المركز الخليجي للوقاية من الأمراض ومكافحتها
Gulf Center for Disease Prevention and Control

مجلس الصحة
لدول مجلس التعاون
Gulf Health Council

Monthly Epidemic Intelligence Report

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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 **January 2025** (December 24, 2024 – January 23, 2025).*

74	4	1	2
Disease Signals	**CRNE Signals**	**Potential Threats**	**Events of Regional Interest**

Executive Summary

Disease Signals This month, the epidemic intelligence team at Gulf CDC detected 74 infectious disease signals. Of these, 12% were of mpox, 12% were of measles, 12% were of poliovirus, and 9.5% were animal signals. 11% of signals were related to influenza A H5N1 (4% in humans and 7% in animals). There were 4% of signals were detected in the GCC countries (2 signals were related to listeriosis and 1 to bottled water contamination).

CRNE Signals 4 CRNE signals with potential public health consequences were identified, including 2 environmental signals related to poliovirus in Australia and Ethiopia and 1 environmental signal related to flooding in Saudi Arabia.

Potential Threats the Gulf CDC identified 1 potential threat in January: Marburg in Tanzania.

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.

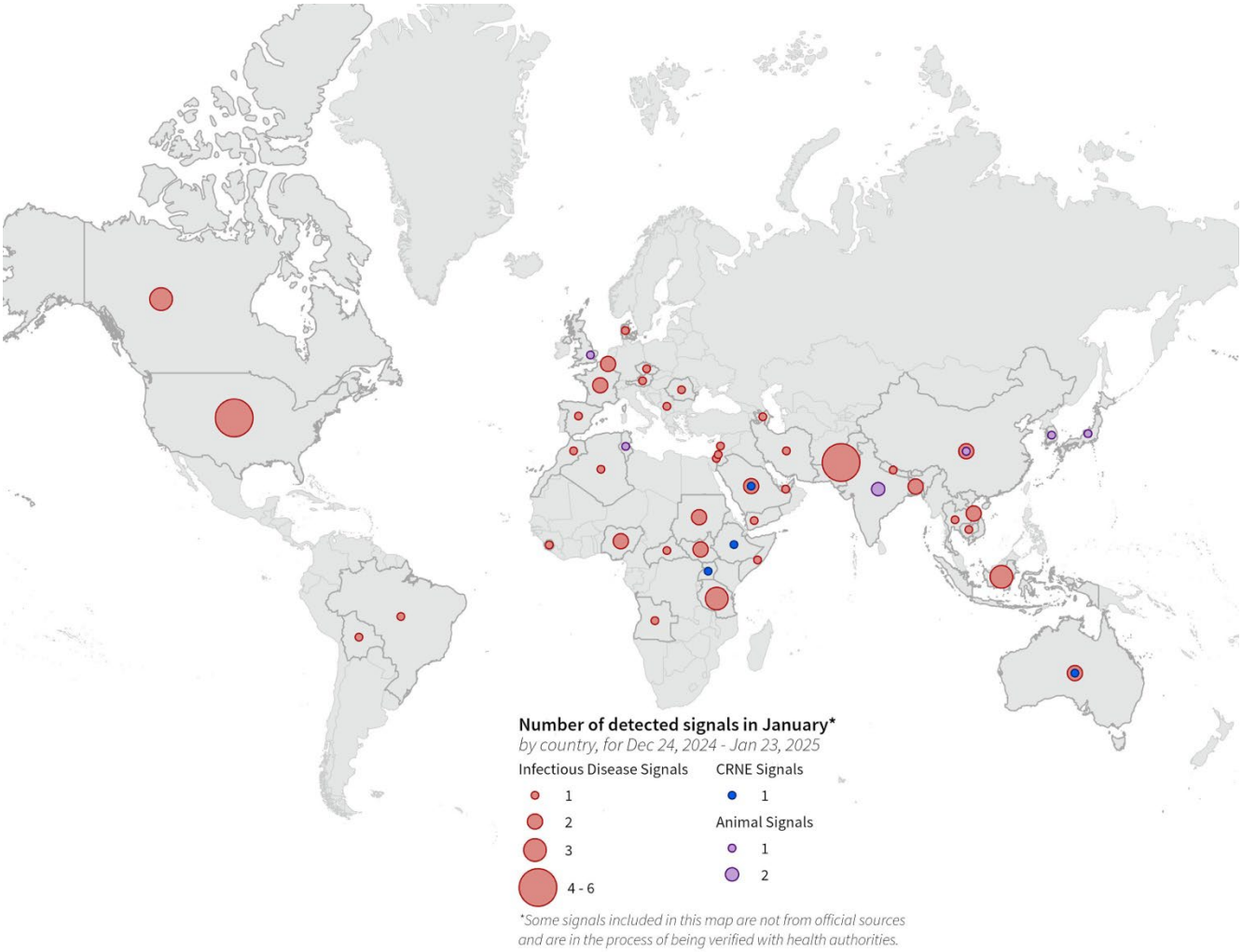
* Monthly reports cover data from the 24th of the previous month to the 23rd of the reported month, ensuring there is no gap in reported data.

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 December 24, 2024 to January 23, 2025

Highlights of Signals Identified in January 2025

- **Poliovirus (WPV1) in Pakistan**: in 2024, Pakistan reported 71 cases of poliovirus. Particularly, since 24 December 2024, 6 cases were detected nationwide.
    - One of the cases in Balochistan was discovered in late December during the nationwide anti-polio campaign[1]. The campaign aimed at inoculating more than 44 million children under the age of 5 in 143 districts in the country.
    - Cases have been detected in the following provinces[2]: 27 are from Balochistan, 21 from Khyber Pakhtunkhwa, 21 from Sindh, and one each from Punjab and Islamabad.
    - In early January, the country concluded a week-long anti-polio drive[3] in southwestern Balochistan, where most of the detected cases have been found.
    - The first polio vaccination campaign for 2025 is scheduled to be conducted nationwide from 3-9 February.
- **Poliovirus (cVDPV, unspecified) in Israel and Palestine**: In January, 1 case of poliovirus was detected in Jerusalem and 2 in the Gaza Strip.
    - According to the Ministry of Health's virus laboratory[4], the case of infection was detected in a 17-year-old boy who was not vaccinated against the disease. Epidemiological investigation continues to locate contacts and refer any unvaccinated contacts for vaccination.
    - The Ministry of Health has identified areas of unvaccinated children around Jerusalem, Beit Hemesh and the Bedouin diaspora.
    - In Gaza[5], the director of Al-Quds Hospital confirmed the registration of 2 poliovirus cases. Samples were taken for examination.
    - The first confirmed case of poliovirus in the Gaza Strip was announced by the Ministry of Health last August.
- **Poliovirus (cVDPV2) in Australia:** according to the Department of Health of the state of Victoria[6], poliovirus (cVDPV2) has been detected in routine wastewater sampling in Melbourne. The detection is likely linked to an individual who received a live polio vaccine overseas as Australia uses inactive polio vaccines. The risk of transmissions is considered very low due to the state's high vaccination coverage and effective sewage treatment processes. Increased sewage sampling will continue to monitor the situation.
- **Undiagnosed illness in India:** on 15 January, health officials in Jammu and Kashmir reported on investigations of a localized outbreak of an unknown illness in Badhaal village Rajouri district[7], located in the northwestern region of India close to the border with Pakistan.
    - Since 8 December 2024, 3 families in the village were affected by the undiagnosed illness, including 17 deaths. There was limited information about symptoms and suspected cause of illness/death.
    - On 24 January, the Indian Institute of Toxicology Research[8] in Lucknow identified cadmium toxin in the bodies of the deceased. Cadmium contamination has been confirmed, but the route of exposure remains under investigation.

- Authorities are working to determine the source of contamination, focusing on environmental and supply chains. Budhal village has been isolated to limit further exposure.

- **Malaria in Lebanon**: in December 2024, a study was published studying a rare case of locally acquired malaria in Lebanon[9]. According to the study, Lebanon has remained free from local malaria transmission since 1963. The patient was a 27-year-old Lebanese woman with no recent travel history and no contact with individuals from malaria-endemic regions or residing near airports.
  - According to the study, the infection was likely acquired through contact with infected blood during a dilation and curettage (D&C) procedure performed in a non-sterile clinic setting the patient had undergone 2 weeks prior to presenting with symptoms. However, the source of exposure was not confirmed as surveillance of the patient suspected of being infected and in the same clinic where the D&C procedure was performed was not possible.
- **Malaria in South Sudan**: in January, local authorities in Torit County's Hiyalla Payam, Eastern Equatoria State raised alarm regarding a disease affecting children. A local health worker clarified that it was severe malaria[10] and watery diarrhea afflicting children.
  - One infant died and others remain in critical conditions in the health center, which is understocked with medicine.
  - Clinicians at the medical center are refuting claims of a cholera outbreak, stating that children are being tested for malaria and getting positive results, while no samples have been collected for testing for cholera.
- **Human Metapneumovirus (HMPV) in China:** in early January, the Chinese Centre for Disease Control and Prevention (China CDC) reported a surge in cases of HMPV[11] in northern China.
  - According to surveillance data[12] shared by the China CDC with data up to 29 December 2024, there has been an upward trend of common acute respiratory infections, including those due to seasonal influenza viruses, RSV and HMPV.
  - According to the WHO Disease Outbreak News, China's reported levels of HMPV and other respiratory infections are within the expected range for the winter season with no unusual outbreak patterns reported. The same publication stated that Chinese authorities have confirmed that the health care system is not overwhelmed and there have been no emergency declarations or responses triggered.
- **Listeria-contaminated food in Saudi Arabia and United Arab Emirates:**
  - According to Saudi News 50[13], the Saudi Arabia Food Authority has issued an official warning regarding a dried beef product, due to its contamination with Listeria monocytogenes bacteria.
  - The Ministry of Climate Change and Environment (MOCCAE)[14] in Dubai is investigating the potential contamination of a branch of pepperoni beef after the product was withdrawn from UAE markets.

- The suspected contamination is by listeria monocyotogenes, however the brand name has not been disclosed.
- Additional samples are being collected as the product is removed from UAE markets.
- To further support these efforts, the ministry confirmed the Gulf Rapid Alert System for Food (GRASF) facilitates the immediate exchange of information about health-threatening food products among GCC countries.

Potential Threats

Marburg

Tanzania

This threat is being monitored closely by Gulf CDC.

Situational Highlights

- **Epidemiological information:** On 14 January 2025, the World Health Organization (WHO) released a risk assessment to inform of a suspected Marburg Virus Disease (MVD)[15] outbreak in the Kagera region of the United Republic of Tanzania. ON 20 January, the government of Tanzania and the WHO confirmed[16] the MVD outbreak.
    - The suspected index case[17] was a 27-year-old pregnant female in the 24th week of gestation. Details are unclear about the date and specific symptoms onset.
        - However, the statement indicated that the illness progressed to generalized hemorrhage, and the patient passed away on 16 December 2024[17].
        - A healthcare worker who was directly involved in the care of the patient fell ill (unspecified symptoms) and died on 27 December 2024.
    - As of 23 January, there have 10 reported cases[18]. 2 of them have been confirmed and the other 8 are listed as probable. 31 tests have been conducted, of which 29 were negative.
- **Public Health Response**: National rapid response teams along with the WHO are supporting outbreak investigation and management.
    - The WHO has pledged US$3 million from its Contingency Fund for Emergencies[19] to support the response.
    - Case detection mechanisms have been scaled up.
    - Treatment centers and a mobile laboratory has been deployed to the region, and treatment units have been established for suspected cases.
- Cross-border coordination with neighboring countries, including Rwanda, Uganda, Burundi, and the DRC, has been initiated to strengthen surveillance and readiness efforts.
- **Travel advisories:** On 21 January, the government of Tanzania released a travel advisory[20], adhering to the International Health Regulations. The advisory includes mandatory traveller's surveillance forms for any travellers leaving the Kagera region, temperature checks at ports of entry, health information and reporting and infection control measures.
    - On 23 January, the government of the UK[21] updated their health travel advisory including the government of Tanzania's recent advisory.
- **Vaccine and treatment information:** there are currently no approved vaccines or treatments for MVD, but a range of vaccine and drug therapies are in development.

- On 21 January, the WHO's Filovirus Research Consortium[22] met to discuss several items regarding filovirus research and outbreaks, update on the status of Marburg medical countermeasures, therapeutics and vaccines, and more.
    - The recommendations of the technical advisory group on candidate vaccine prioritization resulted in the four live vector-based MVD vaccines (IAVI, Sabin, PHV, Oxford) being recommended for evaluation in the WHO Marburg vaccine trial.
    - The recommendations for candidate treatments to be included in a randomized clinical trial were to include both MBP091 (Single monoclonal human Immunoglobulin G Type 1 (IgG1) antibody (MBP091) against the Marburg virus glycoprotein) and Remdesivir (an anti-viral by Gilead).
- **Historical outbreaks:** The Kagera region, in Tanzania, experienced the first historical MVD outbreak in 2023 with nine cases, including six fatalities, CFR 66.7%[15].
    - Tanzania's experience in 2023 has contributed to a stronger response infrastructure.

Events of Regional Interest

Highly Pathogenic Avian Influenza H5N1

Globally

Negligible	Very Low	Low	Moderate	High	Critical

Gulf CDC Risk Assessment of this Event – 6 August 2024

- **Risk Question:** What is the likelihood of HPAI H5N1 human-to-human transmission occurring in the GCC countries and what is the impact of that transmission?
- **Impact:** 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.
- **Likelihood:** 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.

Please refer to the Gulf CDC Rapid Risk Assessment: Highly Pathogenic Avian Influenza H5N1 from 6 August 2024 further details.

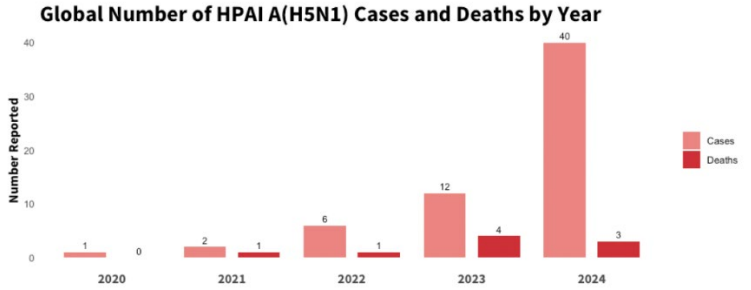
Why is this Notable?

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

2 confirmed cases
of HPAI H5N1 in humans globally in 2025

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. 
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

- **Epidemiological situation in humans:** There have been 2 confirmed and 1 presumptive human case and 1 death of Avian influenza H5N1 in 2025. Since January 2024, there has been a total of 81 confirmed cases to date across 6 countries (United States[23], Canada[24], Cambodia, Australia, China and Vietnam[25]).
- Since the beginning of 2025, the United States has reported 2 cases, and Cambodia has reported 1 case.
    - The San Francisco Department of Public Health[26] in the US announced a presumptive positive H5N1 case in a child.
        - Symptoms included fever and conjunctivitis. The child did not require hospitalization and has since fully recovered. Currently, the source of exposure is unknown.
    - On 27 December 2024, a human case of H5N1[27] avian influenza was confirmed in Stanislaus County, California, linked to contact with infected dairy cattle. The affected individual exhibited mild symptoms and was treated with antiviral medications.
        - As of this date, California (38) had the most human cases, then Washington (11), and Colorado (10).
    - Cambodia confirmed the first fatal human case[28] of the year due to influenza A(H5N1) in Kampong Cham Province. The patient, a 28-year-old male, tested positive on 9 January and exhibited symptoms, including fever, cough, and breathing difficulties, before passing away. The patient has a recent known exposure to sick and dead backyard poultry.
- A previously confirmed case of avian influenza (H5N1) reported in British Columbia, Canada was genomically sequenced[29].
    - The patient was a 13-year-old girl with mild asthma. Symptoms included conjunctivitis, fever, and later, respiratory distress and hemodynamic instability that led to ICU admission.
- Genetic sequencing identified three mutations (E627K, E186D, Q222H) linked to increased virulence and human adaptation and transmission. The virus identified closely resembles strains found in wild birds in British Columbia.
- Recently, the CDC has released genomic sequence data regarding the first confirmed severe US case of avian influenza A(H5N1) that occurred on 18 December 2024.
    - The virus belongs to the D1.1 genotype[30], found in US poultry and migratory birds in recent months. Similar strains have been linked to recent human cases in British Columbia and Washington State. One clinical sample contained low- frequency hemagglutinin mutations, that may enhance binding to human-type receptions that potentially contribute to severe disease.
- The Louisiana Department of Health[31] reporting the death of the initially identified case, marking the first fatal case in the US since this outbreak began in March 2024.
- The Chinese CDC[32] reported 23 human cases of avian influenza across five subtypes, with the primary epidemic being influenza A.
- **Epidemiological situation in animals:** In Chile[33], the Agricultural and Livestock Service (SAG) has raised its alert level for H5N1 avian influenza due to the ongoing risk from migratory birds arriving from the northern hemisphere. While Chile remains free of the disease in poultry,

the presence of the virus in wild birds increases the risk. SAG has mandated biosecurity measures for poultry owners, including keeping birds in a protected coop, ensuring food and water sources are free from wild birds, wearing dedicated clothing, disinfecting footwear, washing hands, and maintaining a clean coop environment.

- As of 23 December 2024, Hong Kong[34] have suspended imports of poultry meat and products from specific regions in the U.S. and U.K. due to outbreaks of highly pathogenic H5N1 avian influenza. Additionally, Shanghai has announced a three year ban[32] on live poultry trading to mitigate public health risks. The ban, effective 1 January 2025, restricts live poultry trading and mandates centralized slaughter for imported poultry. Authorities emphasize strict supervision and encourage public reporting to ensure compliance
- The World Organisation for Animal Health released a report in January 2025 stating that in Chinese Taipei on 4 July 2024[35], over 73,600 birds were infected with HPAI H5N1 in Changhua County, Yunlin County, and Tainan City. Many birds infected died from the virus. Control measures include culling, movement restrictions, disinfection, and intensified 28-day surveillance within a 3 km radius of affected farms. The Veterinary Research Institute confirmed the outbreak through gene sequencing and RT-PCR. The source of infection remains undetermined, and the event is ongoing.
- In Portugal[36], the Directorate General for Food and Veterinary Medicine (DGAV) reported a highly pathogenic avian influenza (HPAI) outbreak at a laying hen farm in Sintra, Lisbon, on 3 January, prompting immediate control and eradication measures. Following this report from WOAH, Hong Kong added additional restrictions surrounding imported foods from the area.
- Maharajbagh Zoo in Nagpur, India[37] temporarily halted feeding chickens to wild animals after three tigers and a leopard died, likely due to avian influenza (H5N1). The wildlife rescue centre where the animals died has been ordered to remain closed until further notice.
- An outbreak of highly pathogenic avian influenza has been reported on 29 December 2024 at a turkey farm in Kfar Vitkin, central Israel[38]. The Ministry of Agriculture and Food Security confirmed the detection in a facility housing 19,000 turkeys. To prevent the disease from spreading, strict measures have been enacted, including quarantine and monitoring of nearby chicken coops.
    - On 12 January 2025, Kibbutz Tzora[39] reported unusual mortality in three pre-market turkey coops. Samples were sent to the Ministry of Agriculture and were then confirmed to be HPAI H5N1. As of 22 January 2025, there have been 16 outbreaks of avian flu amongst turkey farms in the region.
- Starting on 16 October 2024, Japan[40] reported an ongoing outbreak of HPAI H5N1 in poultry in Saijo-City, Ehime Prefecture.
    - In total, there have been 1,536 cases and 1,518 deaths reported amongst a susceptible population of 1.2 million birds.
    - Movement restrictions, disinfection protocols, and quarantine measures were implemented within affected zones to control the spread of the virus.
- In Tijuana, Mexico[41], a probable case of H5N1 has been reported on 27 December 2024 in a bird at Morelos Park, causing the space to be partially closed.
- In South Korea, there have been a total of 19[42] outbreaks at 15 of the farms with positive cases for H5N1 virus serotype were confirmed in December 2024. The

agriculture ministry in the country has decided to reduce compensation for farms with biosecurity violation during HPAI outbreaks.

- Ministry investigations were carried out at 15 infected farms. Among the frequently observed procedural issues were failures to disinfect vehicles entering and leaving the premises, and to wear farm-specific clothing and footwear. Maintaining the correct concentration of disinfectant was also a common fault.

- Highly pathogenic avian influenza (HPAI) H5N1 has been confirmed in commercial poultry at a premises near Easingwold, Hambleton, North Yorkshire[43] (AIV 2025/06). All poultry on the premises will be humanely culled. A 3km protection zone and 10km surveillance zone have been declared around the premises, but as of 22 January 2025, the protection zone has ended.
  - There have been additional cases reported in Kingoldrum, Kirriemuir, Angus[44], Scotland.
- Several states in the United States have reported animal cases of HPAI H5N1:
  - Two cats tested positive[45] for H5N1 bird flu in Arapahoe, Colorado and Washington county, Oregon on 23 December 2024.
  - Similarly on 24 December 2024, the Santa Barbara County Public Health Department[46] reported that two cats from different households were infected with the H5N1 bird flu. Both cats developed severe neurological illness and died. The sources of infection are still under investigation.
  - H5N1 bird flu virus levels in San Francisco wastewater[47] surged to a record high of 228.8, according to WastewaterSCAN on 24 December 2024. This wastewater treatment plant handles 80% of the city's wastewater.
  - Within the US, 62 domestic cats[48] have been infected with H5N1 as of 21 January 2025.
  - There is no evidence[49] of cat-to-cat or cat-to-human spread.
  - According to the Los Angeles department of Public Health, HPAI H5N1 has been found in another brand of raw pet food (Northwest Naturals). The Los Angeles Department of Public Health reported that an indoor cat tested positive for the virus, linking it to contaminated raw food. The outbreak has led to multiple cats getting sick and several deaths, prompting health authorities to warn against feeding pets raw milk and meat products.[49]
  - The FDA has issued guidelines[50] to minimize the risk of cats contracting the virus through contaminated food products, especially as investigations have linked cases of HPAI in cats to raw or improperly processed food. The requirement aims to address new scientific findings and recent cases of H5N1 illnesses and deaths in cats linked to contaminated food products. The reanalysis ensures[51] preventive measures, such as heat treatments, Sourcing ingredients from healthy flocks or herds, and supply-chain controls to avoid ingredients from H5N1-infected animals are implemented to minimize or eliminate H5N1 transmission risks through pet food.
  - Henry Doorly Zoo and Aquarium[52] has closed a portion of their exhibit due to confirmed cases of avian influenza in Douglas County area in Omaha, Nebraska.
  - On 16 January 2025, an outbreak of avian influenza in a commercial poultry operation in Elbert County, Georgia[53], was confirmed by the U.S. Department

of Agriculture (USDA). The flock, consisting of 45,500 breeder chickens, marks Georgia's first confirmed case of bird flu in a commercial operation, raising significant concerns for the state's poultry industry, the largest in the United States.

- **Recent findings:**
- A recent study[54] compared virus replication and host response of three HPAI A(H5N1) viruses in human alveolar epithelium. Researchers hypothesized that clade 2.3.4.4b HPAI viruses may have reduced disease severity in humans compared to historic HPAI clades. This was based on a higher viral titer, earlier cell death, and higher induced host immune response produced by the older isolate (A/Vietnam/1203/2004) compared to human and bovine strains associated with the US cattle outbreak. However, changes in pathogenicity and transmissibility are possible given the continuously evolving genetic landscape of clade 2.3.4.4b viruses.
- In an early preprint[55], researchers describe the early genetic evolution of strains circulating in cattle through the accumulation of polymerase mutations. The PB2 M631L mutation (found in all cattle strains) and the PA K497R mutation (found in majority of strains) were described as key mutations supporting efficient replication in bovine and primary human airway cells. Additional converging mutations were identified such as the PB2 D740N mutation. Overall, these mutational changes provided enhanced viral replication in mammalian cells with no fitness cost in avian cells.
- Researchers evaluated receptor binding specificity[56] of an early human strain associated with the dairy cattle outbreak in the US (A/Texas/37/2024) compared to other clade 2.3.4.4b H5N1 viruses. The study found an increased binding breadth to glycans with terminal α2,3 sialic acids and no binding to those with α2,6 sialic acids (i.e., human-type receptors). A single mutation outside of the receptor binding site (T199I) provided increased flexibility of the receptor binding site.
- On 18 January, the US government awarded Moderna[57] $590 million to advance the development of its avian influenza vaccine, as the country doubles down on efforts to tackle increasing infections in humans. This is in addition to $176 million awarded by the U.S. Department of Health and Human Services (HHS) last year to complete the late-stage development and testing of a pre-pandemic mRNA-based vaccine against the H5N1 avian influenza. The award will also support the expansion of clinical studies for up to five additional subtypes of pandemic influenza. Moreover, the drugmaker said it is preparing to advance its experimental shot, mRNA-1018, into late-stage trials based on preliminary data from an early-to-mid stage study and plans to present the data at an upcoming medical meeting.

Mpox

Globally

Negligible	Very Low	Low	Moderate	High	Critical

Gulf CDC Risk Assessment of this Event – 16 December 2024

- **Risk Question:** 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?
- **Impact:** 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.
- **Likelihood:** 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. *Please refer to the Gulf CDC Rapid Risk Assessment: Mpox updated 16 December 2024 further details.*

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

10,000 doses

of MVA-BN vaccine delivered to Uganda

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. Clade I has been shown to cause more severe disease than clade II, with case fatality rates (CFRs) of approximately 10% and 1% respectively.
Trends from previous outbreaks	Although ongoing human-to-human transmission of mpox in the DRC 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.
Healthcare capacity	In 2024, the majority (96%) of mpox cases were reported from the DRC and Uganda. 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 Interim Medical Countermeasures Network (i-MCM-Net)[58], 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. Countries outside of Africa that have imported mpox clade Ib cases have thus far managed to contain cases to households and close contacts.
Connectivity to the Gulf Region	Of the 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 January 2024[59]:

	DRC	Kenya	Rwanda	Uganda	Zimbabwe
UAE	2,461	13,346	3,217	15,624	2,067
Bahrain	39	352	18	103	63
Saudi Arabia	286	5,341	116	1,875	185
Oman	65	806	94	105	62
Qatar	38	3,675	249	1,251	334
Kuwait	64	385	16	148	69

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.

Situational Highlights for Mpox

- **New cases of mpox Clade I outside Africa:** Pakistan, Oman, France, Belgium, China, the United States and the United Kingdom have reported new cases of mpox Clade I. [60]

  - According to a WHO report, mpox cases were detected in Pakistan and Oman in December 2024 with travel history to GCC countries.
  - **France:** On 6 January, French health authorities announced the identification of the first human case of mpox Clade Ib in mainland France,[60] specifically in Brittany. This marks the first recorded case of this sub-variant outside of Africa in 2025. The case involves an individual who had no travel history to Central Africa; however, epidemiological investigations indicated that the individual was in contact with two people who recently returned from Central Africa. Health authorities are conducting investigations to determine the source of infection and to trace potential contacts. The European CDC stated[61] that based on the epidemiological investigation, it is most likely that transmission took place in France.
  - **Belgium:** Belgian health authorities[61] have reported a second case of mpox Clade Ib through household transmission. The child of the index case developed symptoms on 21 December and the case was confirmed as mpox Clade Ib on 26 December. It is reported that the child is recovering well and isolating at home. Five other high-risk contacts have been identified, four of whom are healthcare workers.
  - **China:** On 9 January, the Chinese Center for Disease Control and Prevention[62] reported the first cluster of mpox Clade Ib human cases in the country. The outbreak originated from a foreigner with a history of residence in the Democratic Republic of the Congo. However, the specific locations in China and the DRC, the dates of travel, and points of entry have not been specified by the CDC.
    - Following detection, prevention and control measures were rapidly implemented across multiple provinces,[63] including Zhejiang, Guangdong, Beijing, and Tianjin, leading to the identification of the four secondary cases among close contacts of the index case (traveller from the DRC). All secondary cases were infected through close personal contact with the index case. No cases have been identified among general contacts.
  - United States: On 15 January, the Georgia Department of Public Health[64] reported a case of mpox clade I. The case is not linked to the first mpox clade I case that was reported in November 2024. Both individuals travelled from areas experiencing mpox clade I transmission and sought medical care for mpox symptoms after arriving in the US.
    - The US CDC has updated the prevention and vaccination recommendations[65] for people travelling to countries with clade I outbreaks, recommending they be vaccinated with two doses of JYNNEOS if they anticipate certain sexual activities while traveling.

- **United Kingdom:** On 20 January, the UK Health Security Agency[66] (UKHSA) has confirmed an additional case of clade Ib mpox. This is the sixth case of clade Ib mpox confirmed in England since October 2024 and it has no epidemiological links to the previously reported cases. The case was confirmed in East Sussex, England and affected individual is currently receiving medical care. The affected individual had recently returned from Uganda, where there is ongoing community transmission of clade Ib mpox. Close contacts are being monitored by UKHSA and partner organizations and will be offered care, testing, and vaccination where needed to prevent further infections. Rapid identification and diagnosis by clinicians and specialist laboratories contributed to the detection of this new case.

- **Cumulative cases in Africa:** According to the Africa CDC [67] in 2024, there were a total of 77,756 cases of mpox (16,763 laboratory-confirmed) and 1,288 deaths across 20 African Union member states. The countries reporting the highest confirmed cases were DRC (11,503 confirmed cases) and Uganda (1,353 confirmed cases).
  - On 11 January 2025, Sierra Leone's National Public Health Agency[68] reported the country's first mpox case since the WHO declared mpox a PHEIC in August 2024. The affected individual has been isolated and provided medical care in a secure environment. However, no further details regarding exposure or travel history have been provided, and the clade has not yet been identified.

Cumulative cases (2025) by African country reporting mpox cases[67]

Country	Reported	Confirmed	Deaths
Côte d'Ivoire	5	0	0
Ghana	13	0	0
Nigeria	76	6	0
Sierra Leone	8	4	0
Uganda	477	477	4
Zambia	1	1	1

- **Vaccine and treatment information:** On 21 January, the Health Emergency Preparedness and Response Authority (HERA) delivered 10,000 doses of the MVA-BN vaccine to Uganda[69]. The delivery is part of the 215,000+ doses donated by HERA to the Africa CDC and follows the delivery of 200,000 mpox vaccines to the DRC in September and 5,420 mpox vaccines to Rwanda in October.
- MOSA, a pan-African randomized platform adaptive trial for the MpOx Study[70], enrolled its first patients in the Equateur Province, DRC. The study will evaluate different antivirals, either alone or in combination.
  - Recent results from the PALM 007 and STOMP studies showed that tecovirimat did not show the expected effect on lesion resolution, underscoring the need for additional therapeutic options.

- The trial will start by evaluating the safety and efficacy of brincidofovir, an antiviral from Emergent BioSolutions. In the United States it is available under a single-patient emergency use Investigational New Drug (IND) for Mpox. The safety and efficacy of brincidofovir to treat Mpox in humans has not been established in double-blind, placebo-controlled studies for Mpox.
- In the MpOx Study, patients will receive either brincidofovir or a matching placebo in a liquid oral formulation, administered once-a-week, for 2 weeks.
- A first interim analysis is expected by the end of Q1 2025.

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