



Cholera outbreaks in Africa: protecting underserved populations through vaccination and public health action

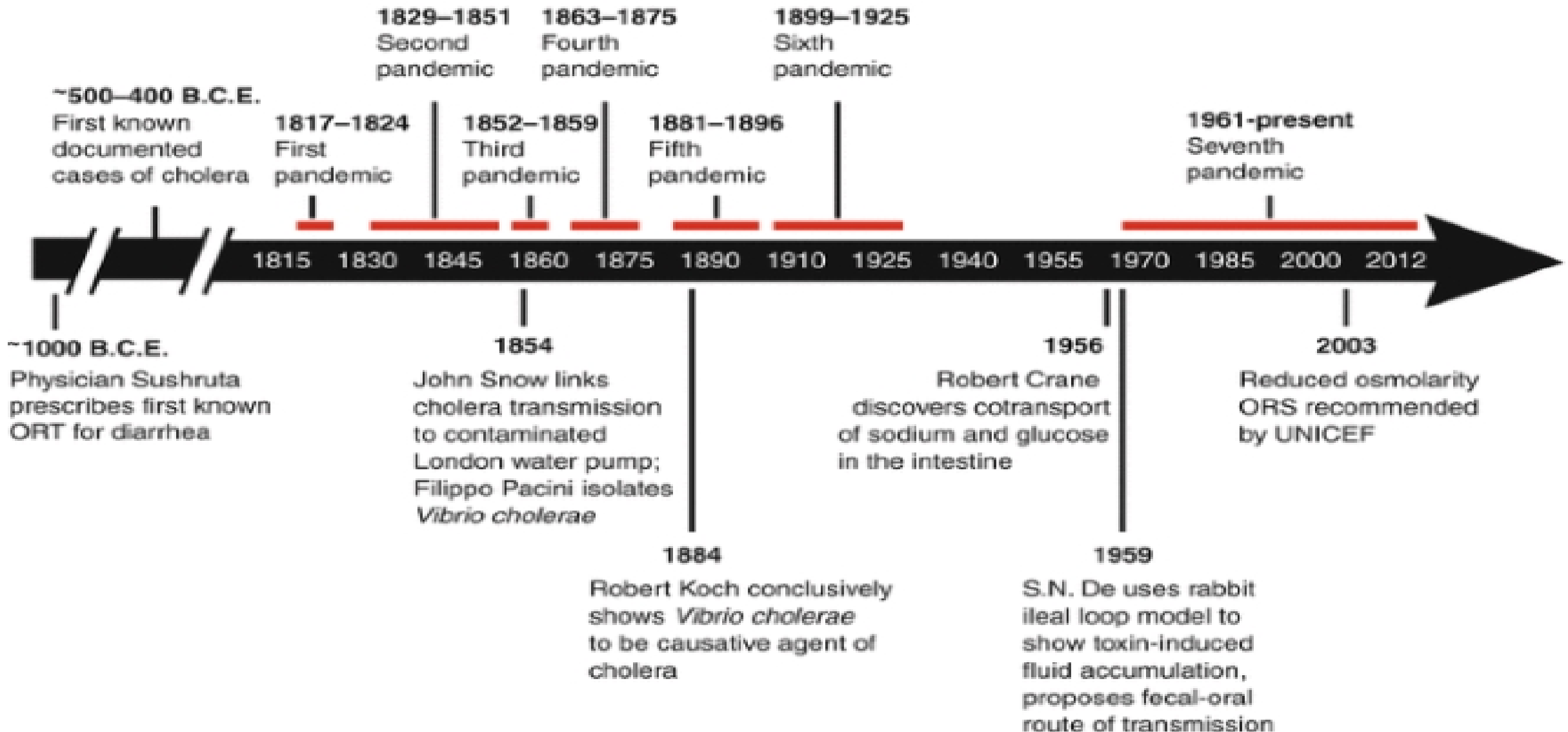
Dr Beverley Cowper
Medical Officer
BIOVAC
6th November 2025

Agenda



- 1. Cholera: the disease, the pathogen and global outbreak dynamics**
 - 2. Cholera in Africa: scope and trends**
 - 3. Challenges faced by underserved populations**
 - 4. Cholera vaccines, development and vaccination strategies**
 - 5. Public health responses**
 - 6. Take Home messages**
-

Historical context and global burden of disease



1. Introduction to cholera: the pathogen and disease ^{1,2}



- Cholera is caused by a bacterium called ***Vibrio cholerae***, a **facultative anaerobe** found in contaminated food and water and remains a global threat to public health ^{1,2}
- There are many **serogroups** of ***V. cholerae***, but only two – O1 (which belongs to the El Tor biotype) and O139 – have epidemic potential and cause outbreaks
- There is no difference in the illness caused by the serogroups: profound diarrhoea
- ***V. cholerae*** O1 has caused all recent outbreaks
- ***V. cholerae*** O139 – first identified in Bangladesh in 1992, caused outbreaks in the past, but is now only identified in sporadic cases, and never outside Asia. This has importance in vaccine development
- ***V. cholerae*** is further divided into three **serotypes**, Inaba, Ogawa, and Hikojima (very rare)
- **Virulence** is caused by **cholera toxin**, which has **2 subunits**:
 - **A subunit** – physiological and toxic activity
 - **B subunit** – non-toxic receptor-binding subunit

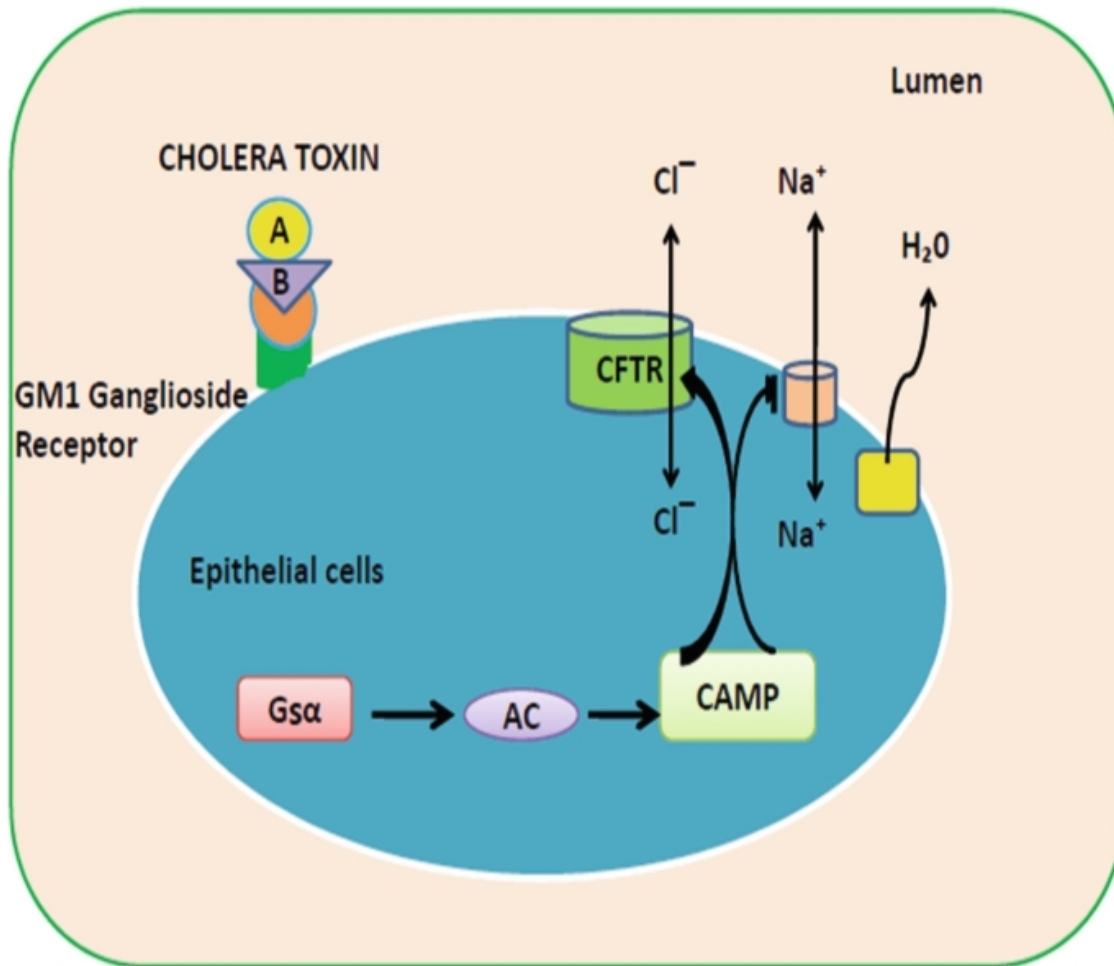


1a. Cholera: the disease ^{1,2}

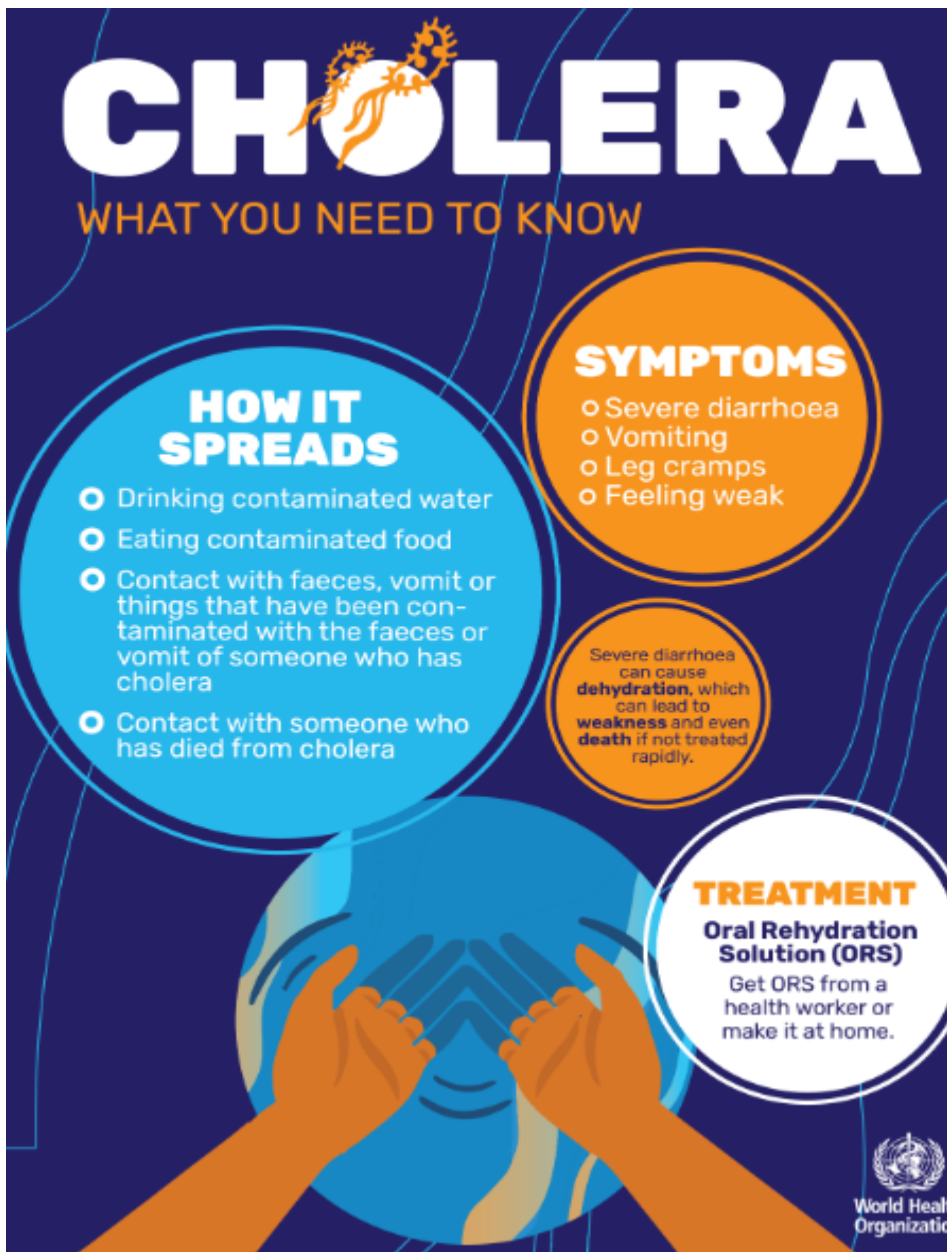


- During the 19th century, cholera spread across the world from its original reservoir in the Ganges delta in India. Six subsequent pandemics killed millions of people across all continents
- The current (seventh) pandemic started in South Asia in 1961, reached Africa in 1971 and the Americas in 1991. Cholera is now endemic in many countries ⁵
- It is a **disease of poverty** primarily affecting people living in areas with difficult access to clean drinking water, and inadequate hygiene and sanitation ³
- It is estimated that every year there can be between 1.3 to 4.0 million cases of cholera with 21 000 to 143 000 deaths; globally in **2025** there have been **518 328 cases** and **6508 deaths** across 5 WHO regions up to 31 st October 2025
- Cholera occurs both as **endemic disease** and in **outbreaks**, which can be large, explosive **epidemics: important when we come to vaccines**
- The global burden of cholera is not always known because of **under-reporting**, with affected countries not reporting cases at all to avoid the **stigma** often associated with the disease and its **economic impact** ⁴

1b. Cholera: disease mechanism ^{4,7}



- Incubation period is between 12h and five days; if not treated properly, infection can lead to death within hours
- Once the cholera bacterium infects the intestine, it secretes the **enterotoxin** from its external coating
- The **enterotoxin** binds to a receptor on the cells of the lining of the small intestine and some of the toxin then enters the intestinal cells
- The toxin affects the enzyme that controls the movement of **water** and **electrolytes** between the intestine and the circulatory system
- Results in rapid outflow of large quantities of fluid—up to one liter per hour—into the intestinal tract, resulting in '**rice water**' stools
- Clinical manifestations due to the extreme loss of **water** and **electrolytes**



Symptoms and risks....



1d. Cholera: identification and treatment ^{8,9}



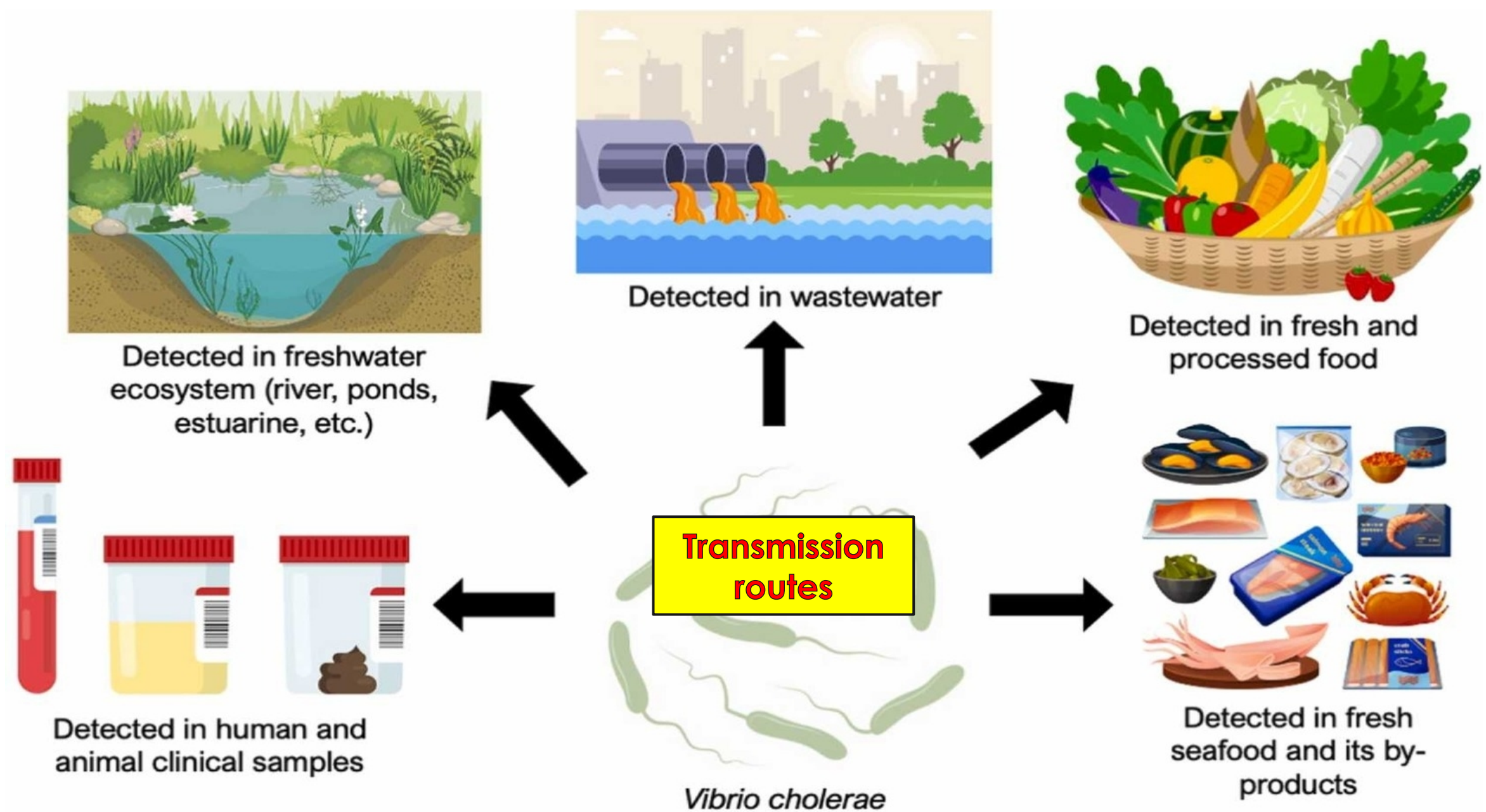
- A **clinical diagnosis** and treat aggressively with ORS or IVI depending on triage
- Isolate ***Vibrio cholerae*** bacteria from a stool specimen and perform 01 and 0139 serotyping
- **Lab stool cultures** using thiosulfate-citrate-bile salts-sucrose (TCBS) agar, the preferred selective media for isolation and identification; Cary Blair Transport Medium is used to transport stool samples to the laboratory for testing
- Molecular methods such as **Polymerase Chain Reaction (PCR)** are more sensitive and accurate compared to culture
- Commercially available **rapid diagnostic test (RDT) kits** are useful in epidemic settings but don't yield an isolate for antimicrobial susceptibility testing and subtyping
- **Zinc** in young children
- **Antibiotics:**⁸ only if indicated eg severe cases, co morbidities

	First-line	Alternative
Adults (including pregnant women)	doxycycline 300 mg p.o. single dose	azithromycin 1g p.o. single dose or ciprofloxacin 1g p.o. single dose
Children < 12 years old	doxycycline 2-4 mg/kg p.o. single dose	azithromycin 20 mg/kg (max 1g) p.o. single dose, or ciprofloxacin 20 mg/kg (max 1g) p.o. single dose

1e. Outbreak dynamics^{10,13}



- Key **definitions** in Cholera: Cholera can be **endemic or epidemic**
 - A **cholera-endemic area** is an area where confirmed cholera cases were detected during 3 out of the last 5 years with evidence of **local transmission** (meaning the cases are not imported from elsewhere)
 - A **cholera outbreak/epidemic** is defined by the occurrence of at least 1 confirmed case of cholera **with evidence of local transmission** in an area where **there wasn't prior cholera**
- **Cholera transmission** is closely linked to inadequate access to clean water and sanitation found in at-risk areas eg slums, lack of basic infrastructure, camps for displaced persons or refugees, lacking clean water and sanitation for living



Multi-country outbreak of cholera



External Situation Report n. 21, published 18 December 2024

Cases – 733 956
Since Jan. 2024

Deaths – 5162
Since Jan. 2024

Countries affected – 33
Since Jan. 2024

Population at risk
1 billion

Global risk –
Very high

<https://www.who.int/publications/m/item/multi-country-outbreak-of-cholera--external-situation-report--21---18-december-2024>



Global
Stats

Multi-country outbreak of cholera



External Situation Report n. 31, published 29 October 2025

Cases – 518 328
Since Jan. 2025

Deaths – 6 508
Since Jan. 2025

Countries affected – 32
Since Jan. 2025

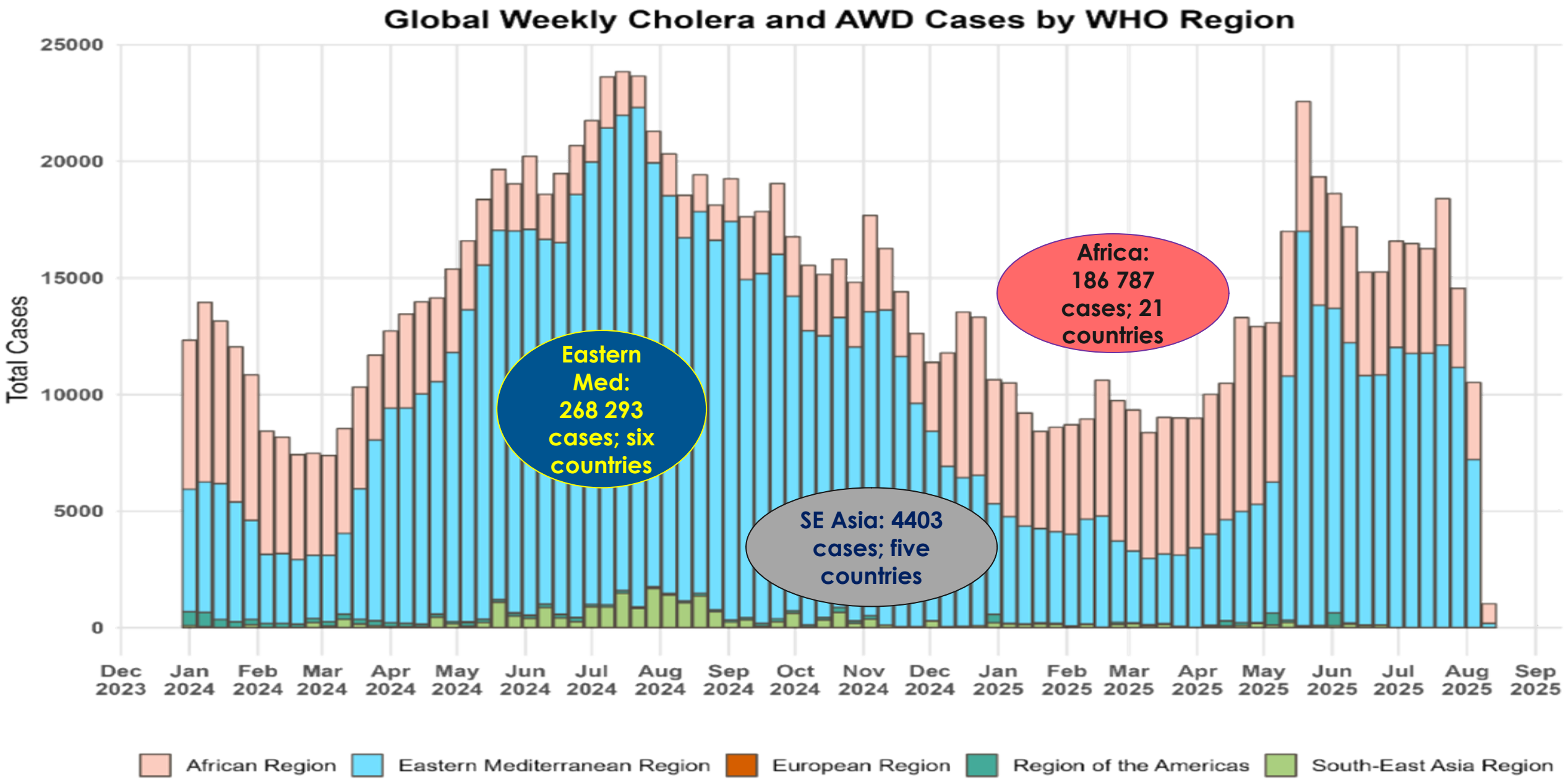
Population at risk
1 billion

Global risk –
Very high



Figure 1. Number of cholera cases by epidemiological week of reporting, as of 17 August 2025

Data source: WHO <https://www.who.int/emergencies/disease-outbreak-news/item/2025>



2. Recent Cholera Outbreaks in Africa (2024–2025)

1. Current Statistics:

- Over **254,371 suspected cases, 7905 confirmed human cases, 47 probable human cases** and **5,896 deaths** reported from Jan 2025 to September 2025
- **Top affected countries:** South Sudan, DRC, Angola, Ethiopia, Mozambique
- **Case Fatality Rate (CFR):** **2.25%**, slightly up from **1.9%** in 2024

Africa_CDC_Epidemic_Intelligence_Report_30-09-2025 accessed 20th October 2025

2. Trends:

- Increase in cases and deaths compared to previous years
- Climate events (e.g., **Cyclones Dikeledi and Jude**) exacerbated outbreaks

3. Transmission Hotspots:

- Urban slums, refugee camps, flood-prone areas, and regions with poor WASH infrastructure

WHO Cholera and AWD Dashboard 2025



Global Cholera and Acute Watery Diarrhoea (AWD) Dashboard

WHO Health Emergencies Programme

[Overview](#) [Data download](#) [Information note](#) [Contact us](#)

Cumulative cases and deaths reported from 01 January to 26 September 2025

Select a country or area
All countries and areas

Select WHO Region
No category selected

Countries and areas
32

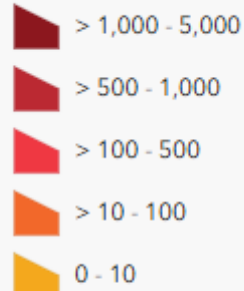
Cumulative cases
489.5k

Cases reported in the last 28 days
45.5k

Cumulative deaths
6.2k

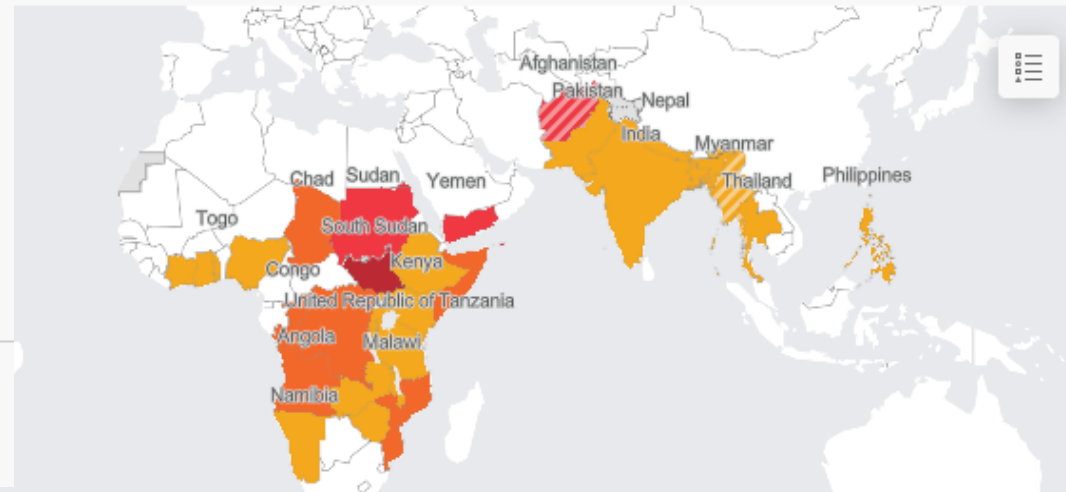
Deaths reported in the last 28 days
573

Legend

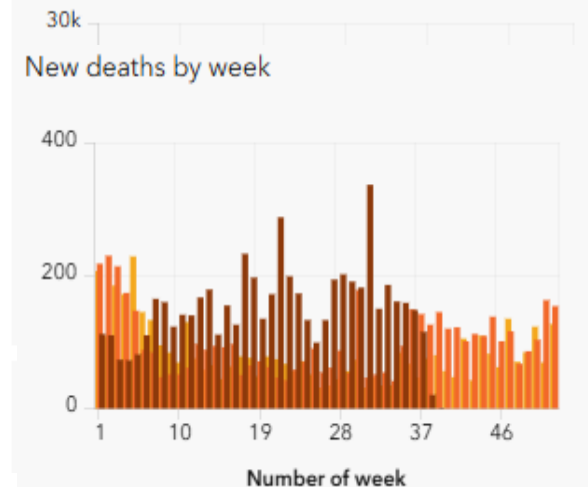


Not applicable

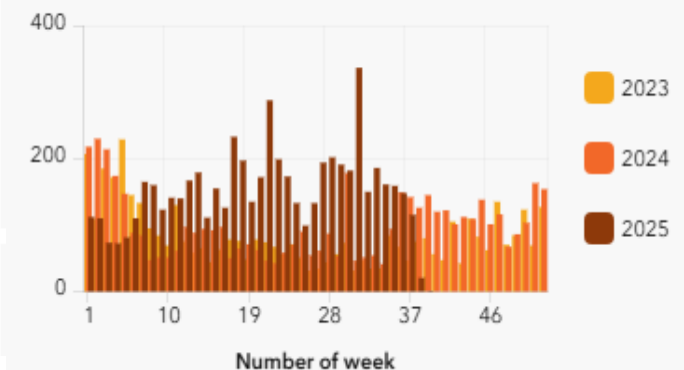
es per 100,000 population



New cases by week

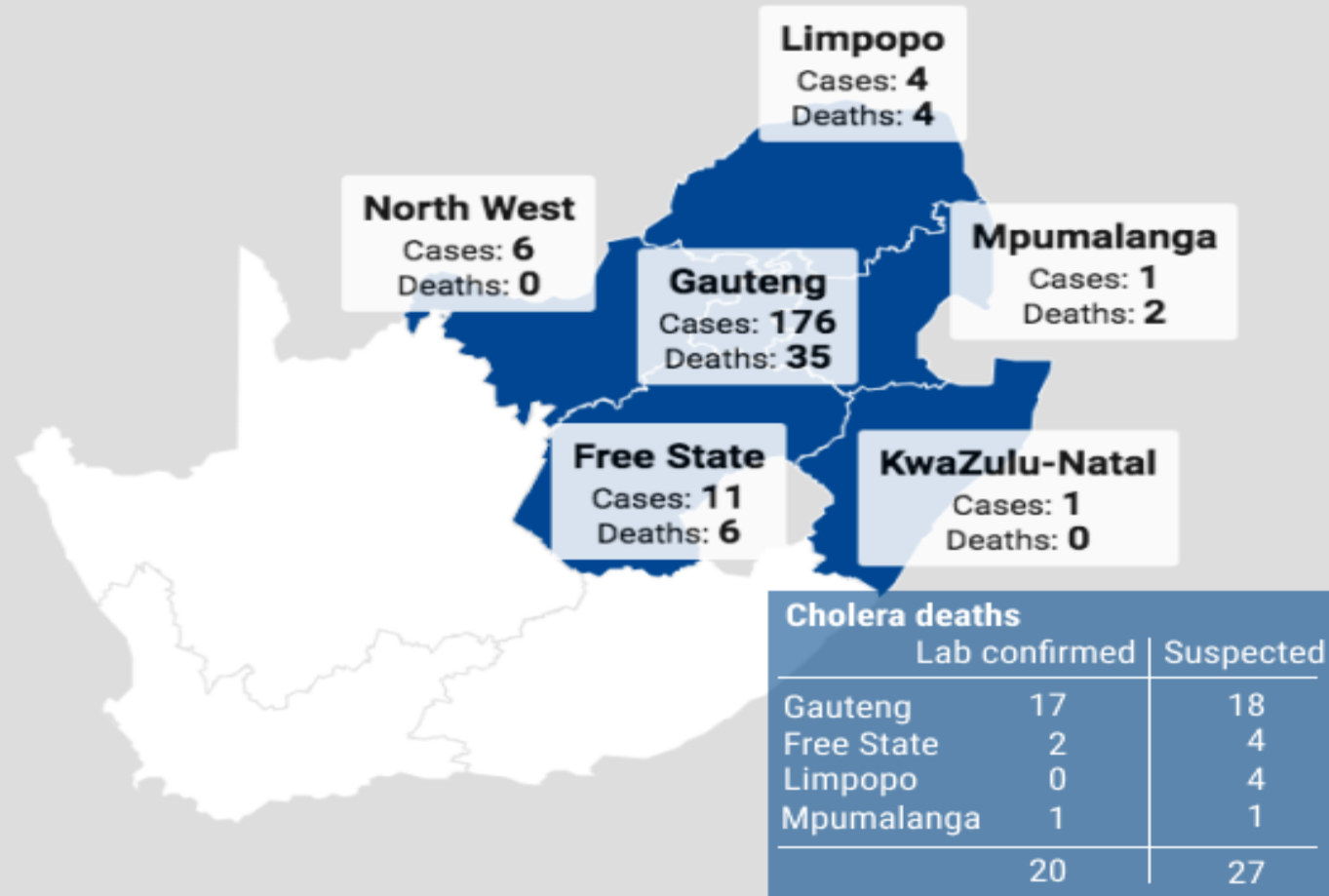


New deaths by week



Cholera in South Africa

Total cases: **199** Deaths: **47**



Source: Department of Health, 25 July 2023

3. Risk factors and challenges faced by vulnerable and underserved populations

Vulnerable Populations

Who is most affected?



Children under 5



Displaced communities



Urban slum dwellers

Barriers to prevention and care



Limited access to services



Poor sanitation and water quality



Insecurity and instability

TABLE 1 | The persistent challenge of cholera in Africa: a complex interplay of climatic factors, Africa, 2024

Category	Key causes/patterns	Context in SSA
Structural Poverty and Inequalities	<ul style="list-style-type: none">- Marginalized populations in urban slums and rural areas are underserved- Poverty forces reliance on contaminated water sources	<ul style="list-style-type: none">- Limited political prioritization leaves communities without access to clean water or sanitation- Informal economies restrict resources for public health investments
Environmental and Climatic Vulnerabilities	<ul style="list-style-type: none">- Seasonal floods contaminate water supplies- Droughts exacerbate water scarcity- Unplanned urbanization overwhelms waste management	<ul style="list-style-type: none">- Rapid urban growth in informal settlements increases exposure to cholera- Climate extremes amplify risks of waterborne diseases in vulnerable regions
Conflict and Fragility	<ul style="list-style-type: none">- Displacement due to armed conflicts leads to poor camp conditions- Fragile health systems fail to provide adequate cholera prevention	<ul style="list-style-type: none">- Refugee and IDP camps often lack water, sanitation, and healthcare.- Reliance on emergency aid undermines sustainable solutions
Cultural and Behavioural Barriers	<ul style="list-style-type: none">- Traditional practices hinder adoption of hygienic behaviours- Distrust in authorities limits acceptance of health interventions	<ul style="list-style-type: none">- Hygiene education efforts are culturally insensitive or absent- Behavioural norms (e.g., open defecation) perpetuate unsafe practices
Gaps in Governance and Policy	<ul style="list-style-type: none">- Inconsistent funding focuses on reactive measures instead of proactive investments- Poor collaboration across sectors (water, sanitation, health)	<ul style="list-style-type: none">- Cholera response programs remain underfunded and poorly coordinated- Long-term investments in public health infrastructure are deprioritized
Cross-Border Transmission Patterns	<ul style="list-style-type: none">- Porous borders and trade routes enable cholera spread across countries	<ul style="list-style-type: none">- Frequent migration and regional trade increase risk of cross-border outbreaks
Neglected Investment in Preventative Measures	<ul style="list-style-type: none">- Vaccination campaigns are limited and reactive- Health education efforts fail to address systemic barriers	<ul style="list-style-type: none">- Oral cholera vaccines are underutilized- Public awareness campaigns are rare and lack cultural or contextual relevance

Trends and case studies: Southern Africa: Humanitarian Snapshot (as of August 2025)



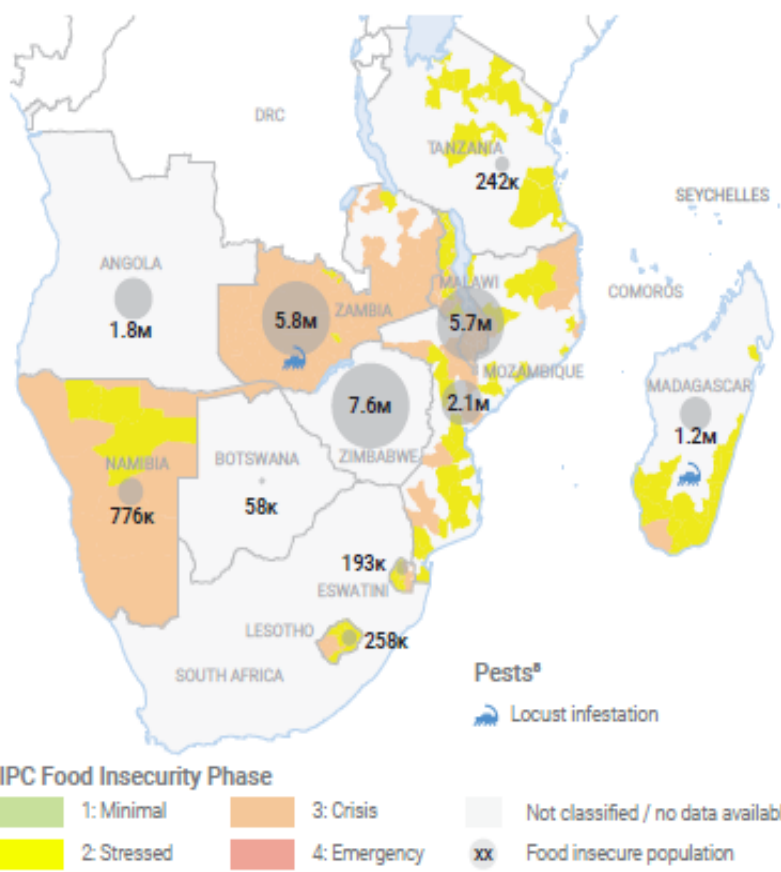
- **Southern Africa continues to grapple with the lingering impacts of the 2024 El Niño-induced drought:**
 - further devastation by destructive cyclones and heavy rains in early 2025
 - **cyclones:** of Chido, Dikeledi and Jude in 2025 in Mozambique
 - severe flooding in countries including Botswana, Madagascar, Mozambique, and Malawi
- **Protracted conflict, displacement, other disease outbreaks,** and weak social protection systems: over 23 million people require humanitarian assistance
- **The region is grappling with other major disease** outbreaks not only cholera: malaria, mpox, and measles, threatening millions of lives
- **Acute food insecurity**
 - over 500,000 children pushed into acute malnutrition: cases have continued to rise in 2025 in Angola, Malawi, Mozambique, Madagascar, Zambia, and Zimbabwe
- **Humanitarian partners facing significant funding cuts: millions of \$ US for programs**

Southern Africa: Humanitarian Snapshot (as of August 2025)

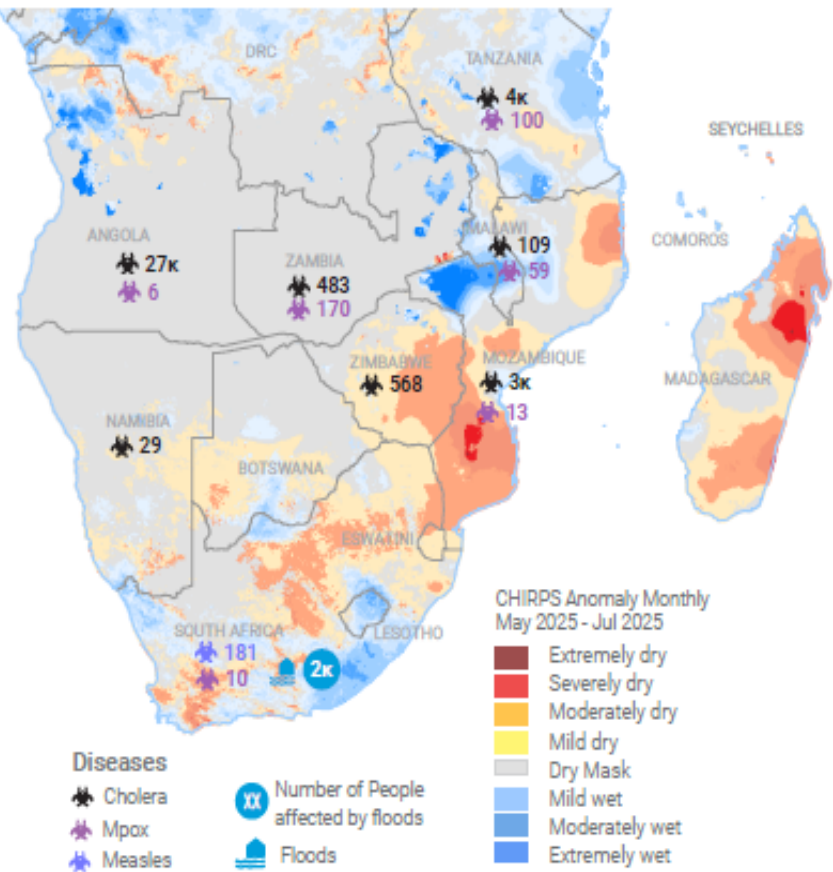
KEY FIGURES FOR THE REGION



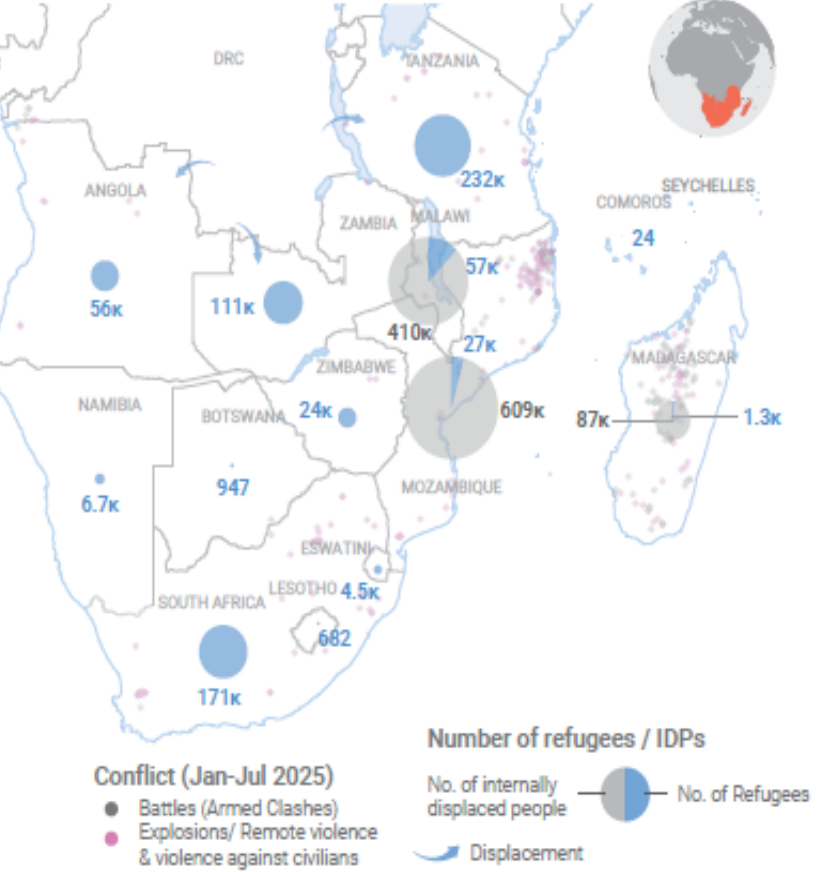
FOOD INSECURITY / PESTS



RAINFALL PERFORMANCE⁹ / DISEASES OUTBREAKS⁹



DISPLACEMENT / CONFLICT¹⁰



PEOPLE IN NEED



1M

PEOPLE TARGETED



921K

PEOPLE REACHED



559K 338K

Excluding Food Security and Livelihood Response

FINANCIAL REQUIREMENTS (\$)

\$197.5M \$22.2M

Total Financial Requirements

Funding received

Province

All

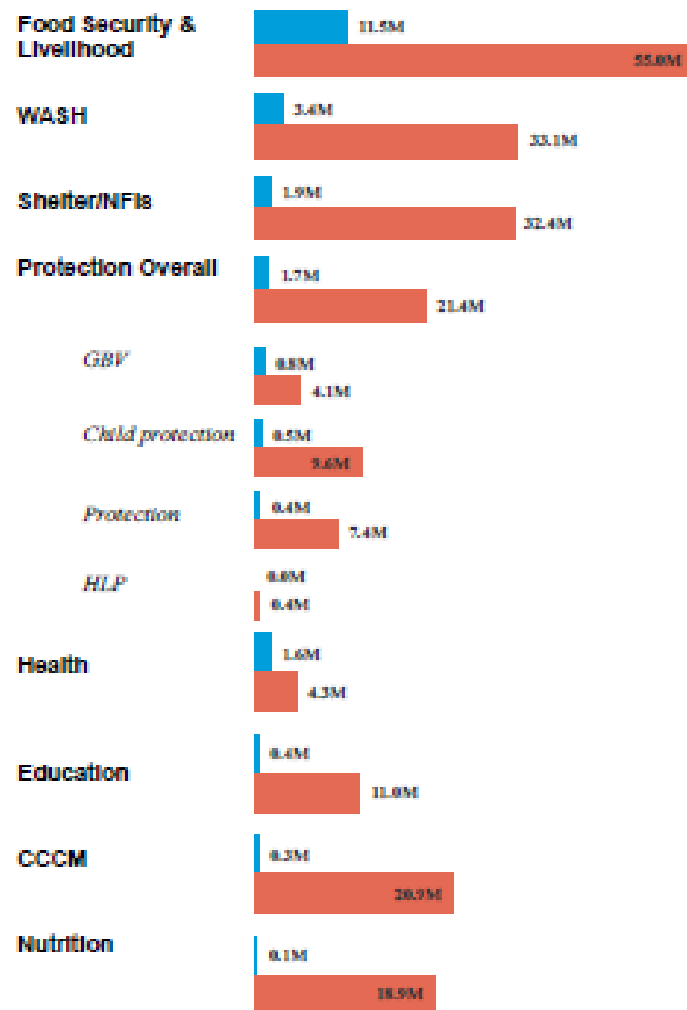
District

All

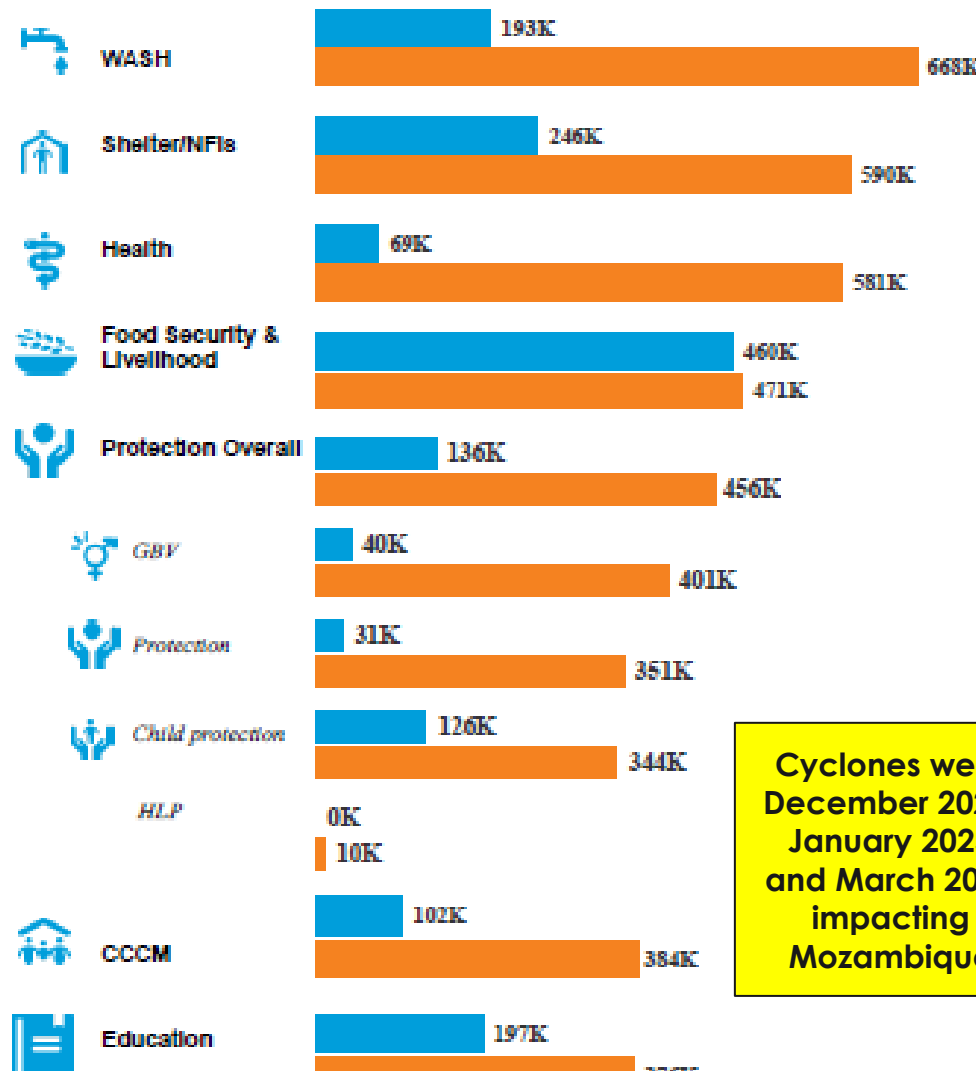
For more details by specific province and district see the [Power BI](#)

FINANCIAL REQUIREMENTS (\$)

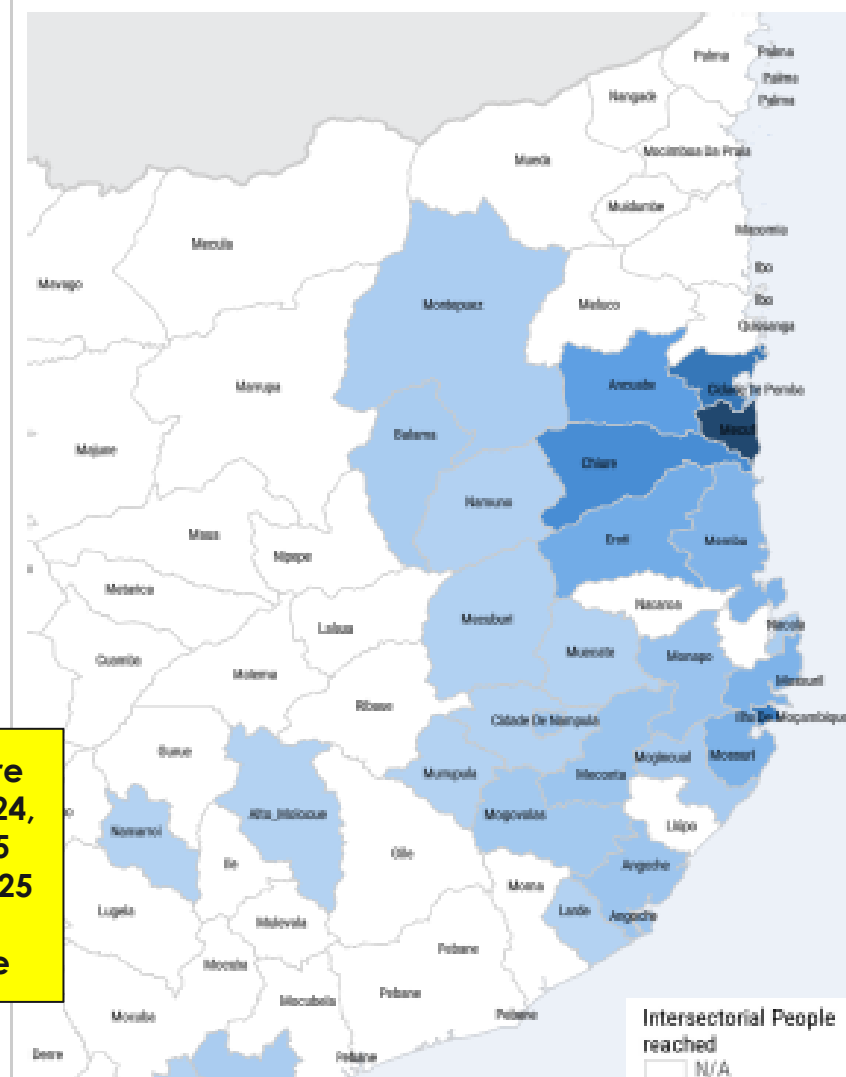
Funding US\$ Current requirements US\$



PEOPLE IN NEED, TARGETED AND REACHED BY CLUSTER



PEOPLE REACHED BY DISTRICT



Cholera due to exposure in Europe associated with consumption of holy water from Ethiopia, January to February 2025

Christina Frank¹, Claire Jenkins², Jana-Marie Weis³, Anja Brilmayer³, Anja Schoeps⁴, Susann Dupke⁵, Hendrik Wilking¹, Parisha Katwa^{1,2,3,4,5}, Satheesh Nair², Clare Barker², Derren Ready², Gauri Godbole², Susan Hopkins², Hilary Kirkbride²

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2. United Kingdom (UK) Health Security Agency, London, United Kingdom
3. Bad Kreuznach Public Health Office, Bad Kreuznach, Germany
4. Federal State Agency for Consumer and Health Protection Rhineland-Palatinate, Koblenz, Germany
5. Centre for Biological Threats and Special Pathogens, Robert Koch Institute, Berlin, Germany

Correspondence: Claire Jenkins (Claire.jenkins1@ukhsa.gov.uk)

Journal of Epidemiology and Global Health
<https://doi.org/10.1007/s44197-024-00278-6>

RESEARCH ARTICLE



Cost of Cholera for Households and Health Facilities, Somalia

Salvador Figuereo¹ · Ian Yoon² · Ssentamu Simon Kaddu¹ · Mutaawe Lubogo¹ · Joaquin Baruch¹ · Asm Amjad Hossain¹ · Sahra Isse Mohamed³ · Ali H. A. Abubakar³ · Khalid Mohamed Mohamud³ · Sk Md Mamunur Rahman Malik⁴

Received: 27 May 2024 / Accepted: 11 July 2024
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Ethiopia: cross border transmission to Europe via contaminated Holy Water

Somalia: high treatment costs for cholera and socioeconomic inequality

4. Cholera vaccination strategies



4a. Development of cholera vaccines ¹

- We all know that vaccines are among the most cost-effective public health interventions, contributing significantly to the reduction of mortality and morbidity from infectious diseases in the 20th century
- Yet, an estimated (by the WHO) 1.5 million children under the age of five die annually from infectious diseases that could have been prevented by vaccination
- Lack of availability of vaccines, especially in LMICs can be affected by many external factors: the perceived lack of profitable markets by vaccine producers, lack of certainty about the disease due to poor data, vaccines often not a focus for neglected diseases in LMICs, trying to fit a new vaccine into EPIs etc
- **Cholera faced many of these challenges where the global burden of disease is mostly in sub-Saharan Africa (60%) and South-East Asia (29%)**
- The first vaccine against cholera, a whole-cell (WC) injectable vaccine, was developed in 1985 but it was not fit for purpose and the focus was on oral vaccines such as Dukoral (1991) were PQ-ed and made available to **UNICEF** yet the demand remained low...difficult vaccine for the environment and went into the travel market
- **IVI** was the first organization to partner with groups in India, Vietnam, Korea, and many others to develop, build capacity and provide access to cholera vaccines through many initiatives over a very long time
- **OCV is a game-changer in the fight against cholera.** It takes effect immediately and works to prevent cholera for 2-3+ years, effectively bridging emergency response and longer-term cholera control with a WASH focus

4b.Cholera vaccine use ¹⁹

The **WHO 2017 Position Paper on Cholera Vaccine** defines the use of cholera vaccines:

- **Cholera prevention and control should be a priority** in areas at risk for cholera or where endemic cholera is present. Current OCVs have data on their safety, efficacy, field effectiveness, feasibility, impact and acceptability in cholera-affected populations and should be used in areas with endemic cholera, in humanitarian crises with high risk of cholera, and during cholera outbreaks. Use in conjunction with other cholera prevention and control strategies
- **Vaccination should not disrupt the provision of other high priority health interventions** to control or prevent cholera outbreaks. Appropriate case management, WaSH interventions, surveillance and community mobilization remain cornerstones of cholera control. Vaccination complements the other prevention and control measures
- **Two doses of vaccine** were usually given however in **October 2022**, the strained global supply of cholera vaccines obliged the International Coordinating Group (ICG) to temporarily suspend the standard two-dose vaccination regimen in cholera outbreak response campaigns, using instead a **single-dose approach**; the pivot in strategy was to allow for the doses to be used in more countries, at a time of unprecedented rise in cholera outbreaks worldwide
- The production of OCV as a continuous process needs > 2.5 million doses to be produced **monthly**

4c. Cholera vaccines ²



Cholera Vaccines Approved by FDA or WHO

Vaccine name (Manufacturer)	Number of doses recommended	Recommended age	How long vaccination is effective	Available in the U.S.?
Vaxchora (Emergent BioSolutions)	1 dose	2-64 years	At least 3–6 months	Yes
Dukoral (SBL Vaccines)	2 doses, given 1-6 weeks apart (Children ages 2-5 years need 3 doses, given 1-6 weeks apart)	2 years and older	2 years 65% protection against cholera for 2 years; the ‘traveller’s vaccine’	No
Euvichol/Euvichol- Plus (EuBiologics)	2 doses, given at least 2 weeks apart	1 year and older	At least 3 years for 2 doses. (One dose provides short-term protection for about one year.)	No
Shanchol™ = Euvichol®= Euvichol Plus			65% protection against cholera for up to 5 years following vaccination in endemic areas: reduced circulation	
https://www.cdc.gov/cholera/prevention/cholera-vaccines.html accessed 23rd October 2025				

4d.Next generation Oral Cholera Vaccines ¹⁶



- A recently registered and PQ-ed OCV, **Euvichol-S**, has been developed in South Korea by EuBiologics in collaboration with the International Vaccine Institute (IVI). It is made based on two cholera strains, so it can also be produced at a lower cost yet be as immunogenic as Shanchol and Euvichol /Plus

Globally, there is a shortage of OCVs as there is only one manufacturer. The deficit is ~40 million doses per year

- **Hillchol** is another second-generation vaccine in which the many components of the first generation vaccine are based on a different bacterial strain. That means it can be produced in various countries. It was developed in 2011 and from 2014 through a collaboration with the Indian government, this vaccine was licensed to Bharat Biotech. It is currently in phase III clinical trials. Expected capacity of 200m doses over time
- A third-generation vaccine based on Dukoral, the first-generation oral cholera vaccine but improved the vaccine's thermostability to remain active in higher temperatures for a long period of time, is also being developed. Supported by Wellcome, the vaccine **DuoChol**, has been developed as a thermostable, low-cost capsule vaccine

- Vaccines need to get to patients urgently in outbreaks...
- Following major **outbreaks of meningitis** in Africa, The International Coordinating Group (**ICG**) on Vaccine Provision was established in 1997, as a mechanism to manage and coordinate the provision of emergency vaccine supplies and antibiotics to countries during major outbreaks
- In 2013, the WHO established an **OCV stockpile**. The number of vaccine doses per year has increased from 2 million in 2013 to 7 million in 2016 and nearly 30 million in 2022
- To date, over 298 million doses of OCV have been delivered to over 31 countries
- While the International Coordinating Group (ICG) reviews and approves emergency stockpile requests, the Global Task Force on Cholera Control (**GTFCC**) established in 2014 and with representation from over **15 partner organizations**, through their **OCV Working Group**, coordinates and manages **stockpile requests** for **preventive** and **outbreak** campaigns as well as collecting **data** and shaping the international **consensus** on comprehensive cholera control

[GTFCC https://www.gtfcc.org/about-cholera](https://www.gtfcc.org/about-cholera) accessed 16 October 2025

[Stockpiles https://www.who.int/groups/icg/cholera/stockpiles](https://www.who.int/groups/icg/cholera/stockpiles), accessed 20 October 2025

4e. Establishing the ICG and the cholera vaccine stockpile...^{8,21}



UNICEF SD PROCUREMENT²¹

EMERGENCY STOCK

TOTAL 2M doses (Shanchol)

Includes vaccines to be used in emergencies (i.e. outbreaks and humanitarian crises).

Decisions from the International Coordinating Group (ICG).

NON-EMERGENCY RESERVE

TOTAL 4.3M doses (1M Shanchol + 3.3M Euvichol)

Includes vaccines to be used preventively to control cholera in highly endemic settings (i.e. "hotspots")

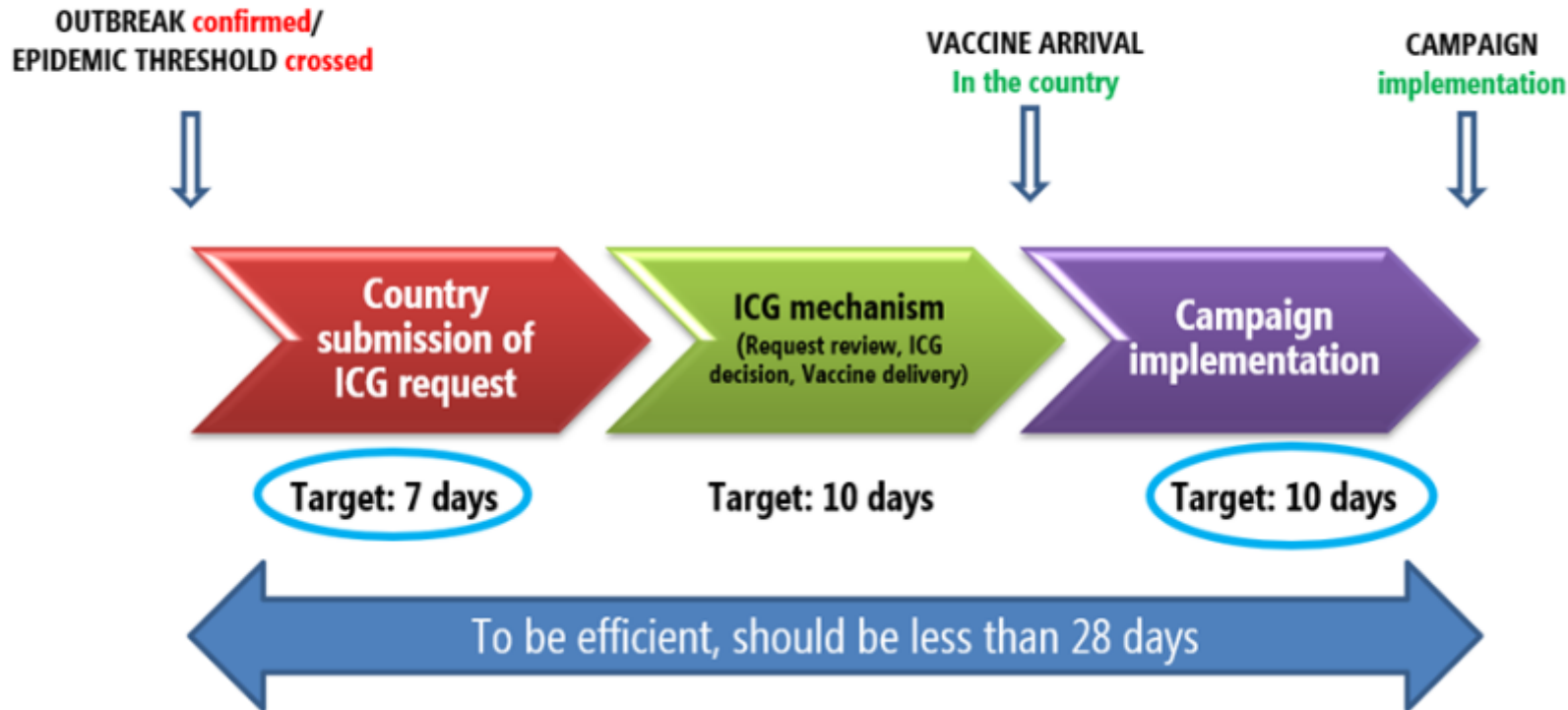
Decisions from the OCV Working Group of the Global Task Force on Cholera Control (GTFCC)

At least 1M doses (700,000 under special circumstances) locked AT ALL TIMES for emergencies.

Flexibility around the remaining available doses for use as needed in emergency and/or non-emergency settings.

ICG key performance indicators:


A **timely** response is **essential**...






OCV dashboards and stockpile data 2025

GTFCC OCV data updated: 03 October 2025

 [Requests](#)

 [Timeline](#)

 [Report an issue](#)

Date filters

Click the switch to activate each period filter.

Request period



01/07/13

to

29/09/25

Shipment period



01/07/13

to

03/10/25

Campaign period



25/03/15

to

23/10/25



Requests received

276

236 (86%) approved



Doses requested

436.2M

298.2M (68%) approved



Doses shipped

253.9M

203.2M (80%) shipped with ICG



Countries

37

34 (92%) with an approved request

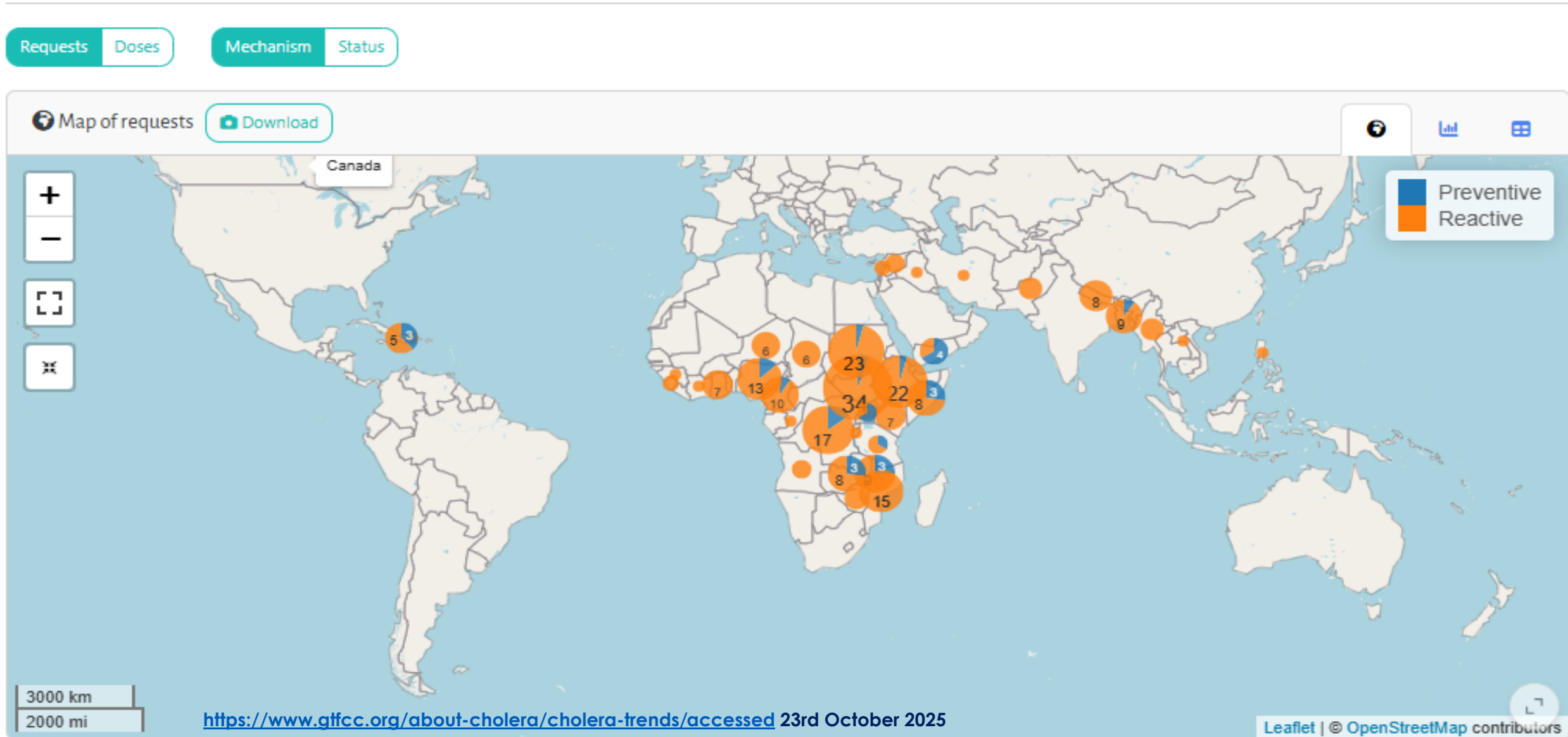


Average decision time

12.2 days

Min: 0 days - Max: 317 days

GTfCC: dashboard and stockpile data requests: as of September 2025



4f. Media response to cholera outbreaks galvanizing urgent responses...

Press release

Over 640,000 children under five at risk as cholera spreads in Sudan's North Darfur State

UNICEF calls for sus outbreak News | Sudan war

03 August 2025

Sudan reports 70 cholera deaths in Khartoum in two days

Cholera outbreak is centred around the capital city, Khartoum, which
ALJAZEERA *been devastated by more than two years of war.*



<https://www.aljazeera.com/news/2025/5/29/sudan-reports-70-cholera-deaths-in-khartoum-in-two-days> accessed 23rd October 2025

<https://www.msf.org/war-fuels-cholera-outbreak-across-sudan> accessed 23rd October 2025

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Government Health Policy

2 minute read - December 16, 2022 4:34 PM GMT+2 - Last Updated a month ago

We've run out of cholera vaccines, WHO official says as disease surges

By Emma Farge

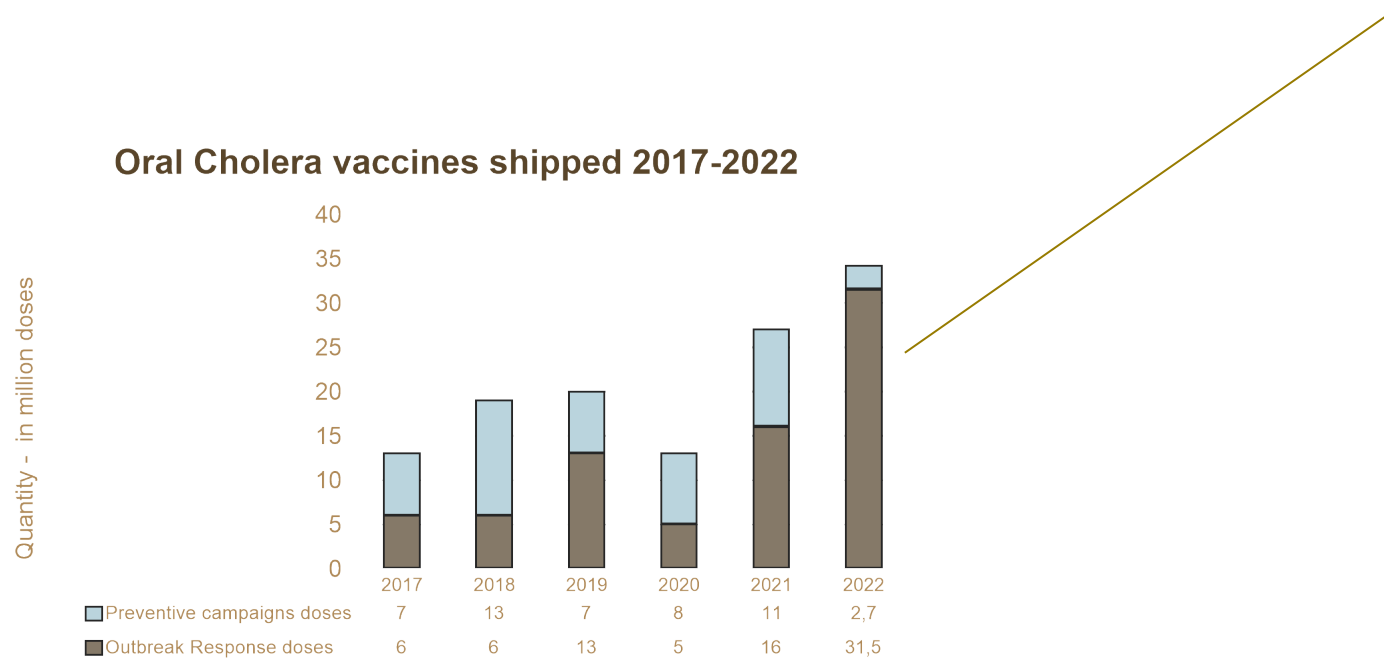


4g.Case study: Oral Cholera (OCV-S) Tech transfer

Addressing societal problems and Quality of Life



Example from 2022: Planned prevention campaigns in 4 African countries did not go ahead in 2022 due to insufficient supply and some countries only received 1 dose for emergency response.



4h. A new collaborative venture between Biovac and IVI was announced in 2022



For Immediate Release

BIOVAC SIGNS DEAL TO DEVELOP AND MANUFACTURE ORAL CHOLERA VACCINE FOR AFRICAN AND GLOBAL MARKETS

Cape Town, 23 November 2022 - South African based Bio-pharmaceutical company, Biovac, has concluded a ground-breaking licensing and technology transfer agreement with the International Vaccine Institute (IVI), a non-profit international organisation headquartered in South Korea, for the manufacture of an oral cholera vaccine (OCV).

The project is significant for Biovac as it enables drug substance manufacturing capability to be built, that is, production of the antigen/raw material needed to manufacture actual vaccines. This is one of the remaining steps in the vaccine manufacturing value chain that is currently missing, not only at Biovac, but across the African vaccine manufacturing landscape.

The agreement comes at a time as cholera outbreaks – prompted by climate change, armed conflict and displacements – wreak havoc on fragile health systems, as observed in Pakistan, Nigeria and Malawi as recent examples. This places additional demand on already-limited supply of cholera vaccines globally.¹ The extent of cholera outbreaks in recent years has escalated while there has been an increasing gap between supply and demand for cholera vaccines.

4i. After the COVID vaccine situation in LMICs...¹⁷



World Report

African vaccine manufacturing scheme to boost production

Gavi is launching the African Vaccine Manufacturing Accelerator to promote domestic vaccine production. Udani Samarasekera reports.



Africa's ability to produce vaccines for the region and the world will soon receive a much-needed boost. The African Vaccine Manufacturing Accelerator (AVMA), a new US\$1 billion innovative financing mechanism designed by Gavi, the Vaccine Alliance, launches on June 20, 2024, and offers manufacturers in Africa financial incentives to produce vaccines at scale. Hailed as a game-changer for the continent, it was created after the world witnessed the inequitable distribution of COVID-19 vaccines

campaign, immunising children who missed out on essential vaccines during the pandemic.

“As an African researcher in the continent, I am hopeful that when vaccines are manufactured in Africa this will promote trust and vaccine uptake in the region.”

By co-designing AVMA with the Africa CDC, Gavi hopes to contribute to the African Union's 2021 goal to locally

markets” with good access to vaccines, low prices for everyone, and increased flexibility and pandemic resilience, Kinder explained.

Manufacturers in Africa have two opportunities to get payments from AVMA to “help them on their pathway to sustainability”, said Kinder. The first payment will be awarded after a manufacturer receives WHO pre-qualification for their vaccine. A maximum of \$250 million will go on these so-called milestone payments. Most of AVMA's funds will be paid out

5. The 'BIG QUESTION': Europe and North America eliminated cholera >150 years ago....



Through sustained investments in WASH infrastructure, education, advocacy, political will, community engagement, using vaccines with surveillance, risk communication, early detection, working closely with partners to bring about change.. etc

HOW?

WHY?

Because cholera poses a significant economic burden to any country, costs estimated \$2 billion per year globally in health care costs and lost productivity causing further poverty in these countries ...

5a.The Public Health Response ⁸



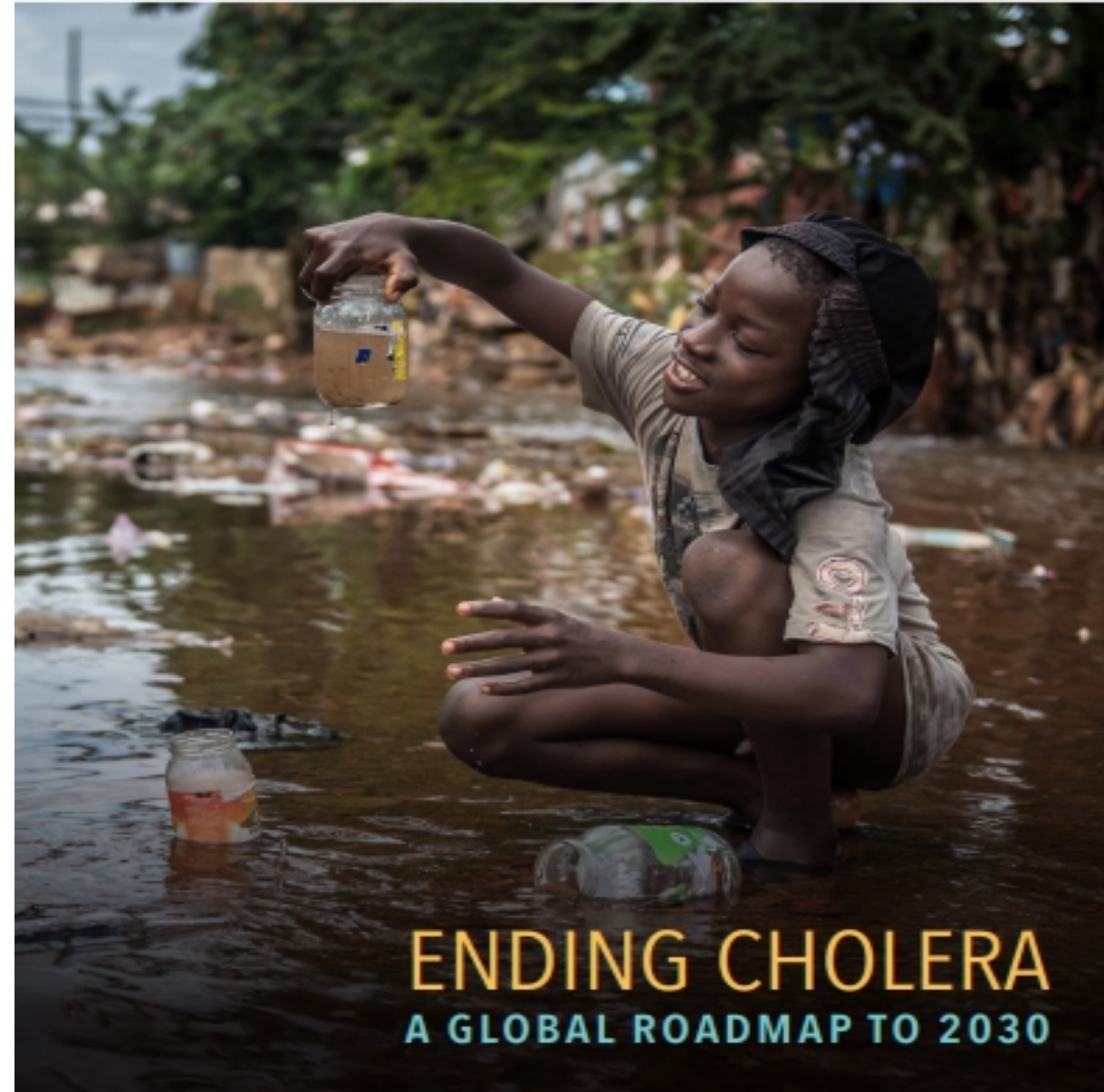
The Global Roadmap outlines a set of actions to prevent and control cholera. This includes improving and strengthening water, sanitation, and hygiene (WASH) systems, improving access to preventive and reaction oral cholera vaccines, increasing disease surveillance in PAMI areas (hotspots most affected by cholera), and containing outbreaks through early detection and rapid response.

*Cholera Priority Areas for
Multisectoral
Interventions (PAMIs,
formerly Hotspots)*

PAMIs play a central role for the spread of the disease. By targeting these areas, we will not only reduce the burden of cholera, but also ensure that interventions reach those in greatest need.

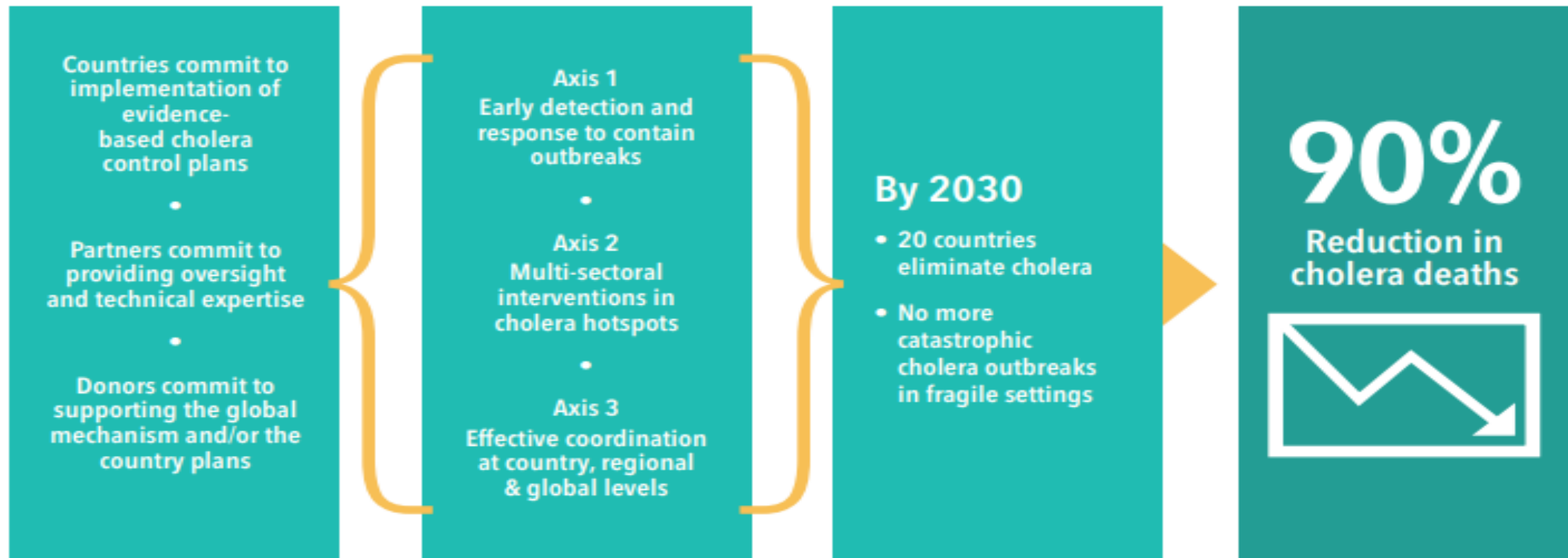
Why is the control and ending of cholera so critical?

A resolution promoting control of cholera and endorsing the Global Roadmap was passed in May 2018 at the 71st World Health Assembly.



The Global Roadmap to 2030

- sets out a vision for a world in which cholera is no longer an active threat to public health
- a renewed strategy - reducing the mortality resulting from cholera by 90 percent by 2030
- relies on strong commitments from countries, partners, and donors to collectively engage in the fight against cholera
- The Global Roadmap is based on **three strategic axes**:





Leadership and coordination

To build and implement strong preparedness and response interventions



Water, sanitation and hygiene (WASH)

To ensure sustainable access to safe water and sanitation solutions for populations most at risk



Case Management

To improve access and quality of care to reduce cholera related deaths



Surveillance and reporting

To confirm suspected cases and track progress



Oral cholera vaccines (OCV)

To prevent cholera and protect communities



Community engagement

To co-produce and implement sustainable community-centred solutions

Multi-sectoral interventions to control cholera



SUSTAINABLE DEVELOPMENT GOALS



NO
POVERTY



ZERO
HUNGER



GOOD HEALTH
AND WELL-BEING



QUALITY
EDUCATION



GENDER
EQUALITY



CLEAN WATER
AND SANITATION



AFFORDABLE AND
CLEAN ENERGY



DECENT WORK AND
ECONOMIC GROWTH



INDUSTRY, INNOVATION
AND INFRASTRUCTURE



REDUCED
INEQUALITIES



SUSTAINABLE CITIES
AND COMMUNITIES



RESPONSIBLE
CONSUMPTION
AND PRODUCTION



CLIMATE
ACTION



LIFE
BELOW WATER



LIFE
ON LAND



PEACE, JUSTICE AND
STRONG INSTITUTIONS



PARTNERSHIPS
FOR THE GOALS

6. 'Take Home Messages'

- Cholera as **a disease**: in Africa and globally...
- Since 2021, there has been an **increase in cholera cases** and their geographical distribution globally
- Many of those countries are reporting higher case numbers and **case fatality ratios (CFR)** than in previous years which is on average 1.9% but 2.9% in Africa, well above 'acceptable' (<1%) and the highest recorded in over a decade
- The number of cholera cases and cholera-associated deaths have surged with reports coming from countries **not** previously reporting outbreaks for many years and often **not** considered cholera-endemic countries
- Conflict, mass displacement, disasters from natural hazards, and climate change have intensified outbreaks, particularly in rural and flood-affected areas, where poor infrastructure and limited healthcare access delay treatment. These cross-border factors have made cholera outbreaks increasingly complex and harder to control

'Take home messages' continued...



- **Metrics:** Since the beginning of the year in 2025, in Africa alone, there are 23 countries affected with cholera and >175 K cases and cholera-related deaths were highest in the African Region (> 3763 deaths, CFR 2.2 %, far exceeding the 'dangerous rate' of 1%)
- **Control measures** of the **GTfCC**, all Partners in surveillance and reporting etc clearly defined
- The **supply of vaccines** and the **capacity to respond** to multiple and simultaneous outbreaks is strained: mostly reactive campaigns for multiple disease outbreaks at the same time
- **Vaccines:** There is a **stockpile** but it is depleted due to a **shortage of cholera vaccines and increased requests**
- **Sustainable vaccine supply:** **AVMA** has been established to enable the local manufacturing of vaccines eg cholera by 'biotechs' such as **BIOVAC** to drive sustainability and vaccine self reliance

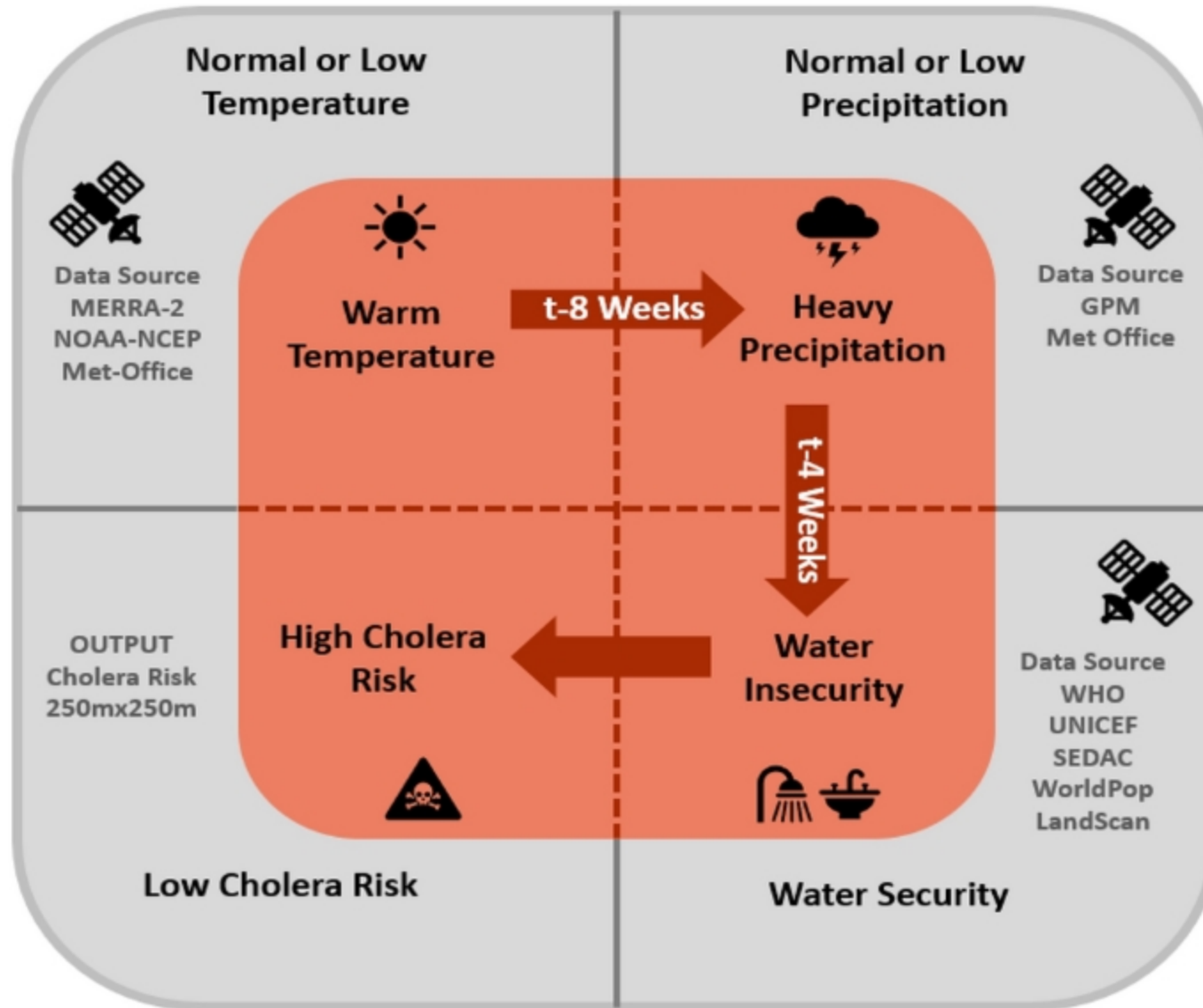
'Take home messages' continued...



-
- **Must have an Integrated Emergency Response:**
 - **Africa CDC's Incident Management Support Team (IMST) and "4-One" principle:** improves coordination across borders and sectors by creating a unified framework for responding to health emergencies, ensuring there is one team, one plan, one budget, and one monitoring framework
 - **Must have a Policy and Strategic Framework that is followed by all countries:**
 - **Global Roadmap to 2030:**
Goal: reduce cholera deaths by **90%** and eliminate cholera in **20 African countries**
 - **Continental Preparedness Plan (2025–2026):** focus on vaccination, WASH, surveillance, and cross-border coordination
 - **Call to Action by African Leaders:** emphasis on political commitment, domestic investment, and regional collaboration
-

AI predictive modelling

...

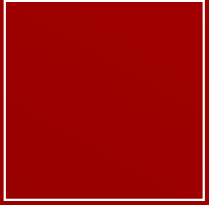


The study represents the first to monitor cholera in Yemen with the objective of validating a near real-time cholera prediction model using a series of ten parameters to provide epidemiological evidence of a causal relationship between public health outcomes and factors influencing the outcome, to assess the performance of the CRM trigger of the cholera prediction system



*Cholera is preventable
with the tools we have
today, putting the goal of
ending it within reach*





Back Up Slides

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