>65</td> <td>151</td> <td>54</td> </tr> <tr> <th>Qatar</th> <td>56</td> <td>2,949</td> <td>494</td> <td>1,070</td> <td>517</td> </tr> <tr> <th>Kuwait</th> <td>53</td> <td>361</td> <td>10</td> <td>184</td> <td>60</td> </tr> </tbody> </table> <p><i>Connections between the above-mentioned countries and the region are primarily counted based on airline data. Other routes of entry and illegal migration might contribute to the importation likelihood.</i></p>		DRC	Kenya	Rwanda	Uganda	Zimbabwe	UAE	3,280	16,407	2,703	15,584	3,877	Bahrain	45	345	22	79	79	Saudi Arabia	266	5,938	95	1,411	198	Oman	49	852	65	151	54	Qatar	56	2,949	494	1,070	517	Kuwait	53	361	10	184	60
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## Situational Highlights for Mpox

- **New cases of mpox Clade Ib outside Africa:** The United Kingdom, Germany and Belgium have reported new cases of mpox Clade Ib since 23 November.
  - **United Kingdom:** On 29 November, [the UK Health Security Agency \(UKHSA\)](#)(22) confirmed a new imported case of mpox clade Ib in Leeds City, West Yorkshire, England.
    - This is the fifth mpox clade Ib case reported in recent weeks, with no epidemiological links to the previously reported household cluster of four cases.
    - The most recent case was detected in Leeds City, with care being managed at Sheffield Teaching Hospitals NHS Foundation Trust. The individual recently returned from Uganda, a country experiencing community transmission of Clade Ib Mpox.
    - The previous four cases have fully recovered and were localized within one household, with the index case being an imported case from an unspecified location in Africa. This marked the first event of local transmission of mpox clade Ib outside Africa.
  - **Germany:** On 16 December, a [cluster of cases of the mpox virus clade Ib](#)(23) were detected in Rheinisch-Bergischer Kreis, North Rhine-Westphalia, Germany.
    - The cluster of cases is among four members of a family, who recently travelled to an unspecified location in Africa, and are currently in quarantine.
    - The [index case](#)(24) involved a family member who likely contracted the virus through close contact with locals during their trip to Africa. Three additional family members, including two children, became infected upon their return to Germany.
    - The Rheinisch-Bergischer Kreis health department identified potential contacts, including a [school class](#)(25) and workplace colleagues. While the family is quarantined, no quarantine measures have been applied to identified contacts; instead, they have been instructed to monitor for symptoms and report suspected infections to the health department.
  - **Belgium:** On 18 December, the Belgian health authorities reported a confirmed case of mpox Clade Ib in the country(24).
    - The mpox Clade Ib case was confirmed in Belgium on 16 December, involving adult with travel history to an unspecified African country where Clade Ib is known to circulate.
    - It was reported that the [patient presented symptoms](#)(26) localized to the genital area and had sexual contact with a person who exhibited mpox-compatible symptoms prior to symptom onset. The individual voluntarily isolated before receiving diagnosis and no high-risk contacts have been identified in Belgium.
    - Belgian authorities have assessed the risk to the general public as low, given the individual's isolation and the absence of high-risk contacts.
    - The European Centre for Disease Prevention and Control (ECDC) has reiterated that the measures implemented are sufficient and maintain a low likelihood of further spread.
- **Cumulative cases in Africa:** According to the [Africa CDC](#) (27), as of 16 December, there have been 65,947 suspected cases, 14,394 confirmed cases, and 1,239 deaths of mpox in Africa in 2024.

- In the last 6 epidemiological weeks, 7 countries that had previously reported mpox cases have not reported any new confirmed mpox cases: Gabon, Guinea, Mauritius, Morocco, Nigeria, South Africa and Zimbabwe.

*Cumulative cases (2024) by African country reporting mpox cases[25]*

Country	Confirmed	Deaths
Angola	3	0
Burundi*	2,402	1
Cameroon	9	2
Central African Republic	85	3
Congo	23	0
Côte d'Ivoire	107	1
Democratic Republic of the Congo*	10,533	1,222
Gabon	2	0
Ghana	5	0
Guinea	1	0
Kenya*	28	1
Liberia	63	0
Mauritius	1	0
Morocco	2	0
Nigeria	118	0
Rwanda*	59	0
South Africa	25	3
Uganda*	925	6
Zambia	1	0
Zimbabwe	2	0

*\*Country has confirmed at least one case of mpox clade 1b.*

- **Vaccination updates:** On 18 November 2024, [Nigeria launched its mpox vaccination campaign](#)(29), targeting healthcare workers and individuals with weakened immune systems in hospitals across the Federal Capital Territory (FCT) of Abuja.
  - Nigeria became the first African country to receive mpox vaccines in August 2024. Nigeria received an initial 8,960 doses of the JYNNEOS. Africa CDC has also planned additional vaccines for deployment to Nigeria, in addition to the 10,000 doses already received from the US government.
  - Initial plans to start the rollout in October were delayed due to the specific cold chain requirements of the vaccine.
  - The campaign targets three priority groups: frontline healthcare workers, close contacts of mpox cases, and people living with HIV.
  - Additional vaccines from the Access and Allocation Mechanism (AAM) and the WHO framework are expected to bolster Nigeria's efforts. Africa CDC has allocated 899,000 vaccine doses across nine African countries, with Nigeria set to receive more supplies soon.
- **Research updates:** a recent study published in [Biosensors and Bioelectronics](#)(30) highlights an optical biosensor developed by researchers from UC San Diego and Boston University for the rapid detection of mpox. Current diagnostic methods like PCR are costly and lengthy, making rapid

detection crucial during epidemics. Using a Pixel-Diversity interferometric reflectance imaging sensor (PD-IRIS), the biosensor can distinguish mpox from similar viruses, such as herpes simplex and cowpox, within minutes. This work establishes the effectiveness of PD-IRIS and opens possibilities for its advancement in clinical diagnostics of Mpox at point of care.



# Acknowledgements

The production of this monthly epidemic intelligence report was made possible through the collaboration and contributions of multiple individuals and organizations. Thus, the Gulf CDC is grateful to, and would like to acknowledge, all contributing individuals and organizations for their expertise and dedication to epidemic intelligence that were essential to our collective efforts in detecting, monitoring, and preparing for potential public health threats to the GCC region.

The Gulf CDC is grateful for insights on GCC countries' capacities and national data provided by members of the Public Health Emergency Network members. This provided valuable contextual understanding that enhanced the PHE team's assessment of risk posed by the hazards detected.

In addition, the Gulf CDC acknowledges the insights provided by international and GCC subject matter experts on reviewing risk assessment reports and on sharing best practices and lessons learned to improve preparedness for the hazards detected.

For queries regarding this publication, please contact us at [eidetect@gulfcdc.org](mailto:eidetect@gulfcdc.org)

# References

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