

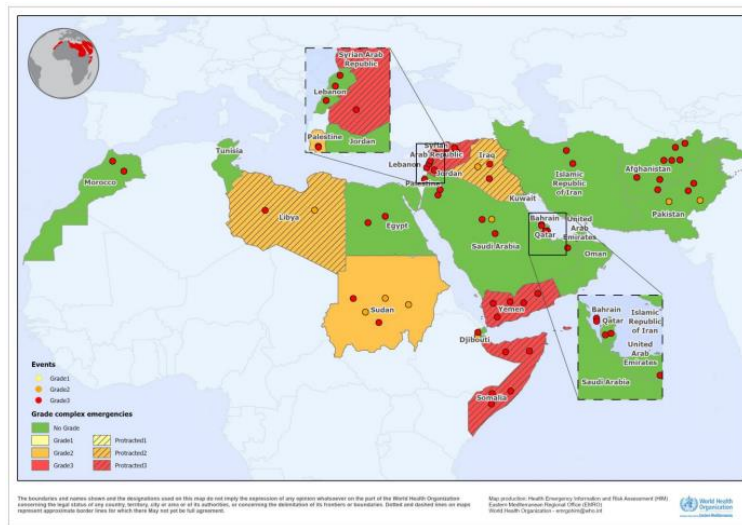
# Cholera surveillance in EMR – Regional Approach

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Regional Office for the Eastern Mediterranean

# Eastern Mediterranean Region of WHO

- More than **76 million** people in the Region are directly or indirectly affected by political **conflict**, environmental threats and natural disasters
- Hosting the largest caseload of **displaced populations**, including 17.1 million internally displaced people and 16.7 million refugees
- Limited access to basic health care services and environmental health infrastructure
- **Cholera** remains a major public health risk in the Eastern Mediterranean Region.
- At least **13** out of the 22 countries in the region have reported cholera cases in the last decade. Eight most challenging countries in the world with humanitarian complex emergency are in EMR



Graded emergencies			
5	7	0	Grand total
Grade 3	Grade 2	Grade 1	
2	1	0	15
Protracted 3	Protracted 2	Protracted 1	

# Cholera in the EMR



- Cholera is endemic in few of the WHO EMR countries
- During 2022, 8 out of 22 countries reported AWD/ cholera cases and outbreaks.

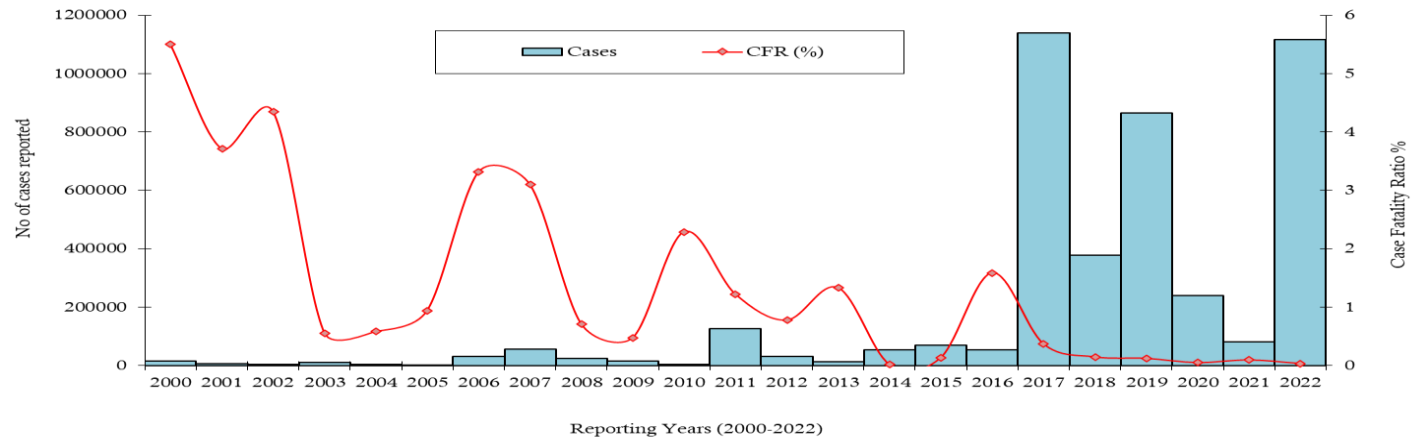
The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Outlined and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization  
Map Production: WHO Health Emergencies Programme  
Map Date: 20 March 2023



Trend of cholera cases and CFR in Eastern Mediterranean Region, 2000 - 2022

Cumulative number of cholera cases, deaths and CFR reported from the Eastern Mediterranean Region, 2000-2022



# Cholera surveillance in EMR

- It is estimated that 188 000 cholera cases occur annually in WHO EMR, but accurate quantification is limited due to weak surveillance systems.
- All 22 countries categorize cholera as 'immediately reportable' as part of routine surveillance.
- There were eight countries reported AWD/ cholera cases during 2022 in EMR, and most of the reporting countries are facing emergencies and are reporting through the EWARN system.
- Other countries in the region also report very few numbers, and most are categorized as imported cases (Kuwait reported an imported case).

Country	Diseases	Cases*	Deaths	CFR%
Afghanistan	Acute Watery Diarrhoea (AWD)	273969	97	0.04%
Iraq	Cholera	11 097	25	0.23%
Islamic Republic of Iran	Cholera	360	6	1.67%
Lebanon	Cholera	7180	23	0.32%
Pakistan	Cholera	335105	43	0.01%
Somalia	Cholera	19669	105	0.53%
Syrian Arab Republic	Cholera	100598	104	0.10%
Yemen	Cholera	1982	3	0.15%

# Type of surveillance per country

- **Stable countries:** case-based reporting as it is considered as outbreak.
- **EWARN** is implemented in 8 countries: Afghanistan, Djibouti, Iraq, Syria, Somalia, Sudan, Libya, and Yemen and in addition it was implemented in Pakistan in 17 calamity hit districts.
- Data is collected at sub-national level and is based on sentinel sites, and the aggregated data is collected by sex and age.
- Some countries (e.g. Somalia) additionally use separate platforms for the collection of the cholera data (**Cholera Outbreak Portal**)
- **Confirmation:** Stool sample from every 10<sup>th</sup> patient who met the case definition is tested using RDT and 10% of positive RDTs are cultured.
- **Sample management:** Sample collection, transport and testing is affected by accessibility/security conditions, as well as availability of resources, supplies, reagents.

# Data summaries: reporting to RO

- Case-based data or line lists are shared to RO on Ad Hoc basis during outbreaks. Aggregated data and situation reports are more forthcoming.
- Somalia shares regularly shares:
  - Weekly Cholera situation reports
  - EWARN weekly bulletin
  - Weekly aggregated cholera data (till 2021)
  - Monthly aggregated cholera data on Excel file (till 2021)
- Yemen share them as well, but irregularly (till 2021).
- Pakistan, Afghanistan, Syria share the weekly bulletins
- Sudan shared in 2019 outbreak
  - line list
  - weekly aggregated data
  - Daily/Weekly situation reports
  - Official FMOH presentations with data slides



# Different ways of sharing cholera data

Somalia summary data for Cholera from December 2020										Total	
Region	District	31-Dec		31-Jan		28-Feb		31-Dec		Commulative	
		Death	Cases	Death	Cases	Death	Cases	Death	Cases	Death	Cases
Banadir	Abdul Aziz	0	0	0	0	0	0	0	3	2	38
Banadir	Bondere	0	0	0	0	0	0	0	2	0	70
Banadir	Daynile	0	0	1	34	1	25	0	38	18	1942
Banadir	Dharkeynley	0	0	0	21	0	30	0	36	4	1474
Banadir	Hamarjajba	0	0	0	4	0	6	0	4	2	523
Banadir	Hamarweyn	0	0	0	2	0	2	0	1	1	115
Banadir	Heliwa	0	0	0	2	0	1	0	0	0	76
Banadir	Hodan	0	0	0	59	0	45	0	39	3	1947
Banadir	Howlwadag	0	0	0	8	0	6	0	3	3	390
Banadir	Kahda	0	0	0	0	0	0	0	9	1	355
Banadir	Karaan	0	0	0	3	0	7	0	1	1	184
Banadir	Madina	0	0	0	40	0	45	0	40	10	1863
Banadir	Shibis	0	0	0	1	0	2	0	0	0	35
Banadir	Shingani	0	0	0	0	0	0	0	0	0	27
Banadir	Waberi	0	0	0	9	0	6	0	4	2	338
Banadir	Warta Nabada	0	0	0	4	0	6	0	4	3	339
Banadir	Yaqshid	0	0	0	4	0	3	0	3	0	183
Gedo	Belethawo	0	0	0	0	0	0	0	0	0	94
Hiran	Beleweyn	1	313	0	162	0	38	0	0	6	1080
Hiran	Bulo Burti	0	0	0	0	0	0	0	0	0	193
Hiran	Jalalaqi	0	0	0	0	0	0	0	0	0	216
Lower jubba	Kismayo	0	0	0	39	3	137	0	0	15	2305
Middle Shabelle	Iowhar	0	0	0	0	2	152	0	0	4	1113
Middle Shabelle	Mahaday	0	0	0	0	0	0	0	0	0	1
Lower Shabelle	Afgoye	0	0	0	0	0	0	0	0	0	133
Lower Shabelle	Brava	0	0	0	0	0	0	0	0	0	14
Lower Shabelle	Kurtunwarey	0	0	0	0	0	0	0	0	4	27
Lower Shabelle	Merka	0	0	0	0	0	0	0	0	0	228
Lower jubba	Badhadhe	0	0	0	0	0	0	0	0	0	30
Bay	Baidoa	0	0	0	0	0	0	0	87	3	944
<b>TOTAL</b>		<b>1</b>	<b>313</b>	<b>1</b>	<b>392</b>	<b>6</b>	<b>511</b>	<b>0</b>	<b>274</b>	<b>80</b>	<b>16277</b>

Excel sheets

Ministry of Health & Human Services  
Federal Government of Somalia

Wasaarada Caafimaadka & Daryeelka  
Hobabada  
Dowlada Federaalka Soomaalida

Weekly Cholera Situation Report  
Epidemiological Week 3 (17<sup>th</sup> - 17<sup>th</sup> January 2021)

**HIGHLIGHTS**

- A total of 89 new suspected cases of cholera were reported in week 3 from Bay (11) and Banadir (78 cases) regions
- No death was reported in the during this week
- A cumulative total of 220 cases including 1 death were reported from 28<sup>th</sup> December 2020 to 17<sup>th</sup> January 2021 in 2 regions
- All cholera cases reported during this outbreak have never received Oral Cholera Vaccine (OCV)

**KEY FIGURES**

- 89 new suspected cases with no death
- 44% of the new cases are female
- 36% of the cases are aged ≤2 years
- 0.5% cholera deaths are ≤2 years
- 17 flood affected districts affected by cholera outbreak
- Cumulatively, 220 cases and 1 death (CFR 0.5%) reported since 28<sup>th</sup> December 2020 - 17<sup>th</sup> January 2021

**Cholera situation in Somalia as January 2021**

The current cholera outbreak in Somalia is a continuation of the previous outbreak that started in Banadir and continued throughout 2019 to date regions. Flash floods caused by heavy Gu rains in April 2020 led to contamination of water sources and displacement of over 400,000 people in 17 districts in the country. However, reports indicate that water levels receded due to reduction in Gu rains in June<sup>1</sup>. Hagaa rains that started in June has also contributed to the negative consequences of the Gu rains especially in towns located along river Shabelle<sup>2</sup>. Contamination of water sources and poor sanitation has contributed to increase in the number of cholera cases in flood affected districts including Banadir region. Since 28 December 2020 to 17<sup>th</sup> January 2021, a total of 220 cases including 1 death (CFR 0.5%) have been reported in 17 flood affected districts. The cholera cases that peaked between week 1-3 and have gradually increased over time as a result of poor implementation of control measures. (Fig. 1). Of the 220 cases reported since the week 1-3-2021, 83 (38%) are aged ≤2 years. Of the 1 death registered, 1 (0.5%) aged ≤2 years.

<sup>1</sup> OCHA Flash update as of 1<sup>st</sup> January 2021  
<sup>2</sup> OCHA Hagaa season flood update | January 17<sup>th</sup> 2021  
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Weekly epidemiological bulletins

Federal ministry of health  
General directorate of primary health care  
Health emergency and epidemic control

Cholera cases in Sudan State  
Report No. (49) 28 Aug up to 16 Nov 2019

Cholera case in Sudan states 16 Nov 2019

Cases: 0  
Deaths: 0  
CFR: 0.0  
AR: 0.0/10,000 of population

Cumulative Cholera case in Sudan states until 16 Nov 2019

Cases: 336  
Deaths: 11  
CFR: 3.3  
AR: 0.8/10,000 of population

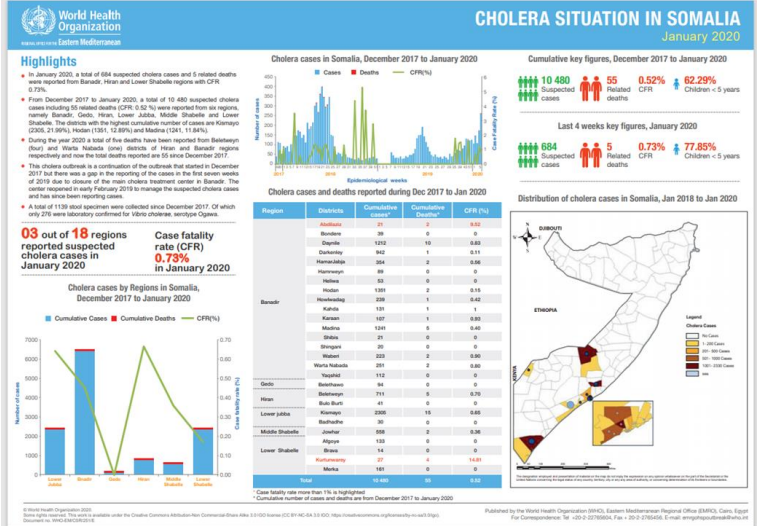
Cholera cases in Sudan (28 August - 16 November 2019) prepared by: communicable disease surveillance & event unit

PPTs

### Somalia summary data for Cholera from December 2017 to January 2020

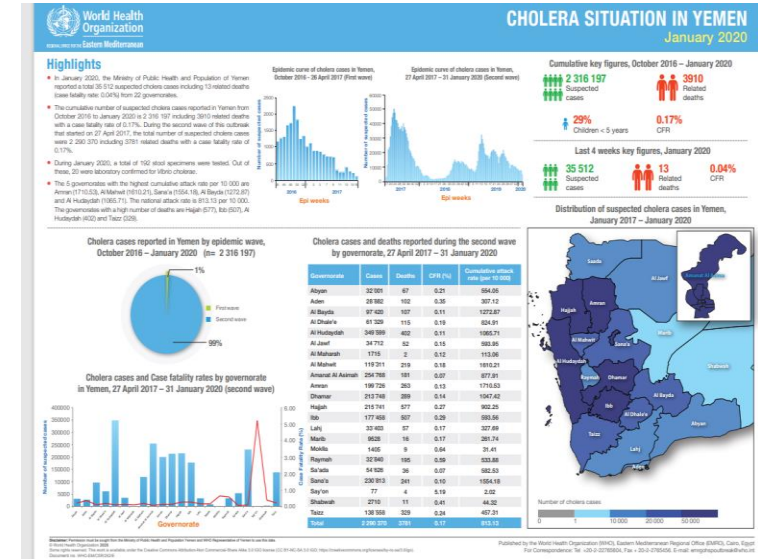
Region	District	31-Dec		31-Jan		28-Feb		31-Dec		Cumulative	
		Deaths	Cases	Death	Case	Death	Case	Death	Case	Death	Case
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Banadir	Hamarweyn	0	0	0	2	0	2	0	1	1	215
Banadir	Helwaa	0	0	0	2	0	1	0	0	0	76
Banadir	Hodan	0	0	0	59	0	45	0	39	3	1947
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Banadir	Karaan	0	0	0	3	0	7	0	1	1	184
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Banadir	Shibis	0	0	0	1	0	2	0	0	0	35
Banadir	Shingani	0	0	0	0	0	0	0	0	0	27
Banadir	Waberi	0	0	0	9	0	6	0	4	2	338
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Banadir	Yagshid	0	0	0	4	0	3	0	3	0	183
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Lower Jubba	Kismayo	0	0	0	39	3	137	0	15	5	2305
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Lower Shabelle	Brava	0	0	0	0	0	0	0	0	0	14
Lower Shabelle	Kurtunwarey	0	0	0	0	0	0	0	0	4	27
Lower Shabelle	Merka	0	0	0	0	0	0	0	0	0	228
Lower Jubba	Badhadhe	0	0	0	0	0	0	0	0	0	30
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Analyzed



Governorate	Jan to Dec 2019 Cases	Jan to Dec 2019 Deaths	Jan to Dec 2020 Cases	Jan to Dec 2020 Deaths	Cases cumulative	Death Cumulative	CFR%	Pop	All per 10,000		
Al Abyan	3325	25	786	1	3258	68	0.2%	57587899	562.82		
Al Aden	3908	31	453	3	2909	105	0.4%	94427873	308.30		
Al Bahariyah	40245	43	2333	10	136781	115	0.1%	783359313	1534.79		
Al Dhale'e al Bahariyah	12750	29	1708	2	62973	117	0.2%	743483785	847.02		
Al Hudaydah	134281	59	40507	7	384722	409	0.1%	328044459	1172.77		
Al Hudaydah	15879	25	4111	2	38135	53	0.1%	584428101	652.52		
Al Mahrah	530	1	38	0	1740	2	0.1%	151689392	114.71		
Al Mahrah	38016	37	4623	3	123134	222	0.2%	740967165	1661.80		
Amanat Al Asimah	100346	377	18490	184	270267	184	0.1%	290199682	931.31		
Amran	51302	46	9689	2	207998	265	0.1%	118762515	1750.86		
Al Dhariyah	68052	53	14796	4	226338	292	0.1%	200477521	1139.11		
Al Hudaydah	76998	105	16354	8	228702	385	0.1%	229114718	969.64		
Al Jabal	78381	131	20090	12	194346	315	0.1%	289172129	649.38		
Al Jawf	7401	29	1241	2	14363	57	0.2%	101943148	337.11		
Marib	2177	8	984	0	10521	16	0.2%	364023684	288.74		
Mokha	822	7	0.6%	44720.759	31.68	0	1417	9	0.6%	44720.759	31.68
Raymah	10201	55	4477	0	36658	355	0.3%	61523177	595.95		
San'a	33868	21	8837	2	61874	38	0.1%	977944899	638.82		
Sana'a	12055	83	30210	7	25527	347	0.1%	146310752	1738.84		
Sayun	45	4	12	0	88	4	4.5%	381894494	2.30		
Shabwah	1285	7	206	5	2902	15	0.5%	611440329	474.86		
Ta'izz	56220	107	29634	11	164425	339	0.2%	30282025	543.89		
Yamalo	861096	1025	2484579	3852	2484579	3852	0.2%	281670001	882.22		

Analyzed





1. <http://www.emro.who.int/health-topics/cholera-outbreak/cholera-outbreaks.html>
2. <http://www.emro.who.int/pandemic-epidemic-diseases/cholera/index.html>

Ministry of Health & Human Services  
Federal Government of Somalia

Wasaaradda Caafimaadka & Horumarinta Biyashaha  
Dawladda Federaalka Soomaalida

Weekly Cholera Situation Report  
Epidemiological Week 41 (17<sup>th</sup> January 2021)

**HIGHLIGHTS**

- A total of 89 new suspected cases of cholera were reported in week 41 from May (11) and Beledwee (78 cases) regions
- No deaths were reported in the during this week
- A considerable total of 220 cases including 1 death were reported from 18<sup>th</sup> December 2020 to 17 January 2021 in 2 regions
- All cholera cases reported during this outbreak have never received Oral Cholera Vaccine (OCV)

**KEY FIGURES**

- 89 new suspected cases with no deaths
- 44% of the new cases are female
- 30% of the cases are aged  $\geq 20$  years
- 0.7% cholera deaths are  $\geq 20$  years
- 17 flood affected districts affected by cholera outbreak
- Cumulatively, 220 cases and 1 death (CFR 0.5%) reported since 28<sup>th</sup> December 2020 - 17<sup>th</sup> January 2021

**Cholera situation in Somalia in January 2021**

The current cholera outbreak in Somalia is a continuation of the previous outbreak that started in Beledwee and continued throughout 2019 in date regions. Flood events caused by heavy Ocu rains in April 2020 led to contamination of water sources and displacement of over 400,000 people in 17 districts in the country. However, reports indicate that water levels receded due to reduction in Ocu rains in June<sup>2</sup>. Drought stress that started in June has also contributed to the negative consequences of the Ocu rains especially in areas located along river Shabelle<sup>3</sup>. Contamination of water sources and poor sanitation has continued to increase in the number of cholera cases in flood affected districts including Beledwee region. Since 28 December 2020 to 17<sup>th</sup> January 2021, a total of 220 cases including 1 death (CFR 0.5%) have been reported in 17 flood affected districts. The cholera cases that peaked between week 1-3 and have gradually increased over time as a result of poor implementation of control measures. (Fig. 2). Of the 220 cases reported since the week 1-3-2021, 81 (37%) are aged  $\geq 20$  years. Of the 1 death registered, 1 (0.7%) aged  $\geq 20$  years.

Trends of cholera cases in Somalia from 28November 2020 to 17th January 2021

<sup>1</sup> OCHA Flash update as of 17<sup>th</sup> January 2021  
<sup>2</sup> OCHA Drought stress waves flash update 1 January 17<sup>th</sup> 2021  
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Weekly bulletins to web posting

World Health Organization  
YEMEN Cholera Situation Update

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Epidemic and pandemic-prone diseases

## Epidemic and pandemic-prone diseases

### Cholera

About the programme

Outbreak update – Cholera in Somalia, 10 January 2021

Outbreaks

Outbreak update – Cholera in Somalia, 3 January 2021

Archived outbreaks

Outbreak update – Cholera in Somalia, 27 December 2020

News

Outbreak update – Cholera in Somalia, 6 December 2020

Related health topics

Outbreak update – Cholera in Somalia, 29 November 2020

Information resources

Outbreak update – Cholera in Somalia, 22 November 2020

The Global Outbreak Alert and Response Network in the Eastern Mediterranean Region

Outbreak update – Cholera in Somalia, 15 November 2020

Outbreak update – Cholera in Somalia, 8 November 2020

Outbreak update – Cholera in Somalia, 1 November 2020

Pandemic Influenza Preparedness Framework

Outbreak update – Cholera in Somalia, 25 October 2020

Emerging and dangerous pathogens laboratory network

Outbreak update – Cholera in Somalia, 18 October 2020

Outbreak update – Cholera in Somalia, 11 October 2020

Public health laboratories

Outbreak update – Cholera in Somalia, 4 October 2020

Weekly cholera updates

+2020

+2019

+2018

+2017

+2016

Monthly cholera updates

+2020

+2019

+2018

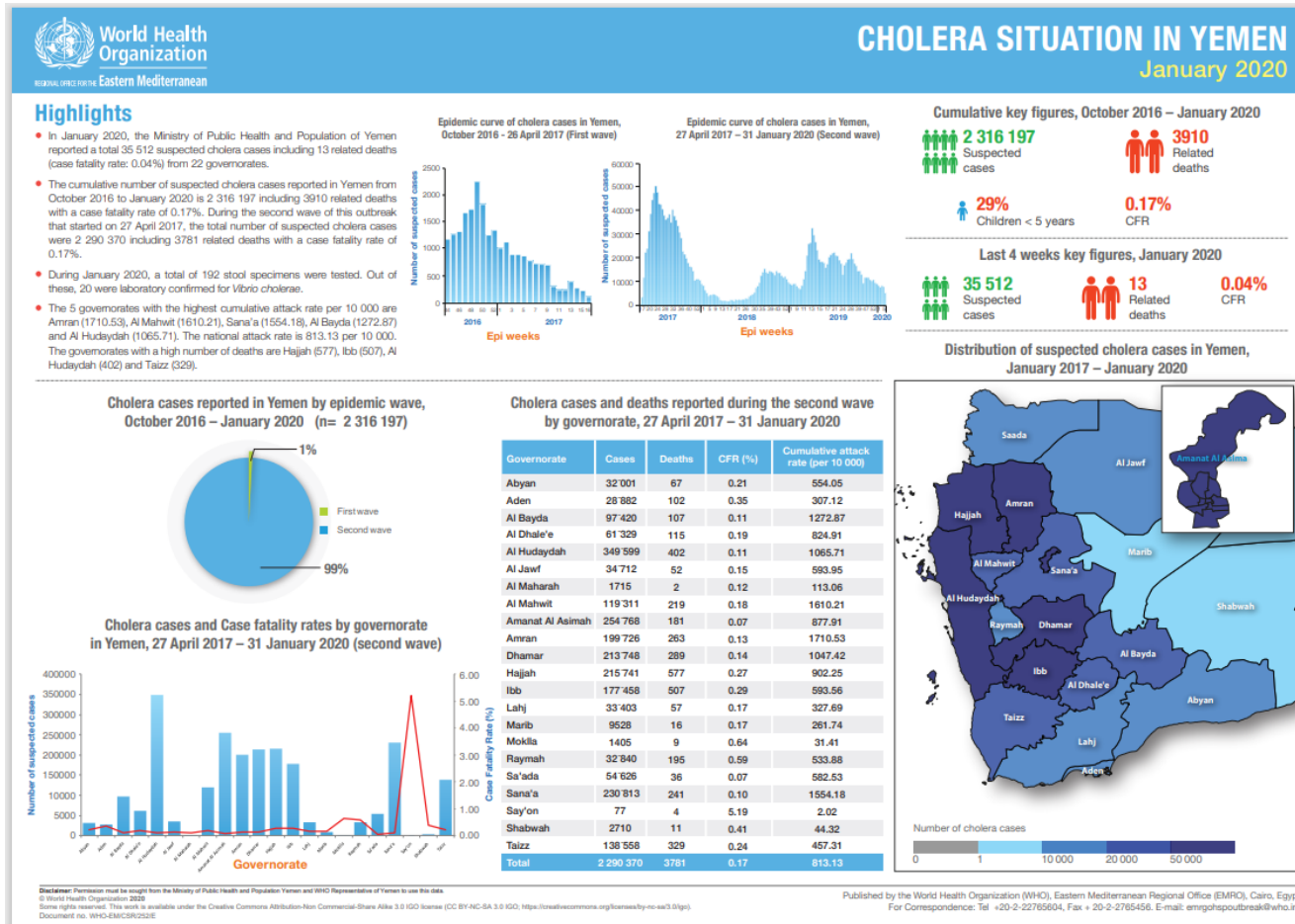
+2017

+2016

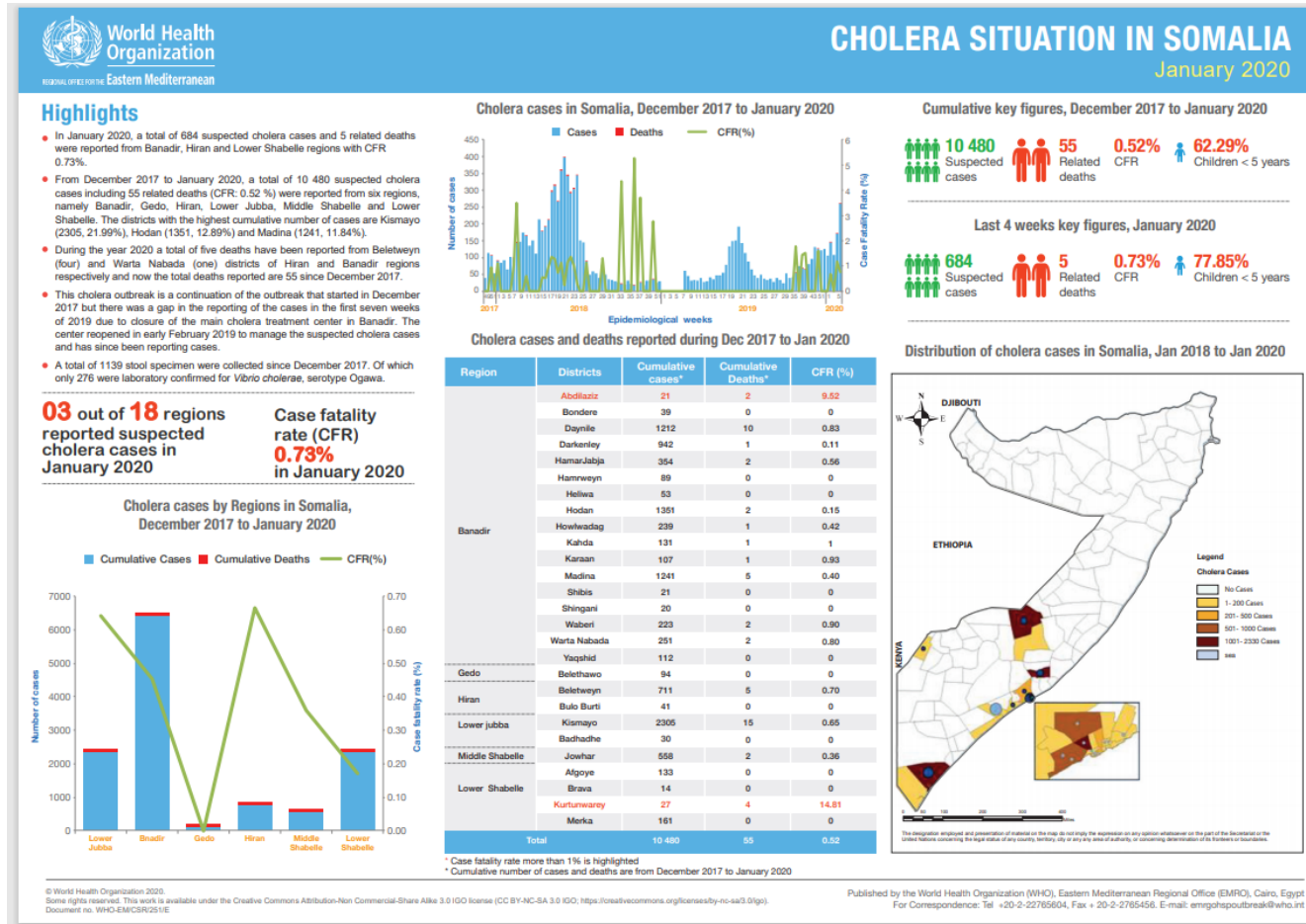
# Feedback mechanisms of regional cholera data

- EMRO produces a weekly cholera sit rep and monthly bulletin for Somalia and Yemen (Till 2021).
- The Regional Cholera Platform is still in the development phase and mostly it will serve as a repository of the available guidelines, reports produced and as well as the donor alerts
- RO cholera surveillance data has mainly been used for planning purposes:
  - monitoring cholera status in the region
  - Monitoring cholera preparedness/prevention programs and activities
  - Supporting countries in national cholera policies and planning

# <http://www.emro.who.int/pandemic-epidemic-diseases/outbreaks/index.html>



# <http://www.emro.who.int/pandemic-epidemic-diseases/outbreaks/index.html>



# Regional partnerships

- EMRO is collaborating with the relevant stakeholders and partners and providing leadership for cholera prevention, detection and response
- Regional office serves as a central body of the technical and emergency support for the cholera in the region
- Role of regional partnerships in collecting and using regional cholera data is still not well defined



# MENA Regional cholera platform

- The cholera platform for Northern Africa and Middle East/Eastern and Mediterranean region (MENA), was created in 2018 and is enter now in its operational phase.
- The platforms is part of the activities for the global road map implementation.
- The objective is to have some coordination between the different partners operating at regional level for support in terms of expertise, advocacy, resources mobilization.

**CholeraPlatform**

HOME WESTERN AND CENTRAL AFRICA PLATFORM EASTERN AND SOUTHERN AFRICA PLATFORM MIDDLE EAST AND NORTH AFRICA PLATFORM

**CholeraPlatform**  
Western and Central Africa

**Who are we?**

The Regional Cholera Platforms for WCAR, MENA and ESARO bring together multi-sectoral partners from different organizations involved in cholera prevention, preparedness, or response in the region.

**CholeraPlatform**  
Eastern and Southern Africa

**Where we work?**

We work in more than 45 countries across the three regions of Western & Central Africa (24 countries), Eastern & Southern Africa (21 countries) and Middle East & North Africa (15 countries)

**CholeraPlatform**  
Middle East and North Africa

**What we do?**

The Regional Cholera Platforms aim to improve cholera control and prevention across Africa through operationalization of an integrated strategy towards elimination.

WELCOME ON THE REGIONAL CHOLERA PLATFORMS IN AFRICA

<http://www.platformecholera.info/index.php/about-cholera-in-mena-region>

**CholeraPlatform**

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**About Cholera in MENA Region**

- Global Strategy
- Operational Steps
- Technical Working Groups (TWGs)
- Regional Strategy
- Cholera Dynamic
- Country Membership and Progression
- IRIS
- Sudan
- Publications
- Publications for Scientific Publications
- Regional Key Scientific Publications
- Tools
- Events
- Webinars
- Communication for Development (C4D)
- Old Cholera News (OCN)
- External Links

**Cholera** is a bacterial disease caused by ingestion of food or water contaminated by *Vibrio Cholerae*. It is an extremely urgent disease that, if untreated, can kill healthy adults within hours through extreme dehydration of the body caused by violent episodes of watery diarrhea and vomiting. Cholera is an acute issue which disproportionately affects the poorest and most vulnerable people worldwide and within each affected country in 2016. Sixty of all reported cholera cases were from Africa (WHO, 2017).

Additional information [click here](#)

In MENA-EM region, at least 14 out of the 21 countries have reported cholera cases in the last decade. The overall global and regional incidence of cholera has been rising over the last few years and the region has faced large outbreaks in recent years. Major underlying causes of these outbreaks are poor environmental infrastructure, lack of health care services, lack of safe water and sanitation, and increased population movements.

From December 2017 to August 2018, 8 613 suspected cholera cases including 40 related deaths were reported in Somalia (Somalia, WHO bulletin, August 2018). From October 2016 to August 2018, 2 022, 18 suspected cholera cases were reported in Yemen including 3 500 related deaths (Yemen WHO bulletin, August 2018). Yemen is still facing more than 15 000 suspected cholera cases per week. In the last years, other countries have experienced cholera epidemics, such as Sudan with 35 811 acute watery diarrhea cases reported from August 2017 to February 2018 and has with 2 810 suspected cholera cases reported in Nigeria's states between October and December 2018. Other countries in the region are also at risk of cholera due to large population movements from cholera endemic/epidemic settings (Djibouti, Libya) but also due to the deterioration of health, water and sanitation infrastructures (Yemen, Somalia, Iraq, Afghanistan), limited the political stability and civil conflict affecting many countries in the region have resulted in major displacement of refugees and breakdown of basic social services.

**What is currently done**

In MENA region, national governments and operational partners undertake cholera initiatives on an annual basis. Consequently, implementing timely and effective strategies for cholera preparedness, prevention and response remain limited. Cross-border transmission is partly addressed, and governments are sometimes reluctant to report cholera cases, that leads to overall underestimation of the extent of the disease and impedes a timely and targeted response.

The key challenges that we identified are the lack of adequate national plans for cholera prevention and response, the limited access to remote communities, poor health and water and sanitation facilities/infrastructure, the complex social and anthropological norms, the insufficient engagement of communities and localities in cholera prevention, preparedness and response actions but also the inadequate or non-existent cross-border collaboration mechanisms and the limited local capacity in some technical areas.

Learn more about cholera in the region through the following sections:

- Regional Strategy**  
An integrated and targeted approach in cholera preparedness, emergency response and long term intervention.

# Risk of Cholera Spread in EMR

## Cholera risk assessment – Jordan, 6 Dec 2022

		Impact				
		Minimal	Minor	Moderate	Major	Severe
Likelihood	Very unlikely					
	Unlikely					
	Possible		X			
	Likely					
	Very likely					

Cholera risk assessment was carried out in Jordan involving relevant stakeholders, and the risk of cholera is characterized:

- The **likelihood** of getting the case/ infection is there
- But the **impact** (calculated) was minor due to good preparedness and mitigation activities

## Regional Risks and Challenges:

- **Very high risk of spread**, including spread to refugees/IDPs/illegal migrants (Turkey), refugees in Jordan
- Continued conflict, economic crisis, population displacement in the region, Challenging coordination with multiple hubs/authorities
- Low visibility and information sharing by local governments
- Surveillance challenges
- Effect of extreme weather, both floods and drought in the region

Country	Date of risk assessment	Overall risk		
		National	Regional	Global
Lebanon	2022-10-17	Very High	High	Low
Pakistan	2022-09-19	Very High	High	Low
Syria	2022-09-15	Very High	High	Low
Iraq	2022-08-11	Very High	High	Low
Yemen	2021-06-17	High	Moderate	Low
Somalia	2022-06-16	Very High	High	Low
Afghanistan	2022-07-15	Very High	High	Low

# Challenges (information sharing)

Challenges in accessing country cholera data and generating a regional data approach:

- Cholera data is not regularly shared
- Cholera outbreaks are not always officially declared, due to fear of economic losses
- Lack of interest of the countries for the establishment / strengthening of the cholera surveillance system





# Main Challenges

- Weak surveillance system
  - Underreporting to reduce political pressure
  - Lack of laboratory capacity in some countries
  - Lack of coordination between relevant stakeholders
  - Limited preparedness for seasonal cholera outbreaks
  - Reactive response after epidemics
  - limited resources for the public health control activities
  - Lack of cross border collaboration between the neighboring countries
- Absence of active laboratory-based surveillance for epidemic diarrheal diseases in general
  - Emergency stockpiles of drugs and other supplies not available
  - Unsafe water at point-of use (absence of effective treatment strategy for portable water including proper storage)
  - Social mobilization campaigns and risk communication to public (Hand washing)
  - Critical knowledge gaps



- **Urgent investment needed TO PREVENT outbreaks WASH, WASH, WASH**
- **+ Surveillance, case management community engagement**

# Way Forward



# Thank you

