GCDC
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

Issue 04

April 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.

Threat

Any signal as assessed by the Gulf CDC PHE Department to have the potential to pose a near-future risk to the GCC countries' populations.

Threat of Regional Interest

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**

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 **April 2024** (March 22 – April 23, 2024).*

79	4	2	2
Disease Signals	**CRNE Signals**	**Threat of Regional Interest**	**Events of Regional Interest**

Executive Summary

Disease Signals This month, the epidemic intelligence team at Gulf CDC detected 79 infectious disease signals, of these 7 were detected in GCC countries. 19% of the total signals were measles signals, 13% were dengue signals and 11% were cholera signals.

CRNE Signals 4 CRNE signals of unusual environmental hazards with potential public health consequences were identified. Of these, 3 were in GCC countries. Heavy rain on 15 and 16 April 2024 caused flooding and major disruptions in areas of the UAE and Oman. The heavy rainfalls disrupted flights at Dubai International Airport. The province of Ash Shariqyah North in Oman was particularly hard hit, prompting the deployment of police and soldiers to assist in evacuating affected citizens from flooded areas.

Threat of Regional Interest The global situation of Cholera and the Mpox outbreak in DRC were identified as threats of regional interest.

Events of Regional Interest the Gulf CDC closely monitored two events of regional interest in April 2024: measles – globally and yellow fever in South Sudan. Daily monitoring of these events did not reveal any changes to the risk levels assessed for GCC or public health recommendations over the reporting period.

* Monthly reports cover data from the 22nd 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 and Potential Threats

The Gulf CDC monitors the globe for daily disease and CRNE 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 is reduced below our threshold.

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

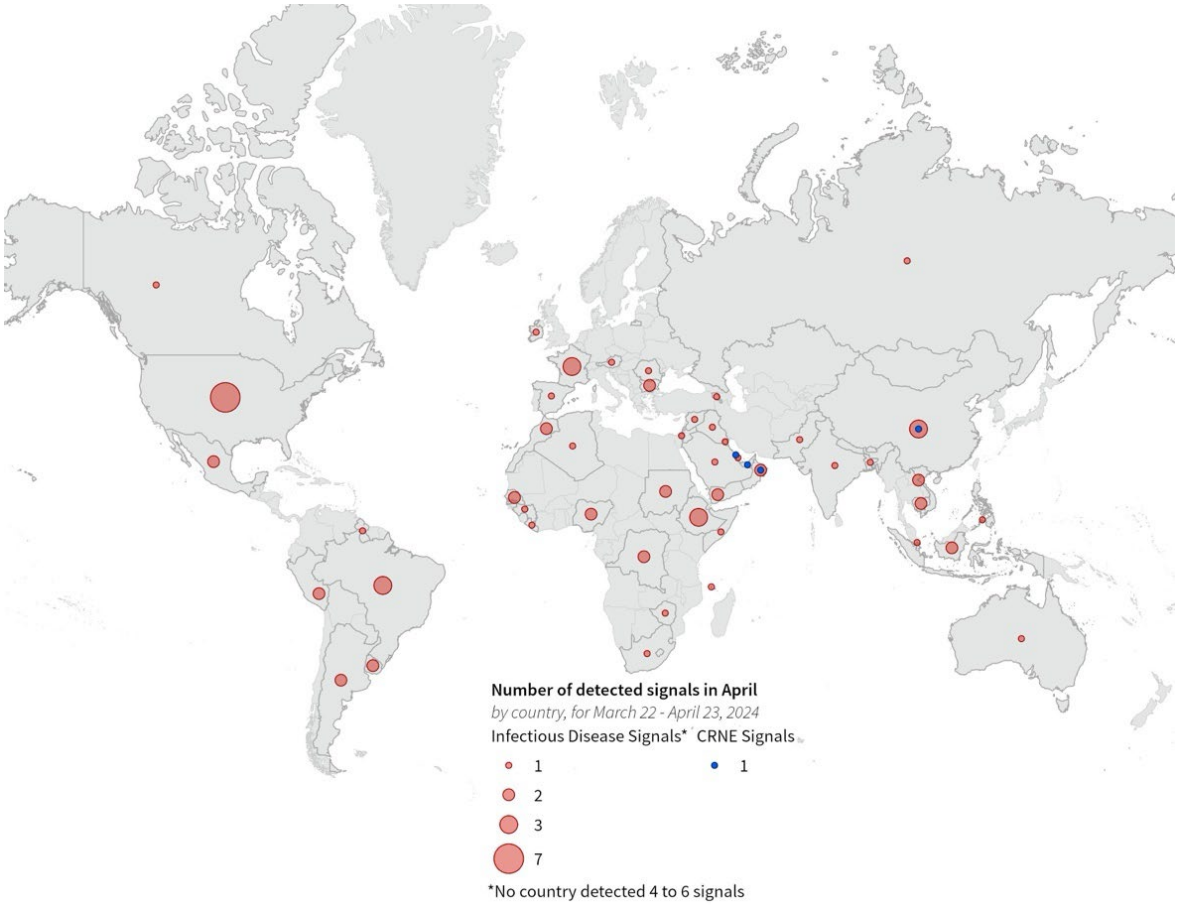

Figure 1. Number of detected signals by the Gulf CDC from March 22 to April 23, 2024

Threats of Regional Interest

Cholera

Neighboring and Highly Connected countries to the Gulf

This threat is being monitored closely by Gulf CDC.

Key Stats

31 countries
Recording outbreaks of cholera in 2024 (WHO)

11,000 suspected cases
In Yemen

Key Factors of Concern for Cholera	
Disease severity	Cholera is considered to have a moderate severity level. While there is vaccine availability, there is a global shortage, and logistical challenges exist in countries experiencing conflict and cholera outbreaks. Recent outbreaks have been more deadly, with case fatality rates being the highest recorded in over a decade.
Trends from previous outbreaks	According to the WHO, after decades of progress against cholera, cases have been steadily rising worldwide since 2021[1], including in countries that had not seen the disease in years. Extreme climate events like floods, cyclones and droughts in recent years have reduced access to clean water and created ideal environments for cholera to thrive. In 2022, 44 countries reported cholera cases, a 25% increase from 2021. In 2023, there was a significant global surge in cholera, totaling over 667,000 cases with 4,000 fatalities reported in at least 30 countries.[2] This global resurgence is categorized as a grade 3 emergency by the WHO, with the global risk evaluated as extremely high.
Healthcare capacity	Increases in outbreaks and cases are stretching the global capacity to response. The global stockpile of cholera vaccines is entirely depleted[2], as of end of February 2024. New doses are being produced at a rate of around 2.5 million per month, and all were allocated through March. The region expected to be most affected by the shortage of vaccines is Africa, as the 7 countries with most severe impacts in recent months are Comoros, DR Congo, Ethiopia, Mozambique, Somalia, Zambia and Zimbabwe. Further, cholera outbreaks are often triggered by countries

	experiencing poverty and conflict, which further reduces the healthcare capacity to respond to outbreaks.

Connectivity to the Gulf Region	Some of the countries experiencing cholera outbreaks are neighboring and highly connected countries to the Gulf region, including Yemen, Somalia, Afghanistan, and Pakistan.
	• The following are the top forecasted passengers for the month of April 2024 (over 10,000 passengers):
	  • Pakistan – Saudi Arabia: 235,580
	  • Pakistan – UAE: 188,714
	  • Pakistan – Oman: 16,798
	  • Pakistan - Qatar: 12,979
	  • Afghanistan – UAE: 12,490
	  • Yemen – Saudi Arabia: 11,067
	  • Afghanistan – Saudi Arabia: 10,654
	• Additionally, there is the possibility of illegal migration via land borders between Yemen and the GCC countries, both as a result of the ongoing conflict in Yemen and because the country has become a primary destination for illegal immigrants from countries in the Horn of Africa.
	** Connections between the above mentioned countries and the region is primarily counted based on airline data. Other routes of entry and illegal migration might contribute to the importation likelihood*

Situational Highlights for Cholera globally

- According to the World Health Organization (WHO),[3] from January to March of this year, 31 countries have recorded cases or outbreaks of cholera, with at least 18 countries affected in the African continent, making it the most impacted region.
  - The five countries reporting most of the cases are Afghanistan, the Democratic Republic of the Congo, Zimbabwe, Zambia, and Somalia. However, it is widely recognized that there may be widespread under-reporting and under-diagnosis of cholera globally, due to economic, social and political disincentives, inadequate investigation, or lack of diligence.
  - The five countries with the most reported deaths associated with cholera cases are the Democratic Republic of the Congo, Zambia, Zimbabwe, Somalia, and Ethiopia.
- As of 12 April 2024, the WHO prequalified a new oral vaccine for cholera[4]. The inactivated oral vaccine Euvichol-S has similar efficacy to existing vaccines, but a simplified formulation, allowing opportunities to rapidly increase production capacity.
- **Yemen:** According to the UN Office for the Coordination of Humanitarian Affairs (UN OCHA),[5] as of 7 April 2024, more than 11,000 suspected cases of cholera have been reported, with 75 associated deaths. The case count is expected to be higher since there are deficiencies in diagnosis and reporting in the country.
  - More than 2.5 million suspected cases have been reported since the first cholera outbreak was reported in the country in 2016

- **Somalia:** The current outbreak started in January 2024,[6] and is understood to be the result of large-scale flooding that took place in October and November 2023. There have been 4,388 confirmed cases in 2024 (as of 21 March). 58% of these are children under 5 years old.
    - The Banadir region in the Southern States has seen a high increase in the number of reported cases, reporting 586 new cholera cases from 23 districts in a 2-week period in March 2024.
    - Save the Children, an international non-governmental organization that has been working in Somalia for over 70 years, is rolling out an emergency response to prevent the further spread of the disease, working with the government, local partners, and communities to support two cholera treatment centers.
- **Africa:** eastern and southern African nations bear the heaviest burden of cholera with approximately 75% of the fatalities and a third of all cases reported by UNICEF.[7] These regions are grappling with inadequate clean water and sanitation issues and face heightened vulnerability, particularly among children.
    - Some African countries like Burundi, Mozambique, Tanzania, Zambia and Zimbabwe are presently in their rainy season (October – April). Increased rainfall in this period can lead to flooding and insufficient sanitation, creating optimal conditions for cholera transmission, particularly in under-resourced areas.
- **Brazil:** On 19 April, Brazil's Ministry of Health[8] confirmed the first locally acquired case of cholera in Brazil after almost 20 years without autochthonous cases of cholera. There is limited information of the isolated case in a 60-year-old man and the possible source of exposure. Official information highlighted that the affected individual has no recent travel history outside of the country, and no known contact with a confirmed cholera case.
    - While Brazil has low levels of connectivity with the Gulf region, this event is notable given the global cholera burden. Further, this isolated case underscores the probability of unreported cases and the potential for a large local and regional outbreak adding to an already stretched healthcare system with historical levels of dengue cases and likely other under-diagnosed mosquito-borne diseases including emerging pathogens such as Oropuche virus.

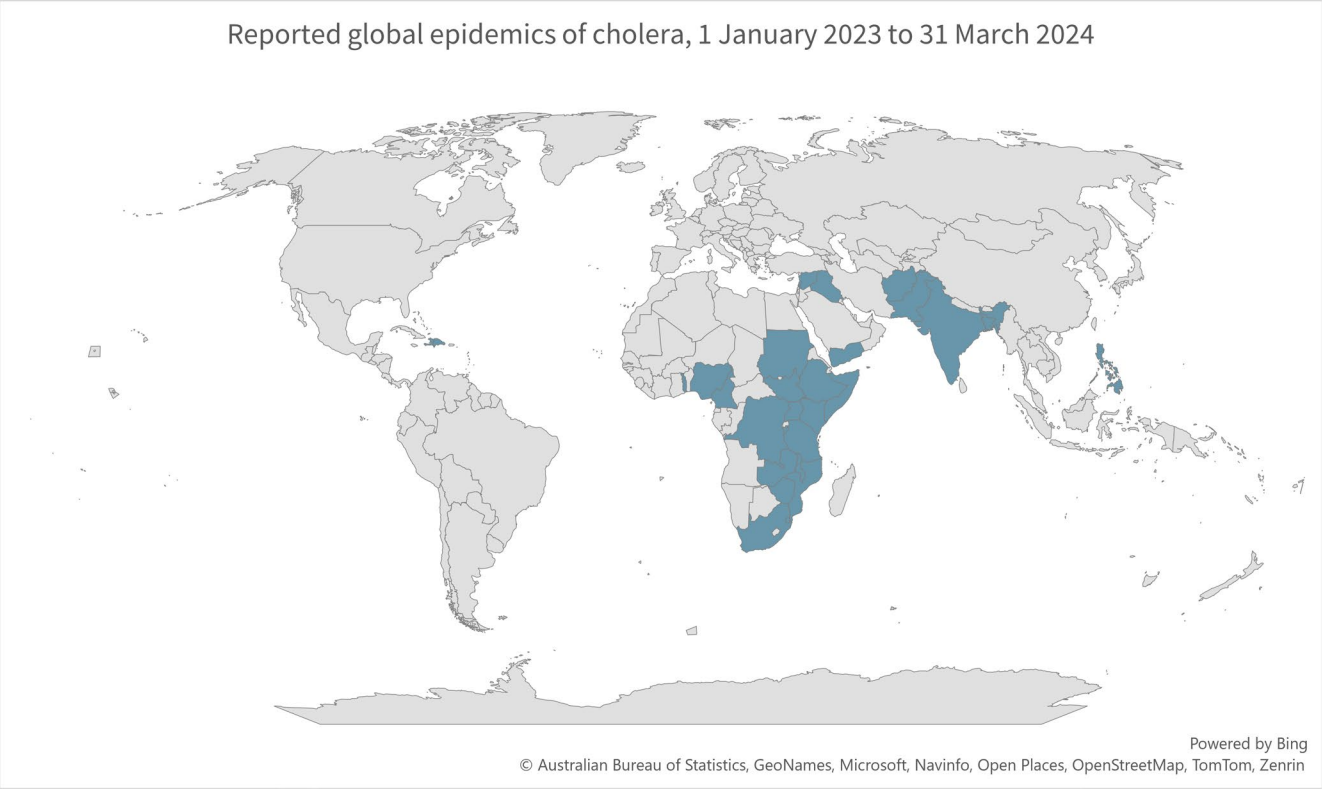

Figure 2. Reported global epidemics of cholera (1 January 2023 to 31 March 2024)
Source: [WHO Multi-country outbreak of cholera](), External situation report # 13 – 17 April 2024[2]

Mpox

Democratic Republic of the Congo

This threat is being monitored closely by Gulf CDC.

Key Stats

4,488

Reported Mpox cases in 2024 (as of 29 March)

70%

Of reported cases are in children

Key Factors of Concern for Mpox

Disease severity	Severe complications of mpox may include secondary bacterial infections, pneumonia, sepsis, and encephalitis and immunocompromised individuals are particularly susceptible to severe infections. Mpox is divided into two distinct clades,9 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 IIa 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. The current outbreak in the DRC has been due to at least one new strain of Mpox clade I, now proposed as clade Ib, with around 70% of cases being in children.[16] It is unclear what is the dominant transmission mode of the current DRC Mpox clade Ib outbreak, however sexual transmission has been reported for the first time including heterosexual contact among sex workers. Diagnosing Mpox is generally done using RT-PCR tests however, the Mpox clade I strain in the current DRC outbreak has mutated to be undetectable when using a specific clade I PCR[10] gene primer, despite the generic Mpox primers and probes maintaining their function.
Trends from previous outbreaks	Although ongoing human-to-human transmission of mpox in the DRC[11] has been documented since the 1970s, there are still gaps in knowledge of all the dynamics involved. According to the WHO, 11 out of 26 provinces[12] of the DRC are identified as endemic for Mpox. 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 IIb, lineage B.1 and its descendants. According to the WHO, Mpox outbreaks have occurred consistently in the DR Congo[13] since the 1970s, with case numbers increasing in recent years. • 1981-1986 – 1,415 suspected cases • 1996-2004 - >200 suspected cases per year • 2005-2015 - >1,000 suspected cases per year • 2016-2018 – 2,500-3,800 suspected cases per year • 2019-2020 – 5,200-6,200 suspected cases per year • 2021- Present – 2,841 suspected cases
Healthcare capacity	The DRC has a limited capacity to respond to public health emergencies due to limited testing capacity, medical countermeasure (MCM) access, and the implementation of appropriate healthcare interventions. According to reports[14], medical Mpox countermeasures have not been cleared for use by Congo regulators, and no treatments or vaccines are available for use in the country outside of clinical trials. The government has not asked to buy any or applied for donations of vaccines, despite efforts to donate, stalling efforts to donate doses of Mpox vaccines. In addition, competing priorities with other pervasive endemic and epidemic diseases and local conflict and displacement further constrain national public health responses against Mpox. The DRC has also not requested to purchase or applied for donations for the limited supply of mpox vaccines, hindering the procurement of much needed vaccines which has not approved by any endemic country in Africa including the DRC. Support from multi-lateral institutions such as Africa CDC and WHO[15] have also been important for public health responses against mpox. Both institutions have helped in coordinating responses against the current outbreak and have provided technical and resource support such as by providing diagnostics and expertise.
Connectivity to the Gulf Region	The UAE is one of the top 10 connected destinations to the DRC (Forecasted air travel passenger volumes for April 2024), with an expected 2,664 passengers travelling from the DRC to the UAE throughout the month of April 2024. Forecasted air travel passenger volumes for April 2024 for the rest of the GCC countries are below 300 passengers. ** Connections between DRC and the region is primarily counted based on airline data. Other routes of entry and illegal migration might contribute to the importation likelihood*

Situational Highlights for Mpox in DRC

- There is currently a mpox clade I outbreak[16] in the DRC that begun in 2023, with a total of 17,845 suspected cases and 878 deaths with most cases in children.
    - In 2023, according to the World Health Organization (WHO), the DRC had 13,357 suspected cases and 607 deaths of mpox from January to the end of November, up from 5,677 suspected cases and 213 deaths in 2022.
    - Due to limited testing capacities in the country, only around 10% of suspected cases are tested for confirmation and it is likely that the case numbers are underestimates. To date in 2024, there have around 4,488 suspected Mpox cases[17] and 271 deaths with a CFR of around 7%.
    - Mpox clade I has spread across 23 out of 26 provinces in the DRC including the capital Kinshasa, and may be fuelling the outbreak across the border in the Republic of the Congo
    - Like past outbreaks, children have been more likely to acquire infection through contact with infected animals. Further, children and young adults are less likely to have vaccine-induced orthopoxvirus immunity since smallpox vaccination programs ended in the 1980s in DRC.[16]
- **Medical countermeasures:** there are currently 3 WHO approved Mpox vaccines[18] (3rd generations modified vaccinia Ankara from Bavarian Nordic – MVA-BN, 3rd generation LC-16 from KMB Biologics, 4th generation OrthopoxVac). These are usually given to at-risk groups such as men who have sex with men or as a prophylactic for people have have been exposed to Mpox.
- Recent scientific evidence[19] (a preprint) has just highlighted that the current ongoing concerning trends of mpox in the DRC are due to:
    1. There is a newly emerging lineage of Clade I (labelled as Clade Ib) in Kamituga, South Kivu Province. Researchers identified APOBEC3-type mutations in Clade Ib which suggests recent and sustained human-to-human transmission.
    2. Researchers have estimated the emergence of this strain to have occurred around mid-September 2023.
    3. Clade Ib is capable of evading current mpox PCR testing due to mutations affecting genomic regions targeted by current testing methods for Clade I.
- These findings are of concern given:
    - This event represents the first-ever documented cases of a new lineage of the MPXV clade I (clade Ib), suggesting an increased risk for geographic spread, amplification, and undetected chains of transmission.
    - Genomic analysis of MPXV clade Ib suggests sustained human-to-human transmission supporting epidemiological evidence of sexual activity being a primary transmission route.
    - MPXV clade I cause more severe illness and higher mortality than clade II (which was associated with the 2022 global outbreak).

Events of Regional Interest

Measles

Globally

Negligible	Very Low	Low	Moderate	High	Critical

Gulf CDC Risk Assessment of this Event

- **Risk Question:** What is the risk of a significant number of measles cases being imported into the GCC Region in the upcoming 6 months, in terms of the likelihood and impact of the importation?
- **Impact:** Moderate. Despite an increase in likelihood, the impact remains moderate, due to varying immunization coverage across the region, potentially exacerbated by upcoming mass gatherings.
- **Likelihood:** Almost certain. The likelihood of measles importation to the GCC countries from countries with current measles outbreaks has been escalated to almost certain driven by the detection of several cases with travel history to the UAE and the high travel volume from endemic regions and countries reporting an increase in measles cases.

Please refer to the Gulf CDC Rapid Risk Assessment on Measles – Version 3 (updated 21 March 2024) for further details.

Why is this Notable?

The Gulf CDC EI team escalated the measles outbreaks globally from a potential threat to a threat of regional interest on 19 February because of an increase in the expected incidence of measles globally. On 21 March, the Gulf CDC EI team updated the RRA to a likelihood of 'almost certain,' due to the detection of several cases with travel history to the UAE.

Key Stats

6

GCC countries have confirmed measles cases (mostly imported) as of 22 April 2024

17-fold increase

In the total number of patients being treated for measles in a 7-month period in Yemen

Key Factors of Concern for Measles

Disease severity	Measles is a virus most commonly transmitted between humans vias airborne route and respiratory droplets. It is considered to have a moderate severity level. It is highly contagious, needing hospitalization in 25% of people who are infected. Complications such as pneumonia, otitis media, meningitis and encephalitis may occur.
Trends from previous outbreaks	According to WHO data, there has been a 79% increase in reported measles cases from 2022 to 2023.[20] The most affected regions were the WHO European region, which reported 937 cases in 2022 and 58,115 cases in 2023; the WHO Eastern Mediterranean region, which reported 54,245 cases in 2022 and 88,598 cases in 2023, and the WHO South-East Asia region, which reported 49,492 cases in 2022 and 84,720 cases in 2023. There exist immunization gaps related to pandemic disruptions to routine public health programs and growing vaccine hesitancy in several regions including the United Kingdom, the United States and Europe, leading to recent concerning outbreaks.
Healthcare capacity	The WHO recommends a vaccination threshold of 95% for the Measles, Mumps, and Rubella (MMR) vaccine. According to the WHO, no region in 2022 met that suggested threshold for the 1st dose (the highest reporting regions were the European Region (93%), Western Pacific Region (92%), and South-East Asia Region (92%)).[21]

Situational Highlights for Measles

- **Global overview:** there continues to be a high number of measles cases across countries worldwide, including high-connectivity countries, neighboring countries with the Gulf region, and within GCC countries.
- **GCC countries:** According to WHO data, all GCC countries reported suspected and confirmed, measles cases since the beginning of the year and as of 22 April 2024, these are mostly imported cases.[12] (not official data reported by GCC countries to the Gulf CDC).
    - UAE: 200 confirmed cases and 391 suspected cases
    - Bahrain: 5 confirmed cases and 119 suspected cases
    - Saudi Arabia: 73 confirmed cases and 190 suspected cases
    - Oman: 25 confirmed cases and 229 suspected cases
    - Qatar: 24 confirmed cases and 39 suspected cases
    - Kuwait: 2 confirmed cases and 16 suspected cases

- **Yemen:** According to *Médecins Sans Frontières*,[22] there is a 17-fold increase in the number of patients being treated for measles in a 7-month period at their Taiz Houban hospital (102 patients between January and July 2023, 1,776 patients between August 2023 and February 2024).
    - Due to the significant upsurge in measles patients, MSF opened a measles isolation unit in Taiz Houban Mother and Child Hospital in August 2023.
    - 85% of patients are children under the age of 5 years old.
    - As the number of cases has increased, the geographic reach of patients at the hospital has as well. Patients from many districts in the Taiz governorate are arriving at the MSF Taiz Houban Mother and Child Hospital for treatment.
- **The United States** has continued reporting high case numbers of measles since the March 2024 Monthly Report publish date.
    - As of 22 April 2024, there are at least 135 measles cases across 18 jurisdictions and states.
    - According to the US CDC, 93% of the total reported cases have been among individuals with recent international travel.
    - 58% of cases have required hospitalizations due to measles complications.
    - 83% of individuals have been unvaccinated or had unknown immunization status.
    - Health officials' investigations have identified the outbreak in the state of Florida as a probable common link in measles cases reported in at least 3 other states (Indiana, Louisiana, and Ohio).
        - These results raise concerns about undetected or delayed detections in the chain of transmission.
    - The City of Chicago has reported 57 cases of measles this year, accounting for over half of total cases across the country.
        - The largest ongoing known outbreak is at a migrant shelter, which has affected unvaccinated children and adults who have arrived from abroad, highlighting that diseases can further spread among pockets of unimmunized individuals despite the overall high levels of measles immunizations across the country.
- **Canada** has reported 56 measles cases reported across four provinces of Canada (British Columbia, Ontario, Quebec, and Saskatchewan), as of 22 March 2024.
    - There are imported and community transmission cases.
    - The province of Quebec makes up 78% of the reported measles cases across the country.

Yellow Fever

South Sudan

Negligible	Very Low	Low	Moderate	High	Critical

Gulf CDC Risk Assessment of this Event

- **Risk Question:** What is the risk of one case of YF being imported into the GCC Region from South Sudan in the upcoming 3 months, in terms of likelihood and impact of the importation?
- **Impact:** Moderate, due to severity of disease and low rate of immunization against yellow fever among GCC country populations. Robust vector control measures are in place to combat mosquito-borne diseases.
- **Likelihood:** Unlikely, there is a low number of travelers forecasted to travel between South Sudan and GCC countries, and South Sudan MOH has reported that entry and exit screening is in place as all travelers are requested to present their yellow fever vaccination cards.

Please refer to the Gulf CDC Rapid Risk Assessment for further details.

Why is this Notable?

This event is of concern as it highlights the possibility of a larger ongoing outbreak and potential risk of further spread of yellow fever in South Sudan.

Key Stats

115
Yellow fever cases (as of 15 April 2024)

77%
Targeted vaccination coverage rate in South Sudan

Key Factors of Concern for Yellow Fever

Disease severity	Yellow fever is a mosquito-borne disease considered to have a severe pathogen severity. It has a mortality rate of 15-50% in individuals who evolve from a flu like illness to a toxic phase. Prevention measures through immunization are available, however there are no approved treatments for yellow fever.
	Since the beginning of 2023, a total of 13 countries in the WHO African Region (Burkina Faso, Cameroon, the Central African Republic, Chad, Republic of the

Trends from previous outbreaks	Congo, Côte d'Ivoire, Democratic Republic of the Congo, Guinea, Niger, Nigeria, South Sudan, Togo and Uganda) have documented suspected and confirmed cases of yellow fever. According to the WHO, preliminary data for 2023 indicates a CFR of 11%.[23]
Healthcare capacity	South Sudan is classified as a high-risk country in the Eliminate Yellow Fever Epidemics initiative.[10] Population immunity is negligible. The vaccination campaign launched aims to protect populations at high risk and support in South Sudan's plans to introduce the yellow fever vaccine into their routine immunization systems. The country's previous experience with outbreaks allowed for rapid response team mobilization and improved surveillance to enhance case detection and reporting. South Sudan is current experiencing a measles outbreak[24] in Yambio, Nzara, Ibba and Tambura, adding further resource constraints to an already fragile health system. South Sudan is experiencing an influx of displaced people[25] because of the civil war in Sudan, which began on 15 April 2023. 635,138 individuals have entered South Sudan since the start of the war. This places further strain on the South Sudan healthcare system.
Connectivity to the Gulf Region	There is relatively low connectivity between South Sudan and GCC countries. The importation likelihood of yellow fever from South Sudan to GCC countries is less than 0.5%.* ** Connections between South Sudan and the region is primarily counted based on airline data. Other routes of entry and illegal migration might contribute to the importation likelihood*

Situational Highlights for Yellow Fever

- Between 9 and 15 April 2024, five new suspected Yellow Fever cases were reported, with three cases from Yambio, one from Tambura, and one from Mvolo counties.
    - As of 15 April, a total of 115 Yellow Fever cases (112 suspected and 3 confirmed) have been reported across seven counties in Western Equatoria state.
    - Yambio county has reported the highest number of cases (57).
    - 74% of reported cases are in individuals aged 15 years and above
    - A total of six suspected deaths have been reported, resulting in a case fatality ratio of 5.2%.
- The Ministry of health deployed the EAC Mobile Lab in Yambio/Wetern Equatorial State to enhance the laboratory testing capacities and laboratory surveillance
- The yellow fever vaccination campaign launched[26] in response to the outbreak reached 465,798 persons in the Western Equatoria State (in the targeted counties of Yambio, Nzara, Ibba, Ezzo and Tambura).
    - The initiative achieved a 77% coverage rate, highlighting the difficulties in reaching all targeted individuals.

- The WHO representative for South Sudan stressed the importance of integrating Yellow Fever vaccinations into the country's framework and national immunization schedule.[17]
- The Ministry of Health and the WHO are planning to conduct a post-campaign coverage survey to measure the quality of the reactive campaign.

- The State Ministry of Health has a number of response activities to contain the outbreak, supported by partners like the WHO, UNICEF, Red Cross Sudan, AMREF, MSF and more.
- During the last quarter of 2023 and as of 25 February 2024, a total of eight countries (Cameroon, Chad, Congo, DRC, Guinea, Niger, Nigeria, and South Sudan), have reported active YF transmission with confirmed YF cases. These countries have initiated response planning activities.

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

References

[1] Cholera Upsurge (2021-present). WHO. https://www.who.int/emergencies/situations/cholera-upsurge

[2] Burki, Talha. "The great cholera vaccine shortage." *The Lancet.* Vol 403, Issue 10430. 9 March 2024. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(24)00467-7/fulltext

[3] "Multi-country outbreak of cholera, External situation report #13 - 17 April 2024." WHO. https://www.who.int/publications/m/item/multi-country-outbreak-of-cholera--external-situation-report--13---17-april-2024#:~:text=Since%20the%20beginning%20of%202023,the%20South%2DEast%20Asia%20Region%2C

[4] "WHO prequalifies new oral simplified vaccine for cholera." WHO. 18 April 2024. https://www.who.int/news/item/18-04-2024-who-prequalifies-new-oral-simplified-vaccine-for-cholera#:~:text=A%20new%20oral%20vaccine%20for,to%20rapidly%20increase

[5] "Cholera resurges in Yemen as Houthis warn of 'dangerous levels' of famine." *Al-Monitor.* 18 April 2024. https://www.al-monitor.com/originals/2024/04/cholera-resurges-yemen-houthis-warn-dangerous-levels-famine

[6] "Cholera kills 54 people in Somalia with cases rising." Save the Children. 21 March 2024. https://www.savethechildren.net/news/cholera-kills-54-people-somalia-cases-rising-save-children

[7] "As cholera cases continue to rise in parts of Southern Africa, UNICEF calls for increased focus on children in the cholera response." UNICEF. 15 January 2024. https://www.unicef.org/press-releases/cholera-cases-continue-rise-parts-southern-africa-unicef-calls-increased-focus

[8] "Colera - Brasil (BA), caso confirmado, autóctone, fonte de infecção desconhecida." ProMED. 21 April 2024. https://promedmail.org/promed-post/?id=8716081

[9] "Epidemiological Situation of Monkeypox Transmission by Possible Sexual Contact: A Systematic Review." *Trop. Med. Infect. Dis.* 2022, *7*(10), 267. https://doi.org/10.3390/tropicalmed7100267

[10] Van Beusekom, Mary. "More than 600 dead in spreading DR Congo mpox outbreak as Republic of Congo reports its first cases." *CIDRAP.* 15 March 2024. https://www.cidrap.umn.edu/mpox/more-600-dead-spreading-dr-congo-mpox-outbreak-republic-congo-reports-its-first-cases

[11] Kibungu, E. M., Vakaniaki, E. H., Kinganda-Lusamaki, E., Kalonji-Mukendi, T., Pukuta, E., Hoff, N. A....Lushima, R. S. (2024). Clade I–Associated Mpox Cases Associated with Sexual Contact, the Democratic Republic of the Congo. Emerging Infectious Diseases, 30(1), 172-176. https://doi.org/10.3201/eid3001.231164.

[12] "Mpox (monkeypox) – Democratic Republic of the Congo." WHO. 23 November 2023. https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON493

[13] "Mpox (monkeypox)." WHO Fact Sheet. 18 April 2023. https://www.who.int/news-room/fact-sheets/detail/monkeypox

[14] Rigby, Jennifer. "Stigma, regulatory barriers delay mpox response in country that needs it most." *Reuters.* 6 December 2023. https://www.reuters.com/business/healthcare-pharmaceuticals/stigma-regulatory-barriers-delay-mpox-response-country-that-needs-it-most-2023-12-05/

[15] "Strengthening Partnerships to Combat Disease Outbreaks in the Democratic Republic of the Congo." Africa CDC. 10 February 2024. https://africacdc.org/news-item/strengthening-partnerships-to-combat-disease-outbreaks-in-the-democratic-republic-of-congo-drc/

[16] "Outbreak of mpox caused by Monkeypox virus clade I in Democratic Republic of the Congo." ECDC. 5 April 2024. https://www.ecdc.europa.eu/en/news-events/outbreak-mpox-caused-monkeypox-virus-clade-i-democratic-republic-congo

[17] "Rapid Risk Assessment: Risk Posed to the United States by Clade I Mpox Outbreak in Democratic Republic of Congo." Centers for Disease Control and Prevention. 17 April 2024. https://www.cdc.gov/forecast-outbreak-analytics/about/mpox-risk-assessment.html

[18] "Mpox (monkeypox)." WHO. 11 December 2023. https://www.who.int/news-room/questions-and-answers/item/monkeypox

[19] Vakaniaki, E. et al. Sustained Human Outbreak of a New MPXV Clade I Lineage in Eastern Democratic Republic of the Congo. Preprint article. *MedRxiv.* 12 April 2024. https://www.medrxiv.org/content/10.1101/2024.04.12.24305195v2

[20] Immunization Analysis and Insights Unit. WHO. https://www.who.int/teams/immunization-vaccines-and-biologicals/immunization-analysis-and-insights/surveillance/monitoring/provisional-monthly-measles-and-rubella-data

[21] Measles vaccination coverage. WHO Immunization Data Portal. https://www.who.int/teams/immunization-vaccines-and-biologicals/immunization-analysis-and-insights/surveillance/monitoring/provisional-monthly-measles-and-rubella-data

[22] "The upsurge in measles cases shows no sign of abating." Médecins Sans Frontières. 26 March 2024. https://www.msf.org/yemen-upsurge-measles-cases-shows-no-sign-abating

[23] "Yellow fever – African Region (AFRO)." Disease Outbreak News, World Health Organization. 20 March 2024. https://www.who.int/emergencies/disease-outbreak-news/item/2024-DON510

[24] "Weekly Situation update on the Yellow Fever outbreak in Western Equatoria State, South Sudan: Situation Report Number 038." 18 April 2024. PHEOC / WHO South Sudan. https://reliefweb.int/report/south-sudan/weekly-situation-update-yellow-fever-outbreak-western-equatoria-state-south-sudan-situation-report-number-038-18-april-2024

[25] "Sudan Crisis – Situation Update of South Sudan Response." WHO South Sudan. 10 April 2024. https://reliefweb.int/report/south-sudan/sudan-crisis-situation-update-south-sudan-response-reporting-date-10-april-2024-reporting-period-epidemiological-week-14

[26] "Combatting Yellow Fever Outbreak in South Sudan: Urgent Push Towards Immunization." WHO. 22 April 2024. https://www.afro.who.int/countries/south-sudan/news/combatting-yellow-fever-outbreak-south-sudan-urgent-push-towards-immunization