

**Joint Cholera Response Plan
Yemen
July 2017**

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

EXECUTIVE SUMMARY

Yemen is in the grip of a fast spreading cholera outbreak of unprecedented scale. This plan presents an integrated response to the significant upsurge of acute watery diarrhoea (AWD)/suspected cholera cases¹ across the country, since 27 April. Consequently, as of 28 June, a total of 254,871 suspected cases, with 1,439 associated deaths (0.6% CFR) were reported from 286 districts (20 Governorates). On 14 May, the MoHP declared a state of emergency stating that the health system is unable to contain this unprecedented health and environmental disaster. An additional, 280,358 cases are projected from the high risk districts in the coming six months till end of 2017.

The plan outlines emergency health, WASH and communications interventions to contain and prevent further spread of the outbreak in the 286 high risk districts, where suspected cholera cases were reported during the period October 2016 to June 2017 (see Annex 1 for details). Health and WASH clusters will continually identify priority districts from high risk districts, by considering the number of cases and attack rate.

A total of \$ 254 million is required to implement activities outlined in this integrated plan for 6 months from May to December 2017, to control the outbreak, prevent further spread, and minimize the risk of recurrence. Considering available resources, including almost \$50 million allocated through YHPF, WB, China and KSReleif, the net requirement totals to \$207 million.

1. OVERVIEW OF THE CHOLERA OUTBREAK

The Yemen's Ministry of Public Health and Population (MoPHP) confirmed a cholera outbreak in Amanat al Asimah Governorate in October 2016. Subsequently, the outbreak spread to close to 165 districts in 16 Governorates by the end of December 2016. The trend of the cholera outbreak and case-fatality rate then declined during the period January to March, with the number of districts reporting suspected cholera cases dropping to 25. The decline in the epidemic curve could be partly attributed to the health and WASH interventions. A total of 24,504 suspected cases, including 143 associated deaths (with a case-fatality rate of 0.44%) were reported by the end of March 2017.

The resurgence of the outbreak during the last week of April resulted in a cumulative of 254,871 suspected cases, with 1,439 associated deaths (0.6% CFR) by 28 June, rapidly spreading to 286 districts (in 20 governorates²). With the rapid spread, the cumulative number of cases during the seven weeks period is six times more than those reported over a period of the first months in the October 2016 outbreak.

The outbreak is spreading against the backdrop of a major humanitarian crisis. The current upsurge of cholera cases is attributed to prevalence of risk factors including disruption of public health and WASH services amidst increasingly collapsing basic

1 Cholera is an acute diarrhoea infection caused by the ingestion of the vibrio cholera bacterium. Transmission occurs through direct Faecal-Oral contamination or through ingestion of contaminated water and/or food. Cholera transmission is closely linked to inadequate access to clean water and sanitation facilities. The consequences of a humanitarian crisis – such as disruption of water and sanitation systems, or the displacement of populations to inadequate and overcrowded camps –increase the risk of cholera transmission, should the bacteria be present or introduced.

2 Amanat Al Asimah, Sana'a, Amran, Hajjah, Ibb, Al Mahwit, Al Bayda, Dhamar, Al Dhale'e, Taizz, Abyan, Al Hudaydah, Lahj, Marib, Raymah, Aden, Al Jawf, Sa'ada, Shabwah, and Al Maharah governorates.

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

services, displacement, and inadequate sanitation conditions. Less than 45 per cent of all health facilities are fully functional and more than 8 million people lack access to safe drinking water and sanitation.

The situation is further aggravated by high prevalence of severe food insecurity and malnutrition³. The health condition of this vulnerable population is already compromised by the deteriorating situation, increasing their susceptibility to cholera infection and associated complications contributing to higher case fatality rate. Two years of conflict, compounded by an economic decline have devastated livelihoods, depleted safety nets, weakened social service delivery, and ability to access social services.

Health and WASH clusters immediately mobilized partners to scale up response. Two emergency operations centres have been established in Aden and Sana'a to oversee surveillance activities and coordinate the response. As of 28 June, 2,351 CTC beds have been established to treat severe cases. Additionally, 311 community-level Oral Rehydration Points (ORPs) were opened in Sana'a and other affected governorates to treat moderate and mild cases, with a referral system of severe cases to the CTCs. Over 5 million people benefitted from chlorinated water supplies (at system and household levels), more than 2.5 million people benefitted from water storage disinfection (both at community and household levels). Almost 2 million people were reached with key cholera messages, through household, community and mass media campaigns. Water, sanitation and hygiene related activities took place in 165 districts in 18 governorates. Partners are re-programming resources to respond to the outbreak.

Despite these, the spread of the outbreak continue to outpace ongoing response efforts, and additional resources are required to scale up interventions to control the outbreak and prevent further spread.

2. OUTBREAK PROJECTIONS FOR THE COMING SIX MONTHS (JULY TO DECEMBER 2017)

CASE DEFINITION

Cholera is endemic in Yemen, where the country currently is dealing with a major cholera epidemic. Since large number of cholera cases were already laboratory confirmed in most of the governorates in the country, it is critical to adapt and use a uniform case definition consistently across all health facilities to establish a uniform criteria for identification and reporting of all suspected cases of cholera.

Therefore, the following standard case definitions will be used during the current epidemic settings in Yemen:

- Suspected cholera case:
 - *Any patient presenting 3 or more liquid stools with or without vomiting for the last 24 hours should be considered as suspected cholera case*
- Confirmed cholera case:
 - *A suspected case for which *Vibrio cholerae* O1 or O139 is confirmed by culture*

3 14 million people in Yemen are food insecure, including 7 million severely food insecure, 3.3 million are acutely malnourished and 462,000 children are in the grip of Severe Acute Malnutrition (SAM).]

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

In the 286 high risk districts where suspected cholera cases were reported since the onset of the outbreak (see Annex one for details), an additional 280,358 cases are projected during the coming six months till end of 2017, out of an estimated 26 million at risk population (at actual attack rate + 110% increase in number of cases). A cholera prediction model based on the attack rates during October 2016 and June 2017, and other risk factors were applied to make the projections (See Annex 2 for details).

A total of 280,358 cases are, therefore, projected from the risky areas in the coming six months, in addition to the cumulative 254,871 suspected cholera cases since the onset of the outbreak. Out of the projected caseload, 25 percent (70,090 cases) are expected to experience severe and moderate dehydration, and will likely required intravenous treatment and hospitalization. Of these severe cases, there is a need for treatment facilities with 5,006 CTC beds (assuming each case will spend 2 nights in hospital and a duration of 6 months) to accommodate the expected new cholera cases (see Annex 3 and 4 for details). These projections form the basis for estimating the required resources and capacity to adequately respond in the coming six months.

The projection of the caseload and corresponding response is based on the following assumptions:

- *The was no interruption of the outbreak that started in October 2016, so the new increase in number of cases is considered as part of the same outbreak;*
- *Since October 2016 to 28 June 2017, a total of 254,871 suspected cholera were reported from 286 Districts in 20 Governorates in Yemen*
- *All districts that reported cases since October 2016 are considered as high risk areas for cholera.*
- *Districts that were free of infection till 28 June 2017 (47 Districts) are considered as low risk areas for cholera*
- *The total number of population in high risk areas (286 Districts) is 26,590,590 and the total population in low risk areas (47 districts) is 1,866,540.*
- *Severe and some moderate cases will need hospitalization (25% of the caseload).*
- *Length of stay at CTCs is 2 days.*
- *Number of beds per CTC is 20 beds as an average.*
- *Door to door awareness campaigns with ORS and cholera prevention kits distribution targeting 100% of population in 70 high priority districts.*
- *Community awareness campaigns with ORS distribution targeting 100% of population in 216 high risk districts, and distribution of cholera prevention kits to a smaller percentage of population (ranging from 40 – 5% depending on # of cholera cases).*
- *Community awareness campaigns without supplies distribution in the 47 low risk districts.*

3. RESPONSE STRATEGY

The overall goal of this plan is to reduce occurrence and to minimize morbidity and fatality of cholera and AWD through effective prevention and timely response. The

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

response strategy⁴ entails two- approaches focusing on control and prevention. The strategy also identifies the criteria for prioritization of response in the most affected districts. (See Annex 8 for indicators of success for the two approaches)

The first approach “Control” focusses on districts that reports suspected cases with positive rapid diagnostic test and / or confirmed cases. This approach aims at controlling the spread of the outbreak in the affected districts.

In areas where cholera has been culture confirmed, all cases of AWD should be treated as cholera– without need for laboratory confirmation therefore laboratory tests should be only taken sporadically to oversee the evolution of the outbreak and whether *Vibrio cholerae* O1 is still circulating in the area. When patients present with acute watery diarrhoea, with or without severe dehydration, they should be managed as cholera cases and reported through established cholera surveillance channels. In areas where cholera has not been culture confirmed, all cases of AWD should be managed clinically as if it was cholera and testing (RDT and cultures) should be commenced according to guidelines until Cholera culture confirmed.

While the second approach “Prevention” considers intervention in at other risk districts to prevent and / or minimize the chances of introduction of the outbreak to the high-risk but outbreak-free districts. As of June 28, 286 districts have reported suspected cholera cases and these districts will benefit from the control activities, while another 47 districts have not reported any suspected cholera cases and the prevention activities will be implemented. Both approaches include early/rapid response, integrated response activities and integrated prevention activities that will continue until the cholera transmission is interrupted and no new cases are reported.

- **Early/rapid response activities** enable a quick response as soon as suspected cases are reported in an area. Some of this rapid response include enhance early warning surveillance, timely laboratory confirmation, improved case management and infection control, strengthen water, sanitation and hygiene, and provision of essential supplies;
- **Integrated response activities** are based on the epidemiological analysis of the course of the outbreak, including contact tracing, incidence, case fatality rate, attack rate and mapping areas with contaminated water at household level.
- **Integrated prevention activities** are characterized mainly by WASH, Health and Communication for Development (C4D) strategy to protect people at all levels even those live in unaffected but at high-risk areas from AWD/cholera.

The two- approaches are defined by the districts affected (table 1). Other districts which do not have any suspected/confirmed cases could be affected at any time; as such, the number of districts targeted in this approach will increase. The two approaches are implemented in parallel, while priority is given to the control activities if insufficient capacity is available to respond to all districts under Prevention and Control approaches.

⁴ This strategy is informed by the Regional “Shield and Sword” strategy that has been implemented to control and prevent cholera in West and Central Africa among other places.

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

Depending on funding and capacity of partners, Health and WASH partners will additionally intervene with sustainable and preventive interventions. Additionally, long-term prevention aims at improving water quality, sanitation and hygiene conditions as well as behavioral changes. However, it should be noted that all activities take place in a complex emergency setting and therefore sustainable development interventions are not likely to be prioritized or even possible.

4. 1. Control approach:

Goal

To contain the cholera outbreak in affected communities and prevent the disease spread in “at risk” communities.

Geographic Targeting

Districts where cholera cases have been reported and confirmed since October 2016. This will include 286 districts in 20 governorates with a total of 26,590,590 population. Other districts which did not have any suspected/confirmed cases could be affected at any time; as such, the number of high risk districts targeted by this approach will increase.

Activities

The control approach activities are focused on early detection, improved case management/treatment and targeted prevention for districts with confirmed cases:

- 1) **Early detection activities** aim to increase surveillance and expedite laboratory testing and understand the root of contamination:
 - a. Reactivate and sustain an integrated cholera emergency operational centers at national and governorate level
 - b. Sustain cholera task force at national and sub national levels to ensure maximum coordination, gap coverage and concerted approach
 - c. Strengthen community based surveillance and current surveillance system (e-DEWs)
 - d. Strengthen the central public health lab and its governorate branches and micro biology laboratory in main hospitals in areas without branch, for decentralized testing of samples
 - e. Outbreak investigation to identify sources of infection.
 - f. Enhance water testing water sources for cholera by different means.
 - g. Continue support to rapid response teams at governorate level and establish rapid response teams at district level (in affected districts). At governorate level, the rapid response team will be integrated and include health, WASH and C4D experts.
 - h. Improve data management and information dissemination through Health and WASH Clusters.

- 2) **Case management/infection control activities** contribute to decreasing the case fatality rate by:
 - a. Establish / reactivate / sustain cholera treatment centers (CTCs)⁵ with the required health and WASH facilities for management of severe cases

⁵ This includes providing food for patients admitted on CTC.

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

- b. Establish Oral Rehydration Points ORPs at community and primary health care level for management of mild and moderate cases.
- c. A health partner should provide full support to the health facility they operate including management so they are responsible and accountable to quality of health service provided through this facility.
- d. For any district that has reported suspected cases, there should be at least one CTC (20 beds on average) and at least 5 ORPs based on the caseload in different locations to cover the district.
- e. With full consideration of geographic accessibility, it is preferred to expand a current CTC to accommodate more cases rather than establishing new ones.
- f. Case management and setting for the different types of treatment centers and points should follow WHO standards and guidelines to ensure quality of health care.
- g. Establish referral system for cases failing to recover or deteriorating at ORPs to CTCs. Stabilization of such patients should be considered during transportation.
- h. Training health workers on case definition, diagnosis, case management protocols and infection prevention and control.
- i. Training laboratory staff on proper handling and testing of different types of cholera samples.
- j. Distribution of communication material and treatment guidelines to health workers in CTCs and ORPs.
- k. Procuring and distribution of diarrheal disease and cholera kits besides other essential medicines and medical supplies (targeting oral and IV rehydration).
- l. Promote safe burial practices at health facility level through training the health workers and at the community level through awareness campaigns and disseminating IEC materials
- m. Ensure infection prevention and control measures at CTCs and ORPs.
- n. Regular joint monitoring of CTCs and ORPs to ensure quality of services.
- o. Provide household chlorination tablets (aquatabs) and consumable hygiene kits (soap) for 1 month for 1 family and IEC materials and awareness messages for recovered patients and their families, which will be provided to them by CTC staff upon release of the patient. This is as part of discharge procedures.

3) **Integrated prevention activities** to decrease the number of new cases by:

- a. Water safety planning as appropriate in rural and urban context;
- b. Water quality monitoring at source and point of use of FRC & turbidity. If necessary surveillance of faecal contamination (bacteriological testing);
- c. Chlorination of water supplies, including piped network and private water trucks. Chlorination of unprotected wells should be avoided and instead bucket chlorination should be considered (if appropriate). As a last resort, supply of chlorinated water through water trucking where necessary and appropriate;

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

- d. Cleaning, sterilization and disinfection of water storage facilities at community and household level;
- e. Distribution of consumable hygiene kits and jerry cans (if needed) for households with new cases and immediate surrounding households;
- f. Distribution of chlorine tablets for water treatment at household level with proper instructions on use of the tablets, targeting households in affected locations.
- g. Communication and mass awareness raising, including production and dissemination of IEC materials. Household and community level hygiene promotion, community mobilization and cholera awareness messages by adopting C4D strategy. Messages will be guided by epidemiological data and better understanding of different transmission contexts, as well as rapid knowledge, attitude and practice (KAP) surveys.
- h. Sanitation measures to be considered on a case by case basis after better understanding of the situation (including sanitary survey). This includes advocacy to enhance solid and liquid waste management, support to cleaning campaigns, waste water treatment plants and desludging when necessary (overflowing sewage systems, large amounts of uncollected garbage in densely populated areas). In areas with many displaced people without latrines, this could include construction of emergency latrines.

4) Oral Cholera Vaccine

Conduct risk assessment to determine locations and population eligible for vaccination, explore availability of the vaccine globally, discuss with MoPHP and other stakeholders the feasibility of a cholera vaccination campaign in high risk areas eligible to receive the vaccine.

All WASH related activities are guided by a technical document with standard operating procedures developed and approved by the WASH cluster in Yemen.

The logistics cluster is significantly scaling up capacities, with the aim to aims to facilitate access to sufficient and reliable logistics services, coordination, and operationally relevant information to ensure a timely and uninterrupted supply of life-saving relief items to populations affected by or at risk of cholera. Dedicated logistics services for the cholera response include airlifts, sea cargo transport, overland transport and common storage, fuel provision and the passenger services by air and sea.

4.2 Preventions approach:

Goal

To prevent cholera to spread to low risk districts.

Geographic Targeting

Districts that are at risk to report cases due to presence of risk factors with possibility of spread of the infection. These low risk areas include 47 districts with a population of 1,866,540.

Activities

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

In preventive approach, the activities will focus on integrated prevention activities, including:

- 1) Early Detection Activities, similar to control approach, the aim is to ensure robust surveillance and timely laboratory tests of suspected cases, including: strengthening current early warning surveillance system (e-DEWs) and expanding community based surveillance.
- 2) Case management/Treatment activities in this phase aim to reduce the case fatality rate among AWD cases, which includes: preparing the potential CTC and ORPs sites, procuring and prepositioning/stockpiling essential medical supplies, monitoring will take place at different levels for case management.
- 3) Integrated prevention activities, same activities as in control approach, but with a focus on communication and mass awareness. WASH and health activities focusing on water treatment and water quality surveillance as part of water safety planning, and prepositioning of WASH supplies as preparedness measure (IEC materials, chlorine, consumable hygiene kits and jerry cans) to be able to immediately respond in situations when cholera cases are being detected. Furthermore, as resilience measure, advocacy will be done to ensure water safety planning and promotion of environmental health (solid waste, sewage) to be part of institutional systems. This will be complemented by investments in rehabilitation and regular operation and maintenance of water supply and sanitation facilities.
- 4) Oral Cholera Vaccine, conduct risk assessment to determine locations and population eligible for vaccination, explore availability of the vaccine globally, discuss with MoPHP and other stakeholders the feasibility of a cholera vaccination campaign in high risk areas eligible to receive the vaccine.

4.3 Prioritization

Health and WASH clusters will prioritize the response in the affected districts based on the following criteria:

- Absolute number of suspected cases (caseload). This will allow proper response in terms of quantity.
- Attack rate (number of suspected cases as a proportion to the total population in the district). This will indicate the gravity of the situation and will allow mobilization of enough resources for the response.

The clusters will update the priority districts list on regular basis to capture new developments as the situation evolves.

5. OPERATIONAL RESPONSE PLAN AND FUNDING REQUIREMENT

The Health and WASH cluster operational response plan identifies response activities to address the cholera outbreak in the risky districts during the planning period, based on the

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

response strategy outlined above. The scaled up response interventions aim at reducing morbidity and mortality including reduction in case-fatality rate. The major expected outputs include: provide leadership and co-ordination of the health and WASH response; strengthen epidemic disease surveillance; improve Case Management at community, primary and secondary care levels including referral; strengthen infection prevention and control at health facility and community levels; build capacity of national counter partners mainly Health and WASH authorities at the central and peripheral levels; and increase community awareness in relation to different aspects of cholera including prevention and control. (See Annex 6 for the response matrix outlining planned activities, timeline, and partner).

A total of US\$ 254,053,750 is required to implement Health, WASH and communication activities identified in this Integrated Cholera Response plan. Considering available resources amounting to \$ 49,840,000, the net requirement stands at \$ 207,053,750 (See Table 1 for details). The available resources were available thanks to the generous contribution of the Yemen Humanitarian Funding, KSRelief, China, and WB.

Table 1: Summary for Funding Requirements for Health and WASH Response (*See Annex 6 for details*)

Intervention Area	Estimated WASH USD	Estimated Health USD	Total H&WA SH USD	Available Resource USD	Gap USD	% Funded
Provide leadership and co-ordination of the Health and WASH response	300,000	3,514,000	3,814,000	-	3,814,000	-
Strengthen epidemic disease surveillance		9,912,000	9,912,000		9,912,000	-
Improve Case Management at community, primary and secondary care levels	14,510,500	91,129,600	105,640,100		105,640,100	-
Strengthen infection prevention and control at health facility and community levels.	106,427,050	3,003,600	109,430,650		109,430,650	-
Capacity building	1,500,000	1,232,000	2,732,000	-	2,732,000	-
Community awareness	22,525,000	-	22,525,000		22,525,000	-
				49,840,000		
Total	145,262,550	108,791,200	254,053,750	49,840,000	204,213,750	19.6

- The budget is calculating the cost to respond to the caseload from May - December 2017.

6. MONITORING AND REPORTING

6.1 Cholera Treatment Centre (CTC) Reporting

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

As of 28 June 2017, 2,351 CTCs beds and 624 ORPs have been established by MoPHP and health partners. Many of these CTCs specially those run by MoPHP are in urgent need for different type of support. The health cluster is targeting 5,006 CTCs beds and 2,003 ORPs to be opened across Yemen providing quality health services to patients. The standards of quality of service provision at the CTCs and ORP are regulated by WHO Yemen Guidelines that are in accordance with the WHO global standards on cholera response and is available in English and Arabic. The guidelines include standards on:

- Monitoring, equipment and supplies, infection control measures and sanitation and hygiene measures.
- Diagnosis, clinical management and timely reporting of cholera.
- Technical capacity of care providers to manage cholera patients and structural criteria for CTC.

To ensure these standards are maintained, the coordinators at the CTCs report gaps and challenges to the cholera task force, reports and data are subjected to analysis. At the governorate level, there are the Emergency Health Operation Rooms that focus on surveillance and coordination of health response, they report to MoPHP/WHO.

Using the developed monitoring tools, health and WASH cluster partners will conduct several visits monitoring the CTC standards. The visits will measure the capacity of the CTC, as well as the capacity of the staff, the management of the CTC, knowledge of the guidelines and the quality of the treatment.

6.2 Treatment/Case management

The treatment/case management is regulated by the WHO Yemen Guidelines as described previously. Once a case is identified, the case is subjected to triage and managed or referred accordingly.

6.3 Epidemiological data

The collection of epidemiological data is completed by the CTCs staff in the field, who report directly to the cholera emergency rooms in Aden and Sana'a. The collected data is then "cleaned" and delivered to the taskforce for data analyses and reporting.

Two types of reports are produced, an epidemiological update which provides a brief summary of the outbreak evolvment twice weekly. The second publication is a situational report that includes the epidemiological curve, case fatality rate, and age & sex distribution of cases and map showing distribution of cases by districts.

To improve the data quality, a standard field reporting tool has been developed by WHO Yemen with data validations to minimize the data entry errors expediting the reporting process.

6.4 Response monitoring

The Health and WASH Clusters with partners are coordinating the cholera response monitoring activities which include location of WASH and health activities. This information is shared regularly with the national Cholera Taskforce. Regular joint situational reports are released by the health and WASH clusters, with data provided by the MoPHP on new cases.

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

7 COORDINATION

Till now, The health authorities is leading the national Cholera Taskforce which is formed of MoPHP, UNICEF/WASH cluster, WHO/health cluster while at the sub-national level, it was supposed to have similar integrated task forces, where GHO, health and WASH cluster partners participate.

As the outbreak has grown the mechanisms for coordination have needed to change to cope with the speed and complexity of the situation. At the time of writing this document the UN is mobilising cross-cluster support to a distributed network of Emergency Operations Centres across the country. Two central EOCs in Sana'a and Aden will liaise closely with each other whilst supporting EOCs in every governorate.

The health and WASH clusters are combining resources with other clusters and partners to expand the coordination and management of the outbreak under a single command and control structure. The goal is not to add additional burden to the previous coordination groups and meetings schedules, but to adopt a more operational posture by reducing the number of meetings and increasing the face-to-face working of the relevant stakeholders.

The EOCs are responsible for the timely and coordinated dissemination of information between national, governorate and district levels, and for providing the tools for decision making by the strategic leadership led by government ministries and supported by UN agencies.

The network of EOCs also deploys Rapid Response Teams at every level to investigate areas of concern and help mobilise resources quickly to support the most affected areas.

To guide the coordination, there is a response plan matrix developed at national level (see annex 6). This response matrix should be developed at sub national level as well to guide a better coordination of partners on the ground.

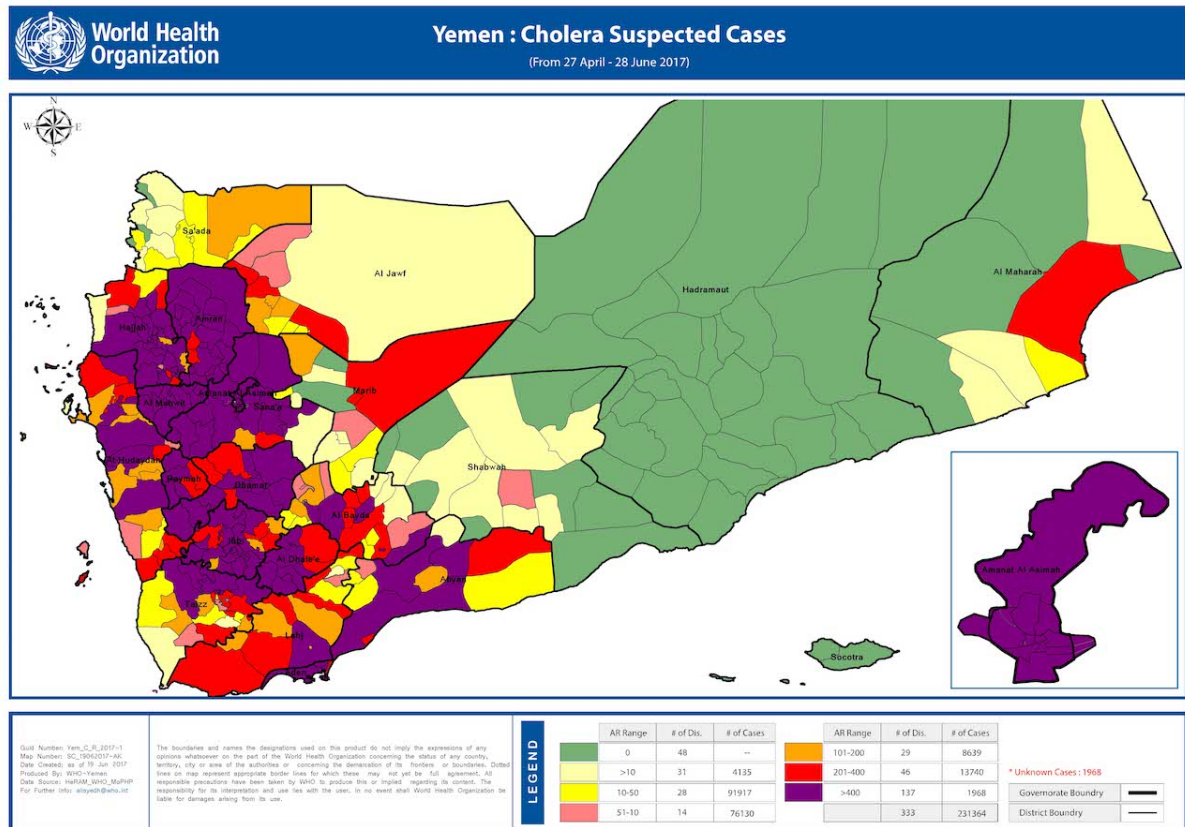
There are 105 health partners of which, 32 active NGOs and UN agencies working closely with MoPHP at the central and peripheral levels. Health cluster partners are operational in 19 governorates in Yemen. Partners conducted consultations in April 2017 and are supporting 71 hospitals and 353 primary health care facilities and mobile teams.

The WASH cluster coordinates over 175 partners in Yemen with presence in 20 out of 22 governorates across the country. Most partners are local NGOs with limited access to flexible financial resources, while there are few partners (mainly UN and international NGO) with small amounts of flexible funding for emergency response, including cholera response. An estimated 34 partners (LNGO, INGO and UN) have been involved in the WASH cholera response since October 2016.

The Health and WASH clusters conduct regular joint meetings with partners to enhance cooperation and provide guidance on an integrated response.

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

ANNEX 1: Spread of Cholera Outbreak by Districts: Attack rate



Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

Annex 2: Estimation of the Expected Number of Cases of Cholera in the current outbreak of 2017 in Yemen

Governorate	Cases Wave1 Oct 16- Apr 17	Cases Wave2 27 Apr- 28Jun 17	Total cases till 28 June	Adjusted population 2017	Actual AR (%) 28 June	Expected caseload: AR + 110%	Total cases remaining: Jun- Dec2017
Abyan	811	4,494	5,305	570,832	9	11,141	5,836
Aden	1,652	6,899	8,551	922,996	7	17,957	9,406
Al Bayda	2,905	7,318	10,223	759,388	22	21,468	11,245
Al Dhale'e	1,587	10,564	12,151	731,496	14	25,517	13,366
Al Hudaydah	5,776	27,993	33,769	3,238,199	21	70,915	37,146
Al Jawf	9	1,554	1,563	578,585	4	3,282	1,719
Al Maharah	-	243	243	153,306	1	510	267
Al Mahwit	14	11,685	11,699	730,209	16	24,568	12,869
Amanat Al Asimah	226	34,918	35,144	2,827,824	12	73,802	38,658
Amran	51	25,082	25,133	1,160,559	56	52,779	27,646
Dhamar	185	12,788	12,973	2,012,264	9	27,243	14,270
Hadramaut	-	-	-	1,429,351	-	-	-
Hajjah	2,344	24,647	26,991	2,329,741	40	56,681	29,690
Ibb	2,309	16,908	19,217	2,957,138	13	40,356	21,139
Lahj	1,031	2,939	3,970	1,008,864	6	8,337	4,367
Marib	-	804	804	358,542	2	1,688	884
Raymah	720	3,987	4,707	606,776	6	9,885	5,178
Sa'adah	-	336	336	911,467	0	706	370
Sana'a	1,698	19,092	20,790	1,470,346	26	43,659	22,869
Shabwah	85	112	197	636,008	0	414	217
Socotra	-	-	-	64,939	-	-	-
Taizz	4,072	17,033	21,105	2,998,300	12	44,321	23,216
Total	25,475	229,396	254,871	28,457,130	0.90	535,229	280,358

- Detailed analysis is available up to district level

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

ANNEX 3: Estimated number of CTC beds and ORP stations

Population at Risk	28,457,130
Attack Rate	Actual AR (as of 28 June) at district level + 110% increase
Number of Districts reported cases	309
Total number expected patients	535,229
Total number of reported cases till 28 June	254,871
Total number of remaining cases July- Dec 2017	280,358
Total Number of CTC beds needed	5,006
Total number of CTCs (average 20 beds)	250
Total number of ORPs needed	2,003

ANNEX 4: Required Medicines and Medical Supplies

Medicines and medical supplies needed July-Dec 2017	
Expected number of cases July - Dec 2017	280,358
ORS packets (1 litre)	3,504,476
Nasog. Tubes (adults) 5.3/3.5mm (16 flack) 50cm	38,646
Nasogastric tubes (children)	38,646
Ringer's lactate bags, 1 litre with giving sets	1,121,432
Scalp vein sets	2,772
Doxycycline, 100mg (adults)	280,358
Erythromycin 250mg (children)	1,121,432
Zinc (10 Mg) Tablets	1,051,343
Large water dispensers with tap (marked at 5-10L)	2,772
1 litre bottles for ORS solution	2,772
0.5L bottles for ORS solution	79,188
Tumblers, 200ml	277,160
Teaspoons	138,580
Cotton wool, kg	277,160
Adhesive tapes, reels	1,108,640

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

ANNEX 5: Response Matrix

Key Component	Activity	Timeline 2017	Partner
Leadership/ Coordination	Reactivate cholera task force at national and sub national levels to ensure maximum coordination, gap coverage and concerted approach.	May	MoPHP, Health & WASH Clusters
	Reactivate and sustain an integrated cholera operational room at national and governorate level.	May	MoPHP, Health & WASH Clusters
Surveillance	Expand community based surveillance and strengthen current surveillance system (e-DEWs).	May	MoPHP, Health & WASH Clusters
	Strengthen the central public health lab and its governorate branches and micro biology laboratory in main hospitals in areas without branch, for decentralized testing of samples.	May – Dec	MoPHP, WHO
	Outbreak investigation and identify sources of infection.	May – Dec	MoPHP, Health & WASH Clusters
	Test water sources for cholera by central laboratory.	May – Dec	MoPHP, WASH Clusters
	Continue support to rapid response teams at governorate level and establish rapid response teams at district level (in affected districts). At governorate level, the rapid response team will be integrated and include health, WASH and C4D experts.	May – Dec	MoPHP, WHO
Case Management	Conduct cholera risk assessment to identify hotspot areas for possible oral cholera vaccine	May-Dec	WHO
	Establish and operate ORP at community and primary health care level for management of mild and moderate cases.	May - Dec	MoPHP, Health Cluster
	Establish referral system for cases failing to recover or deteriorating to higher health care levels.	May - Dec	MoPHP, Health Cluster
	Establish / reactivate / sustain cholera treatment centers (CTCs) with the required WASH facilities for management of severe cases.	May – Dec	MoPHP, Health & WASH Clusters
	Procuring and distribution of cholera kits (targeting oral and IV rehydration) and other medical supplies	May – Dec	Health Cluster (WHO, Unicef, other NGOs)
	Promote safe burial practices at health facility level through training the health workers and at the community level through awareness campaigns and disseminating IEC materials.	May – Dec	MoPHP, Health & WASH Clusters
Capacity Building	Training health workers on case definition, diagnosis and management protocols.	May – Sept	MoPHP, Health Cluster
	Training laboratory staff on proper handling and testing of different types of cholera samples.	May – July	MoPHP, WHO
	Training of hygiene promoters on cholera awareness messages	May – July	WASH Cluster
	Training of chlorinators on proper handling, storage and dosing of chlorine and monitoring of residual chlorine levels	May – July	WASH Cluster
Infection Prevention and Control	Ensure infection prevention and control measures at CTCs and other treatment points	May – Dec	MoPHP, Health Cluster
	Regular joint monitoring of CTCs and ORP to ensure quality of services.	May – Oct	MoPHP, Health Clusters
	Provide household chlorination tablets (aquatabs) and consumable hygiene kits (soap) for 1 month for 1 family and IEC materials and awareness messages for recovered patients and their families, which will be provided to them by CTC staff upon release of the patient. This is as part of discharge procedures.	May – Oct	WASH Cluster
	Water safety planning as appropriate in rural and urban context.	May – Dec	WASH Clusters
	Water quality monitoring at source and point of use of FRC & turbidity. If necessary surveillance of fecal contamination (bacteriological testing).	May – Dec	MoPHP, Health & WASH Clusters

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

	Chlorination of water sources, piped network and private water trucks. Chlorination of unprotected wells should be avoided and instead bucket chlorination should be considered (if appropriate). As a last resort, supply of chlorinated water through water trucking where necessary and appropriate.	May – Dec	WASH Clusters
	Disinfection of water storage facilities at household level.	May – Dec	WASH Clusters
	Distribution of consumable hygiene kits and jerry cans (if needed) for households with cases and immediate surrounding households.	May – Dec	WASH Clusters
	Distribution of chlorine tablets for water treatment at household level with proper instructions on use of the tablets, targeting households in affected locations.	May – Dec	WASH Clusters
	Sanitation measures to be considered on a case by case basis after better understanding of the situation (including sanitary survey). This includes advocacy to enhance solid and liquid waste management, support to cleaning campaigns and desludging when necessary (overflowing sewage systems, large amounts of uncollected garbage in densely populated areas). In areas with many displaced people without latrines, this could include construction of emergency latrines.	May – Dec	WASH Clusters
Public Awareness	Communication and mass awareness raising, including production and dissemination of IEC materials.	May – Dec	Health & WASH Clusters
	Household and community level hygiene promotion, community mobilization and cholera awareness messages.	May – Dec	Health & WASH Clusters
	Distribution of communication material and treatment guidelines to CTC, ORP and health workers.	May – Dec	MoPHP, Health & WASH Clusters

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

ANNEX 6: Funding Requirements for Health and WASH Response – budget breakdown

WASH

	WASH Coordinated Activities	Quantity	Unit	Unit cost	Total cost
Provide leadership and co-ordination of the Health and WASH response					
1	Coordination				\$ 300,000
Improve Case Management at community, primary and secondary care levels					
2	Provision of chlorinated water and other WASH support to ORPs	2,003	ORP	\$ 3,500	\$ 7,010,500
3	Provision of chlorinated water and other WASH support to DTCs	250	DTC	\$ 30,000	\$ 7,500,000
Strengthen infection prevention and control at health facility and community levels					
4	Assessment and mapping of water and sanitation infrastructure, including sanitary surveys	286	Survey	\$ 15,000	\$ 4,290,000
5	Provision of chlorinated water through water trucking (only where necessary and appropriate – estimated for 750,000 people for 3 months)	750,000	Person	\$ 6	\$ 13,500,000
6	Chlorination of water supplies (piped network, private water trucks)	8,000,000	Person	\$ 2	\$ 16,000,000
7	Bucket chlorination (only when necessary and appropriate)	150,000	Person	\$ 6	\$ 2,700,000
8	Disinfection of community and household water storage facilities	4,000,000	Person	\$ 1	\$ 4,000,000
9	Water quality monitoring (FRC and NTU) at source and point of use (household level) including supplies (pool tester, consumables etc)	286	District	\$ 6,000	\$ 1,716,000
10	Provision of WASH supplies (aquatabs, jerry can, consumable hygiene kits and IEC materials for three months) to high risk communities	14,969,170	Person	\$ 3	\$ 44,907,510
11	Provision of WASH supplies (aquatabs, jerry can, consumable hygiene kits and IEC materials) to recovered patients upon discharge of DTC	509,754	Person	\$ 10	\$5,097,540
12	Emergency latrine construction	50,000	Person	\$ 25	\$ 1,250,000
13	Desludging cess pits, ceptic tanks and latrines				\$ 750,000
14	Monitoring and technical assistance	286	District	\$ 6,000	\$ 1,716,000
15	O&M of water supply systems in highly populated areas / high risk areas	6,000,000	People	\$ 1	\$ 6,000,000

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

16	O&M of waste water and sewage systems in highly populated areas / high risk areas	3,000,000	People	\$ 1	\$ 3,000,000
17	Cleaning campaigns in highly populated areas / high risk areas	1,500,000	People	\$ 1	\$ 1,500,000
Capacity building					
18	Trainings on hygiene promotion & chlorination	5,000	People	\$ 300	\$ 1,500,000
Community awareness					
19	Development, Printing, distribution and dissemination of public Information, education and communication materials				\$ 1,000,000
20	Community engagement for Health and Hygiene promotion and behavior change, mobilization and monitoring of cholera interventions at household and community level including mobilization, orientation and deployment of volunteers, community and religious leaders				\$ 20,225,000
21	Mass media communication including social and community media outreach				\$ 675,000
22	KAP surveys and assessments				\$ 125,000
23	Social mobilization and communication for OCV campaign				\$ 500,000
	WASH Coordinated Activities Total				\$ 145,262,550
	[1] All activity costing are estimates and include operational costs such as staffing, transport etc.				

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

Health

Estimated budget for Cholera Response Plan - Health Component May-Dec 2017

	Activity	Quantity	Duration (month)	Unit Cost USD	Total Cost USD
	Coordination				
1	Coordination (meetings and missions)				250,000
2	Emergency Operation Centers In 22 Governorates and centre in San'a and Aden	24	8	17,000	3,264,000
	Surveillance				
1	Rapid response team 423 team , 5 persons/team; incentives/transport	423	8	2,000	6,768,000
2	Support eDWES operational cost	1	8	393,000	3,144,000
	Case Management				
1	Cholera reference kits(complete)	2500	1	6830	17,075,000
2	Cholera community kits(complete)	8000	1	324	2,592,000
3	Other medicines and medical supplies	1	8	2,000,000	16,000,000
4	Rapid Test kit	50,000	1	20	1,000,000
5	KIT, CHOLERA LABORATORY (4), checklist, 100 samples, complete	500	1	2600	1,300,000
6	CTC establishment (250 CTC of 20 beds)	250	1	30,000	7,500,000
7	Operational cost for CTC/DTC	250	8	12,000	24,000,000
8	Establish ORPs (2003 ORPs)	2003	1	3,800	7,611,400
9	Operational cost for ORS	2003	8	800	12,819,200
10	M&E for treatment centers in 22 Governorates	22	8	7,000	1,232,000
	Capacity building				
1	Training of 6 medical staff for 3 days from 250 DTCs and 2 person from 2003 ORS corners (5,506 Staff)	275 training sessions		4,480	1,232,000
	Infection prevention and control				
1	IPC in CTCs	250	8	300	600,000
2	IPC in CTCs	2003	8	100	1,602,400
3	IPC Materials	2003	8	50	801,200
	Total				108,791,200

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

ANNEX 7 – Indicators of success

Indicators for Control Approach

Indicators of success

The main indicators of success for Control Approach) are:

- 1) The Cholera/AWD case fatality rate as an indicator to treatment success (Target: <1%).
- 2) The Cholera/ AWD Incidence rate as an indicator for the effectiveness of prevention efforts (Target: <1% of population at risk).

Early Detection indicators include:

- Number of orientation sessions conducted for emergency medical mobile teams, community health volunteer, community midwives in priority areas completed in each affected governorate (Target: 22 gov * 5 sessions = 110)
- % of reports received from operational rooms in affected districts/governorate (Baseline: 50%; Target: 85%)
- % of alerts reported by eDEWs focal points within 24 hrs (Baseline: 50%; Target: 85%)
- Number of rapid response teams established and activated in targeted districts (Target: 150)
- % of alerts investigated within 72 hours (Target: 90%)
- % of collected laboratory samples tested (weekly) (Baseline: 50%; Target: 80%)

The indicators for case management/treatment:

- % of CTC applying standard operating procedure regarding case isolation (target: 75%)
- Number of CTC beds established and functional (Target: 5,006 beds)
- % of CTC reporting shortages of essential medical supplies and/or WASH supplies (Target: <10%).
- Case fatality rate at governorate level (Target <1%)

Specific Integrated prevention activities indicators are:

- % beneficiaries receiving soap and Aqua tabs and properly utilize the materials (target: 75%)
- % of tested chlorinated water with Free Residual Chlorine > 0.2 ppm (mg/l) and Turbidity < 10 NTU (target: 90%)
- % of affected villages sensitized on cholera prevention and water treatment. (target: 75%)

Indicators for Prevention Approach

Indicators of success

The main indicator for success in Prevention approach:

- 1) The Cholera/ AWD Incidence rate as an indicator for the effectiveness of prevention efforts (Target: <1% of population at risk).

Integrated Response Plan: Yemen cholera outbreak (29 June 2017)

Specific indicators of success are listed below:

Early Detection:

- % of daily reports received from operational rooms in targeted governorate (Baseline: 50%; Target: 85%)
- % of alerts reported by eDEWs focal points within 24 hrs (Baseline: 50%; Target: 85%)
- % of alerts investigated within 72 hours (Target: 90%)
- % of collected laboratory samples tested (weekly) (Baseline: 50%; Target: 80%)

Case management:

- % of CTC reporting shortages of essential medical supplies and/or WASH supplies (Target: <5%)

Integrated prevention activities:

- % beneficiaries receiving soap and Aqua tabs and properly utilize the materials (target: 75%)
- % of tested chlorinated water with Free Residual Chlorine > 0.2 ppm (mg/l) and Turbidity < 10 NTU (target: 90%)
- % of affected villages sensitized on cholera prevention and water treatment (target: 75%).