2023

OPERATIONAL CHOLERA TOOLKIT

ACTION AGAINST HUNGER

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Action contre la Faim - International, October 2022

PREAMBLE

PASCAL REVAULT
DIRECTOR OF EXPERTISE AND ADVOCACY
ACF FRANCE, 16 SEPTEMBER 2022

England, 1848, after another severe cholera outbreak *the first Public Health Act* was established under the leadership of Edward Chadwick. Chadwick recognized the crucial role of disease transmission in the fight against poverty. He advocated for activities to improve public health, including the installation of sewers; improved drainage; the removal of all rubbish from houses, streets and roads; the provision of clean drinking water; the appointment of a doctor for each town to detect and treat the disease; and the establishment of a social protection[1] system. The law was a first, but it was non-binding and general, leading to disparities in responses that sometimes limited its effectiveness.

Today, cholera remains a disease of poverty. There are cholera cases in all regions of the world, of which 50% are from the African continent, the case-fatality can exceed 6% in vulnerable populations residing in areas at high risk of epidemics. The recent emergence of *Vibrio cholerae* variants, hybrids between the classical biotype and the El Tor biotype, is proving to be particularly virulent, while the number of cases is underestimated[2], with probably more than 2 million annual cases of cholera in 47 countries and more than 100,000 deaths per year[3]. With nearly 840 million people currently without access to basic drinking water services, more than 2 billion drinking water contaminated with faeces and 2.4 billion without basic toilets[4], conditions are present for a high risk of cholera outbreaks occurring and spreading. Finally, conflicts, social inequalities and the environmental crisis are factors that favour the occurrence of epidemics, especially among malnourished people. Undernutrition and cholera have a common history and can be the breeding ground for each other.

Action Against Hunger is committed through the *Global Task* Force on *Cholera Control*[5] (GTFCC) to reduce cholera transmission and 90% of cholera deaths by 2030. The GTFCC's response is structured around three strategic areas: early detection and rapid response to contain outbreaks; a targeted approach to improve prevention; and coordination of human, technical and financial resources.

This **operational toolkit** produced by ACF provides the Standard Operating Procedures needed to better implement these axes through an intersectoral approach and five modules: coordination; case management; response within and with communities; monitoring, evaluation and learning; and logistics and human. We hope this toolkit provides a concrete lever for the interventions of the teams, whether they work in the fields of health, water, sanitation and hygiene (WASH), or logistics. We designed this kit to provide guidelines for those who plan, evaluate and lead operational responses. We hope the kit is systematically distributed, shared and used to improve cholera programming and improve public health.

1 https://www.parliament.uk/about/living-heritage/transformingsociety/towncountry/towns/tyne-and-wear-case-study/about-the-group/public-administration/the-1848-public-health-act/

2 https://www.pasteur.fr/fr/centre-medical/fiches-maladies/cholera

3 https://www.gtfcc.org/fr/

4 https://www.gtfcc.org/fr/a-propos-du-cholera/

5 https://www.gtfcc.org/fr/partenaires-en-action/

TABLE OF CONTENTS

WHAT IS THE ACF OPERATIONAL CHOLERA TOOLKIT? 5

OPERATIONNAL CHOLERA TOOLKIT'S MODULES 7

1/ COORDINATION 9

2/ CHOLERA CASE MANAGEMENT 15

3/ CHOLERA RESPONSE IN THE COMMUNITY 93

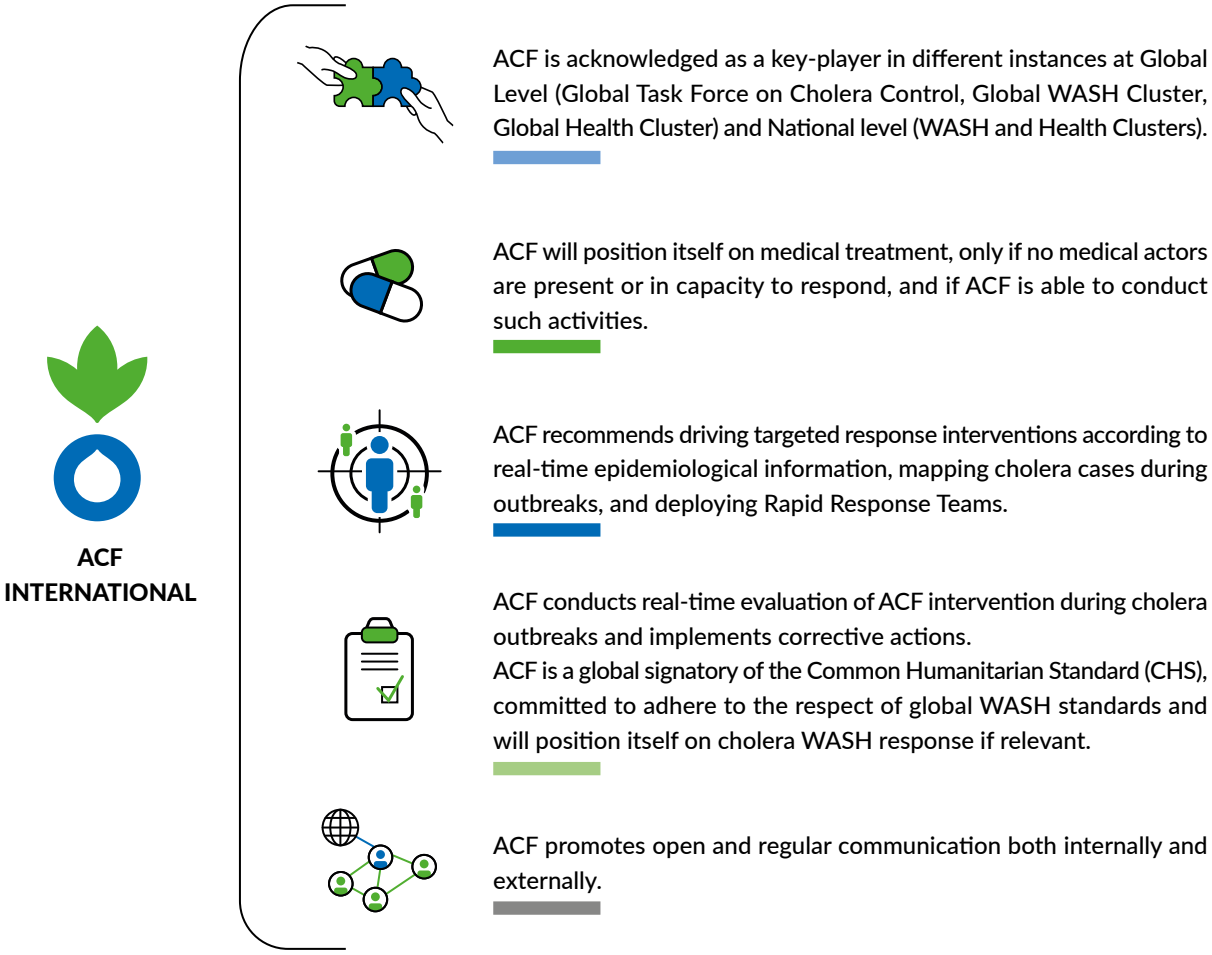
4/ ASSESSMENT, MONITORING & EVALUATION, LEARNING 139

5/ KEY SUPPORT FUNCTIONS 161

WHAT IS THE ACF OPERATIONAL CHOLERA TOOLKIT?

Since its creation in 1979, ACF has responded to cholera epidemics by involving its WASH department, and more sporadically, its Health & Nutrition department. Increasingly, ACF naional offices are receiving urgent invitations to participate in local outbreak control actions in their work areas, coming from health authorities and partners (donors, international and national NGOs). Due to the importance of taking part on these efforts, a number of naional offices have been recently involved on WASH and medical activities outbreak responses. With the recent re-engagement in health, there is a need to describe and combine both activities and to encourage multidisciplinary working. Moreover, ACF increasingly supports the response in the community by implementing epi-driven, geo-targeted and evidence-based interventions which requires adapted operational guidelines.

FIGURE 1 POSITIONING



OBJECTIVE

The purpose of the ACF cholera operational toolkit is to provide Standard Operating Procedures for ACF field teams to prevent, prepare for and respond to cholera outbreaks, combining both Health and WASH activities and including a component on case management strategy.

Specific objectives are:

- To establish standards for cholera preparedness and response activities.
- To describe the steps for a timely and effective response to cholera outbreaks.
- To outline roles and responsibilities of program and logistic teams and also link with Emergency Unit process.

METHODOLOGY

1. In 2019 an online survey enabled ACF to collect ACF end-users' expectations in terms of contents and structure for a toolkit.
2. The operational toolkit was developed in 2019, to based on available resources including toolkits, roadmap, reports, web-platforms and other documentation and materials from the Global Task Force for Cholera Control (GTFCC), Médecins Sans Frontières (MSF), UNICEF, World Health Organization (WHO), and ACF, as well as relevant scientific articles and countries information.
3. In 2020 each factsheet was reviewed by experts from relevant departments at ACF as well as external experts[1].
4. The toolkit development follows an incremental and interactive process: it is a living tool that is aimed to being regularly updated and enhanced thanks to the feedback from end-users.

For your comments and suggestions, please contact cantoine@actioncontrelafaim.org

CONTENT

The ACF Cholera operational toolkit is subdivided in five distinct modules:

1. **Coordination**
2. **Cholera case management**
3. **Cholera response in the community**
4. **Assessment, Monitoring, Evaluation and Learning**
5. **Support functions (logistics, human resources, communication)**

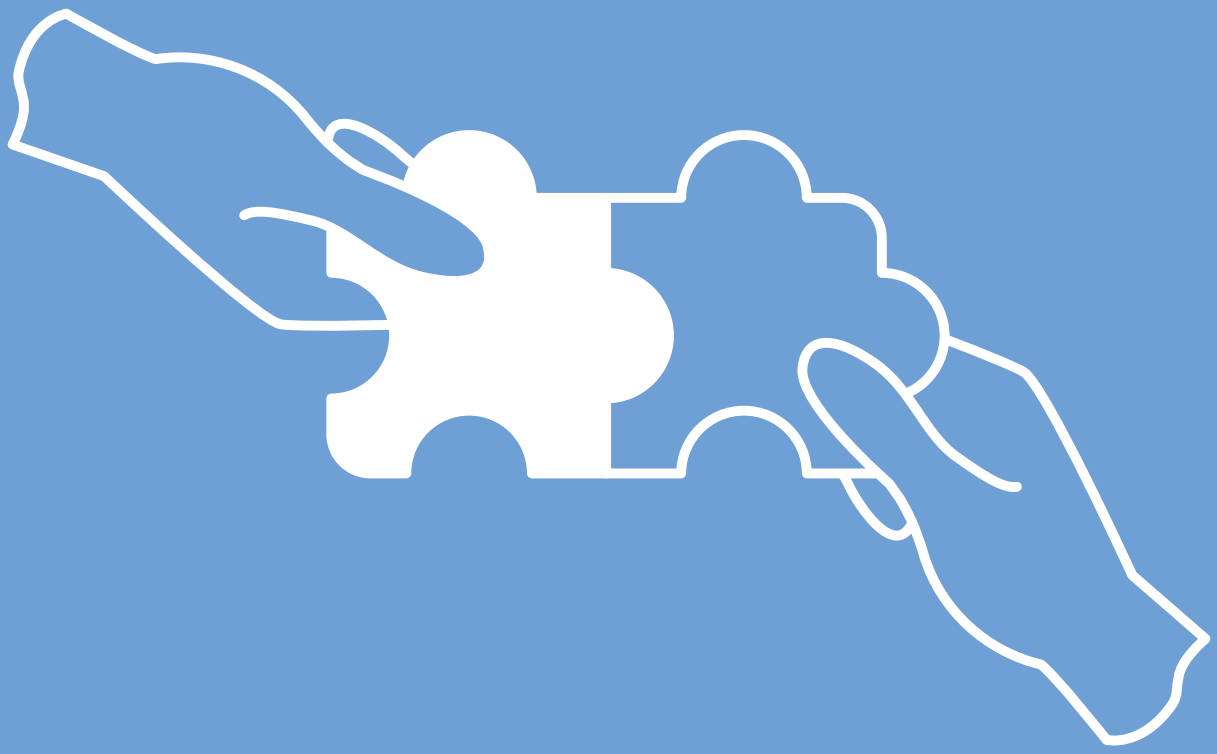
Each module includes a panel of operational factsheets that can be either strategic briefs or technical briefs (activities and tools). They include materials for decision-making process, key actions for case management and response in the community, and protocols. They summarize information on positioning, objectives, responsibilities, and cross-sectoral collaboration. The information relates to the different phases of a cholera outbreak (before/during/after), and therefore fits into cholera preparedness and response.

1 *Jessica Dunoyer, Jaïnil Didaraly, Philippe Jaillard, Elise Guillermet*

OPERATIONNAL CHOLERA TOOLKIT'S MODULES

The table below presents the modules and their corresponding briefs. For each brief, the category is indicated (**S:** Strategic; **A:** Activity; **T:** Tool) as well as the phases of a cholera outbreak.

MODULES AND FACTSHEETS				Before	During	After	pages
COORDINATION							
	1A	What are the external coordination mechanisms?	S		■		11
CHOLERA CASE MANAGEMENT							
	2A	How to get ready for cholera case management?	S	■			17
	2B	How to set up Cholera Treatment Facilities?	A	■	■		21
	2C	How to manage Cholera Treatment Facilities?	A		■		31
	2D	How to prepare and store chlorinated solutions using different products?	A		■	■	43
	2E	How to manage waste in Cholera Treatment Facilities?	A		■		47
	2F	What resource needs for Cholera Treatment Facilities?	T	■	■		55
	2G	What is the protocol for clinical management of cholera cases?	T				69
	2H	What are the key measures for infection, prevention and control?	T		■		89
CHOLERA RESPONSE IN THE COMMUNITY							
	3A	How to implement epi-driven interventions?	S	■	■	■	95
	3B	How to implement geo-targeted interventions?	A	■	■	■	103
	3C	How to set up Rapid Response Teams?	A	■			111
	3D	How to map cholera cases during outbreaks?	A		■		117
	3E	How to conduct case-home disinfection?	A	■	■	■	123
	3F	How to reduce cholera transmission during burials and funerals?	A	■	■	■	127
	3G	What are ACF standards for community cholera kits?	T		■		135
ASSESSMENT, MONITORING & EVALUATION, LEARNING							
	4A	What are the data to be collected for a rapid situation analysis?	T	■	■		141
	4B	How to measure the performance of a cholera response?	T		■	■	149
	4C	How to interpret cholera facility indicators?	T		■		141
	4D	What standards for WASH services in Cholera Treatment Facilities?	T		■		157
KEY SUPPORT FUNCTIONS							
	5A	What human resources organigram for a cholera outbreak response?	T				163
	5B	What are the emergency logistics procedures?	T				167



1

COORDINATION

1A What are the external coordination mechanisms? p.11

1A

WHAT ARE THE EXTERNAL COORDINATION MECHANISMS?

POSITIONING

ACF contributes actively and is acknowledged as a key-player in different instances at Global Level (Global Task Force on Cholera Control, Global WASH Cluster, Global Health Cluster) and National level (WASH and Health Clusters).

OBJECTIVE

To make appropriate use of coordination mechanisms at global, regional, national and district levels in order to avoid duplication and contribute to high quality outbreak response.

LEAD

Heads of Department (HoD)

CROSS SECTORAL COLLABORATION

WASH + HEALTH & NUTRITION + LOGISTICS

- Attend cholera coordination meetings such as Cholera Task Force and sectorial working groups/clusters in-country (including weekly/bi-weekly surveillance meetings).
- Have one focal point in the mission for linkages with coordination bodies.
- Share within ACF field mission strategic decision-making information from the different coordination meetings.

WHAT TYPES AND LEVELS OF COORDINATION?

GLOBAL

EXISTING PLATFORMS / MECHANISMS	ROLES/OBJECTIVES	RESPONSIBILITIES	ACF FOCAL POINT
WORKING GROUPS (WGS) OF THE GLOBAL TASK FORCE FOR CHOLERA CONTROL (GTFCC) *www.gtfcc.org*	» Offer countries the capacity, tools, and assistance to develop National Cholera Plans (NCPs) and implement them effectively in the framework of the 2030 End Cholera Roadmap through Policy, Technical support and guidance, Research and evidence generation, Capacity-building, and resource mobilization (1).	**WASH:** Monica Ramos, *mramos@unicef.org* **Case Management:** Iqbal Hossain, *ihossain@iccdrb.org* **OCV:** Kashmira Date, *kashmira.date@gmail.com* **Epidemiology & Surveillance:** Francisco Luquero, francisco. *luquero@epicentre.msf.org* **Laboratory & Surveillance:** Marie-Laure Quilici *marie-laure.quilici@pasteur.fr*	Jean Lapegue, Senior WASH advisor *jlapegue@actioncontrelafaim.org*
GLOBAL WASH CLUSTER (GWC) *www.washcluster.net*	» Increase coordination and response quality and capacity of national WASH coordination platforms to achieve improved relevance, quality, coverage and effectiveness of WASH assistance provided to people affected by emergencies, through Operational Support including HelpDesk, capacity building, knowledge management and advocacy.	*globalwashcluster@gmail.com*	Jean Lapegue, Senior WASH advisor *jlapegue@actioncontrelafaim.org*
GLOBAL HEALTH CLUSTER (GHC) *https://www.who.int/health-cluster/en/*	» Support Health Clusters/Sectors in countries by: • Providing the right expertise at the right place at the right time. Building capacity of Health Cluster Coordinators and other Health Cluster staff in countries. • Gathering and disseminating sound and relevant information to guide partners' response. • Identifying and addressing gaps in technical knowledge and available guidance. • Promoting and advocating for the importance of humanitarian health action on the global stage.	*healthcluster@who.int*	Caroline Antoine *cantoine@actioncontrelafaim.org*

REGIONAL

EXISTING PLATFORMS / MECHANISMS	ROLES/OBJECTIVES	RESPONSIBILITIES	ACF FOCAL POINT
• **WEST AND CENTRAL AFRICA (WCA) CHOLERA PLATFORM** • **EASTERN AND SOUTHERN AFRICA (ESA) CHOLERA PLATFORM** • **MIDDLE EAST AND NORTHERN AFRICA (MENA) CHOLERA PLATFORM** *www.plateformecholera.info*	» Facilitate and systematize information sharing between neighboring countries, and gain a better understanding of where and why cholera epidemics take place. This is done through the operationalization of a regional multi-sectoral and evidence-based strategy with key activities: identification of cholera hotspots, the diffusion of cross-border alerts, technical trainings of hundreds of actors engaged locally in cholera response, or support for the development of national guidance on cholera prevention and control (2).	**WCA**: *contact@choleraplatform.info* Joachim Peeters, *jpeeters@unicef.org* **ESA:** Pierre Fourcassié, *pfourcassie@unicef.org* Christopher Brewer, *christopher.brewer@ifrc.org* **MENA:** Delphine Sauvageot *dsauvageot@unicef.org*	**WCA:** Tom Heath *theath@actiactioncontreac.org* **ESA:** Stephen Barno sbarno@actionagainsthunger.org **MENA:** Pierre marie Goimard *pgoimard@actioncontrelafaim.org*

SUB-REGIONAL (CROSS-BORDER)

EXISTING PLATFORMS / MECHANISMS	ROLES/OBJECTIVES	RESPONSIBILITIES	ACF FOCAL POINT
BETWEEN NEIGHBORING COUNTRIES	» Ensure regular communication, timely sharing of information and cross-learning to mitigate the risk and impact of cross-border spread of cholera outbreaks.	Usually the District Officers of the Ministry of Health (MoH) from each country + National Cholera Taskforce	WASH and Health & Nutrition HoD of each ACF mission

NATIONAL

EXISTING PLATFORMS / MECHANISMS	ROLES/OBJECTIVES	RESPONSIBILITIES	ACF FOCAL POINT
NATIONAL CHOLERA WORKING GROUP, CRISIS COMMITTEE OR TASK FORCE	» Bring together partners from different sectors and organizations to support the Government in controlling cholera outbreaks.	Usually WHO or a MoH staff members	WASH and Health & Nutrition HoDs
HEALTH, WASH, AND CAMP COORDINATION AND CAMP MANAGEMENT (CCCM) CLUSTERS	» Cluster approach is to strengthen system-wide preparedness and technical capacity by: • Providing a platform to ensure that service delivery is driven by the agreed strategic priorities. • Needs assessment and response gap analysis (across sectors and within the sector). • Developing sectoral plans, objectives and indicators to applying and adhere to existing standards and guidelines and clarifying funding requirements, prioritization, and cluster contributions. • Monitoring and reporting the implementation of the cluster strategy and results; recommending corrective action where necessary. • Contingency planning, preparedness, capacity building. • Undertake advocacy activities on behalf of participants and the affected population.	WHO Staff member (Health) or UNICEF WASH Specialist or IOM Staff member (CCCM)	

DISTRICT

EXISTING PLATFORMS / MECHANISMS	ROLES/OBJECTIVES	RESPONSIBILITIES	ACF FOCAL POINT
USUALLY MINISTRY OF HEALTH–LED COORDINATION MECHANISM	• Coordinate response intervention to avoid duplication and fulfil gaps. • Produce and share real-time epide- • miological information across sectors. • Build mixed RRT with both Health and WaSH staffs from governments and partners. • Monitor government partners response. • Inform National level for further strategic support and funding advocacy.	"District Management Team"	WASH and Health & Nutrition Program Managers

WHICH BENEFITS AND ADDED VALUE?

	WHAT CAN ACF BENEFIT FROM?	WHAT CAN ACF CONTRIBUTE TO?
GLOBAL LEVEL	• Strategic and technical guidance • Partnership for field research • Update on latest scientific evidence • Deployment of Stand-By Partners hosted by ACF (3 months maximum) to support the sectoral Clusters • HelpDesk from the GWC (online operational support and exchange of technical information)	• Contribute to evidence generation and innovations.
REGIONAL/ NATIONAL	• Key epidemiological information on past and on-going cholera outbreaks including cross-border spread risk • Strategic and technical guidance • Capacity building and trainings • Partnership for field research • Update on latest scientific evidence (webinar) • Networking and partnerships opportunities • Potential funding windows, including for cluster co-facilitator positions	• Advocate and support analysis of past outbreaks to attempt modelling and anticipating upcoming trends of the current outbreak. • Propose one or two experimented ACF staffs to be facilitators for a joint cholera training of coordination platform members. • Advocate for epi-driven (3) and geo-targeted (4) interventions to ensure timely ad effective interventions. • Communicate with neighbouring ACF mission(s) if cross-border issues are relevant.
DISTRICT LEVEL	• Real-time epidemiological data and products such as cartographic outputs to guide outbreak response and new assessments. • Work with Lead agencies and local authorities to identify affected areas, resource gaps, and potential barriers and enablers for response success. • Coordinate ACF's response with other actors to avoid duplication. • Strong tie with the local Ministry of Health to gain further trust and build partnership.	• **Delivery mechanism:** advocate for epi-driven interventions strategy to be implemented - Have a presentation of the proposed strategy during coordination meetings, include innovation such as CATI/Case clusters (3, 4). • **Capacity building:** propose one or two experimented ACF staffs to be facilitators for a joint cholera training. • **Joint response:** propose ACF skilled staff to participate to joint assessments and response (with government agencies where possible) in the affected area and/or the areas most vulnerable to new outbreaks.

ADDITIONNAL RESOURCES

- ACF Lutter contre le choléra, p.47 "Coordination multisectorielle et transfrontalière"
- UNICEF Cholera Toolkit, p.153, "Community-focused actions for cholera response Coordination"
- GTFCC Cholera roadmap, "Ending Cholera: A Global Roadmap to 2030"

REFERENCES

(1) *Ending Cholera: A Global Roadmap to 2030*

(2) *Terms of references of the West and Central Africa Cholera Platform (Feb 2019)*

(3) *3A ACF Cholera Operational Toolkit, Technical brief 'How to implement epi-driven interventions?'*

(4) *3B ACF Cholera Operational Toolkit, Technical brief 'How to implement geo-targeted interventions?'*

2

CHOLERA CASE MANAGEMENT

2A How to get ready for cholera case management? p.17

2B How to set up cholera treatment facilities? p.21

2C How to manage cholera treatment facilities? p.31

2D How to prepare and store chlorinated solutions using different products? p.43

2E How to manage waste in cholera treatment facilities? p.47

2F What resource needs for cholera treatment facilities? p.55

2G What is the protocol for clinical management of cholera cases? p.69

2H What are the key measures for infection, prevention and control? p.89

2A

HOW TO GET READY FOR CHOLERA CASE MANAGEMENT?

 **POSITIONING**	ACF will provide medical treatment only if the country office is able to in terms of resources and expertise and if no other actor is able to respond.
 **OBJECTIVE**	To accompany ACF field missions in initiating case management intervention including medical treatment during cholera outbreaks
 **LEAD**	Health and Nutrition Head of Departmentt
 **CROSS SECTORAL COLLABORATION**	**HEALTH & NUTRITION + WASH** Case management preparedness requires Health and WASH expertise

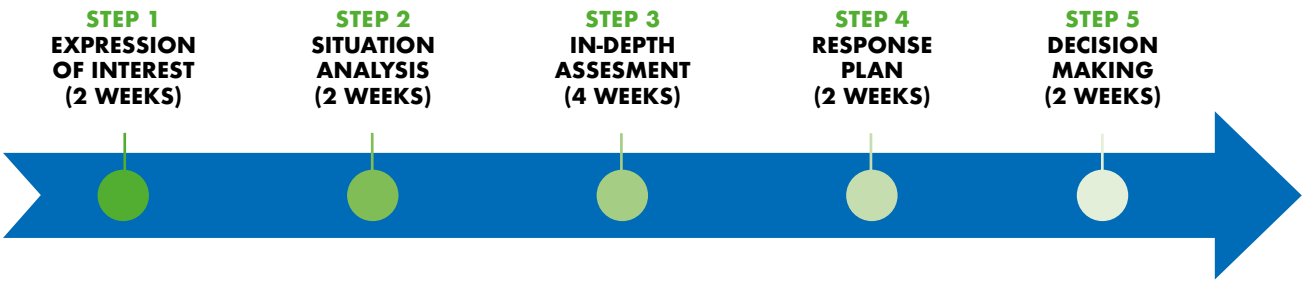
WHAT IS THE PRINCIPLE?

- Case management consists of early detection, referral, management and treatment of suspect and confirmed cholera cases in a dedicated facility or area 24/7 (1).
- Cholera case management includes:
  - **Medical treatment:** triage, Rehydratation therapy, complementary therapy and discharge.
  - **Infection, prevention and control:** hand hygiene, food preparation and handling, laundry, waste management, cleaning and disinfection, vector control, dead body management.
  - **Water, sanitation and hygiene interventions:** potable water, oral rehydration solutions, chlorinated solutions, latrines, showers and bathing units, waste water and drainage, health and hygiene education.
- The adequate running of Cholera Treatment Facilities relies heavily on sufficient skilled human resources and availability of supplies. Any default can cost lives.
- The decision to begin case management activities requires the all-round capability of the country mission to respond, from the possibility of obtaining urgent medical supplies to human resource availability and skill level and the capacity of others medical partners.

WHAT DECISION MAKING PROCESS?

The process to engage in case management activities in a country should be initiated by the mission and will be then supported by Head-Quarter.

⚠ ***Thresholds for onset of preparedness activities: minimum six months before the outbreak season.***



STEP 1 – EXPRESSION OF INTEREST

1. Assess country interest in ACF's support to cholera case management activities.
2. Form a multi-disciplinary team of outbreak experienced personnel at mission level (at least health, WASH, HR and logistics).
3. Recognise case management intervention as a priority for the mission.
4. Inform HQ health and nutrition advisor about the mission engagement and the will to initiate case management intervention if needs are further identifed.
5. Form a multi-disciplinary team of outbreak experienced personnel at HQ level (at least health, WASH, HR and logistics).
6. Schedule regular meetings to discuss progress in the decision-making process for case management.

STEP 2 – SITUATION ANALYSIS (ACF INTERVENTION AREA)

1. Collect existing data on previous cholera outbreaks: cholera burden, outbreak length cholera hotspots, cholera affected areas, seasonality, risk factor, high-risk population (2).
2. Collect information on the epidemiological surveillance system at national and district level especially regarding outbreak detection and confirmation, data reporting flow and alert and response threshold and identify gaps.
3. Organize meetings with authorities (MoH or relevant sectors) and coordination body (WHO, Health cluster, Health working group) to assess response gaps in terms of case management during the previous cholera outbreak.
4. Gather information on the intended response of other international NGOs and assess possibility of consortium (particularly for case management) (2).
5. Identify together with authorities and lead agencies several previously affected areas (when relevant) where ACF case management response could be needed if a cholera outbreak occur.

STEP 3 – IN-DEPTH ASSESSMENT (FIELD LEVEL)

1. Assess the security context and identify key informant resources in the pre-identified areas of intervention (including the attitudes to the proposed response of the local population).
2. Confirm the need to support case management intervention and identify the types of CTF to set up. Evaluate the proposed sites using the site assesment tool in the pre-identified areas (1).
3. Identify what is needed to set up (Bill of material) and to run (supply plan) the different CTFs in the pre-identified areas (1,3).
4. Consult lead agencies (WHO, UNICEF) for Cholera kit, hard-ware material or supply donation (medical and WASH) and secure transaction. ACF must follow the SOP for medical supply procurement and verify the quality of drugs even as part of a donation ('No Hunger Forum').
5. Assess the possibility of international and purchase of supplies considering SOP for medical and non-medical supply procurement. HQ Health and Logistcs advisors can be consulted at this stage.
6. Identify the minimum Human Resources requirement (1) and assess the skills level and availibility of staff, locally for each proposed CTFs and contexts. This assesment should be conducted every six months. HQ Health and HR advisors can be consulted at this stage to discuss any issue encountered.
7. Consult the emergency pool for short-duration support in term of response coordination, logistics or human resources in case of cholera outbreak.
8. Pre-identified donors that fund case management intervention during cholera outbreaks in the country and engage discussion. Alternatively, discuss with HQ team the possibility to receive emergency funds from ACF.
9. Fill in the scoring tool for decision making for case management intervention (below) and address gaps. HQ team can be consulted at this stage as they may suggest way forward or alternatives.

STEP 4 – RESPONSE PLAN

1. Propose different geographic areas for case management based on the situation analysis.
2. Develop scenari with different type of CTF and pre-identified sites.
3. Develop the mission procurement plan for case management intervention based on the in-depth assessment and the identified scenari.
4. Develop the human resources recruitment and training plan for case management intervention based on the in-depth assesment and the identified scenari.
5. Outline budget options for the different scenari for two-month response.
6. Develop and send a concept note or proposal to donors interested in order to secure funding in case of cholera outbreak. HQ team approval should be sought before sharing funding request to donors.
7. Elaborate the mission response plan, at least for case management intervention.

STEP 5 – DECISION MAKING

1. The Health and Nutrition Head of Departmentt Send the mission response plan with the scoring tool (mandatory) to the HQ team (Operational Technical Advisor and Health Referent).
2. Consult internally at HQ level and send clarifications requests or suggestions if any.
3. Joint-decision making for case management intervention between ACF HQ and field mission.
4. In the case of a positive decision, send the response plan to relevant authorities for approval.

WHAT DECISION MAKING TOOL?

The below scoring tool is intended for the multi-disciplinary response team to see clearly if they are ready and able to run a case management response. Only if the score is 9/9 can case management proceed.

TABLE 1: SCORING TOOL FOR DECISION MAKING FOR CASE MANAGEMENT INTERVENTION

	NEED	SCORE
HUMAN RESOURCES	☐ An experienced response coordinator will be available to lead the case management response for at least the next 2 months. ☐ The minimum HR requirement for the proposed case management activity can be achieved (Technical brief 2C).	/2
CONFIRMATION FROM LOCAL AUTHORITY	☐ Proposed case management activity agreed by local authorities (MoH). ☐ Proposed case management activity accepted by local partners and host community. ☐ No duplication of interventions with other INGOs working in the area.	/3
SUPPLIES	☐ Two-month + 10% buffer stock for case management activity correctly calculated and confirmed (including medical and non-medical supplies).	/1
PROCUREMENT PLAN	☐ Emergency procurement plan agreed. ☐ Logistic department have confirmed their ability to support case management activity in the required timeframe.	/2
FUNDING	☐ Budget estimated and funding for two months secured.	/1
TOTAL		**/9**

ADDITIONNAL RESOURCES

- 2B ACF Cholera Operational Toolkit, Technical brief 'How to set up Cholera Treatment Facilities?'
- 2F ACF Cholera Operational Toolkit, Technical brief 'What resource needs Cholera Treatment Facilities?'
- 4A ACF Cholera Operational Toolkit, Technical brief 'What are the data to be collected for a rapid situation analysis?'
- ACF positioning paper on disease outbreaks
- UNICEF cholera toolkit, Chapter 8 'Case management and infection control in health facilities and treatment sites'

REFERENCES

(1) *2B ACF Cholera Operational Toolkit, Technical brief 'How to set up Cholera Treatment Facilities?'*

(2) *4A ACF Cholera Operational Toolkit, Technical brief 'What are the data to be collected for a rapid situation analysis?'*

(3) *2F ACF Cholera Operational Toolkit, Technical brief 'What resource needs for Cholera Treatment Facilities?'*

2B

HOW TO SET UP CHOLERA TREATMENT FACILITIES?

 **POSITIONING**	ACF will provide medical treatment only if the country office is able to in terms of resources and expertise and if no other actor is able to respond.
 **OBJECTIVE**	To accompany ACF field missions in setting up and supporting Cholera Treatment Facilities during cholera outbreaks
 **LEAD**	Health and Nutrition Head of Departmentt
 **CROSS SECTORAL COLLABORATION**	**HEALTH & NUTRITION + WASH** • Setting up and supporting cholera treatment facilities require competencies from the Health and WASH sectors

WHAT IS THE PRINCIPLE?

Cholera case management consists of the early detection, referral, management and treatment of suspect and confirmed cases in dedicated facilities or areas Cholera Treatment Centers **(CTC)**, Cholera Treatment Units **(CTU)** and Oral Rehydration Points **(ORP)**.

The key considerations for setting up Cholera Treatment Facilities (CTF) include:

- The type of CTF: CTC, CTU or ORP
- The respect of standards in terms of surfaces, WASH services and Infection, Prevention and Control **(IPC)** practices
- The identification of a suitable site to host the CTF through an in-depth assessment
- The building of new structure or the arrangement of existing premises

Note: Information concerning medical treatment of patients and the day-to day running of a CTF can be sought in the technical brief 2C 'How to manage Cholera Treatment Facilities'.

WHAT TYPE OF CHOLERA TREATMENT FACILTIES?

LEVELS OF CARE

	TYPE OF FACILITY	TYPE OF TREATMENT	TIMING	BED CAPACITY	EQUIPMENT
CTC 	Inpatient facility: Dedicated autonomous isolation zone within healthcare facilities OR existing community building.	Management of simple cases cholera (oral treatment) and severe cases (IV treatment)	24/7	25 - 200 beds	Water, latrines, showers, kitchen, laundry, morgue waste area, stocks and electricity
CTU 	**Inpatient facility:** Dedicated isolation zone inside or attached to an healthcare facility.	Management of simple cases of cholera (oral treatment) and severe cases (IV treatment)	24/7	10 - 20 beds	Water, latrines, showers, morgue waste area, stocks and electricity
ORP 	**Outpatient facility**	Management of simple cases, severe cases referral to CTCs or CTUs	Day time	1 - 5 beds (occasional)	Water and latrines

RECOMMENDATIONS BY OUTBREAK SETTING

SETTING	CTC 	CTU 	ORP 	OBSERVATIONS
REFUGEE or IDP CAMP	A single central CTC to manage severe cases		Several ORPs for simple cases with at least one ambulance for referral	• High risk of spread to other geographical areas (mobile population). • Possible other risk-factors (malnutrition or measles outbreaks)
URBAN	One or more CTCs located as close to the affected neighborhood(s) as possible	If site options are limited CTUs can be implemented in place of a CTC	Each CTC has 5-10 supporting ORPs	• Affected neighborhood can shift quickly • Congestion can impact travel time • Referral system with provision of care • Easy to find skilled workers
RURAL	Within a radius of around 5-10 kilometers, a central CTC or CTU can be implemented	• Within a radius of around 5-10 kilometers, a central CTC or CTU can be implemented. • In case of large outbreak, several CTUs (less permanent) are implemented	• At least one ORP in each of the affected villages • In case of large outbreak, ORP with the capacity to treat 1-2 severe cases can be set up	• Lack of existing treatment facilities • Possible hard to reach communities • Harder to find skilled staff

WHAT STANDARD FOR CHOLERA TREATMENT FACILITIES?

The below table presents the minimum standard for the different types of CTF in terms of surfaces and WASH services (1,2). Standard and options concerning waste collection, storage and disposal can be sought in the technical brief 2E 'How to manage waste in Cholera Treatment Facilities'. Minimum requirements for IPC in CTF are available in the technical brief 2H 'What are the key Infection, Prevention and Control measures in Cholera Treatment Facilities'.

CATEGORY	PARAMETER	CTC	CTU	ORP
GENERAL URBAN	Facility type	Inpatient facility	Inpatient facility	Outpatient facility
	Treatment type	Simple and severe cases	Simple and severe cases	Simple cases only
SURFACE AREA	Bed capacity	25-200	10-20	1-5 (occasional)
	Sector	**Contaminated zone:** Observation, Triage, Hospitalization, Morgue, Washing areas, Waste area **Neutral zone:** Stock/administration, Areas for staff only, Water storage, Kitchen, Preparation of chlorine solutions	Main sectors as for a CTC • Only one room for hospitalization if culturally acceptable • Washing areas and kitchen can be reduced to a minimum	One room
	Per patient	$4m^2$	$4m^2$	$2m^2$
	Total	**$30m^2$ per patient**	**$30m^2$ per patient**	
WASH SERVICES	Chlorinated water	60L/patient/per day 15L/caretaker/per day 3 days' storage capacity At least one potable water point per sector	Standard as for CTC	10L/patient/per day At least one potable water point
	Latrine	Minimum 2 latrines (m/f) in each patient area 1 latrine per 20 patient Minimum 2 latrines (m/f) in neutral area	Standard as for CTC	Minimum 2 latrines (m/f)
	Excreta pit (stool & vomit)	Minimum 1 excreta pit in each patient area	Standard as for CTC	Minimum 1 waste pit
	Hand-washing point	Minimum 1 hand-washing point: • at patient entrance/exit • between the clean and contaminated zones • in front of each patient room/tent • next to the latrine blocks • in the morgue • in the waste treatment area A 120-liter container of 0.05% chlorine solution, with a tap, on a stand	Standard as for CTC	Minimum 1 hand-washing points A 120-liter container of 0.05% chlorine solution, with a tap, on a stand
	Bathing units	Minimum 2 bathing units (m/f) per 40 patients (double unit size) Minimum 2 bathing units (m/f) in neutral area	Standard as for CTC	Minimum 2 (m/f) bathing units if severe cases are managed

WHAT SITE AND PREMISES?

KEY CONSIDERATIONS FOR ORP (1,2)

- The location should be chosen by community members and could be an existing dispensary (outpatient clinic), a local shop, school, religious facilities, or other community space.
- Any area without easy access to a health facility or designated cholera treatment facility should have an ORP as a minimum.
- ORPs should be established in locations that are easily accessed by all, within one hour by foot.

EXISTING OR NEW INFRASTRUCTURES (1)

- Ideally, a CTC or CTU should be set up within or attached to an existing health-care facilities Patients are familiar with them and they are usually centrally located. Certain installations (water, showers, and latrines) may already exist.
- If it is not possible an existing community building can be transformed into a CTC or CTU. Schools should be avoided due to the disruption to education.
- If a CTF need to be built, tents can be used in emergency context. Semi-permanent structure should be privileged in endemic setting.

STAFF REQUIREMENTS

RECRUITMENT

The core team of our CHF needs to be quickly recruited to ensure a timely response. This implies to recruit a large variety of staff members (See the Table, below) in a short lapse of time. It's highly advisable to have a dedicated HR team for this task.

TYPE OF FACILITY	STAFF REQUIRED
CTC or CTU 	Coordinator/Supervisor Nurses Auxiliary nurses Doctors (Can be recruited at a part-time or on-call mode) Pharmacy manager Cleaner Health educator Logistics, water and sanitation supervisor Water and sanitation assistant Potable water and chlorine solution preparer Waste treatment area operator Guard / Stretcher bearer Laundry staff Logistics assistant Store keeper Optionally: Cook and assistant/ Water carrier
ORP (daytime only) 	Nurse or health worker Health promotor or Community Health Worker Logistics, water and sanitation aide Cleaner

The key Medical staff, which usually is more complicated to recruit and train, can either be made available from existing ACF programs or recruited through the MoH, implementing the possibility of seconding some members of its staff. If we are talking about non-ACF staff, it is always necessary to consider some economic incentives in the budget, within the same scale of salaries of the MoH staff.

In the SOP "What organigram for the cholera outbreak response" (5A) is presented a summary of the roles for every type of staff member and shown suggestions of organigrams, which can be used to organize the staff, according to the dimensions of the response.

TRAINING

Training the CHF staff, particularly if it lacks of enough competences or experience on cholera outbreaks, is a prerequisite for these interventions. Contents of this training should be adapted to the needs of every context, but in most of the cases include several topics of those shown on the Table below. These contents are usually offered as a formal training course, and complemented with regular on-the-job training activities, which are described in the SOP "How to manage Cholera Treatment Facilities" (2C) .

TYPE OF CONTENT	MAIN CONTENTS
GENERAL LEVEL	Cholera disease, basic aspects Cholera response and network of Cholera Facilities Biosecurity and Infection, Prevention and Control (IPC) Working in a Cholera Facility
SPECIFIC FOR THE HEALTH STAFF	Case-management Protocols (Ideally Theory and Practice)

Particularly for ORPs, which complexity of services is lower (oral rehydration only), the approach can be simplified, even if it's using very similar strategies.

For all training activities, short guidelines should be ideally prepared, and the content can be reinforced in regular meetings to make it is understanding easier.

STOCK AND SUPPLIES

The success in the management of CHFs relies heavily on sufficient availability of medical supplies. Any drug shortages can cost lives. Then, the decision to launch case management activities should depend on the availability of critical items for at least two-three months (usually this is the delay up to the arrival of the first international purchase).

Due to the type of emergency and the current focus of projects in most of the country offices, the ACF pharmacies usually don't have the type of items required for a cholera case management response. However, ACF may have stocks already pre-positioned at the national/regional level or other actors such as WHO may pre-position cholera management kits that can be made available as donations. Usual providers of these drugs can be the national office of WHO, using their preparedness stocks, or another International NGO. From all these options, probably the most convenient is using some donations from WHO, which can alleviate importation issues and local market assessments allowing for a timelier response. These donations come in kits, which are standardized and may not include specific items needed for each different response (e.g. tents, plastic sheeting, cholera beds or chairs, staff clothing, etc.). To avoid shortages, up to the arrival of the first international purchase, a good estimation of resource needs for our case management activities, ideally based on the WHO cholera kits AND the Cholera Kit Calculator. Another possibility is taking some loans of NGO partners having a quality assurance system for adequate drug supply. Subsequently, the international procurement request launched at the beginning of the project, should provide enough supplies for six months of intervention and, in case it's needed, to reimburse loans.

More information about the process to plan adequately the request of supplies for CHF, and how to adjust them based on the consumption, is provided in the SOP "How to manage Cholera Treatment Facilities" (2C).

INTERNAL COORDINATION AND PLANNING

It is recommended to consider these health facilities as a network, which should expand or contract the number of beds, according to needs. This means that when the caseload is higher, the number of beds at the CTC should increase, and when this declines, some of the CTC spaces can be closed. On the other hand, whenever increase the number of cases in specific areas with long transport time or limited accessibility to the CTC, a secondary CTU with provision of care should be implemented.Then, especially when large geographic areas are affected, it is preferable to implement several CTUs and/or ORPs, rather than constantly increase the capacity of a single CTC. At the same time, a referral system to transport severe cases going from CTUs or non-cholera facilities to the nearest CTC, should be setup. Like what happened with the CTC, the number of potential ORPs or CTUs can be increased or decreased, as the outbreak evolves.

It's important never sub estimate the value of ORPs to help the cholera facilities network to reduce the number of admissions. ORPs can orally rehydrate patients avoiding that they subsequently deteriorated and need further hospitalization. Besides, an adequate number of ORPs is necessary to supplement the CTC action, particularly in urban settings. Then, to reach an adequate coverage of this area, at least one ORP should be implemented in each of the affected neighborhoods, usually using established PHC units.

Finally, some words related to the articulation of CTFs with the CATI strategy, in which rapid mobile teams are able to respond quickly to new alerts, with a mixed water-sanitation/health response. It is important that CTFs have a good coordination with these teams, providing them with opportune information about new areas with cases, and ensuring an adequate referral of severely dehydrated patients. It's important to emphasize the ability of ORPs in urban settings, to provide accurate information to identify "the core of the outbreak", complementing the information coming from the CTC. For being rooted in the community, they may know with good precision the geographical origin of patients and even the contamination sources.

SITE ASSESSMENT TOOL

The guiding principles to be considered for selecting an appropriate site can be summarized in the below '5 A' assessment and should be explored during the in-depth assessment phase (3,4).

TABLE 1: "FIVE A" ASSESSMENT CHECKLIST TOOL FOR CHOLERA TREATMENT FACILITIES (CTC AND CTU)

CRITERIA	PRINCIPLE	CHECKLIST
1 ATTACK RATE	Cholera case management facilities should be positioned in relation to the outbreak epidemiology, especially the attack rate.	☐ Bed capacity and HR matches the attack rate ☐ Facility is near to cholera affected communities ☐ Proposed site for facility does not impede on other facilities providing AWD/cholera care
2 AREA	A thorough assessment of the proposed site and surrounding area must be undertaken before any intervention takes place.	☐ Facility connected to a hospital where possible ☐ Site is large enough to meet minimum IPC standards and m2 per patient. ☐ The land is flat or levelled and foundation can be created if needed ☐ The site must not be prone to flooding. ☐ The site must be <30 meters from a water point (spring, well, borehole, river, lake) ☐ There must be a distance of at least 1.5 meter between the water table and the bottom of the latrines, waste pit and excreta pit. ☐ There is a way for surface water to be drained safely ☐ There is continuous power supply including backup (CTC or CTU) ☐ There is secure storage for equipment, medicines or consumables ☐ The site is at least 100 meters away from public places (markets)
3 ACCESSIBILITY	The proposed facility must be easily accessible to the population and be able to receive supplies by road.	☐ 24/7 access by road at all times (ambulances and deliveries) ☐ Site is easily accessed by patients 24 hours a day ☐ Site is easily and safely accessed by staff 24 hours a day ☐ Site is not near to threatening or dangerous sites ☐ Site is not favoring a particular population, unless epidemiology supported
4 AUTHORIZATION	The appropriate permission to start the case management facility must be sought and obtained before beginning any intervention.	☐ Lead agency permission has been given to open a case management facility ☐ Regional and local partners have been consulted ☐ Other international and local NGOs have been informed
5 ACCEPTABILITY	ACF teams must pay particular attention to the attitudes of the local population towards the proposed site.	☐ Proposed facility accepted and welcomed by the local population ☐ Religious and cultural leaders been evenly consulted ☐ If within a hospital, the hospital management team has agreed ☐ Health promotion teams are culturally accepted and able to build trust with the local population

Source: Adapted from UNICEF Cholera Toolkit-2013 and MSF Cholera Epidemic Guidelines 2018.

WHAT ARE THE KEY ACTIONS?

The below steps to set up a CTC or a CTU are issued from MSF Cholera guidelines (2018). This will be conducted only if the ACF mission has positioned itself for case management as per the Standard Operation Procedures developed in the technical brief 2A 'How to be ready for case management'.

PRELIMINARY STEPS

1. Conduct a site assessment to verify that the site pre-identified to host the cholera treatment facility is suitable (What site and premises).
2. Quantify with the logistic team what is needed to arrange the facilities for existing or new infrastructure (Bill of material).
3. Purchase the material needed and hire the human resources, service provider or construction company required (5).

ISOLATION AND ORGANIZATION

Immediate actions within 24 hours

1. Demarcate the outer boundaries of the CTC/CTU. A safety net can be used as first intention. Ideally CTC entry and exit should be distinct. Position security guards.
2. Demarcate the sectors of the CTC/CTU in priority the zones forbidden to patients (clean zone, morgue, washing areas and waste storage area), then the different treatment zones (triage, observation, hospitalization) (Annex 1).
3. Put up the tents (if applicable). It's not necessary to put up all the patient's tent at once. The number can increase with patient admission.
4. Set up patient areas with minimum IPC standard: a container with a tap for ORS with a bucket underneath, a 120-liter container of 0.05% chlorine solution for handwashing with a tap on a stand with a bucket underneath, a bed (or chair) and 2 buckets per patient.
5. Identify a room or put up a tent to isolate deceased patients.
6. Label the rooms or number the tents.
7. Put up signs: giving directions to the CTC/CTU, patient entrance, staff and suppliers entrance sign, no entry sign (staff only) at the entrance to the clean zone, morgue and waste area, men's/women's showers and the latrines, no entry sign to excreta pits (they must not be used by patients).
8. Label containers: ORS, potable water, 0.05% chlorine solution for hand-washing.
9. Practice flow of the center as a patient and as a staff member (Annex 2).
10. Provide lighting: install a generator and lightbulbs or connect to main network or ensure system working if in existing building. Back up headlamps, torches should be procured.

Complete installations

11. Set up the morgue away from the other sectors, in the contaminated zone, with a fence around it to limit access. Install a hand-washing point and a water point. Set up an apron slab to collect the wastewater and evacuate into the infiltration system.
12. Set up the laundry and the dishes washing areas near the water reserve. Preferably install concrete laundry sinks (available locally) or use plastic basins/containers. Build an apron slab (or plastic sheeting) to collect waste water. Ensure wastewater (containing soap) passes through a grease trap before entering the infiltration system.
13. Place the kitchen in the clean zone. Set up a sheltered facility consisting of: a cooking area with industrial type stoves, a sink, a rack for drying kitchen utensils, a work table with a washable surface, a store with a lock for food and equipment. Install a hand-washing point. Ensure wastewater (containing soap) passes through a grease trap before entering the infiltration system.

MATERIAL AND SUPPLIES

Immediate actions within 24 hours

1. Deliver initial stocks and organize a lockable store rooms for medical supplies and equipment. Position a security guard.
2. Ensure food supplies (might be dry rations during opening until kitchen is fully operational).

Complete installations

3. Class articles by category, to be found easier:
   - Oral drugs: antibiotics, zinc sulfate, etc.
   - Specific drugs, in small quantities, for the treatment of complications (e.g. injectable potassium, furosemide, glucose). Ampoules of injectable potassium must be stored in a specific place away from water for injection, or any other drugs that look similar.
   - Medical materials (infusion materials, sharp containers, etc.).
   - Boxes of ORS, RL, kits and modules.
4. Put away drugs and medical materials on shelves as quickly as possible, and boxes of ORS, RL and kits on palettes. This organization makes visual evaluation of available stock easier and protects materials from deterioration.

WASH SERVICES

Immediate actions within 24 hours

1. Secure potable water for drinking, ORS preparation and handwashing as a first step.
2. If there is an existing water supply system, check free residual chlorine levels and water turbidity.
3. If there is no water supply system: organise trucking, water storage bladders and employ personnel to carry water to the various sites while setting up the water distribution network.
4. Chlorinate water to meet potable water standard (0.5-1 mg/L of FRC at a turbidity < 5NTU after 30 min contact time for pH<8, 1 mg/litre after 1-hour contact time if the pH is > 8).
5. Set up hand-washing points in front of each room or tent: each patient area, in the morgue, in the clean zone for staff, entrance and exit to CTC.
6. Dig at least an excreta pit, 2 latrines (male/female) for mobile patients and 2 latrines (male/female) for staff in the clean zone.
7. While waiting to set up a proper waste treatment area, demarcate a protected site to store waste. For sharps, use a drum that will later be filled with cement.

Complete installations

8. Build platforms for bladders (at least 1.5 m high). Install at least 2 bladders to ease batch chlorination and connect them to the water points.
9. Complete the construction of excreta pit and the building of latrine and bathing units as per standard.
10. For waste water disposal, build either soak away pits or infiltration trenches. Water containing soap must first pass through a grease trap. Connection to an existing drainage system must be considered on a case by case basis and authorization by local authorities should be sought.
11. Set up a covered, well ventilated shelter, or possibly a tent, in the clean zone with strong stands for the 120 liter containers used for the preparation of chlorine solutions. Install palettes to store, under dry conditions, chlorine for the daily preparation of solutions.
12. Organize the waste treatment zone as per standard (6).

ADDITIONNAL RESOURCES

- 2A ACF Cholera Operational Toolkit, Technical brief 'How to be ready for case management?'
- 2F ACF Cholera Operational Toolkit, Technical brief 'What resource needs for Cholera Treatment Facilities?'
- 2H ACF Cholera Operational Toolkit, Technical brief 'What key measures for Infection, Prevention and Control in Cholera Treatment Facilities?'
- 2E ACF Cholera Operational Toolkit, Technical brief 'How to manage waste in Cholera Treatment Facilities?'
- UNICEF cholera toolkit, Chapter 8 'Case management and infection control in health facilities and treatment sites'
- MSF management of a cholera epidemic, Chapter 6 'Setting up cholera treatment facilities'

REFERENCES

(1) *MSF (2018), 'Management of a cholera epidemic', MSF management of a cholera epidemic, chapter 6 'Setting up cholera treatment facilities'*

(2) *UNICEF (2013), 'Cholera Toolkit', Chapter 8 'Case management and infection control in health facilities and treatment sites'*

(3) *2A ACF Cholera Operational Toolkit, Technical brief 'How to get ready for case management?'*

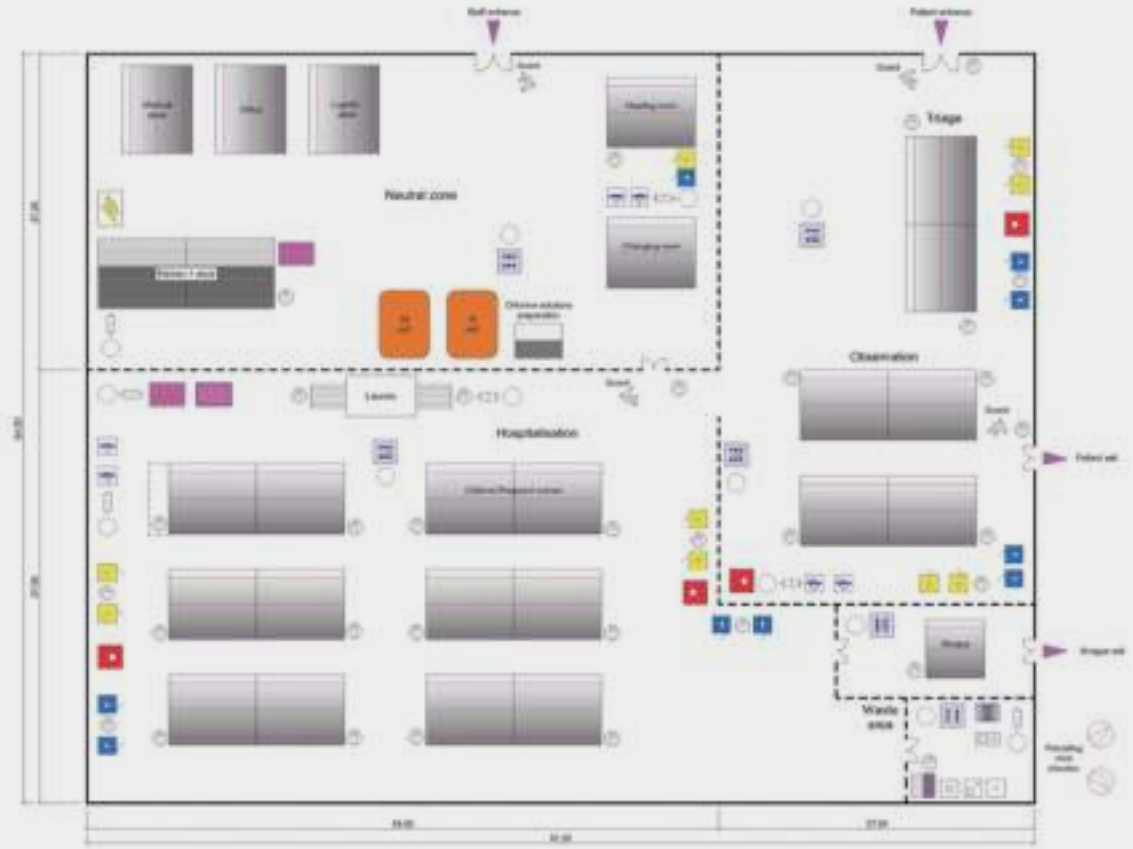
(4) *4A ACF Cholera Operational Toolkit, Technical brief 'What are the data to be collected for a rapid situa on analysis?'*

(5) *2F ACF Cholera Operational Toolkit, Technical brief 'What resource needs for Cholera Treatment Facilities?'*

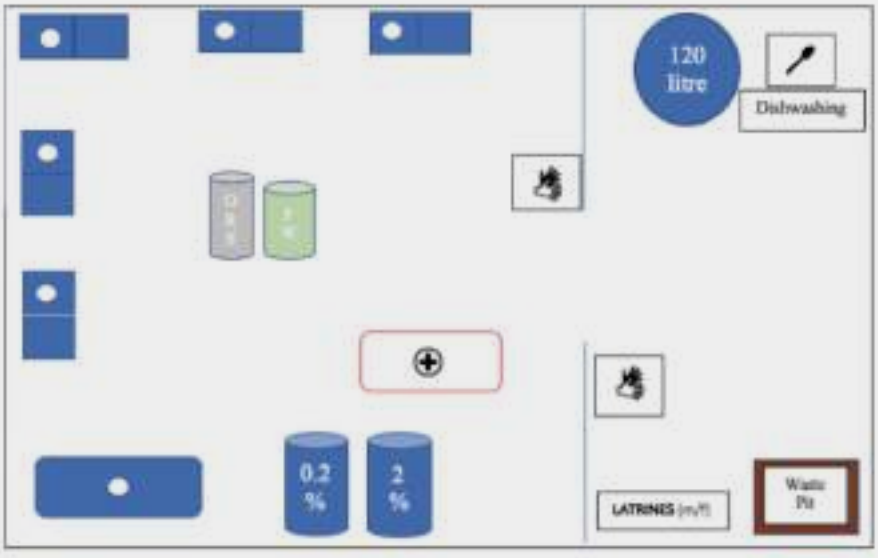
(6) *2E ACF Cholera Operational Toolkit, Technical brief 'How to manage waste in Cholera Treatment Facilities?'*

ANNEX 1 / CHOLERA TREATMENT FACILITIES LAYOUT

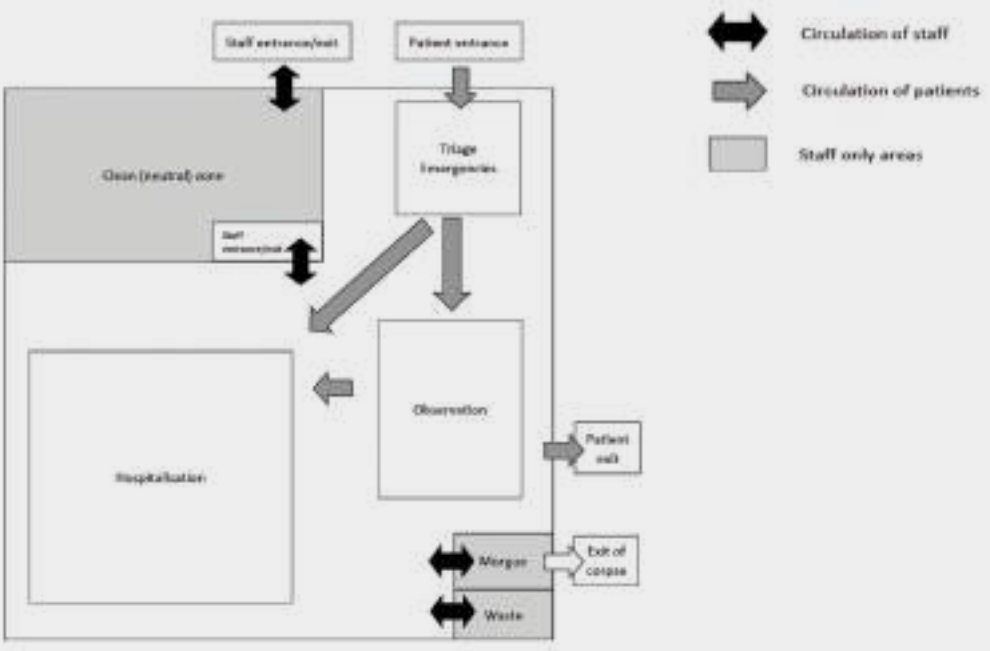
CHOLERA TREATMENT CENTERS LAYOUT (1)



ORAL REHYDRATION POINT LAYOUT (2)



ANNEX 2 / CHOLERA TREATMENT FACILITIES CIRCULATION



2C

HOW TO MANAGE A NETWORK OF CHOLERA TREATMENT FACILITIES?

 **POSITIONING**	ACF will provide medical treatment only if the country office is able to in terms of resources and expertise and if no other actor is able to respond.
 **OBJECTIVE**	To accompany ACF field missions in managing Cholera Treatment Facilities during cholera outbreaks
 **LEAD**	Head of Health and Nutrition department Emergency Health Coordinator for Cholera Response
 **CROSS SECTORAL COLLABORATION**	**WASH + HEALTH & NUTRITION** • Managing cholera treatment facilities requires competencies from both the Health & Nutrition and WASH sectors

This sheet is a summary of the key points to consider, we recommend you to consult chapters 6 and 7 of the **Médecins Sans Frontières (MSF)**. ***Management of a cholera epidemic*** guide which details the information to consider when managing a CTF **Chapter 6:** Setting up Cholera Treatment Facilities **Chap 7 :** Organization of cholera treatment

WHAT IS THE PRINCIPLE?

When Cholera treatment facilities (CTFs) are implemented properly, they are often the most effective response measure for preventing immediate loss of life. However, these kinds of facilities are often the most complex response measure in terms of technical investment and support requirements. Like any other inpatient health service, CTFs require 24/7 administration of specialized services, including diagnosis, rehydration therapy, close monitoring of high-risk patients, and rigorous infection, prevention and control (IPC) measures.

In addition, as is common in emergency health services, these facilities are expected to start offering services in a short delay after their implementation is approved (ideally within 3-4 days following the implementation decision). Therefore, even after the basic setup for Cholera treatment facilities is completed (see SOP 2B “How to set up Cholera Treatment Facilities”), an important effort of simultaneous regular management and gradual improvement of the quality of the service should remain necessary.

As explained in the aforementioned SOP, there are three kinds of CTFs: Cholera Treatment Centers (CTC), Cholera Treatment Units (CTU) and Oral Rehydration Points (ORP). The effort to manage them can be summarized in two main stages:

- Preparation for the launching
- Launching of healthcare

There are different tasks in both stages (See Table 1 in the Annex) which are necessary to manage our CTFs adequately. They intend to accomplish the double objective of simultaneously managing processes and improving the system, since they can start in a basic state for the emergency, as previously described, and then later complete their functioning areas. In this sense, the best way to progress in the adequate implementation of all points presented in this SOP is by utilizing a self-evaluation checklist to gradually improve quality of service, such as the list included in the Tool 2 of the Annex.

WHAT TASKS ARE INCLUDED IN THE PREPARATION FOR THE LAUNCHING

STAFF REQUIREMENTS

- **Verify the competency level of the staff and set up an appropriate on-the-job training based on these findings.**
  CTFs are implemented as an emergency response, so, especially at the beginning of an outbreak response, it is common that their management is taken on as an additional task by the regular coordination team (e.g. field coordinators, Nutrition and Health HoDs, or other program managers).

  In addition, since the personnel have been recruited in a short timeframe, staff members might have a heterogeneous level of competence or experience in work in cholera health facilities. Therefore, in many circumstances, outbreak responses need to invest in the reinforcement of field team members' competencies, particularly when addressing a cholera emergency in a zone with no history of recent outbreaks.
  This work can be done through a customized training course, which will complement the typically-short staff member briefing following their recruitment

  In both cases, training modality should be complemented by available guidelines and other technical guidance material. Ideally, this process should be guided by a personalized assessment of competencies, providing on-the-spot technical reinforcement for team members requiring this support.
  ORPs' staff are usually employees who work at Primary Health Care (PHC) units where the CTF facilities are set up.
  The assignment (or, rarely, the recruitment) of this staff is, in most cases,is the responsibility of at the charge of health local authorities. Since their activities include only oral rehydration and referral, a rapid training and a practical induction in ORS therapy are enough to start working.

- **For CTCs and CTUs: Prepare shifts for the staff covering different areas of the HF.**
  CTCs and CTUs are inpatient units providing continuous healthcare services 24/7, which means that they need enough staff to have two or three shifts that cover the whole day. These shifts have to be organized considering resting days for the staff, in a way that there is always enough personnel to take care of patients, day and night.
  Logically, the number of staff members recruited should vary as a function of the number of beds in the facility, but should always consider their division of shifts, including staff members "in rest."

STOCK AND SUPPLIES

- **Verify that, at any given moment, stocks for critical items (drugs and medical materials), are enough to cover needs for at least two months. To avoid shortages, implement a stock management system, consumption analysis, and periodic requests.**
  Success management of CHFs relies heavily on the sufficient availability of drugs and other medical supplies. Any drug shortage is as critical as an absence of staff or a lack of electricity, and it can cost lives. After case management activities in the CHF begin, managers should ensure that enough supplies to run them for at least two or three months are available. This is particularly important in the first weeks of activities, up to the arrival of supplies from the first international purchase.
  Some practices that can be helpful to attain this goal and avoid any drug shortages during case-management interventions are:

  Request a sufficient initial batch of critical items: Since our pharmacy projects usually don't work on outbreak crises, it is common that, when starting the intervention, they don't have enough supplies needed needed for a cholera case-management response. For this reason, the first lot of drugs and other medical items to launch a cholera response come from loans or donations from agencies or other partners. Another source is an ACF pre-positioned batch of critical items (decentralized stock), which can be mobilized to support these needs. However, it is important to use the calculators presented in the SOP 2B "How to set up Cholera Treatment Facilities", in order to request an

adequate amount of supplies (e.g. WHO Cholera Kit donations). This way, stock problems will be avoided in the subsequent weeks.

Close tracking of drug consumption and launch requests based on this information (See below): This activity should be implemented as a consumption analysis and/or regular physical inventories (ideally weekly or bi-weekly), which are mainly focused on a list of critical items. These critical items should emphasize the drugs and medical materials which are regularly needed to provide medical care at these facilities.

Whenever necessary, launch a local purchase: If the consumption analysis forecast indicates that the stock is not enough to cover needs for the next two months, and if the international purchase will not be delivered in the short term, it is better to launch a local purchase, following HQ procedures that are detailed in the ACF Standard Operating Procedures for Medical Product Management, Procurement and Pharmacy Management. Remember to only request purchases for the amount that will be used in the short period before the international purchase arrives.

- **Verify that items are well-stored, and that cholera services are adequately and opportunely supplied by the main hardware or facilities pharmacy store.**
  It is important to note that case-management supplies are kept not only at warehouses or field base pharmacies, but also at decentralized stores of CTFs or at related hospitals. It is crucial to ensure that these decentralized stores adhere to minimum standards for medicines and medical material conservation or storage practices.
  It should be noted that in other projects, some severe cases have died because critical items were stored in a locked warehouse and not accessible for use at CTFs. Therefore, it is crucial to ensure that deliveries of drugs and medical material to CTFs - particularly of critical items - are always coordinated in advance.
  Regarding ORPs, the management of their supplies is simpler, but it is always important to ensure a good supply of ORS. This can be obtained with appropriate requests and deliveries of these supplies in order to avoid shortages in ORS or any other medical.

PHYSICAL ARRANGEMENTS

- **Ensure IPC measures are in place.**
  Infection, prevention, and control (IPC) measures inside health facilities are crucial to reduce the spread of CTC *Vibrio cholerae* within the structure but also to and from external environments. Therefore, it is crucial that IPC measures are well-performed in our CTFs, starting with an adequate planning and implementation of these facilities. This topic is extensively detailed in the SOP “IPC in Cholera Treatment Facilities”.

- **Ensure that circulation of patients and staff is based on the plan adopted during the setup.**
  In the SOP “How to setup Cholera Treatment Facilities,” the layout of CTFs is demarcated,, ensuring the separation of three areas in these facilities: Clean Area, Contaminated Area, and Neutral Area, and well-defining the flow of patients and staff between these areas. This organization of spaces should be well-enforced with physical barriers, such as fences and closed gates and/or guards, to avoid the admittance of unauthorized people into restricted areas.
  In addition, the flow between these areas needs to be clearly explained to the staff, signposted, and implemented before the opening of the facility. This is even more important when the cholera facility shares its site with a hospital or another existing building, as confused patients or visitors might enter the area by mistake.
  In larger CTCs it may be possible to divide the treatment area into treatment plans as shown in the SOP regarding clinical protocols (e.g Plan B, Plan C, Recovery area, etc.). In this situation, it is also important to ensure that patients of one area do not unnecessarily pass through other areas. This can be done, for example, by designing isolated routes to go to latrines/toilets without crossing other areas, or by helping recently admitted patients to find their treatment area quickly and easily without entering other cholera service areas.

WHAT TASKS ARE INCLUDED IN THE LAUNCHING OF HEALTH ACTIVITIES

STOCK AND SUPPLIES

- **Ensure a continuous and adequate consumption analysis and stock management system, and request drugs and medical materials based on that information, to avoid shortages.**
  Drug supply is one of the most critical points to address in successful emergency medical services during outbreaks. Since drug needs can change quickly from day to day or from week to week depending on critical condition and number of patients, CTFs require a close stock monitoring and regular drug supply to avoid stock out periods. When these principles are correctly administrated, the life-or-death consequences of essential drug shortages can be avoided.
  One of the best tools to help achieve this task is the close monitoring of drug consumption (daily or weekly follow up of the amount of units spent for every item), which allows us to have an accurate forecast of needs in the following days and proposes some adjustments of requests based on that information. In this sense, tracking the consumption information makes it possible to know which drug or medical material will be in a critical level in the incoming days or weeks (ensuring a 2-months stock for critical items). This information, which is particularly helpful when delivery delays are larger (e.g. when waiting for international purchases), will make it possible to urgently order an item in advance to avoid shortages. To this end, it is important to follow the aforementioned pharmacy SOPs, in order to ensure an adequate and opportune supply of drugs and medical material.

OTHER REQUIREMENTS

- **Implement services for special cases (Pregnant women protocols, nutrition corner, etc.) in CTCs.**
  Cholera case-management can face some special challenges when considering specific groups of patients, such as pregnant and lactating women (PLW) and children with Severe Acute Malnutrition (SAM). Both PLW and SAM children require close monitoring and, sometimes, extra privacy to deal with their physiological needs. Many protocols recommend having a separate space to take care of pregnant women in CTCs, since some of them can start labor or have other complications during their stay there. We recommend that a similar space be used for lactating women, so that they can breastfeed their children without external constraints.
  In addition, according to our experience, we propose the creation of a “Nutrition Corner” when there is a considerable caseload of SAM children.

  The “Nutrition Corner” is a space to closely evaluate children with comorbid cholera and SAM in which all the supplies for preparing milk and rehydration treatment are available. Therefore, in this corner, both adequate rehydration and nutritional therapy can be provided through close monitoring of SAM children. They are rehydrated with a slow rhythm, usually using a nasogastric tube, and are simultaneously provided with therapeutic milk to prevent hypoglycemia. All of the supplies for these tasks should be available.
  Obviously, implementing these services in CTCs with a limited number of beds and/or limited space poses a challenge. However, managing these kinds of cases ((in this manner)) is highly recommended as a way to increase our effectiveness.

- **Implement consistent health education activities.**
  A CTF is not only a place to rehydrate patients and treat their complications, but also a key component of an integrated prevention strategy to avoid the spread of the outbreak - fundamentally using health education. In this sense, CTFs should transmit health and hygiene messages to patients and their families, in order to ensure that they have the knowledge to prevent further disease transmission when they return to their homes. Whenever possible, a dedicated staff member should be assigned to develop this activity (health educators, health care assistants, etc.), which will transmit a well-structured package for patients and their families. These educational activities can be addressed to groups of patients in general sessions or in individual conversations with each case and family, particularly before the patient is discharged.
  Messages should be tailored to the population’s cultural practices through consultation with affected communities. Relevant topics to be included in these educational activities could be:
  - Transmission and common sources of cholera infection
  - Cholera prevention through hand washing and food/water care
  - How to recognize if a person has cholera. Danger signs of severe dehydration
  - Care of the sick and referral centers
  - Vaccination (if OCV campaign ongoing)
  - Defecation practices and safe disposal of defecation
  - Dispelling myths and dangerous practices
  - Subjects addressing stigmatization
  - Infant feeding and the need for continuing breastfeeding as a way to protect children.

- **Produce Epidemiologic information, sharing Data and reporting to lead agencies**

  Every CTF, and particularly CTCs and CTUs, which usually concentrate all or almost all severe cases in one geographic area, can generate useful statistics to assess the outbreak's evolution. Therefore, one of the most important tasks of these facilities is the regular production of reliable statistics about patients treated, including Daily linelists, weekly reports, etc.

  Usually, the data regarding these cases is shared with partners in charge of the response (MoH, WHO, etc.) in order to track the cholera outbreak's evolution, which is particularly valuable when no other information sources are available. Then, the registered information in its respective formats (e.g. line lists or reports), and usually anonymized, will be shared with the national or regional central surveillance system and other involved partners.

  To avoid mistakes, it is important to carefully verify the information of patients who return multiple times to treatment facilities, to avoid double counting of the same case.

  In order to produce this information, some arrangements regarding material and human resources are necessary:
  - Having a minimum team composed of at least one data clerk and, if possible, a data analyst. The response coordinator (or health program manager) can cover the latter position if they have enough experience.
  - Having enough IT resources (computers, printers, etc.), required to facilitate the work
  - Printing adequate forms in hardcopies to be used by the staff tracking CTC key indicators, and training the staff to manually fill out these forms adequately
  - Training the data entry staff to adequately manipulate and entering these forms, organize them in databases, produce tables and reports, and, if possible, analyze this information.

  CTFs should collect data to produce, according to epidemiological weeks, the following reports:
  - CTC Daily Linelist: Database containing data of admissions of the day before.
  - CTC Weekly Report tables: Group of tables regarding key indicators for CTC patients.
  - ORPs Weekly Linelist: Database with basic data of admissions of the week before.

  A model of Linelist (Tool 2) and a table with the main indicators (Table 2) that are usually produced at CTCs and CTUs can be found in the Annex.

- **Provide food for Patients**

  Homemade food can be a source of cholera transmission and should consequently be avoided in CTFs whenever possible. Therefore, CTCs and CTUs should provide three meals per day for the patient and their caregiver (this should be calculated before the meal to avoid waste). Ideally, food should be prepared on-site for hygiene purposes, but some units might not have the space for a kitchen, so providing food from an external supplier can be another valid solution. In this case, it is necessary to undertake a thorough assessment of the external supplier's hygiene and ingredient-sourcing practices. In the case that none of the previously-cited options are available, it is always possible to provide meals that do not require preparation, for example dry food such as biscuits or dry rations and fruit as a temporary measure. For ORPs patients, dry rations and snacks should be provided for patients who stay over 4 hours on rehydration.

  Ensure food is culturally appropriate and nutritiously balanced. Patients' feeding ability should be assessed and monitored. If patients need help eating, they should be assisted as necessary by auxiliary staff or nurses.

ADDITIONNAL RESOURCES

- **Médecins Sans Frontières (MSF).** ***Management of a cholera epidemic***. Practical guide for doctors, nurses, laboratory technicians, medical auxiliaries, water and sanitation specialists and logisticians. Médecins Sans Frontières-Clinical Guidelines. Geneva, 2018. Chapter 6: Setting up Cholera Treatment Facilities.
- **Chap 7:** Organisation of cholera treatment facilities
- **GTFCC.** ***Cholera Outbreak Response***. Field Manual. Geneva, 2019. Section 6: Cholera Treatment Facilities.
- **UNICEF.** ***Cholera Toolkit***. New York, 2013. Chapter 8: Case management and infection control in health facilities and treatment sites.

TABLE 1. MANAGEMENT OF CHOLERA TREATMENT FACILITIES, MAIN ACTIVITIES CHECKLIST

Preparation of the launching:

- Provide appropriate on-the-job training for the staff
- Prepare shifts for the staff, covering different areas of the HF
- Verify that stocks for critical items are enough for at least two months.
- Ensure adequate storage in sub-pharmacies.
- Verify that items flow opportunely from the main hardware to the store to sub-pharmacies.
- Ensure details: Blankets, food, water containers
- Ensure IPC measures are in place
- Ensure that circulation of patients and staff is based on a floor plan adapted to the local context.

Launching of activities:

- Ensure a routine of capacity building for the local staff
- Ensure an accurate consumption analysis and adequate stock management system (drugs and materials), to avoid shortages
- Implement services for special cases (Pregnant women protocols, nutrition corner, etc.) in CTCs.
- Implement consistent health education activities
- Ensure a regular production of statistics about patients cared in cholera health facilities (Daily linelists, weekly reports, etc.) and sharing with involved partners (WHO, MoH, etc.).
- Provide food for Patients

Improvement of Activities:

- Using self-evaluation checklists to gradually improve the quality of the service

TABLE 2. MAIN INDICATORS USUALLY PRODUCED BASED ON THE STATISTICS OF CTCS AND CTUS

- Number of admissions per 24 hours
- Number of admissions and deaths for each epidemiologic week
- Cumulative admissions and deaths since confirmation of the outbreak
- Age group (at least <5 years and > 5 years)
- Sex
- Dehydration level on admission (Severe, Moderate, Mild) and subsequent treatment plan (A,B
- Geographic origin of patient (to the nearest precise location)
- Length of stay
- Cholera Vaccination Status
- Number of special cases (pregnant women, SAM children, etc.)

TOOL 1. SELF-EVALUATION CHECKLIST TO IMPROVE THE QUALITY OF SERVICES

ACF CHOLERA TREATMENT CENTER SELF EVALUATION FORMAT

GENERAL PART - IN CHARGE: CTC MANAGER

SPACE OF THE CTC	Excellent	Average	Poor	Comments
Does the CTC have enough capacity to treat the expected number of cholera patients with severe diarrhea?				
Is the clinic open 24 hours a day?				
Does the CTC have enough personnel to work 24 hours a day?				
Are different areas in the health CTC clearly defined by function (triage, observation, in-patient treatment, recovery area and mortuary)?				

POLICIES AND PROTOCOLS	Excellent	Average	Poor	Comments
Does the CTC have a clear case definition of cholera?				
Does the CTC display the WHO diarrhea treatment center chart showing plan A, B and C treatments				
Does the CTC have communication equipment (e.g. mobile phone) to alert district and/or regional officials if they detect a patient with cholera?				
Does the CTC have supplies for obtaining a stool specimen from a suspected cholera patient in order to confirm the diagnosis?				
Does the CTC have a program to educate family members of cholera patients on how to prevent cholera transmission by treating water and improving sanitation for at least the next 10 days?				
Does the CTC have clear discharge criteria?				

ACCESS TO THE FACILITY / ENTRY POINT	Excellent	Average	Poor	Comments
The entrance of the facility is clearly identified				
Handwashing stations are available at point of entry with chlorine solution 0.05%				
Foot bath or spraying of shoes are available at the point of entry with chlorine solution 0.2%				
A staff is posted at the entry to ensure washing of hands and shoes 24 hours a day				
The exit point is different and separated from the entry point				
A staff member is stationed at the exit point 24 hours a day to make sure hands and shoes are washed				

MEDICAL AREA - IN CHARGE: CLINICAL SUPERVISOR	Excellent	Average	Poor	Comments
Do providers know how to treat cholera patients who are pregnant?				
Do providers know how to treat cholera patients who are malnourished?				
Do providers know how to manage the most frequent complications of cholera?				

ORAL REHYDRATION SPACE	Excellent	Average	Poor	Comments
The space has plastic chairs, buckets, basins for all the cholera cots				
The center has a stretcher available				
The preparation of ORS is ready, prepared with treated water and available at the location				
Cups for ORS are disinfected (see below) and available				

HOSPITALISATION AREA	Excellent	Average	Poor	Comments
A staff member is stationed 24 hours a day at the entry of the space to ensure hands and shoes are washed				
The patient's file is correctly filled in and the admission time is registered				
The empty bags of Ringer's lactate are kept close to the bed of the patient for a quick evaluation and the number of liters of Ringer already used is clearly registered				
All the beds are cholera beds (with a hole in the middle) without pillow				
The patients are provided with a gown by the center for the duration of their stay				
The patients clothes are sent to laundry services (see below on how they should be washed)				
There is a plastic chair besides each bed				
Only one relative per patient is authorized				
The condition of the patient is evaluated and registered regularly				
Every patient has ORS available and is encouraged to drink				
Does the CTC have cholera cots for treating patients with severe diarrhea?				
Do providers use cholera cots to manage patients with severe diarrhea?				

SUPPORT SERVICES - IN CHARGE: LOGISTICS OFFICER

UNIFORMS OF STAFF, BED LINEN AND LAUNDRY		Excellent	Average	Poor	Comments
Staff in charge of disinfection activities use mask, googles, gloves and rubber boots.					
There is a designated area for laundry					
All staff uniforms are disinfected at the center	Immerse 10 min in chlorine solution 0,05%) rinse then wash as normal (drying lines are available near to the laundry area).				
All bed linen and gowns are washed at the center					
The clothes that belong to the patient are disinfected before they are discharged					
Does the clinic have a way to decontaminate the bed linens or plastic liners?					

KITCHEN AND MEALS	Excellent	Average	Poor	Comments
Food is provided at the center and there is designated area for food preparation				
Handwashing stations are available with chlorine solution 0.05%				

CUPS	Excellent	Average	Poor	Comments
There is a designated area to wash cups				
Cups used for ORS are washed with a chlorine solution 0,05%				

WASTE MANAGEMENT	Excellent	Average	Poor	Comments
The dustbins are emptied and cleaned regularly				
The center has an designated area to bury the faeces and vomit of the severe cases (or another safe disposal method such as pit latrine)				
Waste management is ensured in an optimal manner (incinerator/ septic tank)				
Latrines are desludged at a regular basis by especialised and sludge is disposed safely				
The area for the disposal of faeces is in an isolated area				
Handwashing stations with chlorine solution 0.05% are available				

DEAD BODIES MANAGEMENT	Excellent	Average	Poor	Comments
The center has a designated isolated area for the dead bodies				
Handwashing stations with chlorine solution 0.05% are available				
Designated staff are trained to prepare and disinfect dead bodies				
Dead bodies are disinfected with chlorine solution 2% (see Annex 9D for details on management of dead bodies)				
There are enough body bags available in the center				

DATA MANAGEMENT	Excellent	Average	Poor	Comments
The number of cases received in the center are correctly registered				
The number of ill perfused is correctly registered				
The number of deaths is registered and the day and hour are noted				
The data of the center are regularly transmitted to the MoH and the provincial/district level				
Does the DTC keep records of all cholera patients and their clinical outcome?				

WASH SERVICES - IN CHARGE: WASH OFFICER

BUCKETS OF BEDS	Excellent	Average	Poor	Comments
Approx. 1 cm (half a cup <> 100-125 ml) of chlorine solution 2% is put into the buckets for faceces and vomit before placement				
Another half a cup (100-125 ml) of chlorine solution 2% is poured in the buckets that are 2/3 filled with faeces and vomits, covered for 30 minutes and disposed into a pit/latrine.				
The empty buckets and basins are cleaned with chlorine solution 2%				

WATER FOR THE CTC	Excellent	Average	Poor	Comments
Water is available at all times and in all critical locations (for cooking and preparation of ORS, handwashing, bathing and cleaning purposes).				
Water for consumption has turbity less than 5NTU and chlorine residual of 0.5 - 1.0 mg/l and is tested regularly				
The quantity of water stored is enough for at least 3 days (based on 60 litres/patient/day + 15 litres/carer/day)				

HYGIENE	Excellent	Average	Poor	Comments
Are hands washing stations adequate and does the clinic provide hand sanitizer?				
Handwashing stations have drainage into a covered soakpit or buckets. If buckets are used they are emptied when they are full into a soakpit/latrine.				
Health staff and relatives wash hands after each manipulation of the patient				
The center has 1 private/shower room per 50 patients or caregivers (minimum 2, male/female)				
The center has minimum 2 private/shower room (male/female) for staff in the Neutral area				
There are cleaners employed 24 hours a day in the facility				

DISINFECTION	Excellent	Average	Poor	Comments
Chlorine solutions 0.2% and 0.05% are prepared daily				
The foot bath is regularly soaked with the appropriate solution				
The floor of each tent is cleaned with chlorine solution 0.2% 3 times per day and each time it is necessary				
Beds are disinfected after each use with chlorine solution 0.2% and then sun dried				
Are different chlorine solutions available and clearly labeled for different uses in the CTC?				

LATRINES	Excellent	Average	Poor	Comments
Does the clinic have a way to properly dispose of contaminated feces?				
The center has 1 latrine per 20 patients or caregiver in the observation/screening and recovery area (min. 2 latrines, male/female)				
The center has 1 latrine per 50 patients in the hospitalization area (min. 2 latrines, male/female)				
The center has at least 2 latrines (male/female) for staff in the Neutral area				
The center has at least 2 latrines (male/female) for visitors outside of the centre				
Latrines are easy to clean and are cleaned several times a day with chlorine solution 0.2% (this includes the slabs and the walls up to 1m or height of splashes).				
Handwashing stations with chlorine solution 0.05% are provided at all latrines (separate for men and women)				

Tool 2. Line list structure

ACF - CHOLERA TREATMENT CENTER

LINELIST OF CHOLERA PATIENTS

Cod Case	Date Admission	Name	Age in Years	Sex	District/ village	Date Onset	Type Diarrh	Type DesH20	Plan	Other Treatm.	Outcome	Date Outcome

2D

HOW TO PREPARE AND STORE CHLORINATED SOLUTIONS USING DIFFERENT PRODUCTS?

 **OBJECTIVE**	To make appropriate preparation and storage of chlorinated products directed to specific needs
 **LEAD**	Water, Sanitation and Hygiene Program Managers
 **CROSS SECTORAL COLLABORATION**	**WASH + HEALTH & NUTRITION** • Teams/Staff trained to prepare or check that chlorine solutions concentrations are correct for the different applications **WASH + MHPS** • Check the acceptance by the community for the products to be used

PREPARING CHLORINATED SOLUTIONS: WHAT FOR?

- **Infection Prevention and Control (IPC) activities within Cholera Treatment Facilities (CTF):** feet disinfection, handwashing, drinking water, stools/vomit bucket, waste containers and covers, beds, linen, kitchen and food utensils, laundry-clothes, floors cleaning, showers/bathing unit, kitchen, latrines, morgue cleaning, Personal Protective Equipment (PPE), disinfection of transportation means, handling and management of cholera corpse.
- **Case-home disinfection:** spraying and cleaning *(Technical Brief n°3E)*
- **Household Water Treatment:** chlorine-based products
- **Safe burials and funerals:** management of cholera corpse and safe hygiene practices during funerals *(Technical Brief n°3F)*

WHAT ARE THE DIFFERENT CHLORINE PRODUCTS AND DILUTIONS?

PREPARING CHLORINATED SOLUTIONS USING CHLORINE POWDER OR TABLETS

PRODUCT	0.05% SOLUTION	0.2% SOLUTION	2% SOLUTION	1% SOLUTION
CHLORINE POWDER Calcium hypochlorite* (HTH ®) granules, 65-70% active chlorine	15 g/20 liters:  X 1 *Ex:* *20ml** per 20L of water (90 g in 120 liters of water)*	60 g/20 liters:  **X 4** *Ex:* *80ml** per 20L of water (360 g in 120 liters of water)*	600 g/20 liters:  **X 40** *Ex:* *800ml** per 20L of water*	15 g/liter:  **X 1** *Ex:* *20 ml** per 1L of water*
CHLORINE POWDER Sodium dichloroisocyanurate (NaDCC) granules, 55% active chlorine	18 g/20 liters:  **X 1** *Ex:* *20ml** per 20L of water (110 g in 120 liters of water)*	72 g/20 liters:  **X 4** *Ex:* *80ml** per 20L of water (430 g in 120 liters of water)*	720 g/20 liters:  **X 40** *Ex:* *800ml** per 20 liters of water*	18 g/liter:  **X 1** *Ex:* *20ml** per 1 liter of water*
CHLORINE TABLET Sodium dichloroisocyanurate (NaDCC) tablet, 1 g of active chlorine	**10 tablets** per 20 liters of water	**40 tablets** per 20 liters of water (2 tablets per liter)	**400 tablets** per 20 liters of water (20 tablets per liter)	**10 tablets** per 1 liter of water

** HTH need = 100 grams per patient per day.*
*** If measuring spoons are not available, use a bottle cap (around 15g of HTH) or table spoon.*

TABLE 1: CHLORINE CONCENTRATIONS SOLUTIONS USING DIFFERENT PRODUCTS

	USES OF DIFFERENT CONCENTRATIONS
0.05% SOLUTION	Hand and skin, food hygiene
0.2% SOLUTION	Floors and walls, clothes, bedding and linen, dishes/kitchen utensils, showers/bathing units and latrines, kitchen, morgue, waste containers and covers, PPE, soles of shoes/boots, means of transportation (after cleaning*)
2% SOLUTION	Vomit, stools, preparation of dead bodies
1% SOLUTION	Mother solution for chlorinating water**

** Ensure that organic matter is cleared before the area is disinfected with chlorine as chlorine is inactivated by the presence of 'organic' matter e.g. excreta, blood, vomit or dirt (2).*
*** To determine the quantity of mother solution to be added in drinking water containers, use the jar test method (section C, page 15).*

Source: adapted from MSF (2018) 'Management of a cholera epidemic, Appendix 15'.

PREPARING CHLORINE SOLUTIONS FROM LIQUID BLEACH

Liquid bleach (sodium hypochlorite solution) should be reserved for domestic use only, when the population is familiar with the product. To prepare a x% chlorine solution, the concentration of the bleach to be used, expressed in "active chlorine" on the commercial product, must be taken into account.

The following formula used to determine the volume of water needed for one volume of liquid bleach:

Volume of water V = [% of chlorine in liquid bleach / % chlorine desired] – 1

*Example if you want to reach a 0.2% chlorine solution and you have a chlorine product with a concentration of 2.6%, you need to dilute 1 volume of bleach in 12 volumes of water: **V = [2.6 / 0.2] – 1 = 12 volumes of water.***

The table below shows the results of calculations for a 0.2% use according to different concentrations of chlorine in commercial liquid bleach

% CHLORINE IN LIQUID BLEACH	0.2% CHLORINE SOLUTION TO DISINFECT (AFTER CLEANING) floors, surfaces, materials contaminated by a patient
2.6%	1 volume of bleach in 12 volumes of water
3.5%	1 volume of bleach in 16 volumes of water
4%	1 volume of bleach in 19 volumes of water

The volume can be a liter, a gallon, a glass or any other recipient used to measure a dose.
These solutions must be prepared just before use.

⚠ ***The existence and availability of disinfection products should be checked in preparedness phase to avoid stock outs.***

⚠ ***ACF community teams should carry out a practical demonstration of disinfection products, especially drinking water disinfections and bleach use for cleaning.***

HOW TO ENSURE AN APPROPRIATE PREPARATION AND STORAGE?

⚠ ***Over exposure to chlorine can be dangerous for patients and staff but is most likely to occur in the preparation stage.***

The below protocol must be followed:

1. Choose a well shaded, well ventilated area (preferably outside) sheltered from any wind.
2. Wear the recommended PPE (rubber gloves, respirator masks, goggles, apron, boots).
3. Check Expiry Date of chlorine products. If an expired product is found, contact the logistics for safe disposal.
4. Use a clean, dry, plastic container to measure the dose.
5. Select clean opaque containers to store chlorinated water.
6. Pour the water first and then add the mixture to avoid splashing; do not over chlorinate.
7. Clearly label each solution with the date of preparation, percentage and instruction for use. For example: '2% for excreta and vomit'.
8. Keep chlorinated water out of direct sunlight.
9. Close chlorine containers after use if chlorine powder or liquid is used.
10. Store chlorine in a ventilated room protected from heat, light and moisture in non-metallic containers tightly closed with lids.
11. Clean properly the material used with running water and dry completely before storage (ensure that there is no chlorine residues).
12. Discard chlorine solutions every 48 hours in waste water drainage as free and total chlorine levels slowly degrade over time in a covered and unsealed container.

⚠ ***Never mix NaDCC with calcium hypochlorite (risk of toxic gas or explosion) and never add other products to chlorine solutions.***

⚠ ***Make sure your chlorinated containers or bladders/reservoirs are under the shade to avoid unwanted chemical reaction between light/heat and chlorine that will decrease the effectiveness of the residual protection.***

HOW TO SAFELY DISPOSE OF EXPIRED CHLORINATED PRODUCTS.

Chlorine is a hazardous chemical waste (halogenated solvent).

Several options exist for disposal of large quantities of hazardous chemical waste:

- Preferably, these wastes should be treated by a specialist contractor with the expertise and facilities to dispose safely of hazardous waste.
- Return of expired product to the original supplier or manufacturer who should be equipped to deal with them safely (to be included in the original purchase contract for the chemicals).
- Use of certain products for non-medical purposes may also be considered; for example, use of outdated disinfectants to clean toilets is often acceptable.

Possibilities for disposal of small quantities:

- Encapsulation and burial in a sanitary landfill.
- Chemical decomposition in accordance with the manufacturer's recommendations if chemical expertise and materials are available.

In any case, halogenated solvents should not be discharged into sewers.

Source: Adapted from: WHO (2014) 'Safe management of wastes from health-care facilities' (p130-131).

ADDITIONNAL RESOURCES

- 2B ACF Cholera Operational Toolkit, Technical brief 'How to set up cholera treatment facilities?'
- 3E ACF Cholera Operational Toolkit, Technical brief 'How to conduct case-home disinfection?'
- MSF 'Study Report: Evidence Based FRC Targets for Centralized Chlorination in Emergencies'
- MSF appendix 15 'Preparation and Use of Chlorine Solutions'
- Global TaskForce for Cholera Control 'Technical Note: WASH and IPC in Cholera Treatment Structures'

REFERENCES

(1) *WHO (2004) Appendix 7 'Cholera Outbreak: assessing the outbreak response and improving preparedness https://apps.who.int/iris/bitstream/handle/10665/43017/WHO_CDS_CPE_ZFk_2004.4_eng.pdf;jsessionid=E99A99A58E1ACB94F17D324E092A4F5E?sequence=1*

(2) *Médecins Sans Frontières (2018) Appendix 15 'Management of a cholera epidemic' https://medicalguidelines.msf.org/viewport/CHOL/english/appendix-15-preparation-and-use-of-chlorine-solutions-32409866.html*

(3) *Ali, SI; Ali, SS; Fesselet, JF (2016) 'Study Report: Evidence Based FRC Targets for Centralized Chlorination in Emergencies' https://fieldresearch.msf.org/handle/10144/618836*

2E

HOW TO MANAGE WASTE IN CHOLERA TREATMENT FACILITIES?

 **OBJECTIVE**	To reduce cholera transmission within or in the vicinity of the Cholera Treatment Facilities (CTF) by ensuring adequate management of all waste, as considered potentially infectious
 **LEAD**	Water, Sanitation and Hygiene Program Manager
 **CROSS SECTORAL COLLABORATION**	**WASH + HEALTH & NUTRITION** • Teams/Staff in Nutrition Units trained to be able to manage different types of waste

WHAT IS THE PRINCIPLE?

Cholera contamination within the Cholera Treatment Facility (CTF) is one of the identified contexts of transmissions (1). Infection, Prevention and Control measures in a CTF include adequate waste management (2). In a CTF, all waste is considered potentially infectious and as such, reducing the generated volume of waste and appropriately treating it requires a specific waste management chain, from collection, segregation, storage to disposal and safe treatment.

WHAT TYPES OF WASTE?

Wastes are classified into five types, as follows:

- **Sharps waste:** This includes all waste that can cause injury and transmit disease if not disposed of properly, such as needles, lancets and glass vials.
- **Soft waste:** This includes waste that can be burned, such as cottons, gauze, plastics, syringes, and paper.
- **Organic waste[1]:** This includes waste of organic origin that cannot be burnt, such as food waste and ash from the incinerator or drum burner.
- **Wastewaters:** Wastewater is grey water that has been used to wash people (hands, shower, cleaning of corpses) and contaminated objects (dishes, laundry, floors and surfaces, buckets and basins) and black water from flushing toilets.
- **Pathologic waste:** Stools and vomit from cholera patients.

1 - Note that only in CTF pathologic wastes are treated differently from organic.

WHAT ACTIONS BY TYPE OF WASTE?

Proceed step by step:

1 Identification of a waste treatment zone within the CTC/CTU → 2 Waste segregation/collection → 3 Waste storage → 4 Waste treatment and disposal in the identified zone

STEP 1 – IDENTIFICATION OF A WASTE TREATMENT ZONE WITHIN THE CHOLERA TREATMENT CENTERS / UNITS

⚠ ***All cholera-related waste should be segregated, stored and disposed of in a designated, restricted waste zone within the CTC/CTU and should not leave the CTC/CTU premises.***

- The waste treatment zone should be marked and fenced off to avoid access by unauthorized people.
- The zone should have access to water (through a water point ideally) with soap or detergent and disinfectant for handwashing or to clean and disinfect containers and tools, with proper drainage.
- Ideally there should be a storage area where tools and containers can be dried and stored.
- The area should be well ventilated, and all waste should be placed into different colored / marked containers and labelled (cf. segregation and storage steps below).

STEP 2 – WASTE SEGREGATION AND COLLECTION

⚠ ***This is ideally done at the source by each person generating waste and thrown in the designated containers, either at the patient's bed or in the waste treatment zone***[2]

SHARPS WASTE		• These should be segregated into leak- and puncture-proof safety boxes. • Depending on the regulations or practices in the country, sharp waste can be collected with a needle cutter. • Clearly marked and labelled SHARPS. • Discarded when ¾ full.
SOFT WASTE		• Collected in a container[2] such as 20-60L bin(s), bag(s) or bucket(s), with well-fitting lid all of one and the same specific color (yellow is the norm) and clearly labelled.
ORGANIC WASTE		• Collected in a container[2] such as 15-20L bin(s), bag(s) or bucket(s), with well-fitting lid, all of one and the same specific color (red is the norm), leak proof and clearly labelled.
WASTEWATERS AND DRAINAGE		• Collected in soak-away pits (greywaters) or infiltration trenches. (Hand washing greywaters collected in basins and manually transported if low permeability soil). • All open wastewater drainage systems should be covered and cleaned regularly to avoid the risks of disease vector breeding and contamination from direct exposure. • Black waters from flushing toilets collected in latrine pits or drainages connected to sewer/sceptic tank.
PATHOLOGIC WASTE		• Small quantities of infectious liquid waste (e.g. blood or body fluids) may be poured into sinks or toilets. • Stools and vomit from cholera patients should be collected in specific 10-15L buckets (with 30% hydrated lime solution) under the cholera bed or next to the head of the bed. • Buckets when 1/3 full, should be carefully transported and emptied by the Hygienist/Cleaner preferably into a dedicated lined pit for this purpose (3), preferably in the ward, or less preferably dropped into a dedicated latrine pit. ⚠ ***Care should be given to avoid any splashes and staff should wear appropriate PPE (i.e. apron, gloves, goggles and boots, see PPE below).***

2 - Ideally containers should be foot operated pedal bins to avoid further contamination with the hands.

STEP 3 – WASTE STORAGE

⚠ ***Waste should be emptied regularly so this section is only relevant if intermediary reservoirs are needed between segregation and elimination, but best practice is to store where it will be disposed/eliminated (in the identified waste treatment zone). In any case, organics should never be stored, even temporarily.***

SHARPS WASTE	• In a safety box within the Waste Treatment and Disposal/Elimination zone.
SOFT WASTE	• All waste containers and bags must be clearly labelled and should be filled to a maximum of three-quarters of their capacities to avoid spillage. Waste containers should be emptied daily, or as needed throughout the day. Upon being emptied, containers and covers should be washed and disinfected with a 0.2% chlorine solution.
ORGANIC WASTE	• All waste containers and bags must be clearly labelled and should be filled to a maximum of three-quarters of their capacities to avoid spillage. Waste containers should be emptied daily, or as needed throughout the day. Upon being emptied, containers and covers should be washed and disinfected with a 0.2% chlorine solution.

STEP 4 – WASTE TREATMENT AND DISPOSAL/ELIMINATION

SHARPS WASTE	• One size fits all approach cannot be recommended and these options will need to be checked against the national regulations. From the most reasonable to the most complex: - disposed in a lined burying pit topped with a 10-15cm layer of soil mixed with lime after each waste load. - Incineration (4); - chemical treatment[3]; - upon closure of the CTC/CTU, the sharps pit filled with concrete or similar material to encapsulate the sharps and to protect future users of the land.
SOFT WASTE	• The most common ways of burning soft waste include (in descending order of desirability, see annex 3 for detailed infectious waste treatment technical options): - dual chamber incinerator using auxiliary fuel to reach temperatures of 800°C/1100°C; - low cost double chamber incinerator without auxiliary fuel; - single chamber incinerator or a drum burner (with a dry area to store the bins) ; - burning in pits, followed by covering with a 10cm layer of soil.
ORGANIC WASTE	• Should be disposed of in pits specific for organic waste. The pit should have a lid to prevent flies/ mosquitoes/ rodents from entering. • Upon closure of the CTC/CTU, the organics pit should be backfilled to protect future users of the land.
WASTEWATERS AND DRAINAGE	• Soak-away pits and trenches should be equipped with grease traps when soap is used, which should be checked daily for functionality. • All systems that infiltrate wastewater into the ground should be sited so as to avoid contaminating groundwater. There should be at least: - 1.5m between the bottom of any un-lined pit or infiltration system and the groundwater table. - 30m from any groundwater source. • All wastewater should be treated in-situ with 30% hydrated lime[4] before infiltration (to avoid transportation off-site to an activated sludge treatment plant). ⚠ ***Seek the MoHS approval for final disposal, complying with national rules and regulations.***
PATHOLOGIC WASTE	• The cholera excreta should be treated with a 30% hydrated lime solution[4] before disposal into final pits for the pathogens to be deactivated and pit volumes reduced (Use a 1:10 ratio of lime suspensions : excreta). • When pits are ¾ full: - If in urban setting, the pathologic waste should be desludged (using a desludging diaphragm manual or mechanic pump) and sent to an activated sludge treatment plant. - If in rural setting, the pit should be safely closed when reaching 3/4 of its full capacity and another bottom-sealed pit should be opened.

⚠ ***Rainwater and surface run-off should be safely disposed of to avoid carrying contamination from the cholera treatment facility to the outside surrounding environment.***

3 - Constraints: shredding is required before disinfection and often the weakest point in the chain. Powerful disinfectants are needed which are themselves hazardous. Effectiveness is largely dependent on operational conditions (5).

4 - More effective than 2% chlorine solution as per MSF Applied research into the disinfection of human excreta in emergency settings using highly concentrated chlorine solutions (ARDHEES) by University of Brighton (2018).

WHAT HUMAN RESOURCES?

People generating waste:

- Medical staff (Nurse (CTC), Auxiliary nurse (CTC), Doctor (CTC), Pharmacy manager (CTC))
- Patients/Caregivers
- Cook and assistant (CTC)
- Laundry staff (CTC)
- Cleaner (CTC)

People cleaning/collecting/disposing waste (ideally at the source each person generating waste should throw it in the designated containers, be it at the patient bed or in the waste treatment zone):

- Hygienist/Health promotor (CTC)/ Cleaner (CTC)
- Cook and assistant (CTC)
- Laundry staff (CTC)
- Waste treatment area operator

TABLE 1: STAFFING NUMBERS REQUIRED FOR EACH CHOLERA TREATMENT FACILITY LEVEL

Waste disposal **HUMAN RESOURCES** (identified roles)	At a hospital facility or similar level **CTC 100 - 200 BEDS**	At a hospital facility or similar level **CTC 25 - 50 BEDS**	At a medium-size inpatient health patient facility **CTU 10 - 20 BEDS**	Small health facility **ORC (OCCASIONAL USE OF 1-5 BEDS)**
Cook	2	1		
Cook assistant	8	4		
Laundry staff	6	3	3 cleaner / chlorine maker / laundry / waste treatment*	2 cleaner / chlorine maker / laundry / waste treatment
Hygienist/cleaner	7	3		
Waste treatment area operator	2	1		

Source: adapted from UNICEF Cholera Toolkit (2013).

** To cover 24h a day, 8h shift of work person – cleaning, making chlorine solutions, spraying, disinfecting patients buckets.*

SELECTION CRITERIA FOR HYGIENIST/CLEANERS AND WASTE TREATMENT OPERATORS

- Previous experience on cholera response
- Respected by the community
- Belongs to the targeted population
- Own means of transport

⚠ ***Teams needs to be gender and ethnic balanced***

WHAT PROTECTIVE EQUIPMENT?

The Personal Protective Equipment (PPE) for CTC Staff should be supplied in the CTC. It should preferably be made or bought locally.

All staff must have at least:

- 1 short-sleeved top and 1 pair of trousers
- 1 pair of boots
- Work overalls
- Reusable rubber gloves or Heat resistant gloves for those working with the incinerator
- Reusable plastic apron or long leather for those working with the incinerator
- Reusable face shield

Staff change on entering and leaving the CTC.

⚠ ***Staff must neither leave the CTC in their protective clothing nor work in the CTC in their personal clothes.***

PPE is changed every day and each time it is soiled.

Reusable equipment should be disinfected with 0.2% chlorine solution each time it is soiled (after cleaning) and washed daily.

ADDITIONNAL RESOURCES

- ACF (2017) Medical Waste Management for WASH Practitioners
- WHO (2014) Safe Management of wastes from health care activities
- WHO (2019) Technologies for the treatment of infectious and sharp waste from Health Care Facilities
- Global Task Force for Cholera Control 'Technical Note: WASH and IPC in Cholera Treatment Structures', p11
- MSF (2018) Applied research into the disinfection of human excreta in emergency settings using highly concentrated chlorine solutions (ARDHEES) by University of Brighton
- WHO COTS Program Staff pocket cards for diarrhoeal diseases

⚠ ***It is important to have simple job or task descriptions for all staff, including any outreach workers (voluntary or paid) in order to clearly define what is expected of them. See COTS cards and MSF cholera guidelines.***

REFERENCES

(1) *3A ACF Cholera Operational Toolkit, Technical brief 'How to implement epi-driven interventions?'*
(2) *2H ACF Cholera Operational Toolkit, Technical brief 'What are the key measures for infec on, preven on and control?'*
(3) *MSF (2018), "Management of a cholera epidemic"*
(4) *WHO (2014), "Safe management of wastes from health- care activities", p80-84*
(5) *WHO (2014), "Safe management of wastes from health- care activities", p93-98*
(6) *MSF (2010), "Public Health Engineering in Precarious Situations"*

ANNEX 1 / EXAMPLE OF CHOLERA TREATMENT FACILITY WASTE MANAGEMENT MONITORING FRAMEWORK

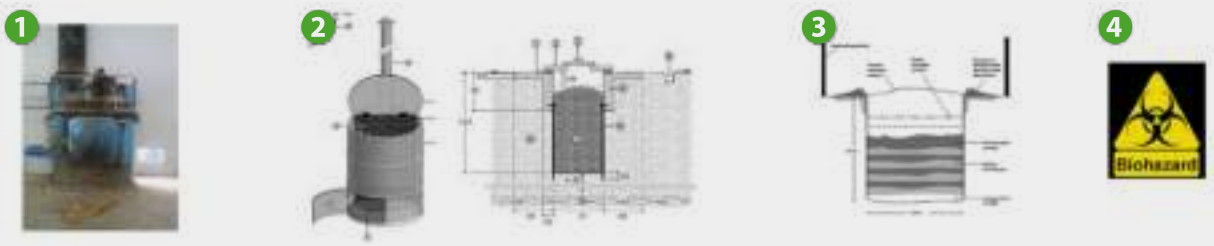
WASTE MANAGEMENT COMPONENT	WHAT EXPECTED OUTCOME?	WHA INDICATOR?	WHAT DAILY MONITORING?
EXCRETA DISPOSAL	• Sufficient numbers of adequate, accessible, appropriate and safe toilets for staff, patients and caretakers (one functional toilet per 20 users). • Toilets do not contaminate the health-care setting or water supplies.	All toilets/ latrines clean and functional.	Visual inspection of every toilet/latrine cubicle.
		CT Facility grounds free from open defecation.	Observation walk around CT Facility perimeter.
WASTE WATER	• Drainage ditches exist, and they are unblocked, properly sized and functional. • Simple soak-aways equipped with grease traps are installed to ensure that wastewater from handwashing, bathing, cleaning, or laundering is not contaminating the health-care setting, water supplies or surrounding communities.	All waste water removed rapidly and safely.	Visual inspection of all points where wastewater generated.
		CT Facility grounds free from standing water.	Observation walk around CT Facility perimeter.
HEALTH-CARE WASTE	• A specific waste-disposal zone exists, where waste can be stored and disposed of safely and effectively. • No potential pathogenic reservoir including waste, food, food containers, or soiled clothing is carried out of the area.	Absence of health-care facility waste in facility ground.	Observation walk around CT Facility perimeter.
	• Health-care waste is segregated at the point of generation according to its type, using four categories: sharps, non-sharps infectious waste, non-sharps non-infectious waste and hazardous waste. • Colour-coded waste containers or containers bearing clearly understood signs and symbols are provided at convenient locations. • Containers are collected from all wards and stored safely before treatment and/or disposal.	Appropriate waste containers in every location where health-care waste generated.	Observation of all points where healthcare wastes are generated.
	• The CTFacility grounds and environment are free from uncontained health-care wast.	No overflowing waste container.	Observation of all points where health wastes generated.
INFECTION CONTROL	• All infectious waste, excreta and body fluids created in the isolation area are disinfected with 2% chlorine solution and disposed safely within the isolation area. • No potentially infectious wastewater flows out of the isolation area.	Floors mopped daily with detergent or 0.2% chlorinated solution. Each room with its own room and bucket.	Observation of rooms where health-care delivered.
	• Staff have sufficient and adequate waste handling equipment and personal protective equipment. • Staff are correctly trained to collect, handle and dispose of health-care waste safely.	At least one month stock of disposable gloves, disposable aprons, overalls, boots and protective glasses.	Observation of stocks.
		At least one month stock of chlorine, detergent and soap.	Observation of stocks.
VECTOR CONTROL	• Vector breeding sites are removed. • Kitchen and health-care waste are properly disposed, window and door barriers are installed. • Rodent traps are installed, window and door screens are installed. • Insecticide treated mosquito nets in inpatient wards are installed.	Absence of diseases vectors in CT. Facility or grounds.	Observation walk around CT Facility and grounds.

Source: Adapted from WHO (2012), "WASH in Health Care Facilities in emergencies".

ANNEX 2 / TECHNICAL OPTIONS FOR THE TREATMENT OF INFECTIOUS WASTE

IMMEDIATE/VERY SHORT TERM OPTIONS

There are several options ranked here in order of preference in the context of a cholera outbreak:

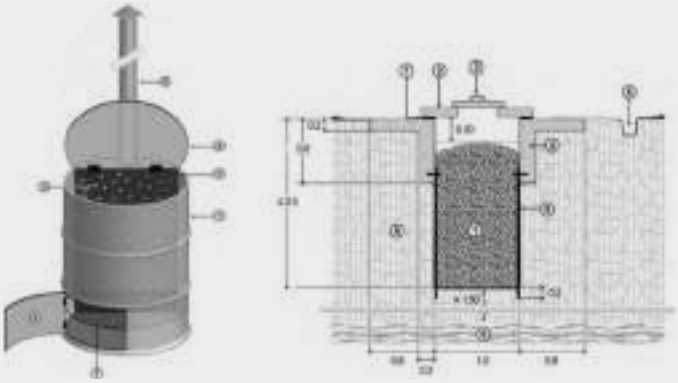


❶ Existing incinerator

Preferred option is to use the existing hospital incinerator if functional and located within the immediate vicinity of the waste disposal zone of the CTF. If not functional, it is recommended to explore the possibilities of putting it back into service.

❷ Temporary reducer of volume + residues pit

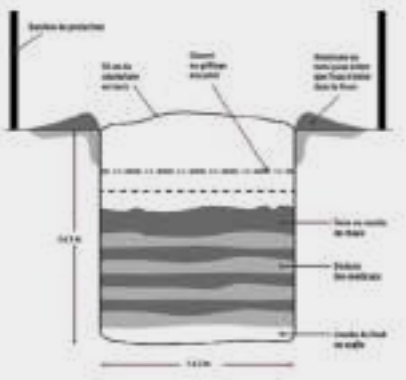
In emergency phase, it is possible to make a volume reducer (temporary) using a metallic drum (picture on the left), within a waste storage and treatment zone which is dedicated on the health facility grounds. The combustion of the waste in a volume reducer (temporary) generates ashes and leaves some unburnt residues, thus the need of an ashes pit (simple pit without lining but with a temporary slab in emergency phase, picture on the right).



Design details are available in the manual (6) « Public Health Engineering in Precarious Situations » (MSF, 2010).

❸ Onsite burying/landfill pit

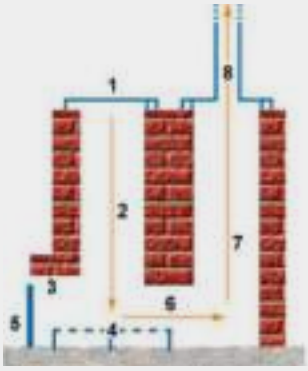
At the onset of the emergency and if the possibility of the temporary volume reducer has been ruled out because of potential smokes pollution within an unfavourable space, it is possible to dig a burying pit on the Health Facility grounds, coated with low permeability materials (to prevent shallow groundwater from being polluted) and fenced. Healthcare waste should be immediately buried under a layer of soil after each offload. For an increased sanitary protection and for the removal of unpleasant smells, it is suggested to pour lime over the waste. Once full, the pit should be sealed.



❹ Securing infectious waste and transportation for safe treatment.

SHORT/MID TERM OPTIONS

- **Permanent incinerators such as Montfort**[5]
  These incinerators can be built onsite (in 1 to 2 weeks) allow to dispose the infectious waste using two combustion chambers, whose second can reach temperatures up to 850°C. They have a comparative advantage when it comes to rapidity of set up and cost (around 1,000 to 2,000 USD).



- **Double chamber industrial incinerators :**
  This type of incinerators allows a combustion at more than 850°C and result in significant volume and weight reduction (>95%). Nonetheless they require quite high investment costs (around 15,000 to 20,000 USD at least) and qualified staff. Transportation of waste and centralization of treatment in urban setting allow in the same time a high quality treatment and cost-effectiveness.

Source: UNICEF (2017), "Guideline for the plague outbreak response in Madagascar" (Annexe 3).

5 - See ACF (2017) "Medical Waste Management for WASH Practitioners", in the additional resources box above.

2F

WHAT RESOURCE NEEDS FOR CHOLERA TREATMENT FACILITIES?

POSITIONING

ACF will provide medical treatment only if the country office is able to in terms of resources and expertise and if no other actor is able to respond.

OBJECTIVE

To identify resource needs for Healthcare facilities during cholera outbreaks

LEAD

Health and Nutrition Head of Departmentt

CROSS SECTORAL COLLABORATION

HEALTH & NUTRITION + WASH

- Resource needs for case management include Health and WASH material and supplies as well as human resources

WHAT TYPE OF CHOLERA TREATMENT FACILTIES?

	TYPE OF FACILITY	TYPE OF TREATMENT	TIMING	BED CAPACITY	EQUIPMENT
CTC 	**Inpatient facility:** Dedicated autonomous isolation zone within healthcare facilities OR existing community building.	Management of simple cases cholera (oral treatment) and severe cases (IV treatment).	24/7	25 - 200 beds	Water, latrines, showers, kitchen, laundry, morgue waste area, stocks and electricity
CTU 	**Inpatient facility:** Dedicated isolation zone inside or attached to an healthcare facility.	Management of simple cases of cholera (oral treatment) and severe cases (IV treatment).	24/7	10 - 20 beds	Water, latrines, showers, morgue waste area, stocks and electricity
ORP 	**Outpatient facility**	Management of simple cases, severe cases referral to CTCs or CTUs.	Day time	1 - 5 beds (occasional)	Water and latrines

WHAT MATERIAL AND SUPPLIES?

CHOLERA KIT FOR CASE MANAGEMENT

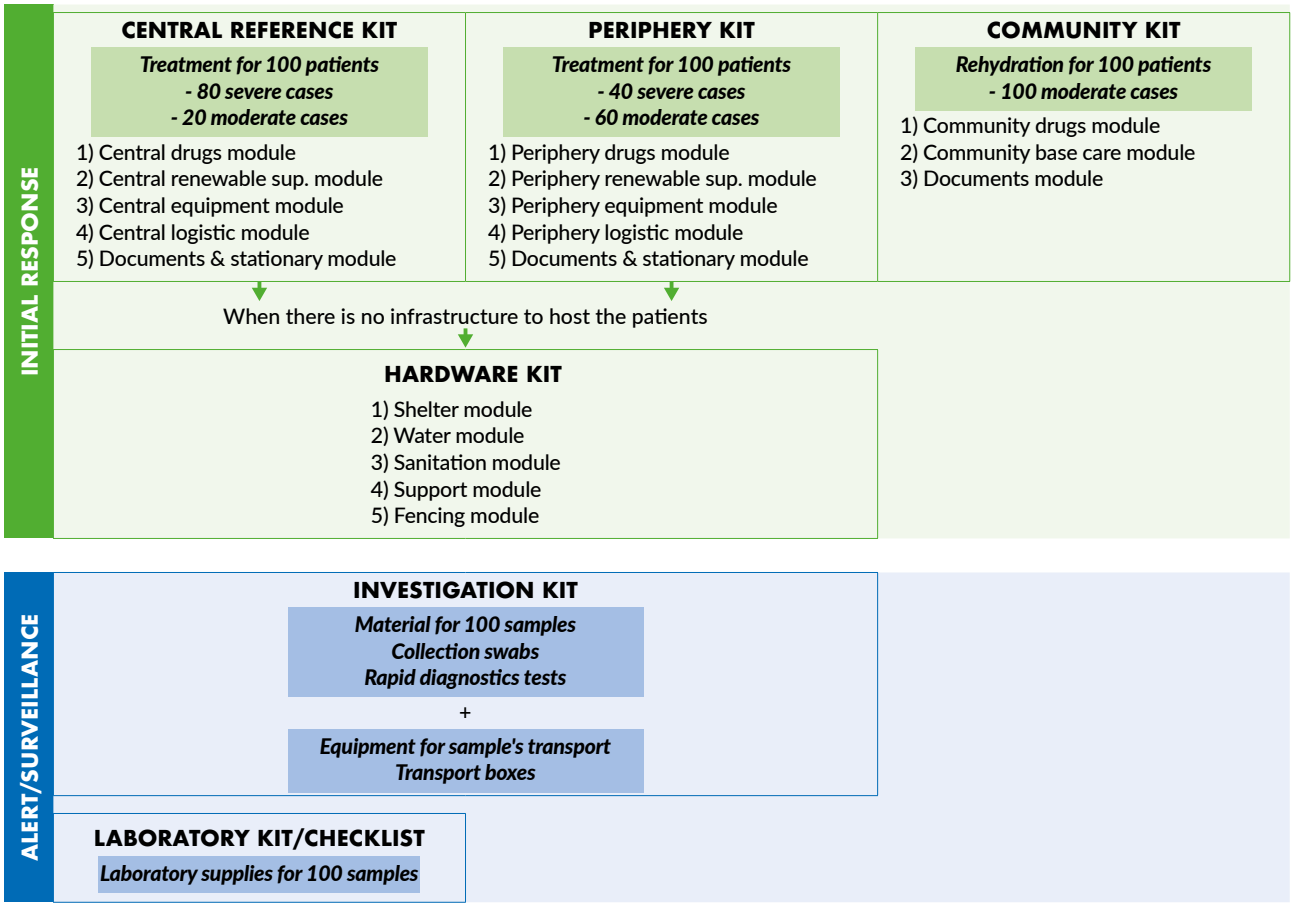
- Cholera Kits are designed to support the first month of the initial response. Each kit is divided in several modules (Figure 1).
  - **Three (3) kits** are designed for the **treatment of cholera patients** within existing structures at the **central** (CTC), **peripheral** (CTU) and community levels (ORP or ORC).
  - **One (1) kit,** called **"Hardware kit"**, provides the necessary material to set-up a **provisional structure** for patient care when no existing structure is in place.
  - **Two (2) kits** include the equipment needed for the **investigation** of cholera outbreaks and for the **laboratory confirmation** of suspected cholera cases.
- ACF mission can order kits and modules[1] separately, seek donations from lead agencies (e.g., WHO, UNICEF) or purchase locally some items.

The detailed content of each kit and module can be found in annex (Annex 1-6).

CHOLERA KIT CALCULATION NEEDS

- **A Cholera Kit Calculator** developed by WHO provides the number and type of cholera kits and modules of a case management facility. The tool uses pre-defined scenarios based on available population data, pre-defined attack rates as well as the number of health care facilities available.
- Alternatively, the initial estimation of medical supply needs based on the number of expected cases, taking into account known available existing stock, can be calculated using the following reference from MSF guideline **'Estimation of treatment resource needs'.**

FIGURE 1: CHOLERA KITS DEPENDING ON THE CONTEXT



Source: WHO revised cholera kits.
Note: "Central reference kit" usually correspond to the resource need of a Cholera Treatment Center (CTC), "Periphery kit" to the resource need of a Cholera Treatment Unit (CTU) and Community kit to the resource need of an Oral Rehydration Point. The detailed content of each kit and module can be found in annex (Annex 1 – 6).

1 - Contact WHO Procurement Services at procurement@who.int, stating" Cholera kits" in the subject of the message. WHO Procurement Services will provide guidance for a direct procurement.

WHAT HUMAN RESOURCES

HUMAN RESOURCES NEEDS

The below table gives an indication of the type and number of human resources needed to manage the different sort of Cholera Treatment Facilities. The adequate running of CTF relies heavily on sufficient skilled human resources. Expertise from both Health and WASH sectors are required. Numbers are subject to changes during the course of an outbreak with extra resources may be needed during the peak. Hiring conditions should be flexible enough.

CTC and CTU are operated 24/7. The number of staff should be sufficient to cover 24h a day, 8h shift of work person. ORP are operated 12/7 (day-time). In some contexts, these numbers of personnel will not be available. Staff can be brought from outside the area in order to sustain a basic level of care and allow staff to have time off.

HUMAN RESOURCES	CTC 100-200 BEDS	CTC 25-50 BEDS	CTU 10-20 BEDS	ORP (1-5 BEDS OCCASIONAL)
CTC coordinator	1	1		
Administrator	1	1		
Doctor	5	1-2		
Nurse	45	15-30	6-12	3
Medical ward helper	45	15-30	6-12	3
Pharmacist	2	1		
Logistics and WASH specialist	1	1		
WASH officer	2	1		
Logistic officer	2	1		
Storekeeper	3	1		
Watchman	18	3-6	6	3
Cook	2	1		
Cook assistant	8	4		
Laundry worker	6	3	3	2
Cleaner	7	3		
Chlorine solution preparer	3	1		
Hygiene educator	2	1		
Water carrier	6	2		
Stretcher carrier	6	2		
Total	165	48-72	21-27	11

JOB DESCRIPTION

Job description should be adapted to the context and meet the needs of the response. Roles and tasks for the management of a CTC developed by MSF are accessible in **Annex 8.**

A full organigram of a cholera outbreak response is availaible un technical brief 5A 'What human resources organigram for a cholera outbreak response?'.

ADDITIONNAL RESOURCES

- 2B ACF Cholera Operational Toolkit, Technical brief 'How to set up Cholera Treatment Facilities?'
- WHO revised cholera kits.
- UNICEF cholera toolkit, Chapter 8 'Case management and infection control in health facilities and treatment sites' (Annex 8G).
- MSF management of a cholera epidemic, Chapter 7 'Organization of cholera treatment facilities' (Appendix 18 and 19).

ANNEX 1/ CENTRAL REFERENCE KIT LIST OF ITEMS

	CHOLERA CENTRAL REFERENCE KIT	PREFERRED PRESENTATION	QUANTITY REQUESTED PER KIT
	100 patients, 80 severe cases - 30/40 beds needed at the peak		
Item	Description	Unit	Quantity
	1. CENTRAL DRUGS MODULE		
1	ORS (oral rehydration salts)	sachet for 1 litre	1000 sachets
2	Paracetamol, dispersible tablets 100mg	dispersable tablets	100 tab
3	Paracetamol, tablets 500mg	tablets	200 tab
4	Compound solution of sodium lactate (Ringer's lactate), injection solution, (without IV set and needle)	500 ml bag	1280 bags
5	Glucose 5%, injection solution (without IV giving set and needle)	500 ml bag	20 bags
6	Glucose 50%, injection solution (hypertonic)	50 ml/vial	10 vials
7	Doxycycline single dose 100mg	100 mg tablets	300 tab
8	Azithromycin powder for suspension	200 mg/5 ml, 100 ml bottle	8 bottles
9	Water purification tablet (NaDCC 67 mg)	tablet	2800
10	Polyvidone iodine 10%, bottle	bottle of 200 ml	5 bottles
11	Zinc sulphate, dispersible tablets 20mg	tablet	300 tab
12	Potassium chloride 100 mg/ml, 10 ml	amps	100 amp
	2. CENTRAL RENEWABLE SUPPLIES MODULE		
13	Cannula, IV short, 14G, (1.7 x 55mm), sterile, single-use	unit	30
14	Cannula, IV short, 16G, (1.7 x 55mm), sterile, single-use	unit	30
15	Cannula, IV short, 18G, (1.3 x 45 mm), sterile, single-use	unit	60
16	Cannula, IV short, 20G, (0.8 x 25 mm), sterile, single-use	unit	30
17	Cannula, IV short, 22G, (0.8 x 25 mm), sterile, single-use	unit	60
18	Cannula, IV short, 24G, (0.7 x 19 mm), sterile, single-use	unit	30
19	Infusion giving set, with airinlet and needle, sterile, single-use	unit	340
20	Stopcock, 3-way, sterile, single-use	unit	340
21	Catheter, Foley, CH10, sterile, single-use	unit	5
22	Catheter, Foley, CH12, sterile, single-use	unit	5
23	Catheter, Foley, CH14, sterile, single-use	unit	10
24	Catheter, Foley, CH18, sterile, single-use	unit	10
25	Bag, urine, collecting 2000ml	unit	50
26	Needle, scalp vein, 21G (0.8 x 19 mm), sterile, single-use	unit	25
27	Needle, scalp vein, 25G (0.5 x 19 mm), sterile, single-use	unit	25
28	Safety box for used syringes/needles, 5 litres	unit	4
29	Gauze bandage, 8cm x 4m, individually packed.	unit	24
30	Cotton wool 500g, roll, non-sterile	unit	5
31	Tape adhesive, zinc oxide, 2.5 cm x 5 m	unit	20
32	Compress, gauze, 10x10cm, non-sterile.	unit	300

33	Gloves, examination, nytril, large, single-use	unit	400
34	Gloves, examination, nytril, medium, single-use	unit	700
35	Gloves, examination, nytril, small, single-use	unit	400
36	Gloves, surgical, 6.5, sterile, single-use	unit	10
37	Gloves, surgical, 7.5, sterile, single-use	unit	40
38	Gloves, surgical, 8.5, sterile, single-use	unit	10
39	Soap, toilet, bar approximately 110g, wrapped	unit	250
40	Tube, aspirating/feeding, CH12, L125 cm, Luer tip, sterile, single-use	unit	3
41	Tube, aspirating/feeding, CH16, L125 cm, Luer tip, sterile, single-use	unit	3
42	Tube, feeding, CH05, L40 cm, Luer tip, sterile, single-use	unit	5
43	Tube, feeding, CH08, L40 cm, Luer tip, sterile, single-use	unit	10
44	Tube, feeding, CH12, L40 cm, Luer tip, sterile, single-use	unit	10
45	Tube, feeding, CH16, L40 cm, Luer tip, sterile, single-use	unit	3
46	Syringe, feeding, 50 ml, catheter tip, sterile	unit	25
47	Syringe, feeding, 50 ml, Luer tip, sterile	unit	30
48	Syringe, single-use, 10 ml, sterile	unit	100
49	CultureSwab, Cary-Blair Agar, single swab.	unit	10
50	Faeces collection container, 125ml with a screw cup	unit	10
	3. CENTRAL EQUIPMENT MODULE		
51	scale, electronic, mother-and-child, 150kg x 100g	unit	1
52	scale,electronic, infant spring (only), 25kg x 100g	unit	1
53	Glucometer (pocket model using test strips, suitable for patient self-testing, test results within 5 sec)	unit	1
54	Test strips for gluco-meter	unit	100
55	Razor, safety, single use	unit	10
56	Scissors, Deaver, 140 mm, straight, sharp/blunt	unit	2
57	Forceps, artery, Kocher, 140 mm, straight	unit	2
58	Basin, kidney, stainless steel, 825ml	unit	2
59	Tray, dressing, stainless steel, 300 mm x 200 mm x 30 mm	unit	5
60	Splint, Carmer type, metallic, foldable, arm (for adult)	unit	30
61	Splint, Carmer type, metallic, foldable, arm (for children)	unit	5
62	Tourniquet, latex rubber, 75 cm	unit	5
63	Stethoscope, binaural, complete	unit	4
64	Sphygmomanometer, (adult) , aneroid	unit	4
65	Sphygmomanometer, (child) , aneroid	unit	2
66	Thermometer, clinical, digital, 32-43 celcius	unit	5
67	Brush, hand, scrubbing, plastic	unit	5
68	Cadaver bag, adult size 250x120cm, extra strong quality with 6 handles,	unit	5
69	Cadaver bag, child size 150x100cm, extra strong quality with 6 handles,	unit	3
70	Foil wrap, 220x160cm, rescue blanket, for adults, metallised polyester gold/silver, to prevent heat loss.	unit	5

4. CENTRAL LOGISTICS MODULE			
71	Cholera Bed with 7" hole in the nylon deck, size open 66cm x 183cm x 38c	unit	10
72	Jerry can of 10l with tap for desinfection (Collapsible)	unit	16
73	Drum of 125l with cover for chlorine solutions + valves (Container+Lid, 125l, food grade plastic, stackable (MSFE Code CWATCON12L), HDPE (high density polyethylene), UV-resistant, food grade, 2 side handles, lid, with tap)	unit	3
74	Jerry can of 10l with tap for ORS (Collapsible)	unit	8
75	Rope (for hanging infusion bags and medical files) x 100m	unit	2
76	Mop with handle	unit	4
77	Plastic dustbin with cover	unit	8
78	Rubber gloves (pair)	unit	20
79	Basin to collect water (Bucket, 14 l, food grade plastic, stackable)	unit	4
80	Plastic cups 250 ml - multi-use , plastic, graduated, with handle	unit	25
81	Plastic plates - multi-use, plate deep,food grade plastic, diametre 22 cm, 0.	7 units	25
82	Plastic spoons - multi-use, Spoon, soup, food plastic grade, 15 ml	unit	25
83	Buckets graduated on the inside of 12 L (3 per bed)	unit	90
84	Blanket, survival, 220x140cm	unit	30
85	Loincloth	unit	20
86	Disinfectant (NaDCC) 1kg container - granules, pot, dehydrate form, 55-57	% unit	10
87	Apron, reusable - universal size - heavy duty non-woven apron, Straight apron with bib, Fabric: 100% polyester with PVC coating, or 100% PVC, or 100% rubber, or other fluid resistant material, Water proof, Sewn strap for neck and back fastening Minimum basis weight: 300g/m2	unit	20
88	Sprayer 12 L, IK 12 BS	unit	4
89	Plastic safety net - 1m high, NET, BOUNDARY MARKING, 1 x 50 m, roll	unit	3 rolls
90	Tester, pool tester	unit	2
91	Chlorine test tablets DPD1	unit	200
92	Chlorine test tablets DPD3	unit	20
93	Phenol red tablets, for chlorine testing	unit	20
94	boots, rubber - small	unit	1
95	boots, rubber - medium	unit	2
96	boots, rubber - large	unit	2
97	Scrubs (trousers and shirt) - small, woven, scrubs, reusable, worn underne	unit	5
98	Scrubs (trousers and shirt) - medium, woven, scrubs, reusable, worn under	unit	15
99	Scrubs (trousers and shirt) - large, woven, scrubs, reusable, worn underne	unit	10
100	Yellow biohazard incineration bags 90x70cm	unit	100
101	Lamps (solar charging or power device)	unit	12

5. DOCUMENTS & STATIONARY MODULE			
102	Information note (English & French)	unit	2
103	Notebook for transmission (shifts)	unit	5
104	Pens	unit	10
105	Calculator (solar)	unit	1
106	Marker, permanent	unit	10
107	Register book	unit	1
108	Patients cards	unit	100
109	UNICEF Cholera Toolkit (French and English)	unit	2
110	Premade forms on how to assess hydration state (French and English)	unit	1
111	Standard premade charts with rehydration protocols (French and English)	unit	1
112	IEC materials (flipchart) from UNICEF	unit	1
113	IEC materials (information poster) from UNICEF	unit	1

ANNEX 2 / CHOLERA PERIPHERY KIT LIST OF ITEMS

CHOLERA PERIPHERY KIT		PREFERRED PRESENTATION	QUANTITY REQUESTED PER KIT
100 patients, 40 severe cases - 15/20 beds at peak of outbreak			
Item	Description	Unit	Quantity
1. PERIPHERY DRUGS MODULE			
1	ORS (oral rehydration salts)	sachet for 1 litre	1000 sachets
2	Paracetamol, dispersable tablets 100mg	tablets	100 tablets
3	Paracetamol, tablets 500mg	tablet	200 tablets
4	Compound solution of sodium lactate (Ringer's lactate), injection solution, (without IV set and needle)	500 ml bag	640 bags
5	Glucose 5%, injection solution (without IV giving set and needle)	500 ml bag	20 bags
6	Doxycycline 100mg tab	100 mg tablets	300 tablets
7	Azithromycin powder for suspension	200 mg/5 ml	8 bottles
8	Water purification tablets (NaDCC 67 mg)	tablet	2800 tablets
9	Polyvidone iodine 10%	bottle of 200 ml	5 bottles
10	Zinc sulphate, dispersible tablets 20mg	tablet	300 tablets
2. PERIPHERY RENEWABLE SUPPLIES MODULE			
11	Cannula, IV short, 16G, (1.7 x 55mm), sterile, single-use	unit	15
12	Cannula, IV short, 18G, (1.3 x 45 mm), sterile, single-use	unit	45
13	Cannula, IV short, 22G, (0.8 x 25 mm), sterile, single-use	unit	45
14	Cannula, IV short, 24G, (0.7 x 19 mm), sterile, single-use	unit	15
15	Infusion giving set, with airinlet and needle and roller-clamp, sterile, single- use	unit	180
16	Stopcock, 3-way, sterile, single-use	unit	180
17	Catheter, Foley, CH12, sterile, single-use	unit	2
18	Catheter, Foley, CH14, sterile, single-use	unit	5
19	Catheter, Foley, CH18, sterile, single-use	unit	5
20	Bag, urine, collecting, 2000ml	unit	30
21	Needle, scalp vein, 21G (0.8 x 19 mm), sterile, single-use	unit	15
22	Needle, scalp vein, 25G (0.5 x 19 mm), sterile, single-use	unit	15
23	Safety box for used syringes/needles, 5 litres	unit	4
24	Gauze bandage, 8cm x 4m, individually packed.	unit	24
25	Cotton wool 500g, roll, non-sterile	unit	5
26	Tape adhesive, zinc oxide, 2.5 cm x 5 m	unit	20
27	Compress, gauze, 10x10cm, non-sterile.	unit	300
28	Gloves, examination, nytril, large, single-use	unit	400
29	Gloves, examination, nytril, medium, single-use	unit	700
30	Gloves, examination, nytril, small, single-use	unit	400
31	Gloves, surgical, 6.5, sterile, single-use	unit	10
32	Gloves, surgical, 7.5, sterile, single-use	unit	40
33	Gloves, surgical, 8.5, sterile, single-use	unit	10
34	Soap, toilet, bar approximately 110g, wrapped	unit	250

35	Tube, aspirating/feeding, CH16, L125 cm, Luer tip, sterile, single-use	unit	2
36	Tube, feeding, CH05, L40 cm, Luer tip, sterile, single-use	unit	2
37	Tube, feeding, CH08, L40 cm, Luer tip, sterile, single-use	unit	5
38	Tube, feeding, CH012, L40 cm, Luer tip, sterile, single-use	unit	5
39	Tube, feeding, CH16, L40 cm, Luer tip, sterile, single-use	unit	3
40	Syringe, feeding, 50 ml, catheter tip, sterile	unit	12
41	Syringe, feeding, 50 ml, Luer tip, sterile	unit	20
42	Syringe, single-use, 10 ml, sterile	unit	100
43	CultureSwab, Cary-Blair Agar, single swab.	unit	10
44	Faeces collection container, 125ml with a screw cup	unit	10
	3. PERIPHERY EQUIPMENT MODULE		
45	scale, electronic, mother-and-child, 150kg x 100g	unit	1
46	scale, electronic, infant spring (only), 25kg x 100g	unit	1
47	Glucometer (pocket model using test strips, suitable for patient self-testing, test results within 5 sec)	unit	1
48	Test strips for gluco-meter	unit	100
49	Razor, safety, single use	unit	10
50	Scissors, Deaver, 140 mm, straight, sharp/blunt	unit	2
51	Forceps, artery, Kocher, 140 mm, straight	unit	2
52	Basin, kidney, stainless steel, 825ml	unit	2
53	Tray, dressing, stainless steel, 300 mm x 200 mm x 30 mm	unit	5
54	Splint, Carmer type, metallic, foldable, arm for adults	unit	3
55	Splint, Carmer type, metallic, foldable, arm for children	unit	3
56	Tourniquet, latex rubber, 75 cm	unit	5
57	Stethoscope, binaural, complete	unit	2
58	Sphygmomanometer, (adult) , aneroid	unit	2
59	Thermometer, clinical, digital, 32-43 celcius	unit	5
60	Brush, hand, scrubbing, plastic	unit	2
61	Cadaver bag, adult size 220x80cm, extra strong quality with 6 handles, suitable for dragging, with zip on lateral side, white colour. (300 microns)	unit	5
62	Foil wrap, 220x160cm, rescue blanket, for adults, metallised polyester gold/silver, to prevent heat loss.	unit	5
	4. PERIPHERY LOGISTICS MODULE		
63	Cholera Bed with 7" hole in the nylon deck, size open 66cm x 183cm x 38c	unit	5
64	Jerry can of 10 l with tap for desinfection (Collapsible)	unit	16
65	Drum of 125l with cover for chlorine solutions + valves (Container+Lid, 125l, food grade plastic, stackable (MSFE Code CWATCON12L), HDPE (high density polyethylene), UV-resistant, food grade, 2 side handles, lid, with tap)	unit	3
66	Jerry can of 10 l with tap for ORS (Collapsible)	unit	8
67	Rope (for hanging infusion bags and medical files) x 100m	unit	2
68	Mop with handle	unit	4
69	Plastic dustbin with cover	unit	8
70	Rubber gloves (pair)	unit	20
71	Basin to collect water (Bucket, 14 l, food grade plastic, stackable)	unit	4

72	Plastic cups 250 ml - multi-use , plastic, graduated	unit	25
73	Plastic plates - multi-use, plate deep,food grade plastic, diametre 22 cm, 0.	unit	25
74	Plastic spoons - multi-use, Spoon, soup, food plastic grade, 15 ml	unit	25
75	Buckets graduated on the inside of 12 L (3 per bed)	unit	45
76	Blanket, survival, 220 x140cm	unit	30
77	Loincloth	unit	20
78	Disinfectant (NaDCC) 1kg container - granules, pot, dehydrate form, 55-57	unit	5
79	Apron, reusable - universal size - heavy duty non-woven apron, Straight apron with bib, Fabric: 100% polyester with PVC coating, or 100% PVC, or 100% rubber, or other fluid resistant material, Water proof, Sewn strap for neck and back fastening Minimum basis weight: 300g/m2	unit	10
80	Sprayer 12 L, IK 12 BS	unit	4
81	Plastic safety net - 1m high, NET, BOUNDARY MARKING, 1 x 50 m, roll	unit	3 rolls
82	Tester, pool tester	unit	2
83	Chlorine test tablets DPD1	unit	200
84	Chlorine test tablets DPD3	unit	20
85	Phenol red tablets, for PH & chlorine testing	unit	20
86	boots, rubber - small	unit	1
87	boots, rubber - medium	unit	2
88	boots, rubber - large	unit	2
89	Scrubs (trousers and shirt) - small, woven, scrubs, reusable, worn underneath the coveralls or gown	unit	3
90	Scrubs (trousers and shirt) - medium, woven, scrubs, reusable, worn. underneath the coveralls or gown	unit	10
91	Scrubs (trousers and shirt) - large, woven, scrubs, reusable, worn underneath the coveralls or gown	unit	5
92	Yellow biohazard incineration bags 90x70cm	unit	100
93	Lamps (solar charging or power device DC)	unit	4
	5. DOCUMENTS & STATIONARY MODULE		
94	Information note (English & French)	unit	2
95	Notebook for transmission (shifts)	unit	5
96	Pens	unit	10
97	Calculator, solar	unit	1
98	Marker, permanent	unit	10
99	Register book	unit	1
100	Patients cards	unit	100
101	Managing outbreak of accute diarrhoea (English)	unit	5
102	UNICEF Cholera Toolkit (French and English)	unit	2
103	Premade forms on how to assess hydration state (French and English)	unit	1
104	Standard premade charts with rehydration protocols (French and English)	unit	1
105	IEC materials (flipchart) from UNICEF	unit	1
106	IEC materials (information poster) from UNICEF	unit	1

ANNEX 3 / CHOLERA COMMUNITY KIT LIST OF ITEMS

CHOLERA COMMUNITY KIT, ORP		PREFERRED PRESENTATION	QUANTITY REQUESTED PER KIT
100 patients			
Item	Description	Unit	Quantity
1. COMMUNITY DRUGS MODULE			
1	ORS (oral rehydration salts)	sachet	1000 sachets
2	Zinc sulphate, dispersible tablets 20mg	tablet	300 tablets
2. ORP kit community based care			
3	Notebook, A5 hard cover	unit	1
4	Pen, ball point blue	unit	5
5	Plastic cups 250 ml - multi-use , plastic, graduated, with handle	unit	40
6	Cup plastic 500 ml, without handle	unit	40
7	Plastic spoons - multi-use, Spoon, soup, food plastic grade, 15 ml	unit	20
8	Jug, plastic 1L with beak and handle	unit	7
9	Plastic casing ceramic filter (fairey)	unit	1
10	Bucket, plastic, 14L with clip cover and outlet tap (Oxfam type)	unit	7
11	Jerrican, foldable, 10 L, food grade plastic, screw cap 50mm	unit	2
12	Soap, toilet, bar approximately 110g, wrapped	100 g	100
13	Water purification tablet (NaDCC 67 mg)	tablet	400
14	Syringe, single-use, 10 ml, sterile	each	100
15	Gloves, examination, nitryl, medium, single-use	unit	200
16	Glove, for washing dishes, rubber, pair, size M	unit	5
17	Spoon, wooden, stirring, 30cm	unit	2
18	Rope, nylon, diam. 3mm, braided,	5 meters	2
19	Brush, scrubbing, hand brush	unit	2
3. DOCUMENTS			
20	Information note (English & French)	unit	2
21	Premade forms on how to assess hydration state (French and English)	unit	1
22	Standard premade charts with rehydration protocols (French and English)	unit	1
23	IEC materials (flipchart) from UNICEF	unit	2
24	IEC materials (information poster) from UNICEF	unit	1
25	IFRC House Water treatment manual	each	1
26	ORP community volunteer guideline - Epidemic Control for Volunteers	each	1

ANNEX 4 / LABORATORY KIT LIST OF ITEMS

CHOLERA LABORATORY CHECKLIST		PREFERRED PRESENTATION	QUANTITY REQUESTED PER KIT
Item	Description	Unit	Quantity
1	Alcaline Peptone Water (APW)		4
2	Kligler Iron Agar, 500 g		4
3	MacConkey Agar with salt, 500 g		4
4	MacConkey Agar without salt, 500 g		4
5	TCBS Medium, 500 g		4
6	Triple Sugar Iron Agar, 500 g		4
7	Lysine Iron Agar		4
8	Vibrio Cholerae Antisera O139 Bengal, 2 ml		4
9	Vibrio Cholerae Antisera O1 Inaba , 2ml		4
10	Vibrio Cholerae Antisera O1 Ogawa, 2ml		4
11	Vibrio Cholerae Antisera Polyvalent As, 2 ml		4
12	Mueller Hinton for Drig Susceptibility testing		1
13	Antibiotic disks (5 disks for each antibiotic: Ampicillin, Tetracycline, Nitrofurantin, Trimethoprim/Sulfamethoxazole, Chloramphenicol, Ciprofloxacin, Nalidixic Acid)		250 disks for each antibiotic

ANNEX 5 / INVESTIGATION KIT LIST OF ITEMS

CHOLERA INVESTIGATION KIT		PREFERRED PRESENTATION	QUANTITY REQUESTED PER KIT
Item	Description	Unit	Quantity
1	Specimen collection swab, Cary-Blair Agar, single swab.	unit	10
2	Faeces container, 60ml, diam 39mm, with a screw cap and spoon	unit	10
3	Bio Pack II	unit	5
4	Rapid Diagnostic Test cholera: Crystal VC Dipstick Cholera Rapid Test kits of 10 tests. Note should say: Contact WHO for reference of recommended test	unit	10
5	Patient information note (ID card)	unit	10
6	Examination gloves, size large, ambidextrous, blue nitrile	unit	50
7	Permanent marker ink (with fine tip)	unit	1
8	Dressing forceps, 13cm, spring type, serrated rounded tips, stainless steel grade	unit	1
9	Filter paper, disk, not impregnated, Ø 6 mm	unit	10
10	Microtubes, 2ml, PP, flat, assembled cap, sterile	unit	10
11	Sodium chloride 0.9%, 10ml plastic ampoules BP.	unit	10
12	BAG, plastic, 10 cm x 10 cm	unit	10
13	Applicator, 150x2.2mm, wooden stick, cotton tip. BG/100 1	unit	10

ANNEX 6 / HARDWARE KIT LIST OF ITEMS

CHOLERA HARDWARE KIT		PREFERRED PRESENTATION	QUANTITY REQUESTED PER KIT
Each module can be ordered separately			
Item	Description	Unit	Quantity
1. Shelter module			
1	45 m² tent - PVC ground sheet. Extra shade net with frame	unit	3
2	27.5 m² tent - PVC ground sheet.	unit	2
2. Water module			
4	Kit water tank, 5 m3, flexible 1 acc.2"DIN50	unit	4
5	Module, water distribution, 2 ramps x 6 tap	unit	3
6	Module additional hoses, 2" DIN 50 + coupling	unit	3
7	Tester, pool tester	unit	2
8	Chlorine test tablets DPD1	unit	200
9	Chlorine test tablets DPD3	unit	20
10	Phenol red tablets, for chlorine testing	unit	20
3. Sanitation module			
11	Squatting plate, 80 x 120cm, model plastic + cover	unit	6
12	Plastic sheeting, white/white, 6 bands, roll 4m (high) x 60 m	unit	3
4. Support module			
13	Cholera Bed with 7" hole in the nylon deck, size open 66cm x 183cm x 38cm	unit	15
14	Solar lamps (lantern rechargeable)	unit	25
5. Fencing module			
15	Plastic sheeting, white/white, 6 bands, roll 4 x 60 m	unit	5

ANNEX 7 / CHOLERA KIT SPECIFICATIONS

FROM	NAME	GROSS WEIGHT IN KG	VOLUME (CBM)	SUPPLIERS	NATIONAL CURRENCY	VALUE
GSM	**1) CENTRAL REFERENCE KIT**	1 634	6,142	MEG / IDA	USD	6 830,20
GSM	1.1: Central drugs module	859,80	1,817	MEG / IDA	USD	1 415,58
GSM	1.2: Central renewable supplies module	99,60	0,391	MEG	USD	681,04
GSM	1.3: Central equipment module	21,20	0,065	MEG	USD	501,15
GSM	1.4: Central logistics module	635,00	3,800	MEG / IDA	USD	4 207,79
GSM	1.5: Central documents & stationary module	18,00	0,069	MEG / IDA	USD	24,64
GSM	**2) PERIPHERY KIT**	997,90	4,098	MEG / IDA	USD	4 532,20
GSM	2.1: Periphery drugs module	454,30	0,972	MEG / IDA	USD	822,86
GSM	2.2: Periphery renewable supplies module	87,60	0,357	MEG / IDA	USD	470,00
GSM	2.3: Periphery equipment module	18,00	0,100	MEG / IDA	USD	361,78
GSM	2.4: Periphery logistics module	420,00	2,600	MEG / IDA	USD	2773,88
GSM	2.5: Periphery documents and stationary module	18,00	0,069	MEG / IDA	USD	103,68
GSM	**3) COMMUNITY KIT**	74,00	0,297	MEG / IDA	USD	324,60
GSM	3.1: Community drugs module	36,00	0,072	MEG / IDA	USD	77,13
GSM	3.2: ORP kit community based care module	35,00	0,202	MEG / IDA	USD	226,00
GSM	3.3: Documents module	3,00	0,023	MEG / IDA	USD	21,56
GSM	**5) INVESTIGATION KIT**	11,00	0,072	MEG	USD	487,00
GSM	**6) HARDWARE KIT**	2 825,00	12,668	MEG	USD	33 577,41
GSM	6.1: Shelter module	1 195,00	5,902	MEG	USD	12 377,37
GSM	6.2: Water module	915,00	3,060	MEG	USD	14 872,00
GSM	6.3: Sanitation module	180,00	0,806	MEG	USD	919,74
GSM	6.4: Hard support module	325,00	2,300	MEG	USD	4 496,30
GSM	6.5: Hard fencing module	210,00	0,600	MEG	USD	912,00
GSM	**4) LABORATORY KIT / CHECKLIST**	15,00	0,005	DEBEN	USD	1 765,38
GSM	**CHOLERA KIT - COMPLETE**	**5 556,50**	**23,282**			**47 516,79**

Note: volume, weight and cost information may vary, for up to date information consult Cholera Kit Calculator.

ANNEX 8 / LINK TO JOB DESCRIPTION

CTC OR CTU

- Coordinator (CTC)
- Nurse (CTC)
- Auxiliary nurse (CTC)
- Doctor (CTC)
- Pharmacy manager (CTC)
- Cleaner (CTC)
- Stretcher bearer (CTC)
- Health promotor (CTC)

ORP (DAYTIME ONLY)

- Nurse or health worker (ORP)
- Health promotor (ORP)
- Logistics, water and sanitation aide (ORP)
- Cleaner (ORP)

SUPPORT STAFF

- Logistics, water and sanitation supervisor (CTC)
- Water and sanitation assistant (CTC)
- Potable water and chlorine solution preparer (CTC)
- Waste treatment area operator (CTC)
- Laundry staff (CTC)
- Water carrier (CTC)
- Logistics assistant (CTC)
- Store keeper (CTC)
- Cook and assistant (CTC)
- Guard (CTC)

2G

WHAT IS THE PROTOCOL FOR CLINICAL MANAGEMENT OF CHOLERA CASES?

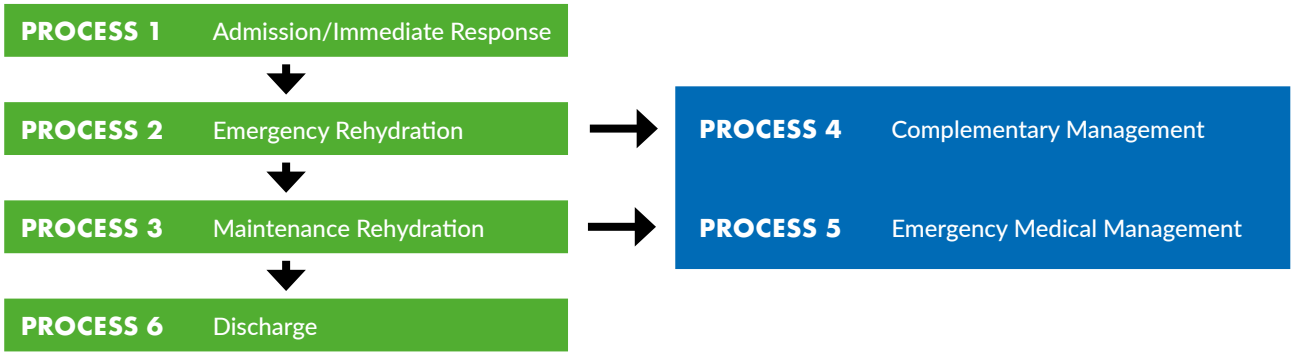
> 2G1 - CASE MANAGEMENT - INITIAL PROCEDURES
> 2G2 - ORAL REHYDRATATION PLAN A AND B
> 2G3 - IV REHYDRATATION
> 2G4 - DISCHARGE AND RECOVERY

GENERAL OBJECTIVE	**To reduce the risk of deaths,** through an adequate case management at cholera treatment facilities
SPECIFIC OBJECTIVE	1 - **To admit cases to the CTC/CTU,** in an appropriate way following established protocols and facilitating the work of the rest of the team in on the hospitalization area. 2 - **To identify/manage severely dehydrated and shock cases** (Sev. DH20 with and without shock) in an emergency basis
LEAD	Admission Team, led by the Clinical Supervisor General Supervision: Cholera PM, CTC/CTU Supervisor
PLACE OF PERFORMANCE	Reception/Admission area for regular procedures. Emergency area (if this is available) for the immediate Response protocol

> 2G1 CASE MANAGEMENT - INITIAL PROCEDURES

WHAT IS THE PRINCIPLE?

FIGURE 1: PROCESSES IN THE MANAGEMENT OF CHOLERA CASES



- In the figure 1, the six processes proposed in this series for the management of cholera cases can be identified.
- In this first sheet of the series, we focus on initial procedures: Admission and Triage/Immediate response.
- The rests of processes will be subsequently addressed in other SOPs of this series.
- An adequate triage and immediate response are critical to reduce mortality, particularly in contexts in which the ratio number of cases/human resources may be insufficient. It should have an admission team who can discriminate appropriately between severe and mild cases and, if necessary, competently provide life-saving care, such as urgent shock rehydration or cardiopulmonary resuscitation (RCP), can be the difference between life and death for many patients. Triage and immediate response, therefore, should be the first mechanism to reduce the fatality rate at the CTC/CTU.
- In addition, an adequate triage mechanism can provide support to hospitalization teams, through a correct internal transfer of cases according to severity (e.g. plan C patients to plan C Area, etc.) and stabilizing patients, and providing the kind of treatment they need, before sending them to the hospitalization area.
- Finally, data registered in the admission book and monitoring format will be reviewed after patients are discharged, being critical to the development of reliable statistics, which will be subsequently, the cornerstone to plan and perform an appropriate response, according to the outbreak magnitude.

WHAT ARE THE COMPONENTS?

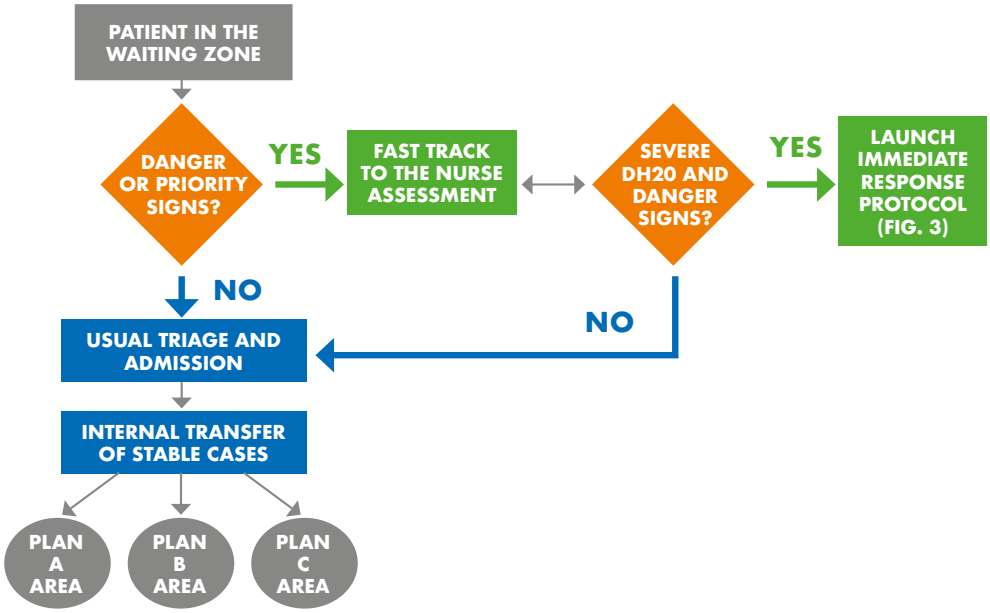
ADMISSION AND TRIAGE

This component of the admission process ensures that all potential cases will be promptly assessed to verify if they:

1. Really are suspect cholera cases that should be admitted to the CTC/CTU.
2. What is their dehydration degree?
3. Which treatment they will receive?
4. The presence of particular conditions defining the need of complementary management.

A special effort to ensure the patient is evaluated according to the arrival order should be made (e.g. distributing numbered tokens or organizing the queue conveniently). However, patients should be informed about fast-track procedures for cases with priority signs, danger signs, and other urgent cases (in order to avoid further protests if a case like this is found) and the staff should constantly verify if patients waiting in the queue have these characteristics. Always that a case with danger or priority signs is found, this patient should be fast-tracked to the admission area (see Annex 1). In addition, the entrance gate staff should be trained to identify danger signs, and expedite the evaluation of these severe cases by the medical staff (See Figure 2).

FIGURE 2. FAST TRACK OF PATIENTS AT THE ADMISSION PROCESS



When a patient arrives to the admission area, verify if the patient meets the necessary admission criteria before admitting him/her. Consider these admission criteria change from country to country (see WHO criteria Box 1, p.59). If a patient doesn't fulfill these criteria, kindly explain the situation to him/her, providing brief health education, and informing patients when they should come back for help.

BOX 1. CRITERIA FOR ADMISSION AT THE CTC/CTU
Over three watery stools per day (in medium to large amount, not necessarily "rice water").
Fever and vomiting are optional (Patients can have them or not).
Patients with non-watery or less three stools per day should not be admitted to the CTC/UTC.

Cases selected to be admitted who meet the above admission criteria and don't have signs of shock should receive a simplified medical interview/physical examination and:

- General assessment and personal data collection. All children under 12 years old need to be weighed (for rehydration and antibiotics prescriptions).
- Rehydration assessment (Using the tool provided by national authorities, or the tool shown on the SOP 2G2)
- In addition to the previous assessments, children under 5 years old need a nutritional assessment to rule out Severe Acute Malnutrition. If the child is severely malnourished, the following of the procedure for SAM children rehydration should be coordinated.
- A verification of the presence of special conditions like: Pregnant women, elderly patients (over 65 years old), patients with comorbidities: cardiac disease, diabetes, other debilitating conditions.

In all cases, immediately after the admission is decided, proceed to register the case, following the admission book template provided by the Ministry of Health or WHO. Remember: Don't let any empty space in the register, filling out all the information required.

IMMEDIATE RESPONSE

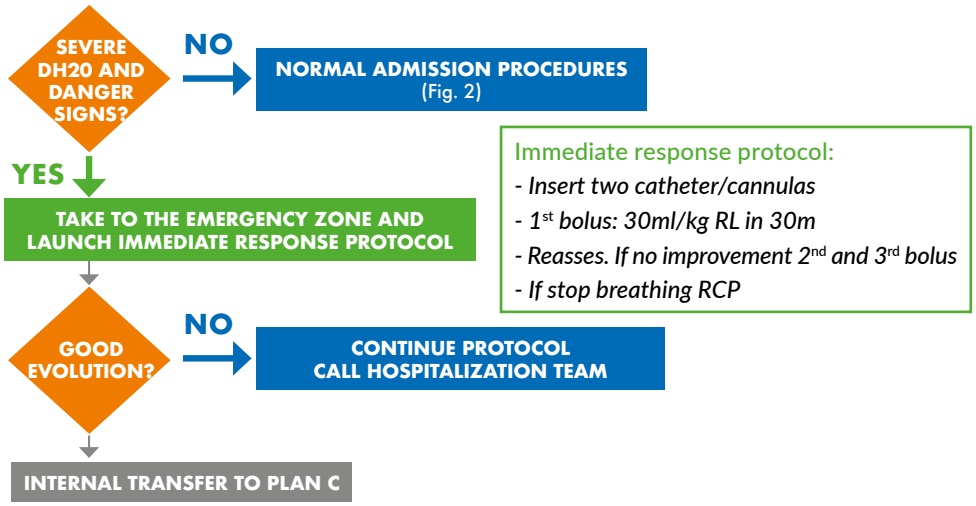
Patients with shock signs (See Boxe 2) should be immediately taken to the emergency area ideally adjacent to or inside the reception area.

BOX 2. SIGNS OF SHOCK IN SEVERE DEHYDRATION
Severe dehydration signs plus:

- "Low" blood pressure (BP) (BP <70/50) or no BP at all
- Lethargy (person has a sleepy tendency but get up after verbal or physical stimulus) or unconscious.
- Cold extremities
- Capillary refill lasts 3 seconds or more
- Pulse weak or not perceptible

If admission nurses have the required skills, the immediate response protocol, described in the Annex 2, must be deployed by them (See Figure 3).. Otherwise, one nurse of the hospitalization team should be called to help in the emergency management. If the patient responds to the therapy, then his/her general status should be assessed every 5 minutes, and after stabilized will be transferred to the hospitalization area. If his/her general status doesn't improve in 30 minutes, the hospitalization team should be called to assess the case and make further decisions.

FIGURE 3. LAUNCH/PERFORMANCE OF THE IMMEDIATE RESPONSE PROTOCOL



Except for the essential data (Name, age, weight in children, etc.), the registry should be completed only after stabilizing the patient. After registering the case, the patient can be send to the hospitalization/Plan C area.

All procedures performed at the emergency area (inserting catheters, CPR, etc.) should be registered in the monitoring format. If there are no national directives in this sense, use the template provided on the Annex 3 to define the monitoring format.

INTERNAL TRANSFER OF CASES

- After completing the simplified medical interview/ physical examination and registration, cases should be transferred to Plan A, B or C areas, depending on the assessment conclusion (See Figure 2). As previously expressed, only patients with severe dehydration and shock signs, will start rehydration at the admission area. All other cases will be send to their respective areas, and rehydration will be launched there.
- Always that possible, the first part of the monitoring format, regarding personal and clinical information and the first column of the assessment (showing the patient situation at arrival) should be completed during the admission process (Plan B and C only).
- Transfer the patient, to the respective area (Plan A, B or C area), sending the patients with a nurse assistant, to avoid they struggle to find their way, and taking the monitoring format (Annex 2) partly filled out.

WHAT ARE THE KEY ACTIONS?

STEP 1 *(In the Waiting Area)*
Admission process organized to evaluate patients on arrival, but giving priority to emergencies. Check for cases with danger / priority signs on a regular basis, and activate immediate response procedures as needed.

STEP 2 *(In the Emergency Area)*
Deploy the immediate response procedure (Annex 3) according to patients needs and team's capacities. If the admission team is not able to develop it, call the hospitalization team.

STEP 3 *(In the Admission Area)*
Non-urgent cases receive a simplified medical interview and a physical examination to assess the type of dehydration, pregnancy or elderly status or other medical conditions.

STEP 4 *(In the Admission Area)*
All children under 5 years old should be assessed using MUAC to identify SAM children. If this is the case, these children should receive a special procedure for SAM children rehydration.

STEP 5 *(In the Admission Area)*
Main data should be appropriately registered in the register book, and ideally the monitoring form register fill out should be started, making easier the hospitalization work.

STEP 6 *(In the Emergency Area)*
Just Immediate response cases (with shock signs), won't be send to the hospitalization area immediately, but after stabilization. Other cases will be transferred after completing the medical assessment and registration.

ADDITIONNAL RESOURCES

- ACF positioning paper on disease outbreaks
- UNICEF cholera toolkit, Chapter 8 'Case management and infection control in health facilities and treatment sites' https://www.medbox.org/preview/5ba0e451-ebc4-43a2-98b0-18b41fcc7b87/doc.pdf
- MSF management of a cholera epidemic https://msf.isiprint.net/gb/msf-guidelines/75-management-of-a-cholera-epidemic.html

ANNEX 1 / DANGER SIGNS AND PRIORITY SIGNS

DANGER SIGNS

Neurologic affectation: Lethargy (person has a sleepy tendency but get up after verbal or physical stimulus) or coma (no response).

Circulatory affectation: Weak or absent pulse. Low blood pressure (no BP, BP <70/50) or other shock or pulse weak/ not perceptible. In under 5 years old children, tachycardia (Pulse > 180 in 0-12m, >140 12- 36m, >140 in children >36m) is a valuable sign.

Respiratory affectation: Fast breathing, especially in under 5 years old children (> 60 in 0-2m, >50 2- 12m, >40 in children >126m), or cyanosis or gasping.

PRIORITY SIGNS

Age: < 1y old or >65 y old.

Symptoms: Patients with fever or vomiting or any other sign that can lead to a quick deterioration.

Special conditions: Pregnant women, people with physical or mental disabilities.

ANNEX 2 / IMMEDIATE RESPONSE PROTOCOL

- Insert immediately two catheters/cannulas in adult patients (depending on the weight, often just one is needed in children).
- Administrate the first bolus: 30ml/kg as rapidly as possible (in 30 minutes)
- If danger signs persist, provide another bolus (30ml/kg). If the patient is note evolving well, repeat the same bolus for the third time.

At some point, danger signs should reverse (pulse strong and easily perceptible, consciousness is recovered, etc.) and then, recommendations to follow up patients and subsequently develop an internal transfer (to the hospitalization area) should be implemented.

- If at some point, a patient stops breathing, the admission team should start cardiopulmonary resuscitation (RCP) according to accepted protocols and call the hospitalization team for support.

ANNEX 3 / TEMPLATE FOR A MONITORING FORMAT

(to be used if there is not a national protocol including these contents)

Name of facility:		Date of admission: / /		Hour:		Number/Code:		
Name of Patient:	Sex:			Age:		Neighborhood/Vlllg:		
				Weight:				
History	Conscious?:		**Plan A FollowUp (Every2hr)**	Time->				
Blood Pressure	Started on:			Pulse				
Pulse per min	Number diarrh:			Diarrhea				
No pulse/weak/strong	Type diarrh:			Vomits				
SAM children (Y/N)	Vomits?:			ORS planned				
MUAC (cms.)	Other signs:			ORS received				
Hospitalization/ Plan B-C								
Date->								
Time->								
Blood Pressure								
Pulse per min								
No pulse /weak/ strong								
Diarrhea (Times)								
Vomits (times)								
Urine (times)								
Temperature								
Respiratoy rate								
Plan (in this period)								
Change motive(if chaged)								
RingerPlanned								
RingerReceived								
ORSplanned								
ORSReceived								
Other diagnosis:				Drugs:				

> 2G2 ORAL REHYDRATION – PLAN A AND B

WHAT IS THE PRINCIPLE?

- **Rehydration** is the **most essential component of treatment** for cholera with an objective to **replenish the water and electrolytes** that are lost through diarrhea and vomiting.
- Without treatment, cholera can kill up to 50% of the patients. It is also estimated that 70% of cholera cases develop mild to moderate diarrhea and require oral treatment only. Oral Rehydration salts and electrolytes if administered in a timely manner and in adequate volumes **will reduce fatalities to well under 1% of all patients.** Oral rehydration solutions cannot influence the infectious process, but correct dehydration and thus save lives.
- According to WHO, there is no **contradiction** in making **ORS packages available to households** and non-medical personnel outside health care facilities. In the opposite, making ORS available at household and community levels **can avert unnecessary deaths** and contributes to diminishing case fatality rates, particularly in resource-poor settings.
- Oral rehydration is **a simple and cost-effective weapon** to fight against dehydration in cholera.
- Based on the degree of dehydration and the need for rehydration – mild, some and severe dehydration, patients are subdivided into plan A, B and C respectively. **Patients in Plan A** area in the CTC need **to be observed carefully** in order to verify that the condition of the patient does not **deteriorate**, and if it does immediately **shift to Plan B**. If symptoms like vomiting persist, immediately shift the treatment of the patient to plan B.
- Hence, **the first priority** in handling a cholera case must **always** be to **correct or to prevent dehydration** with the appropriate rehydration of fluids.
- The below mentioned rehydration therapy is solely for adults and children without SAM.

WHAT ARE THE COMPONENTS?

Primarily, there are two components in treating a patient diagnosed with cholera.

❶ IDENTIFY THE DEGREE OF DEHYDRATION
Assessing the degree of dehydration of the patient will determine the treatment plan. Refer to the table 1 below for a detailed description.

❷ REHYDRATE ACCORDING TO THE DEGREE OF DEHYDRATION
This component is implemented in two phases depending on the dehydration level.

a. **Rehydration phase** – aims at correcting the estimated initial fluid deficit over a defined time period. Once dehydration has been corrected, i.e., when there are no longer signs of dehydration, the patient enters the next phase.	b. **Maintenance phase** – aims at preventing a relapse of dehydration. It is directed at continuing the systematic oral replacement of ongoing fluid losses until diarrhea stops.

❸ DECIDE THE NEXT STEP
Once the patient's appropriate level of rehydration is achieved and is able to maintain good tolerance to oral fluids and able to maintain hydration adequately, the next step in management is taken.

IDENTIFY THE DEGREE OF DEHYDRATION

TABLE 1*: ASSESSING THE DEGREE OF DEHYDRATION AND APPROPRIATE TREATMENT PLANS FOR CHOLERA PATIENTS

EXAMINATION	ASSESSMENT	TREATMENT	ADMISSION TO CTU/CTC
Signs: • Awake and alert • Normal Pulse • Normal thirst • Normally passes urine • Eyes are not sunken • Skin pinch is normal	No Dehydration	**PLAN A** **(Maintain hydration)** 1) Maintenance phase	NO
Signs (at least 2 of the following): • Irritable or restless • Rapid Pulse • Increased thirst (drinks eagerly) • Decreased urine (in infants and children – decreased tears and depressed fontanels) • Sunken eyes • Skin pinch goes back slowly	Some Dehydration	**PLAN B** **(Oral rehydration)** 1) Rehydration phase 2) Maintenance phase	YES
Signs (at least 2 of the following): • Sunken eyes • Not able to drink or drinks poorly • Skin pinch goes back very slowly *Danger signs (if one or more present):* • Lethargic or unconscious • Absent or weak pulse • Respiratory distress	Severe Dehydration	**PLAN C** **(IV and Oral rehydration)** 1) Rehydration phase 2) Maintenance phase	YES

**Table 1 is adapted from the Global Task Force on Cholera Control (Section 7 – Case management in Treatment facilities) and combined with the MSF medical guidelines on management of cholera epidemic (Chapter 5 – Cholera case management) https://www.choleraoutbreak.org/*

Note: Refer to annex 1 for detailed description of the signs / For treatment of plan C, refer to (SOP 2.3).

REHYDRATE ACCORDING TO THE DEGREE OF DEHYDRATION

After the identification of the degree of dehydration, rehydrate appropriately based on which plan the patient best fits in.

PLAN A: ORAL REHYDRATION FOR PATIENTS WITH NO SIGNS OF DEHYDRATION

1. Keep the patient **under observation for 2-4 hours** to ensure that the person is tolerating ORS.
   - During observation and before sending the patient home, provide clear instructions for care *(refer to annex 2 for further details on instructions of care).*
   - Advise the patient and/or caregiver to continue giving ORS after each loose stool and to seek immediate medical attention if the patient's condition deteriorates (repeated vomiting, increasing number of stools or blood in the stools, poor drinking/thirst, fever, poor appetite or if the patient is restless).

2. Patients **should receive ORS after each loose stool** to maintain hydration until diarrhea stops.
   - Following each loose stool, provide the following amounts of ORS *(refer to annex 3 for detailed description on preparation of ORS).*

TABLE 2*: APPROXIMATE AMOUNT OF ORS TO BE GIVEN TO MAINTAIN HYDRATION AND FOR PATIENTS WITH NO SIGNS OF DEHYDRATION

AGE	AMOUNT OF ORS AFTER EACH LOOSE STOOL	ORS QUANTITY NEEDED
<24 months	100ml	~ 500ML/DAY
2 – 9 years	200ml	~ 1000ML/DAY
≥ 10 years	As much as needed	~ 2000ML/DAY

**Table 2 is adapted from Center for Disease Control and Prevention (CDC), Training on Management of Cholera for Haiti, 2010 https://www.cdc.gov/cholera/pdf/trainingonmanagementofcholera_en.pdf*

   - A rough estimate of oral rehydration rate for older children and adults is 100ml ORS every five to ten minutes.
   - Patients should continue to eat a normal diet or resume to normal diet once vomiting stops. For infants, encourage the mother to continue breastfeeding.

PLAN B: ORAL REHYDRATION FOR PATIENTS WITH SIGNS OF SOME DEHYDRATION

Patients presenting with signs of some dehydration must be admitted to the CTU/CTC.

1. **For initial treatment,** give ORS according to the weight of the patient (75ml/kg) in the first 4 hours as mentioned below in the table 3. Patient's age can be used when the weight is not known or difficult to assess.

2. **Monitor the patient** every hour for first 2 hours to ensure that ORS is taken satisfactorily and to detect patients with profuse ongoing diarrhea who will require closer monitoring.

3. **Reassess the patient** after 4 hours using table 1 for degree of dehydration.
   - If there are no signs of dehydration, go to Plan A to maintain hydration by replacing ongoing fluid losses.
   - If there are signs of some dehydration, repeat the procedure for some dehydration and start to offer food and other fluids. Continue to reassess the patient every 4 hours until the management is maintaining hydration on Plan A.
   - If signs of severe dehydration appear (rarely), rehydrate for severe dehydration (Plan C – refer to SOP 2.3).

TABLE 3*: APPROXIMATE AMOUNT OF ORS TO BE GIVEN IN THE FIRST 4 HOURS FOR PATIENTS WITH SIGNS OF SOME DEHYDRATION

AGE	*<4 months*	*4-11 months*	*12-23 months*	*2-4 years*	*5-4 years*	*15 years or older*
WEIGHT	< 5 KG	5-7.9 KG	8-10.9 KG	11-15.9 KG	16-29.9 KG	≥ 30 KG
ORS SOLUTION	200-400ML	400-600ML	600-800ML	800-1200ML	1200-2200ML	2200-4000ML

**Table 3 is adapted from WHO, Emerging and other communicable diseases, surveillance and control – Management of the patient with cholera https://www.who.int/csr/resources/publications/cholera/whocddser9115rev1.pdf*

DECIDE NEXT STEP

Once the patient maintains adequate hydration and is able to rehydrate himself/herself with or without the help of a caregiver, it is important on deciding the next step.

FOR PLAN A PATIENTS

- **Go home** – if the condition improves compared to the time when he/she visited the CTC. Give appropriate discharge instructions to be followed at home. Advise on when to seek immediate care and how to follow hygiene at home and at surrounding.
- **Go to plan B** – if the condition of the patient deteriorates during observation. This is seen in cases of poor hydration maintenance and persistence of vomiting or diarrhea.

FOR PLAN B PATIENTS

- **Go to recovery area** – if the condition improves with visible signs of appropriate hydration status compared to the time when he/ she visited the CTC. Continue observation for any possibility of deterioration in the patient.
- **Go to Plan C** – if the patient's initial clinical state rapidly deteriorates. This can happen when the on-going fluid losses (diarrhea and vomiting) are not being compensated by ORS adequately.

WHAT ARE THE KEY ACTIONS?

KEY ACTIONS FOR PLAN A

STEP 1 – Check the vital signs of the patient like blood pressure, heart rate, respiratory rate and temperature

STEP 2 – Assess for dehydration and rehydrate orally.

STEP 3 – Monitor frequently.

STEP 4 – Maintain hydration until diarrhea stops

STEP 5 – Feed the patient

STEP 6 – Discharge the patient accordingly *(refer to SOP 2G4)*

KEY ACTIONS FOR PLAN B

STEP 1 – Check the vital signs of the patient like blood pressure, heart rate, respiratory rate and temperature

STEP 2 – Assess for dehydration.

STEP 3 – Rehydrate the patient accordingly and monitor frequently. Then reassess hydration status.

STEP 4 – Give antibiotics for everyone when the patient is no longer vomiting and able to tolerate orally.

STEP 5 – Maintain hydration until diarrhea stops.

STEP 5 – Feed the patient

STEP 6 – Discharge the patient accordingly *(refer to SOP 2G4)*

ANNEX 1/ PHYSICAL SIGNS

LEVEL OF CONSCIOUSNESS	Lethargy – a lethargic patient is a somnolent patient who cannot be fully awakened, even after stimulation
PULSE	Routinely counting the pulse rate is unnecessary. Verify if the pulse is palpable or not and if the pulse is strong (readily palpable) or weak (difficult to palpate)
HEART RATE	Outside the normal range for age, in the absence of another pathology explaining the anomaly
RESPIRATORY RATE	Outside the normal range for age, in the absence of another pathology explaining the anomaly
TEMPERATURE	The temperature gradient between the body and the extremities (cold hands and feet)
CAPILLARY REFILL	A capillary refill time > 3 seconds
SUNKEN EYES	Sunken eyes are a sign of dehydration. There is loss of soft tissue volume causing eyes to sink into their orbits but may also be a normal feature in some children. Therefore, ask the caregiver/ mother of the child if the eyes are the same as usual or are more sunken than the usual
SKIN PINCH	This test evaluates the loss of skin elasticity due to a decrease in water content. The slower the skin pinch disappears, the greater is the degree of dehydration. Skin pinch is usually assessed by pinching the skin of the abdomen between the thumb and the forefinger, without twisting.
THIRST	Thirst is not always a good indicator of dehydration. Severely dehydrated patients and the elderly may not feel thirsty, even in the presence of clear signs of dehydration. The objective is to determine if the patient is able to drink, rather than the level of thirst. If the patient drinks normally, then oral rehydration is indicated and is likely to succeed. Those who have difficulty drinking will require close monitoring as they risk failing oral therapy, necessitating a change in the protocol (eg. switching to IV rehydration).
ESTIMATION OF ON-GOING FLUID LOSSES	**Diarrhea and vomiting:** Do not try to measure the volume of diarrhea and vomiting, but note each episode of diarrhea or vomiting over the period of ime. The number of stools is used to estimate the volume to be replaced Vomiting is not counted as fluid to be replaced, but must be followed to know if the patient can (or cannot) retain ORS. **Urine:** Urine output is not counted as fluid loss as such. However, it is necessary to check that the patient has urinated at least once during or by the end of the rehydration phase.
COMPENSATION FOR ON-GOING FLUID LOSSES	It is roughly estimated that each stool should be compensated by 50-100ml of ORS for children <2 years; 100-200ml of ORS for children 2-10 years and 200-250ml of ORS for children >10 years and adults. If the patient is incapable of drinking, on-going losses must be compensated via the IV route.

ANNEX 2 / HEALTH EDUCATION

PREVENTION OF CHOLERA IN THE HOUSEHOLD

The following recommendations outline prevention of cholera transmission within a household once one family member has been diagnosed with the illness.

- Drink and use safe water (safe water is the water that is bottled with an unbroken seal, has been boiled or has been treated with chlorine).
- Wash hands with soap and safe water.
- Use latrines or bury the feces deep; do not defecate in any body of water.
- Cook food thoroughly (especially seafood), keep it covered, eat it hot and peel fruits and vegetables.
- Clean up safely – in the kitchen and in places where the family bathes and washes clothes.
- If diarrhea develops or aggravates, drink ORS and go to a clinic immediately.
- Chemoprophylaxis of family members is not recommended.
- Encourage the patient to send family members or neighbors to the treatment facility if they present with symptoms of cholera.

INSTRUCT THE PATIENT OR THE CARETAKER TO SEEK IMMEDIATE CARE IF ANY OF THE FOLLOWING SIGNS DEVELOP

- Increased number of watery stools
- Eating or drinking poorly
- Marked thirst
- Repeated vomiting

Or if any signs indicating other problems develop:

- Fever
- Blood in the stool

MOTHERS SHOULD

- Keep feeding the child (or increase the frequency of breastfeeding) during the episode and increase feeding afterwards.
- Recognize the signs of dehydration and take the child to a health center so that ORS.
- Administer 20mg zinc supplements to children daily for 10 – 14 days (administer 10mg daily to infants under 6 months).

ANNEX 3 / ORS PREPARATION

Give ORS packets to take home. Give enough packets for 2 days. Patients who want more ORS sachets than prescribed should receive as much as they want. Explain that patients loose a lot of fluid during diarrhea in cholera and ORS serves to replace that fluid loss. Additionally, explain that ORS does not stop the diarrhea, as there is probability of the patient/ caretaker to view this as a treatment failure, and that ORS must be taken until diarrhea stops. Demonstrate how to prepare and give the solution. Make sure to indicate that ORS once prepared should not be stored for more than 12 hours at room temperature or up to 24 hours if refrigerated. After that, a new solution must be prepared.

PREPARATION OF ONE LITER OF ORS

1. Wash your hands with soap and water
2. Pour the entire packet of ORS into a clean container (jar or bottle)
3. Measure 1 liter of clean water
4. Pour the water into the container
5. Mix well until the salts/ powder completely dissolves

NUMBER OF ORS SACHETS

Give enough ORS for 2 days of treatment. Depending on the age, 1 to 2 sachets of ORS will suffice per patient and per day. It is helpful to add 2 additional sachets in case of loss or to start treatment for a family member, particularly if access to a treatment facility is difficult.

VOLUME FOR DILUTION

Patient do not always know how to measure one liter and under- or over-dilution of ORS is common. Ensure that the family has the means to measure a liter of water to correctly prepare ORS at home.

EXAMPLE

- Indicate on a bottle used locally the quantity representing 1 liter (or)
- Provide a one-liter bottle (if available) together with ORS sachets (or)
- Provide a cup of known volume (e.g. 250 or 500 ml), explaining that 1 sachet of ORS is mixed in two 500 ml cups of water or four 250 ml cups of water. Depending on the context, sachets of ORS can be accompanied by illustrative leaflets.

> 2G3 INTRAVENOUS REHYDRATION – PLAN C

WHAT IS THE PRINCIPLE?

- Absence or **weak radial pulse** indicates a **life-threatening emergency**. Patients with **severe dehydration**, stupor, coma, uncontrollable vomiting, or extreme fatigue that prevent drinking orally should be **rehydrated intravenously** in order **to restore normal hydration** within 3 to 6 hours.
- IV rehydration should be the **last resort** and consider giving IV fluids only when the patient **fits into the criteria for Plan C with severe level of dehydration** and when oral rehydration is not possible.
- Patients under plan C should always be placed under close medical supervision *(refer to annex 1 for further details on patient surveillance)*. It is important to measure the amount of IV fluids delivered and measure the fluid lost through diarrhea and vomiting.
- In many contexts, IV rehydration may be considered better due to cultural context and needs to be dealt sensitively with **proper patient education** and awareness on when IV rehydration is indicated.
- Note: **IV rehydration can have secondary effects** like over-hydration and pulmonary congestion. Watch out for signs of excess treatment with IV rehydration.
- **IV rehydration in shock cases** should be dealt aggressively as patients can die or develop serious complications within few minutes. Using a special protocol for such cases is recommended.

*Note: The following protocol is **not** for SAM children.*

WHAT ARE THE COMPONENTS?

❶ CONFIRM SEVERE DEHYDRATION VS SHOCK
Differentiating between severe dehydration and shock is one of the preliminary and foremost clinical things to assess when patients condition arrives at a CTC. When assessing a patient, if any patient is found with ay found with any danger signs (lethargy or unconsciousness, absent or weak pulse and with respiratory distress) immediately start the treatment for Plan C as the patient is considered to be in hypovolemic shock.

❷ REHYDRATE ACCORDING TO THE DEGREE OF DEHYDRATION
When the patient fits into the criteria for severe dehydration, immediately start IV rehydration. Initially two IV lines may be necessary to rehydrate. Once the patient can drink, give ORS solution by mouth in addition to the IV drip. Monitor closely for any signs of hypovolemic shock.

❸ DECIDE NEXT STEP
Once the patient has stabilized or deceased, the next step is automatically followed.

❶ CONFIRM SEVERE DEHYDRATION VS SHOCK

Suspect severe dehydration if:
- Current or severe dehydration
- Decreased thirst
- Recent appearance of sunken eyes
- Decreased urine output

Consider shock if the patient has any or all of the following danger signs:
- Lethargy or unconsciousness
- Absent or weak pulse
- Respiratory distress (RR > 40cpm or kussmaul's apnea)
- Cold and clammy hands and feet (capillary refill > 3 secs)

EXAMINATION	ASSESSMENT	TREATMENT	ADMISSION TO CTU/CTC
Signs (at least 2 of the following): • Sunken eyes • Not able to drink or drinks poorly • Skin pinch goes back very slowly *Danger signs (if one or more present):* • Lethargic or unconscious • Absent or weak pulse • Respiratory distress	Severe Dehydration	**PLAN C** **(IV and Oral rehydration)**	YES

❷ REHYDRATE ACCORDING TO THE DEGREE OF DEHYDRATION

For immediate resuscitation via IV fluids the following solutions are considered as the standard.

Intravenous solutions:

- **Best solution** – Ringer's Lactate solution
- **Acceptable** – Normal saline, 5% glucose in normal saline or cholera saline
- **Unacceptable** – Plain glucose (dextrose) solution

Refer to annex 2 for practical tips on IV rehydration.

- ⚠ Plain 5% glucose (dextrose) should **never** be administered.

TABLE 1*: APPROXIMATE AMOUNT OF RINGER'S LACTATE (IV) TO BE GIVEN BY AGE GROUP AND TIME PERIOD

AGE	GIVE 30ML/KG IV	THEN GIVE 70ML/KG IV	TOTAL
Infants (<12 months)	1 hour	5 hours	100ml/kg in 6 hours
>1 year and adults	30 minutes	2.5 hours	100ml/kg in 3 hours
≥ 10 years	As much as needed	~ 2000ml/day	~ 2000ml/day

**Table 1 is adapted and modified from Global Task Force on cholera control (section 7 – case management in treatment facilities) https://www.choleraoutbreak.org/*

- Give a total of 100ml/kg Ringer's lactate solution divided in two periods. The rate of infusion in each period is slower for children younger than 1 year. About 200ml/kg or more may be needed in first 24 hours.
- More than one IV line may be necessary to give adequate fluid during the first 30 or 60 minutes. When IV rehydration is not possible, and the patient cannot drink, ORS solution can be given by nasogastric tube but switch to IV rehydration as soon as possible. Do not use nasogastric tubes for patients who are vomiting.

During the first 30 minutes:

- Observe closely until a strong radial pulse is present and mental status improves.
- Check the volume of fluid infused. Ensure that the infusion rate is sufficient to administer the prescribed quantity within the correct time frame.
- If there is no improvement with the first bolus, administer a second bolus (children under 5 years may receive up to 3 boluses maximum).
- If after the second bolus, the mental status has not improved, consider hypoglycemia, measure blood glucose and/ or administer glucose empirically (refer to annex 3 for management of hypoglycemia).

During the next 3 hours, assess every 30 minutes:

- Ensure the prescribed volume of infusion is administered in the correct time frame (correct infusion rate, functional catheter).
- Ensure absence of danger signs.
- Note the amount of fluid given (RL and ORS).
- Note the number of stools and vomiting episodes.
- Check more frequently the patients with abundant diarrhea and vomiting, specific groups like the elderly, pregnant patients and children under 5 years.
- If any danger signs (re-)appear, repeat the bolus therapy until resolution, and then continue the above-mentioned fluid therapy.
- If the patient develops an onset of extremity or peri-orbital edema or difficulty breathing, consider fluid overload. (refer to annex 4 for management of fluid overload).
- Give an antibiotic as a single dose (refer to annex 5 for antibiotic therapy).
- Give zinc sulfate to children under the age of 5 (refer to annex 6 for complementary therapy). Children receiving therapeutic food (F75 or F100) do not need zinc sulfate as it is already contained in the food product.

❸ DECIDE NEXT STEP

End of the rehydration phase:

- After the prescribed amount of RL has been given, reassess the hydration status, if there are no signs of dehydration, the patient can then move to the maintenance phase.
- Stop the infusion but leave the catheter in place until discharge.
- However, if a patient is more dehydrated, than initially assessed or if on-going losses have not been replaced accordingly and signs of dehydration are still present then.
  - If signs of severe dehydration are present, repeat the 3 hour IV rehydration treatment, including the bolus.
  - If signs of some dehydration are present, continue the rehydration phase with 75ml/kg of ORS over 4 hours.
  - In these patient, continue the clinical evaluation hourly until the signs of dehydration are completely resolved and the patient can switch to maintenance therapy (refer to 2G2 for oral rehydration).
- However, in untoward circumstances, the patient can also have a negative outcome and can die and in such a case, the body is moved to the mortuary and handed over properly to the relatives and advised on appropriate cremation (based on the cultural context).

WHAT ARE THE KEY ACTIONS?

STEP 1 – Severe dehydration is a medical emergency and the patient must be treated immediately with IV fluid accordingly.

STEP 2 – Any patient in shock or with severe dehydration must be kept on IV rehydration.

STEP 3 – After the initiation of immediate therapy, patient supervision is very important. Regularly reassess the patients for hydration status and possibility of any development of complications.

STEP 4 – Maintain hydration and feed appropriately.

STEP 5 – Discharge the patient accordingly (refer to SOP 2.4).

ANNEX 1 / PATIENT SURVEILLANCE UNDER PLAN C

To evaluate the efficacy of treatment, to react when a patient's condition deteriorates or does not improve, to change treatment plan or to make a decision on patient discharge, surveillance is indispensable. Surveillance is based on the observation of:

CLINICAL EVOLUTION

- Improvement or the (re-)appearance of signs of dehydration or danger signs
- Ability to drink ORS (frequency of vomiting, level of consciousness etc)
- Appearance of complications (symptoms of hypokalemia, fluid overload)
- Patient specific surveillance (eg. Blood pressure in pregnant women, feeding in infants)
- Resumption of food intake after 3-4 hours of admission

INTAKE VS OUTPUT

Intake:
i. Count and record the volume (in ml or L) of RL infused or cups of ORS taken
ii. Verify that fluids are given in the prescribed quantity and time frame *(eg. X liters of RL in 3 hours, or 'x' ml of ORS in 4 hours)*

Output:
i. Record the number of stools (to be able to replace the fluid loss)
ii. Record the number of vomiting (to be able to evaluate the capacity to drink ORS)

While all cholera patients need regular surveillance, certain patients need closer observation:

- Patients with severe dehydration or hypovolemic shock until they are stabilized
- Infants, the elderly, pregnant women, malnourished children, as the risk of complications is higher
- Patients with co-morbidities
- Patients receiving oral therapy who have difficulty drinking or who vomit repeatedly, as their condition can rapidly deteriorate

ANNEX 2 / PRACTICAL TIPS FOR IV REHYDRATION

VENOUS ACCESS

- Use 18 G for adults (20 G for adults with small veins) and 22 G or 24 G for children.
- The veins of the forearm or antecubital fossae are preferred. Hand and foot veins do not permit the needed infusion rate and catheters placed here are easily dislodge.
- In adults, a second catheter may initially be placed in the other arm to deliver the full bolus volume in the correct time-frame. The additional catheters should be removed once a strong pulse is felt, keeping a single catheter in place.
- Always have an intra-osseous needle kit available at hand in case of failure to establish IV access.
- Failure to quickly place an IV catheter in a peripheral vein after 90 seconds should prompt the use of the femoral vein or intra-osseous.

INFUSIONS

- Raise the IV pouch as high as possible above the catheter insertion site to increase the flow rate.
- In children, keeping the arm straight can be achieved by taping a piece of cardboard or a tongue depressor across the posterior aspect of the elbow.
- Mark each pouch of the IV fluid with a marker, indicating the current pouch number and the total prescribed.
- Record in the patient's file the volume of IV fluid administered (in liters or in ml).
- Regularly assess the IV catheter insertion site. The catheter must be replaced in the event of dislodgement, infiltration, local inflammation or unexplained fever. Catheters do not need to be changed systematically if they remain clean and function properly.

END OF THE INFUSION

- Once IV therapy has been completely, leave the catheter in place and disconnect the infusion bag. If after 4 to 6 hours or oral therapy, the patient has:
  1) No profuse diarrhea or severe vomiting,
  2) Compensated the losses by consuming ORS,
  3) No longer has signs of dehydration, the catheter can be removed to minimize the risks of complications.

This decision should take into account the possible difficulties in re-establishing the IV access if needed in young children, the elderly and the obese.

ANNEX 3 / MANAGEMENT OF HYPOGLYCEMIA

Hypoglycemia is a potential complication in patients who start drinking ORS (which contains glucose) late and/or do not quickly resume nutrition. Those most at risk are the malnourished and children under 5 years.

CLINICAL SIGNS AND DIAGNOSIS

Suspect hypoglycemia

- On admission – in patients with decreased levels of consciousness or hypotonia persisting after 2 boluses of RL
- During rehydration therapy – if neurological signs (lethargy or coma) appear when signs of dehydration are resolving
- In case of hypothermia

A blood glucose level of <60mg/dl (<3.3 mmol/L) indicates hypoglycemia.

TREATMENT

- Administer glucose by slow IV injection
  - > Children: 5ml/kg of 10% glucose
  - > Adults: 1ml/kg of 50% glucose
- Reassess glucose level after 30 minutes and repeat the same dose if necessary
- To prevent relapse, give ORS under observation. If ORS consumption is delayed or reduced – add 100ml of 50% glucose per liter of RL to be used for rehydration (giving a 5% glucose solution) until sufficient ORS intake is possible.

PREVENTION

Start ORS therapy as soon as possible for patients receiving IV treatment and resume rapidly nutrition for all patients.

ANNEX 4 / MANAGEMENT OF FLUID OVERLOAD

Fluid overload is a complication of IV rehydration, usually resulting from an error in administration (too much fluid or overly rapid infusion). However, fluid overload can occur even with normal rehydration treatment in infants, the elderly and patients with severe malnutrition or cardiovascular disease. Patients receiving ORS alone do not develop signs of over-hydration/ fluid overload.

CLINICAL SIGNS

Peripheral edema – the appearance of peri-orbital or lower limb edema may indicate fluid overload.
Pulmonary edema – rapid breathing, dyspnea, cough (first dry cough and then with phlegm) and crepitations on lung auscultation.
Pulmonary edema may be preceded by peripheral edema but this is not always the case.

TREATMENT

Peripheral edema:

- Reduce the infusion rate to a minimum, but do not take out the catheter
- Re-evaluate the level of dehydration and the necessity of continuing IV rehydration (signs of dehydration are no longer present or if it is possible to switch to oral rehydration).
- Auscultate the lungs
- If the patient still needs IV rehydration therapy, resume the infusion at a slower rate and observe more closely, assuring that dehydration does not worsen.
- Peripheral edema alone does not require any additional treatment with furosemide. The edema will resolve spontaneously within 24 to 48 hours.

Acute pulmonary edema:

- Do not take out the catheter but reduce the infusion rate to a minimum
- Have the patient sit upright with their legs over the edge of the bed
- Auscultate the lungs for crepitations
- If the patient is dyspneic – administer IV furosemide
  - > Children – 1mg/kg
  - > Adults – 40mg

- These measures should lead to an improvement in clinical signs over 1 to 2 hours.
- Examine the patient for other contributing factors such as cardiovascular disease (hypertension) or renal (anuria) and rule out pulmonary infection.
- Once the patient is stabilized, reassess the level of dehydration.
- Based on the clinical signs, change to oral therapy or continue the IV therapy at one-half the previous rate, while maintaining close observation and stopping IV treatment as soon as possible.

PRECAUTIONS/ PREVENTION

- Avoid unnecessary IV infusions.
- Avoid prolonging IV infusions in patients who are no longer in need.
- In at-risk patients (chronic hypertension, cardiac diseases), pay particular attention to the IV volume and infusion rate as well as the clinical evolution while under IV therapy.

ANNEX 5 / ANTIBIOTIC THERAPY

- Antibiotics are indicated for and administered within the first 4 hours:
  - Cholera patients hospitalized with severe dehydration.
  - Patients with high purging (at least one stool per hour during the first 4 hours of treatment) or treatment failure (the patient is still dehydrated after completing the initial 4 hours of rehydration therapy), regardless of the degree of dehydration.
  - Patient with coexisting conditions (including pregnancy) or comorbidities (such as SAM, HIV), regardless of the degree of dehydration.
- The choice of antibiotic should be based on drug-resistance patterns from cholera cultures performed early in an outbreak. While awaiting results of drug sensitivity testing, patients can be given doxycycline.
  - Doxycycline – single dose is the antibiotic of choice for all patients including pregnant women.
  - If resistance to doxycycline is documented, give Azithromycin or Ciprofloxacin orally as a single dose for adults.

TABLE 5*: ANTIBIOTIC TREATMENT REGIMEN AS A FIRST LINE AND ALTERNATIVE FORMS

AGE GROUP	FIRST LINE	ALTERNATIVE
Adults (including pregnant women)	Doxycycline 300mg p.o. single dose	Azithromycin 1gm p.o. single dose (or) Ciprofloxacin 1gm p.o. single dose
Children < 12 years old	Doxycycline 2-4mg/kg p.o. single dose	Azithromycin 20mg/kg (max 1 gm) p.o. single dose (or) Ciprofloxacin 20mg/kg (max 1gm) p.o. single dose

**Table 5 is adapted from Global Task Force on cholera control (section 7 – case management in treatment facilities) https://www.choleraoutbreak.org/*

ANNEX 6 / COMPLEMENTARY THERAPY

- In children under 5 years, diarrhea causes a significant loss of zinc which must be replace. Zinc sulfate shortens the duration and severity of diarrhea and if taken for 10 days may prevent other diarrheal illnesses for up to 2 to 3 months.
- When available zinc sulfate (20mg p.o. per day) should be started immediately.
- Zinc may reduce the absorption of some classes of antibiotics, including ciprofloxacin. For the best effect, antibiotics be administered 2 hours before zinc or 4-6 hours after zinc (PAHO, 2011).

> 2G4 - RECOVERY AND DISCHARGE OF CHOLERA PATIENTS

WHAT IS THE PRINCIPLE?

- For patients still **under recovery**, the goal is to **maintain hydration** and to **avoid any deterioration** as soon as possible and adjust the treatment regimen based on the progress of the patients' condition.
- For **discharged patients**, the goal of home therapy is **to avoid dehydration.** Therefore, this mostly consists of **providing ORS** for the patient to drink and regular meals.
- **Instruction of care must be given to all discharged patients,** regardless of their duration of stay or the type of facility in which they received their treatment.
- **Follow the necessary hygiene measures** and teach the same to the patients and their caregivers including washing clothes with chlorine.
- **Do not leave any patient** in the recovery area for a longer duration of time as unexpected events can happen anytime and there is a possibility for any patient to rapidly deteriorate if his/her hydration is not maintained. Hence, make sure to have constant/ periodical visits to every patient and making sure that the patient is adequately hydrated.

WHAT ARE THE COMPONENTS?

N°1 RECOVERY AREA

When hospitalized, patients are usually transferred to the recovery area and kept under observation and given ORS for 4-6 hours in order to monitor the capacity of self-hydration either by the patient himself/herself or with the help of the caregiver. Usually patients who are sufficiently hydrated after Plan A are sent to the recovery area.

While the patient stays in the recovery area:

- Educate the correct preparation of ORS in one liter of water (refer to annex 1 for preparation of ORS).
- Make sure to educate them and provide instruction on hygiene (hand-washing, use of potable water, food preparation, etc).
- Drinking and using safe water (safe water is the water that is bottled with an unbroken seal or has been boiled or has been treated with chlorine).
- Use latrines or bury the feces deep and make the patient understand the importance of why not to defecate in any body of water.
- Encourage the patient to send any family members to the treatment facility if they present with the symptoms of cholera.
- Patients should be given a normal, non-restricted meal unless indicated (SAM children and adults with comorbid conditions) once the vomiting has stopped. Continue breast feeding infants and young children.
- Provide blankets to prevent hypothermia.
- Once the patient has fully recovered, clear instruction of when to seek care is also given.

N°2 WHEN TO DISCHARGE

Usually from the recovery area, discharge is made when there are no more signs of any dehydration and less than 3 liquid stools during the past 6 hours were passed. Advise the patient or the caregiver to come back to the treatment center immediately if any of the following occur:

- Vomiting restarts
- Diarrhea worsens
- Patient is not drinking properly or not eating adequately or has decreased appetite
- Dry mouth or intense thirst
- New appearance of sunken eyes
- Change in behaviors – irritable, or the contrary listless and difficult to awaken the patient

Discharge the patient with enough of ORS sachets that can last for about 2 days at home and instruct the patient to prepare the ORS solution with clean potable water.

WHAT ARE THE KEY ACTIONS?

Step 1 – Patients who are able to recover under Plan A - area of the CTC are sent to the recovery area.
Step 2 – Monitor patients in recovery and watch out for any deterioration in patients' condition.
Step 3 – Simultaneously provide the patients and caregivers with appropriate information on home instructions and care to be taken at home.
Step 4 – Once recovered, patients are discharged along with ORS sachets and follow up as indicated.

ANNEX 1 / PREPARATION OF ORS

Give ORS packets to take home. Give enough packets for 2 days. Patients who want more ORS sachets than prescribed should receive as much as they want. Explain that patients loose a lot of fluid during diarrhea in cholera and ORS serves to replace that fluid loss. Additionally, explain that ORS does not stop the diarrhea, as there is probability of the patient/ caretaker to view this as a treatment failure, and that ORS must be taken until diarrhea stops. Demonstrate how to prepare and give the solution. Make sure to indicate that ORS once prepared should not be stored for more than 12 hours at room temperature or up to 24 hours if refrigerated. After that, a new solution must be prepared.

PREPARATION OF ONE LITER OF ORS

1. Wash your hands with soap and water.
2. Pour the entire packet of ORS into a clean container (jar or bottle).
3. Measure 1 liter of clean water.
4. Pour the water into the container.
5. Mix well until the salts/ powder completely dissolves.

NUMBER OF ORS SACHETS

Give enough ORS for 2 days of treatment. Depending on the age, 1 to 2 sachets of ORS will suffice per patient and per day. It is helpful to add 2 additional sachets in case of loss or to start treatment for a family member, particularly if access to a treatment facility is difficult.

VOLUME FOR DILUTION

Patient do not always know how to measure one liter and under- or over-dilution of ORS is common. Ensure that the family has the means to measure a liter of water to correctly prepare ORS at home.

EXAMPLE

- Indicate on a bottle used locally the quantity representing 1 liter. (or)
- Provide a one-liter bottle (if available) together with ORS sachets. (or)
- Provide a cup of known volume (e.g. 250 or 500 ml), explaining that 1 sachet of ORS is mixed in two 500 ml cups of water or four 250 ml cups of water. Depending on the context, sachets of ORS can be accompanied by illustrative leaflets.

ADDITIONNAL RESOURCES

- **Médecins Sans Frontières (MSF)**. *Management of a cholera epidemic*. Practical guide for doctors, nurses, laboratory technicians, medical auxiliaries, water and sanitation specialists and logisticians. Médecins Sans Frontières-Clinical Guidelines. Geneva, 2018. Chapter 5: Cholera Case Mangement.
- **GTFCC.** *Cholera Outbreak Response.* Field Manual. Geneva, 2019. Section 7: Case management in treatment facilities.
- **UNICEF**. *Cholera Toolkit*. New York, 2013. Chapter 8: Case management and infection control in health facilities and treatment sites.

2H

WHAT ARE THE KEY MEASURES FOR INFECTION, PREVENTION AND CONTROL?

 **POSITIONING**	ACF will provide medical treatment only if the country office is able to in terms of resources and expertise and if no other actor is able to respond.
 **OBJECTIVE**	To ensure good infection prevention control practices and keep patients safe and comfortable in Cholera Treatment Facilities
 **LEAD**	Health and Nutrition Head of Departmentt
 **CROSS SECTORAL COLLABORATION**	**HEALTH & NUTRITION + WASH + LOGISTICS + HUMAN RESOURCES** • Meeting Water, sanitation and hygiene (WASH) standards are required for adequate infection prevention and control (IPC) in CT Facilities

WHAT IS THE PRINCIPLE?

- Adequate Water, Sanitation and Hygiene (WASH) services are critical for patient care and for Infection Prevention and Control (IPC) in Cholera Treatment Facilities (CTF).
- IPC measures aim at preventing disease transmission within the cholera treatment facilities and to the surrounding area.
- IPC practices include restricted access and movement, hands hygiene, food preparation and handling, laundry, waste management, cleaning and disinfection, vector control and dead body management.
- Adequate infection control practices should be applied in all situations by patients, caregivers and staff. All medical and non-medical staff (cleaners, guards, etc.) must be trained in the IPC protocols relevant to their functions prior to working in the CTF.

WHAT INFECTION, PREVENTION AND CONTROL CHECKLIST?[1]

Date of evaluation: ____ / _____ / _____
Name of evaluator: _____
Position of evaluator: _____
Contact of evaluator: _____

Healthcare facility Name: _____
Location (District, Town, Village): _____
GPS Long: _____
GPS Lat: _____
□ Hospital □ Clinic post □ Mobile Clinic
□ Cholera Treatment Centre □ Cholera Treatment Unit
□ Therapeutic Feeding Centre □ Other
Healthcare facility focal point: _____
Contact: _____

Number of Staff: _____
Number of inpatient: _____
Occupancy Rate: _____ %
Outpatients/Day: _____

WHAT COMPONENT?	WHAT MEASURE?	WHAT SCORE?
RESTRICTED ACCESS AND MOVEMENT	□ The CTF is fenced to restrict access in an out □ The entrance and exit of the facility is clearly identified with personnel stationed to control traffic flow □ The patient flow is clearly signed □ Access is restricted to one caregiver per patient □ Access to kitchen, waste management area and morgue is restricted to authorized personnel only	__/5 (One point each measure)
HANDS HYGIENE	□ Handwashing stations are available at point of entry and exit with soap or chlorine solution 0.05% □ A staff is posted at the entry and the exit to ensure systematic washing of hands 24 hours a day of all person entering or exiting the CTF □ Handwashing stations with chlorine solution 0.05% or soap at the entry and exit to the wards, in the waste management area, in the morgue, in the kitchen and at all latrines □ Relatives wash hands after each manipulation of the patient, belongings and surroundings □ Health care workers wash hands before touching a patient, before performing clean or aseptic procedures, after body fluid exposure or risk, after touching a patient and after touching patient's surroundings	__/5 (One point each measure)
USE OF PERSONAL PROTECTIVE EQUIPMENT	□ Staff change clothes on entering and leaving the CTC □ Staff in charge of cleaning and disinfection wear a PPE[1] □ Staff in charge of waste management wear a PPE □ Staff in charge of preparing chlorine solutions wear a PPE □ PPE is changed every day and each time it is soiled	__/5 (One point each measure)
SAFE FOOD PREPARATION AND HANDLING	□ Food is provided at the center and there is designated area for food preparation □ Only kitchen staff are allowed to enter the kitchen and handle food □ All foods are heated to 70°C and kept hot (60°C) until eating □ Fruits and vegetables are washed with safe water □ Food brought by caregiver are transferred to a new container at the gate	__/5 (One point each measure)
LAUNDERING SOILED LINENS AND CLOTHES	□ All staff uniforms are kept and cleaned at the center □ All bed linen and gowns are washed at the center □ The clothes that belong to the patient are washed and given back when they reach the recovery area □ Clothes and linens are Immersed 10 min in chlorine solution 0,05%, rinse then wash as normal □ There is a dedicated area to dry linens and clothes	__/5 (One point each measure)

1 - PPE items: one short-sleeved top, one pair of trousers, one pair of boots, one work overalls, reusable rubber gloves or heat resistant gloves for those working with the incinerator, reusable plastic apron or long leather for those working with the incinerator and reusable face shield

MANAGING WASTE (3)	◻ The waste treatment zone is clearly marked and fenced off ◻ All wastes are placed into different colored / marked containers and labelled ◻ Waste are segregated into sharp waste, soft waste, organic waste, waste-waters and pathologic waste ◻ Sharp wastes are either buried, incinerated or treated chemically (Technical Brief n°2E) ◻ Soft wastes are incinerated ◻ Organic wastes are disposed in a specific pit ◻ There is no health-care facility waste in facility ground and overflowing waste container ◻ Water containing soap is first pass through a grease trap ◻ Waste-water are treated with 30% hydrated lime[2] before infiltration and disposed though soak-away pits or trenches ◻ Stools and vomit from cholera patients are collected in specific 10-15L buckets (with 30% hydrated lime solution) ◻ Buckets when 1/3 full, are carefully transported and emptied into a dedicated lined pit for this purpose	__/5 (One point each measure)
CLEANING AND DISINFECTION	◻ There are cleaners employed 24 hours a day in the facility ◻ Chlorine solutions 0.2% and 0.05% are prepared daily ◻ Foot bath or spraying of shoes are available at the point of entry and exit with chlorine solution 0.2% ◻ The foot bath is regularly soaked with the appropriate solution ◻ Cups used for ORS and dishes are washed with a chlorine solution 0.05% in a designated area ◻ Eating and cooking utensils are washed regularly between each use with detergent and a 0.2% chlorine solution ◻ Surfaces used for food preparation should be washed with detergent and a 0.2% chlorine solution ◻ Latrines are easy to clean and are cleaned several times a day with chlorine solution 0.2% (this includes the slabs and the walls up to 1m or height of splashes). ◻ The floor of each tent is cleaned with chlorine solution 0.2% 3 times per day and each time it is necessary ◻ Beds are disinfected after each use with chlorine solution 0.2% and then sun dried	__/5 (One point each measure)
VECTOR CONTROL	◻ Vector breeding sites are removed ◻ Kitchen and health-care waste are properly disposed ◻ Window and door barriers are installed, ◻ odent traps are installed, ◻ Window and door screens are installed, and insecticide treated mosquito nets in inpatient wards are installed on each bed.	__/5 (One point each measure)
SAFE MANAGEMENT OF CORPSE (4)	◻ The center has a designated isolated area for the dead bodies ◻ Handwashing stations with soap or chlorine solution 0.05% are available ◻ Designated staff are trained to prepare and disinfect dead bodies ◻ Dead bodies are disinfected with chlorine solution 2% ◻ There are enough body bags available in the center	__/5 (One point each measure)
Use the space below or additional pages to capture any additional notes, comment, and recommendations. **Action, or drawing**		**__/45** (add all individual scores together)
As soon as it is filled, send this form to: _____@_____		

2 - More effective than 2% chlorine solution as per MSF Applied research into the disinfection of human excreta in emergency settings using highly concentrated chlorine solutions (ARDHEES) by University of Brighton (2018)

ADDITIONNAL RESOURCES

- 2B ACF Cholera Operational Toolkit, Technical brief 'How to set up cholera treatment facilities'
- 2E ACF Cholera Operational Toolkit, Technical brief 'How to manage waste in cholera treatment facilities'
- 4D ACF Cholera Operational Toolkit, Technical brief 'How to monitor WASH standard in Cholera Treatment Facilities'
- UNICEF cholera toolkit, Chapter 8 'Case management and infection control in health facilities and treatment sites' https://www.medbox.org/preview/5ba0e451-ebc4-43a2-98b0-18b41fcc7b87/doc.pdf
- GTFCC WASH working group (2019), "Technical Note: Water, Sanitation and Hygiene and Infection Prevention and Control in Cholera Treatment Structures" https://www.gtfcc.org/wp-content/uploads/2019/10/gtfcc-technical-note-on-water-sanitation-and-hygiene-and-infection-prevention-and-control-in-cholera-treatment-structures.pdf

REFERENCES

(1) *GTFCC WASH working group (2010), "Technical Note: Water, Sanitation and Hygiene and Infection Prevention and Control in Cholera Treatment Structures"*

(2) *UNICEF (2013), "Cholera Toolkit"*

(3) *ACF Cholera Operational Toolkit, Technical brief 'How to manage waste in cholera treatment facilities'*

(4) *ACF Cholera Operational Toolkit, Technical brief 'How to reduce cholera transmission during burials and funerals'*

3

CHOLERA RESPONSE IN THE COMMUNITY

3A How to implement epi-driven interventions? p.95
3B How to implement geo-targeted interventions? p.103
3C How to set up Rapid Response Teams? p.111
3D How to map cholera cases during outbreaks? p.117
3E How to conduct case-home disinfection? p.123
3F How to reduce cholera transmission during burials and funerals? p.127
3G What are ACF standards for community cholera kits? p.135

3A

HOW TO IMPLEMENT EPI-DRIVEN INTERVENTIONS?

 **POSITIONING**	ACF recommends driving response interventions in the community according to real-time epidemiological information analysis to streamline resources and maximize the impact on disease transmission
 **OBJECTIVE**	To reduce cholera transmission through timely, epidemiology-driven and targeted interventions
 **LEAD**	Water, Sanitation and Hygiene Program Manager
 **CROSS SECTORAL COLLABORATION**	**WASH + HEALTH & NUTRITION** • Access to epidemiological data for geo- and epi-targeted interventions. • Set up Multi-sectorial team with Health staff for case findings and OCV administration • Strengthen Health facility and community-based surveillance in ACF intervention areas through regular health and nut programs **WASH + MHPS** • Assess community perception of the intervention and subsequent barriers and enablers to adapt the communication, delivery mechanism and intervention

WHAT IS THE PRINCIPLE?

- Information on the **epidemiology of the disease** (cholera burden, outbreak length, cholera hotspots, cholera affected areas, seasonality, risk factor, high-risk population) is used to **inform preparedness and response strategies** (1).
- **Outbreak response** involves delivery of **timely, epidemiology-driven** and **targeted** interventions as soon as the first cholera cases are suspected. The strategy also aims to **anticipate** and **prevent** the transmission of cholera to the **unaffected population identified as being at risk** through analysis of previous epidemic patterns.
- **The choice of appropriate response interventions** requires **understanding the context of *Vibrio cholera* transmission.** The transmission context is defined as the circumstances in which a person will most likely contract the disease (2). Six recurrent contexts have been identified: case households and neighbors, public institutions and places, population gatherings, cholera treatment facilities, burials and funerals and environmental contamination (Annex 1) (2-4). A targeted approach and appropriate WASH packages will be selected based on the identified transmission context(s) (Annex 2) (Table 1) (2,4).
- **Targeted approaches** can be used **alone or in combination with others, depending on field conditions** (5).

WHAT TARGETED APPROACHES AND INTERVENTIONS?

TABLE 1: MATRIX CONTEXT OF TRANSMISSION, DELIVERY MECHANISMS AND EVIDENCE-BASED INTERVENTIONS

CONTEXTS OF TRANSMISSION	TARGETED APPROACHES	WASH PACKAGES
CASE HOUSEHOLDS AND NEIGHBORS 	• **Case-Area Targeted Interventions (CATIs)** - *onset and tail of outbreak* Conduct interventions ideally within 1-2 days targeting household contacts and neighbors (significant risk up to 150m) • **Health-care Facility Based Interventions** Conduct interventions ideally within 1-2 days targeting household contacts • **Case-Cluster Targeted Interventions** - *acute phase of the outbreak* - Prioritize interventions in case clusters - Intensify WASH interventions in persistent case clusters (>3 weeks)	• **Case referral** • **Social mobilization** - Community engagement and accountability: community consultation, monitoring and capacity building • **Case home disinfection** • **Household water treatment (HWT)** • **Safe water storage** • **Improved hygiene practices** - Hygiene and health education* (early rehydration and referral, HWT methods, safe water storage, food safety and hygiene, handwashing at critical times) - Household cholera kit distribution (HWT supplies and instructions, soap and improved water storage container)
PUBLIC INSTITUTION AND PLACES 	**Place of intervention known** from previous outbreaks or recently identified **as source of infection** following case/outbreak investigation (e.g., markets, schools, transit stations, cross-roads, border posts, harbors, military bases, prisons) • **Case-cluster targeted interventions** - *acute phase of the outbreak* • **Blanket Neighborhood Interventions**	• **Social mobilization** - Engage community and ensure public health regulation compliance - Test and monitor water quality and food safety - Ban open defecation • **Hygiene and health education** • **Food safety and hygiene** - Train food handlers and vendors - Provide handwashing facilities and soap • **Water supply and treatment** • **Improved sanitation**
POPULATION GATHERINGS 	**Population gatherings and/or movement within or close to affected communities** (e.g., ceremonies, religious festivals, seasonal workers, refugee camps)	• **Social mobilization** • Hygiene and health education • **Food safety and hygiene** - Supervise hygienic practices - Provide handwashing facilities and soap • **Water supply and treatment** • **Improved sanitation**
ENVIRONMENTAL CONTAMINATION 	• **Case-area targeted interventions (CATIs) - *onset and tail of outbreak*** Conduct interventions ideally within 1-2 days targeting household contacts and neighbors (significant risk up to 150m) • **Case-cluster targeted interventions - *acute phase of the outbreak*** - Investigate environmental risk factors around cases (e.g., water quality testing of water sources) - Prioritize interventions in case clusters - Intensify WASH interventions in persistent case clusters (>3 weeks)** • **Blanket Neighborhood Interventions**	• **Social mobilization** • **Water supply and treatment** - Inhibit access to contaminated or high-risk water points - Provide temporary safe water supply systems - Conduct operation and maintenance of water treatment stations, water points and distribution networks - Promote source-based water treatment: bucket chlorination, chlorine dispensers, training and equipping of water vendors • **Improved sanitation** - Safe excreta disposal: Bury feces and dispose safely "flying toilets" and CLTS in stable environment - Wastewater disposal: clean drainage networks, advocate and support the repair broken sewer pipes and the wastewater treatment station

BURIALS AND FUNERALS 	**Any burial or funeral of a cholera-like suspected deaths**	• **Social mobilization** • **Burial and funeral hygiene** - Safe and dignified burial: ensure safe handling and management of cholera corpses and appropriate burial ground - Funeral ceremony hygiene: accompany funeral procedure and provision of safe funeral kit
CHOLERA TREATMENT FACILITIES 	**Any facilities managing cholera-like suspected cases**	• **Case investigation** • **Water, sanitation and hygiene** • **Infection, prevention and control**

Source: UNICEF (2019), 'Response strategy for the Water, Sanitation and Hygiene (WASH) sector during a cholera outbreak: guidance document', adapted from ACF cholera handbook (2013).

** ACF recommends to use the WASH'EM approach for handwashing promotion.*
*** A cluster of cases is defined as an aggregate of at least 5 cases within a radius of 50 to 150m depending on population density. A persistent cluster of cases is defined as a cluster that lasts three weeks or more.*

WHAT ARE THE KEY ACTIONS, BY PHASE OF OUTBREAK?

BEFORE THE OUTBREACK

⚠ ***thresholds for onset of preparedness activities: minimum 6 months before the outbreak season***

HOD	**Step 1**	Advocate with relevant government bodies (including national surveillance body) and sectoral coordination bodies on a strategy that promotes timely, epidemiology-driven and geographically-targeted interventions.
	Step 2	Collect existing data or support the production of epidemiology synthesis of previous cholera outbreaks (cholera burden, outbreak length cholera hotspots, cholera affected areas, seasonality, risk factor, high-risk population) to inform preparedness and response strategy (1).
	Step 3	Agree with relevant government bodies and health sector coordination body for an easy access to epidemiological information 1) at national level for response planning purposes and 2) at operational level by mobile response teams during cholera outbreaks.
	Step 4	Conduct a situation analysis to collect key information related to WASH and psycho-social (1) in order to select the appropriate targeted approaches (5) and to design response interventions (6,7).
	Step 5	Identify or Set up an alert system to be informed of cholera cases and community-death – context dependent.
	Step 6	Contribute to sectoral and multi-sectoral response documents externally and internally using relevant information (Additional resources; 1,5,8).
	Step 7	Closely follow up the cholera epidemiological situation at regional level and in neighboring countries (Worldwide: https://promedmail.org and https://reliefweb.int/updates, Africa: http://plateformecholera.info/).
	Step 8	Regularly inform or train (onsite simulation) the WASH program managers and field staffs on the response strategy (5-11).
	Step 9	Pre-position material and supplies for outbreak response in the community before the outbreak season and/or when the risk of cholera outbreak spread from neighboring countries increases (6,7,9,10).
	Step 10	Strengthen health facilities and community-based surveillance in ACF intervention area before the outbreak season and/or when the risk of cholera outbreak spread from neighboring countries increases.
TA	**Step 11**	Pre-establish contact with research institutes to evaluate the effectiveness and impact of delivery mechanisms and interventions during cholera outbreak.

TA	HOD	PM	MHPS	RRT	BF
Technical Advisor (HQ)	*Head of Departmentt*	*Program Manager*	*MHPS*	*Rapid Response Team*	*Burial and funeral focal point*

1 - The authorization of the public body in charge of epidemic control must be obtained prior to ACF intervention, particularly in the case of an unconfirmed epidemic.

DURING THE OUTBREAK

⚠ ***Thresholds for onset of outbreak response in ACF intervention area: one suspected case of cholera***

IMMEDIATE CONTROL MEASURES

PM	**Step 1**	Implement immediate control measures in the community when a case of cholera is first suspected[2]: case-home disinfection (10), sensitization and distribution of household cholera kit to neighbors, source-base treatment of the water source when possible (5).
PM	**Step 2**	Set up mobile response teams and disinfection teams (9).
RRT	**Step 3**	Either at health facility or case household's levels, regularly investigate the context of transmission using the case investigation format attached (Annex 2) .

HOUSEHOLD TRANSMISSION AND ENVIRONMENTAL CONTAMINATION

PM	**Step 1**	If not done before the outbreak, conduct a rapid situation analysis (1) to select the appropriate targeted approaches for each affected area – context-dependent (5).
PM	**Step 2**	If not done before the outbreak, design response interventions such as Household Water Treatment (6), source-based water treatment, safe excreta disposal and waste water disposal for each affected area.
RRT	**Step 3**	Implement a WASH and health packages around cases and neighbor's residences to reduce household and environmental transmission (5).

PUBLIC INSTITUTIONS AND PLACES AND POPULATION GATHERINGS

PM	**Step 1**	Identify public institutions and places and population gatherings known during previous outbreaks or recently identtified following case investigation as source of infection.
PM	**Step 2**	Conduct a rapid risk assessment of food handling and practices, water access and excreta and waste water disposal.
PM	**Step 3**	Advocate for and facilitate, where feasible food and water quality testing by relevant authorities.
RRT	**Step 4**	Conduct hygiene and health education using town criers, community plays, talks or practical demonstrations.
RRT	**Step 5**	Train food handlers and vendors, provide handwashing facilities and soap.
RRT	**Step 6**	Ensure safe water supply through source-based water treatment, small-scaled water network chlorination and quick fix repair of infrastructure when relevant – context-dependent.
RRT	**Step 7**	Ensure safe excreta and waste water when relevant – context-dependent.

BURIALS AND FUNERALS

MHPS	**Step 1**	Conduct a situation analysis to i) collect key information on population beliefs, mortuary rituals and perceptions of safe interventions and ii) identify who is responsible for handling, preparing and burying the corpse (7).
MHPS	**Step 2**	In concertation with community, traditional and religious leaders, design acceptable adaptations of traditional practices when needed to minimize the risk of transmission while respecting local customs and legislation and ensuring community understanding and willingness to adopt adjustments (7).
PM	**Step 3**	Train all those involved in the field and equip them (What material?) to ensure the safe handling and management of the cholera corpse, the establishment of an appropriate burial ground and the conduct of funeral procedures (7).
BF	**Step 4**	Support safe handling and management of cholera corpses and appropriate burial ground (7).
BF	**Step 5**	In close collaboration with the community representatives, conduct an acceptable and safe funeral procedure and provide safe funeral kit (6,7).

TA	HOD	PM	MHPS	RRT	BF
Technical Advisor (HQ)	*Head of Departmentt*	*Program Manager*	*MHPS*	*Rapid Response Team*	*Burial and funeral focal point*

AFTER THE OUTBREAK

PM

Step 1 Draw lesson learnt internally through the organization of a team workshop within two weeks and externally through the WASH cluster/working group.

Step 2 Contribute to the data collection and cleaning, and interpretation of results of effectiveness and impact study.

Step 3 Update and/or produce additional Standard Operating Procedures related to ACF response in the community.

⚠ ***Thresholds for closure of interventions: no cases over three consecutive weeks.***

TA	HOD	PM	MHPS	RRT	BF
Technical Advisor (HQ)	*Head of Departmentt*	*Program Manager*	*MHPS*	*Rapid Response Team*	*Burial and funeral focal point*

ADDITIONNAL RESOURCES

- 3B ACF Cholera Operational Toolkit, Technical brief 'How to implement geo-targeted interventions?'
- 3C ACF Cholera Operational Toolkit, Technical brief 'How to set up Rapid Response Teams?'
- 3E ACF Cholera Operational Toolkit, Technical brief 'How to conduct case-home disinfection?'
- 3F ACF Cholera Operational Toolkit, Technical brief 'How to reduce cholera transmission during burials and funerals?'
- ACF Lutter contre le choléra, chapitre 'Stratégie de réponse' https://www.actioncontrelafaim.org/wp-content/uploads/2018/01/manuel_pratique_cholera_acf.pdf
- WCA Cholera Platform 'Overview of the strategy to control and prevent cholera in West and Central Africa. The "Shield and Sword" concept' https://reliefweb.int/report/democratic-republic-congo/overview-strategy-control-and-prevent-cholera-west-and-central
- UNICEF guidance document 'Response strategy for the Water, Sanitation and Hygiene (WASH) sector during a cholera outbreak' (Draft)
- UNICEF Cholera Factsheets (20 countries through West and central Africa and East and Southern Africa) https://www.afro.who.int/health-topics/cholera

REFERENCES

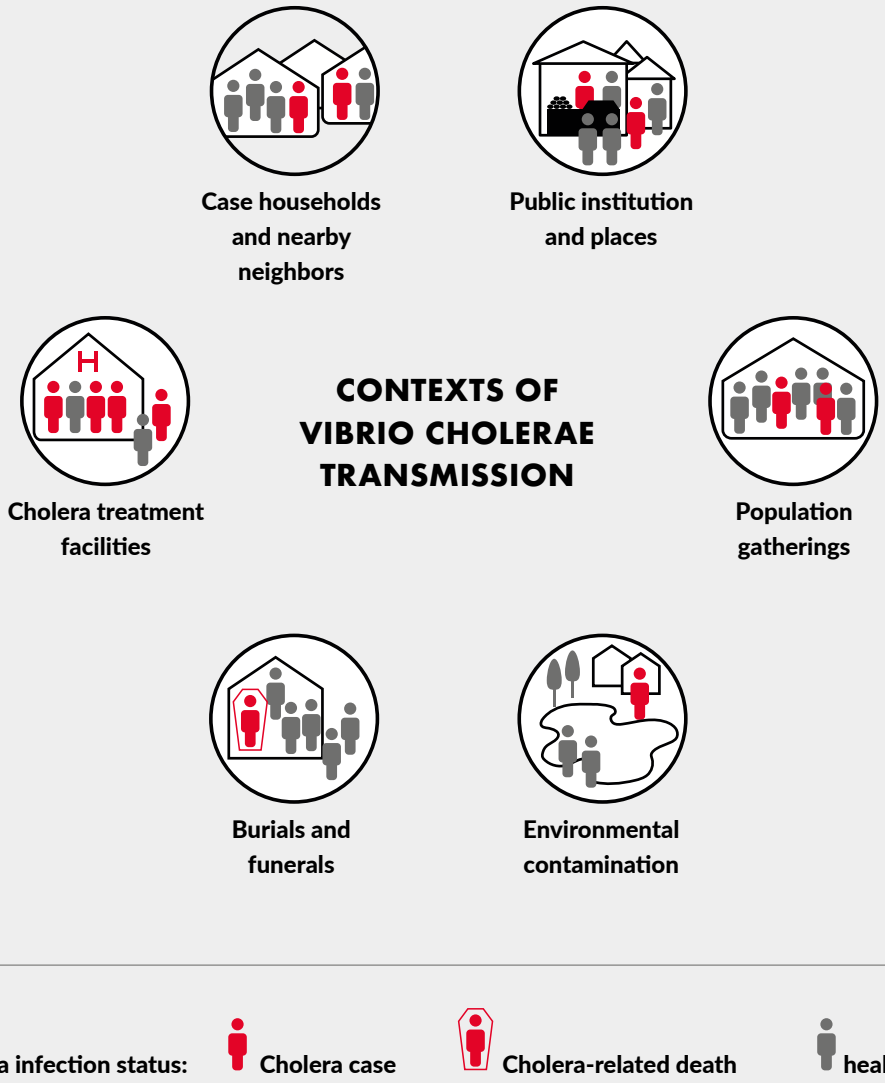
(1) *ACF Cholera Operational Toolkit, Technical brief 'What are the data to be collected for a rapid situation analysis?'*
(2) *The West and Central Africa Cholera Platform (2017), 'Overview of the strategy to control and prevent cholera in West and Central Africa The "Shield and Sword" concept'.*
(3) *ACF (2013), 'Lutter contre le choléra'.*
(4) *UNICEF (2019), 'Response strategy for the Water, Sanitation and Hygiene (WASH) sector during a cholera outbreak: guidance document'.*
(5) *3B ACF Cholera Operational Toolkit, Technical brief 'How to implement geo-targeted interventions?'*
(6) *3G ACF Cholera Operational Toolkit, Technical brief 'What are ACF standards for community cholera kits?'*
(7) *3F ACF Cholera Operational Toolkit, Technical brief 'How to reduce cholera transmission during burials and funerals?'*
(8) *3A ACF Cholera Operational Toolkit, Technical brief 'How to implement epi-driven interventions?'*
(9) *3C ACF Cholera Operational Toolkit, Technical brief 'How to set up Rapid Response Teams?'*
(10) *3E ACF Cholera Operational Toolkit, Technical brief 'How to conduct case-home disinfection?'*
(11) *3D ACF Cholera Operational Toolkit, Technical brief 'How to map cases during cholera outbreaks?'*

2 - The authorization of the public body in charge of epidemic control must be obtained prior to ACF intervention, particularly in the case of an unconfirmed epidemic.

ANNEX 1 / CONTEXT OF TRANSMISSION

The transmission context is defined as the circumstances in which a person will most likely contract the disease (1,2). Six major contexts of *Vibrio cholerae* transmission have been identified in 2011 by ACF (2) and were reviewed in 2019 by UNICEF (3).

FIGURE 1: SIX MAJOR CONTEXTS OF *VIBRIO CHOLERAE* TRANSMISSION.



Source: UNICEF (2019), 'Response strategy for the Water, Sanitation and Hygiene (WASH) sector during a cholera outbreak: guidance document', adapted from ACF cholera handbook (2012)

ANNEX 2 / CONTEXT OF TRANSMISSION INVESTIGATION FORMAT

(to be adapted to the outbreak settings)

Date:_____	Form Completed by: _____
Case investigation	
Name of patient: Health facility of registration: Registration ID: Date of admission: Index case (y/n): Age: Sex: Address (Street + City Section/Village Name): Occupation:	
Case 1: Transmission at Case-Household and nearby neighbors level	
Was there another sick person from cholera or D&V in the household?	◻ No ◻ Yes - Date of illness: _____
Was there another sick person from cholera or D&V in the compound?	◻ No ◻ Yes - Date of illness: _____
Has the sick person visited a household or a compound where they have been cases of cholera?	◻ No ◻ Yes - Who: _____ - Date of illness: _____ ◻ Before admission ◻ After release
Has the sick person received the visit of a person where there have been cases of cholera in the household or in the compound?	◻ No ◻ Yes - Who: _____ Date of visit: _____
Has anyone in the house recently travelled in a affected area? (For border areas, specify if this includes travel to neighbouring countries)	◻ No ◻ Yes - Location: _____ Date: _____
Has anyone recently visited the household from another village/city affected? (Specify where the visitor came from)	◻ No ◻ Yes - Location: _____
Case 2: Environmental transmission	
Drinking Water Source *(record exact location to be visited after household survey is completed):* _____	◻ River/Stream ◻ Rain water ◻ Open/Un-lined Shallow Well ◻ Protected Shallow Well ◻ Spring ◻ Borehole with handpump or ◻ submersible pump ◻ Network system ◻ Water Vendor ◻ Other: _____

Case 3: Transmission during burials and funerals		
Did the sick person recently attend a funeral ritual?	◻ No ◻ Yes	- Location: _____ - Date: _____ - Cause of death: _____ ◻ Attend the Ceremony ◻ Manipulation of corpse
Did anyone else in the household /compound attend a funeral ceremony?	◻ No ◻ Yes	- Who: _____ - Location: _____ - Date: _____ ◻ Attend the Ceremony ◻ Manipulation of corpse
Case 4: Transmission within the Cholera Treatment Facility		
Are you the care-taker of a sick person?	◻ No ◻ Yes	
Did you or your family visit a sick person in health facility receiving cholera patient?	◻ No ◻ Yes	- Location: _____
Do you live nearby a cholera treatment facility receiving cholera cases?	◻ No ◻ Yes	- Location: _____ ◻ Market closed by the PHU _____ ◻ Water points shared by the PHU_____
Do you work in a cholera treatment facility receiving cholera patient?	◻ No ◻ Yes	- Location: _____ - Position: _____
Did you consult for another disease in a cholera treatment facility receiving cholera cases?	◻ No ◻ Yes	- Location: _____
Case 5: Transmission during population gatherings		
Did the sick person eat any of the following in the last three days outside the house? ***✓ check if YES***	◻ Raw fruits or vegetables ◻ Fruit drinks ◻ Ice ◻ food from street vendors	◻ fish or shellfish ◻ Market Food ◻ Location: _____
Did the sick person recently attend a communal gathering?	◻ No ◻ Yes	- Location and type: _____ - Date: _____
Did anyone else in the household attend a communal gathering?	◻ No ◻ Yes	- Who: _____ - Location and type: _____ - Date: _____
Is the sick person belonging to a specific group?	◻ Fishermen ◻ Begging children ◻ Disabled people ◻ Prisoners	◻ Taxi ◻ Ice vendors ◻ Farmers ◻ Others, specify:_____
Case 6: Transmission within public institutions and places		
Has the sick person recently frequented a public institution or places?	◻ Market ◻ School	◻ Worship places ◻ Others, specify: _____

3B

HOW TO IMPLEMENT GEO-TARGETED INTERVENTIONS?

 **POSITIONING**	ACF recommends to geographically target response interventions in the community to make best use of limited resources and maximize the impact on disease transmission
 **OBJECTIVE**	To reduce household and environmental transmission through geo-targeted intervention
 **LEAD**	Water, Sanitation and Hygiene Head of Departmentt
 **CROSS SECTORAL COLLABORATION**	**WASH + HEALTH & NUTRITION** • Access to case-contact information for geo-targeted interventions by Rapid Response Teams • Set up Multi-sectorial team with Health staff for case findings, and OCV administration **WASH + MHPS** • Assess potential stigmatization for recipient of intervention

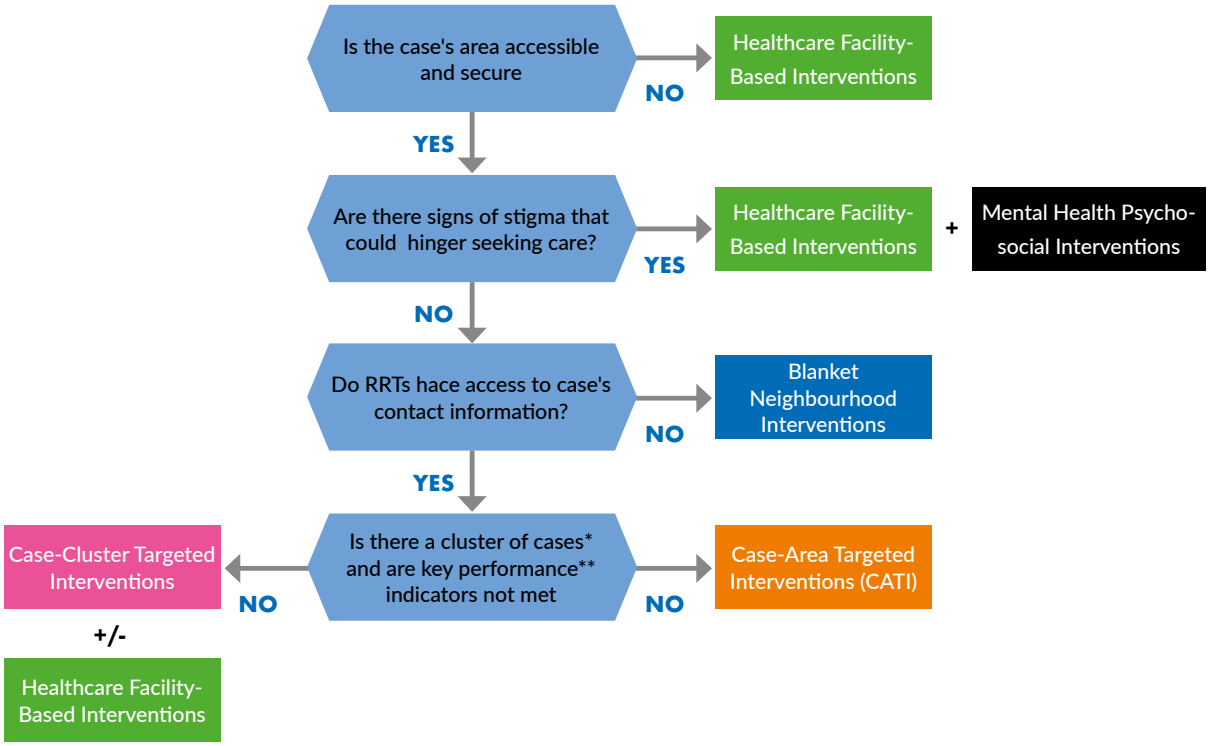
WHAT TYPE OF TARGETED DELIVERY MECHANISMS?

- **Healthcare Facility-Based Interventions**
  A standardized package of interventions delivered in the health-facility to case-households (1).
- **Case-Area Targeted Interventions (CATI)**
  A specific package of tailored interventions implemented by a mobile response team at case households and neighboring households in a defined perimeter (1).
- **Case-Cluster Targeted Interventions**
  A specific package of tailored interventions implemented by a mobile response team targeting local clusters of cholera cases (1).
- **Blanket Neighborhood Interventions**
  A specific package of tailored interventions implemented by a mobile response team targeting affected neighborhood (1).

A schematic representation of targeted approaches (Annex 1) and a summary of scientific evidence (Annex 2) can be found at the end of the technical brief.

HOW TO CHOOSE A TARGETED APPROACH?

FIGURE 1: DECISION MAKING PROCESS FOR TARGETED APPROACHES



** A cluster of cases is defined as an aggregate of at least 5 cases within a radius of 50 to 150m depending on population density.*

*** Not meeting Performance Indicators = Less than 80% of case home disinfected or More than 48 hours on average between patient admission and case household intervention over one week.*

WHAT ARE THE KEY ACTIONS, BY PHASE OF OUTBREAK?

BEFORE THE OUTBREACK

TA	HOD	PM	MHPS	RRT	DA
Technical Advisor (HQ)	*Head of Departmentt*	*Program Manager*	*MHPS*	*Rapid Response Team*	*Data Analyst*

HOD	**Step 1**	Advocate with relevant government bodies and sectoral coordination bodies on a strategy that promotes geographically-targeted approaches.
	Step 2	Contribute to sectoral and multi-sectoral response documents using this technical brief.
	Step 3	Agree with relevant government bodies and health sector coordination body on the principles for geo-referencing patients' homes and thus on the need for easy access to patient unique ID, address and contact phone numbers by rapid response teams.
	Step 4	Assess the internal GIS mapping capacity and if needed pre-identified a resource to be trained (2).
	Step 5	Regularly inform or train (onsite simulation) the WASH program managers and field staffs on how map cholera cases using MWater Surveyor as well as GPS and QGIS (2).
	Step 6	Estimate, order and pre-position material and supplies for Rapid Response Team before the outbreak season and/or when the risk of cholera outbreak spread from neighboring countries increases ('What material?').
TA	**Step 7**	Pre-establish contact with research institute to evaluate the effectiveness and impact of geo-targeted delivery mechanisms during cholera outbreak.

DURING THE OUTBREAK

TA	HOD	PM	WO	RRT	DA
Technical Advisor (HQ)	*Head of Departmentt*	*Program Manager*	*Wash Officer*	*Rapid Response Team*	*Data Analyst*

HEALTHCARE FACILITY-BASED INTERVENTIONS

WO	**Step 1**	Identify for each cholera patient, a member of household to be trained and equipped. The patient's kinship should be able to disinfect the patient's home as soon as possible (1-2 days).
	Step 2	Inform the participant about cholera signs and symptoms, cholera transmission, protective behaviors, health seeking behaviors (3).
	Step 3	Train the participant in using all the items of the household cholera kit and the cholera disinfection kit including household water treatment method - if possible using a fake house (3,4).
	Step 4	Distribute a household cholera kit and a cholera disinfection kit with instructions drawings.
	Step 5	Investigate the circumstances in which the patient fell sick (5).
RRT	**Step 6**	Ideally geo-reference the patient's home, If access to case-household is granted and if there is no stigmatization associated (2). This will allow to identify cluster of cases.

CASE-AREA TARGETED INTERVENTIONS (CATI)

RRT	**Step 1**	Collect cholera patient's details (full name, date of admission, address, two phone numbers)[1].
	Step 2	Introduce the team members and their role to the community leaders, inquire if there is any stigmatization associated to the response and seek agreement for intervention (first intervention).
	Step 3	Conduct household disinfection as per the Standard Operating Procedure developed in the related technical brief (3) including geo-referencing the case's residence (2) and investigation of the context of transmission (5).
	Step 4	Inform neighbors (50 to 150m around case's residence) about cholera signs and symptoms, cholera transmission, protective behaviors and health seeking behaviors.
	Step 5	Deliver and show how to use the different items of a household cholera kit (4).
	Step 6	Conduct Active case findings and at home rehydratation when access to health care facilities is delayed or restricted. Refer any suspected cholera cases encountered during the intervention and immediately inform the household disinfection team so that the intervention can take place without delay.
	Step 7	According to the national protocol in place in your country of intervention, possible administration of oral cholera vaccination.
	Step 8	Treat the case household source of drinking water when feasible and relevant.
	Step 9	Inform the PM on the context of transmission so that he can take further action in case of transmission linked to the environment, health treatment facilities, population gatherings, public places, and burials and funerals.
	Step 10	Record the key performance indicators for the intervention and the context of transmission.
DA	**Step 11**	Plot daily patient's homes location to identify cluster of cases. Record date of admission rather than date of intervention (2).

CASE-CLUSTER TARGETED INTERVENTIONS

RRT	**Step 1A**	Conduct steps 1 to 3 of the CATI approach.
	Step 1B	Conduct steps 1 to 3 of the CATI approach in highly affected areas and step 1 to 5 of the health facility-based approach in less affected areas if key performance indicators are low (Figure 1).
DA	**Step 2**	Plot every three days to once a week (depending on the evolution of the outbreak) patient's homes location to identify cluster of cases[2]. Record date of admission rather than date of intervention (2).
RRT	**Step 3**	Inform households living in cluster of cases about cholera signs and symptoms, cholera transmission, protective behaviors and health seeking behaviors.
	Step 4	Deliver and show how to use the different items of a household cholera kit (4).
	Step 5	Refer any suspected cholera cases encountered during the intervention.
	Step 6	Treat the different source of drinking water (bucket chlorination, chlorine dispenser, small-scale water network chlorination) in cluster of cases.

1 - At the start of the intervention, only cases admitted in the last 24 hours will be taken into account. The cases registered first will be given priority in order to respect the 48-hour deadline.

2 - A cluster of cases is defined as an aggregate of at least 5 cases within a radius of 50 to 150m depending on population density.

PM	**Step 7**	Advocate for closure of contaminated or high-risk water points when no other action can be taken (source-based water treatment, water points rehabilitation).
	Step 8	Collaborate with national laboratory for water quality testing including detection of vibrio cholera and e-coli in water samples.
	Step 9	Provide temporary alternatives for drinking water (water trucking, water tanks/bladders with tap stands) where access to water points is restricted.
DA	**Step 10**	Identify clusters of cases that persist over time (more than three weeks) (2).
PM	**Step 11**	Conduct an in-depth field investigation if there is a persistent cluster to understand the reason and remedy (Annex 3 – Case Study in Guinea).

BLANKET NEIGHBORHOOD INTERVENTIONS

RRT	**Step 1**	Collect information related to affected neighborhoods or villages during surveillance meeting hold by the district management team or directly at cholera treatment facility level.
	Step 2	Inform households living in the affected neighborhood about cholera signs and symptoms, cholera transmission, protective behaviors and health seeking behaviors.
	Step 3	Deliver and show how to use the different items of a household cholera kit (4).
	Step 4	Refer any suspected cholera cases encountered during the intervention.

AFTER THE OUTBREAK

TA	HOD	PM	MHPS	RRT	DA
Technical Advisor (HQ)	*Head of Departmentt*	*Program Manager*	*MHPS*	*Rapid Response Team*	*Data Analyst*

PM	**Step 1**	Draw lesson learnt internally through the organization of a team workshop within two weeks and externally through the WASH cluster/working group.
	Step 2	Contribute to the data collection and cleaning, and interpretation of results of effectiveness and impact study.
	Step 3	Update and/or produce additional Standard Operating Procedures related to response delivery mechanism.

➔ ***Thresholds for closure of interventions: no cases between three consecutive weeks.***

ADDITIONNAL RESOURCES

- 3A ACF Cholera Operational Toolkit, Technical brief *'How to implement epi-driven interventions?'*
- 3C ACF Cholera Operational Toolkit, Technical brief *'How to set up Rapid Response Teams?'*
- 3D ACF Cholera Operational Toolkit, Technical brief *'How to map cases during cholera outbreaks?'*
- 3E ACF Cholera Operational Toolkit, Technical brief *'How to conduct case-home disinfection?'*
- ACF 'Lesson learnt report on the cross-border cholera outbreak in Sierra Leone and Guinea in 2012'
  ACF Lutter contre le choléra, chapitre 'Stratégie de réponse'
- WCA Cholera Platform *'Overview of the strategy to control and prevent cholera in West and Central Africa.* The "Shield and Sword" concept'
- UNICEF guidance document *'Response strategy for the Water, Sanitation and Hygiene (WASH) sector during a cholera outbreak'* (Draft)

REFERENCES

(1) *UNICEF (2019), "Response strategy for the Water, Sanitation and Hygiene (WASH) sector during a cholera outbreak: guidance document"*

(2) *3D ACF Cholera Operational Toolkit, Technical brief 'How to map cases during cholera outbreaks?'*

(3) *3E ACF Cholera Operational Toolkit, Technical brief 'How to conduct case-home disinfection?'*

(4) *3G ACF Cholera Operational Toolkit, Technical brief 'What are ACF standards for community cholera kits?'*

(5) *3A ACF Cholera Operational Toolkit, Technical brief 'How to implement epi-driven interventions?'*

(6) *George, Christine Marie, Monira, Shirajum, Sack, David A., Rashid, Mahamud Ur, et al. (2016) 'Randomized controlled trial of hospital-based hygiene and water treatment intervention (CHoBI7) to reduce cholera'. Emerging Infectious Diseases, 22(2), pp. 233–241.*

(7) *Debes, Amanda K., Ali, Mohammad, Azman, Andrew S., Yunus, Mohammad and Sack, David A. (2016) 'Cholera cases cluster in time and space in Matlab, Bangladesh: implications for targeted preventive interventions'. International Journal of Epidemiology.*

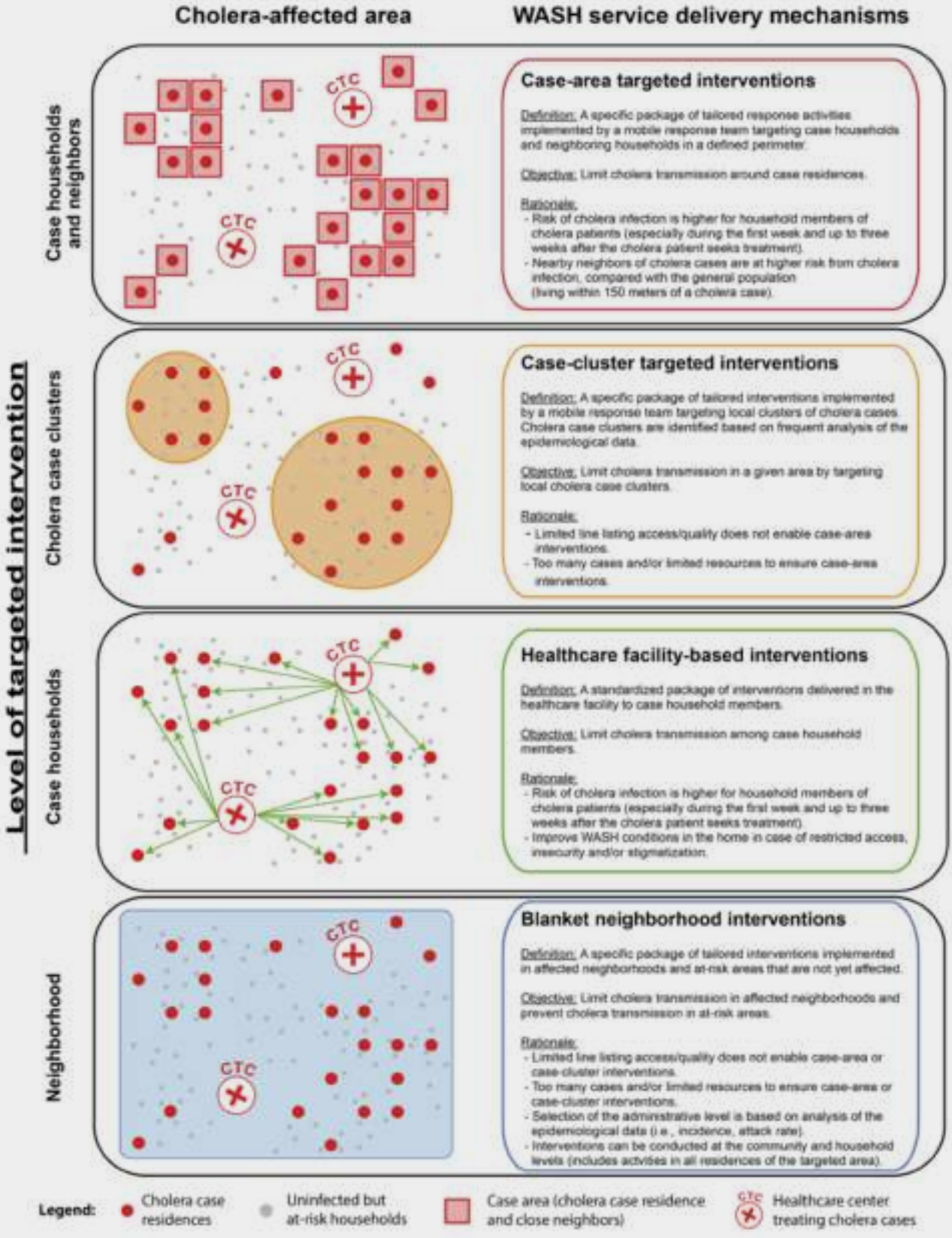
(8) *Azman, Andrew, Alcalde, Francisco Javier Luquero, Salje, Henrik, Naibei, Nathan, et al. (2018) 'Micro-hotspots of Risk in Urban Cholera Epidemics'. bioRxiv, p. 248476.*

(9) *Weil, Ana A, Khan, Ashraful I, Chowdhury, Fahima, LaRocque, Regina C, et al. (2009) 'Clinical Outcomes in Household Contacts of Patients with Cholera in Bangladesh'. Clin Infect Dis., 15(49), pp. 1473–1479.*

(10) *Michel, Edwige, Gaudart, Jean, Beaulieu, Samuel, Bulit, Gregory, et al. (2019) 'Effectiveness of case-area targeted response interventions against cholera: a quasi-experimental study in Haiti'. Lancet, Pre-print.*

ANNEX 1 / SCHEMATIC REPRESENTATION OF TARGETED APPROACHES

FIGURE 2: SCHEMATIC REPRESENTATION OF TARGETED APPROACHES USED DURING CHOLERA OUTBREAKS



Source: UNICEF (2019), "Response strategy for the Water, Sanitation and Hygiene (WASH) sector during a cholera outbreak: guidance document".

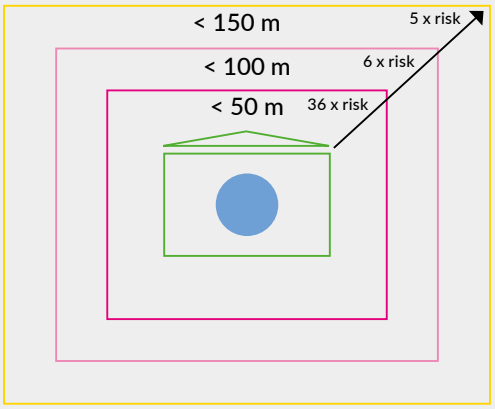
ANNEX 2 / EFFECTIVENESS OF TARGETED APPROACHES

RATIONALE

Cholera infection risk is higher for household members of cholera patients (6) and close neighbors (7, 8, 9).
Cholera infection risk during the first three days is 36 times greater within a 50-meter radius of a confirmed case (7).
The risk remained high at distances up to 150 m and within three weeks (7).

FIGURE 3: INCREASED RISK OF DISEASE TRANSMISSION FOR CLOSE NEIGHBORS OF CHOLERA CASES.

Source: Modified from MSF (2017), Debes et al. (2016) and Azman et al. (2018).

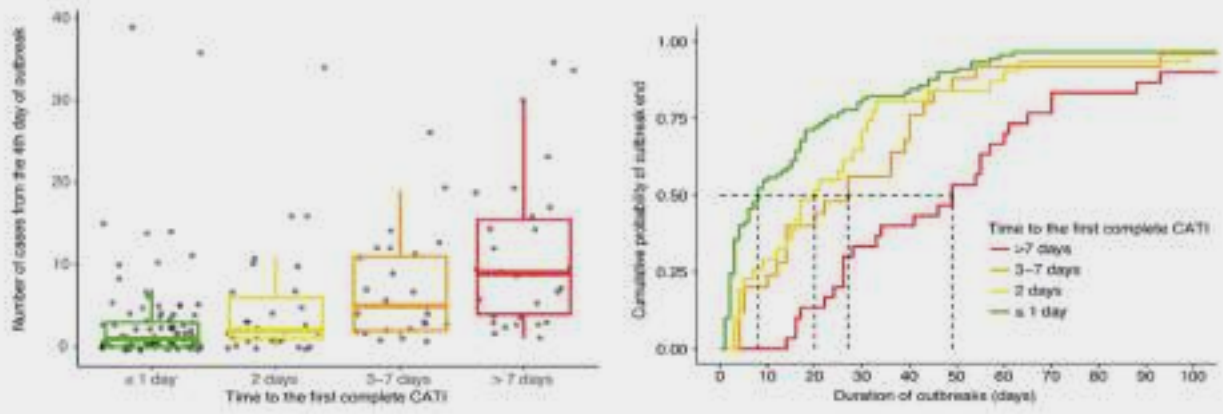


STUDY FINDINGS

1. Effectiveness of case-area targeted interventions in Haiti between 2015 and 2017 (10)

The sooner the first complete CATI was implemented, the shorter the duration of outbreaks (Fig. 4A) and the fewer cholera cases (Fig. 4B) were recorded from the 4th day of outbreak.

FIGURE 4: OUTBREAK OUTCOME ACCORDING TO THE CLASS OF RESPONSE PROMPTNESS
(A) comparison of the number of cholera suspected cases from the 4th day of outbreak and (B) Kaplan-Meier comparison of the duration of outbreaks, according to the time to first complete CATI.



Source: Michel et al. (2019)

2. Effectiveness of health facility-based interventions in Bangladesh in 2016 (6)

Promotion of hand-washing with soap and treatment of water towards case contact from the cholera treatment facility reduce transmission by approximately 50%.

ANNEX 3 / CASE STUDY: FIELD INVESTIGATION IN KAPORO PERSISTENT CLUSTER IN GUINEA, 2012

BACKGROUND INFORMATION

In 2012, ACF responded to a large-scale cholera outbreak in the capital city Conakry (Guinea). In this densely populated environment, the outbreak response team decided to implement an innovative response mechanism in urban setting by geo-referencing patient's homes. Case-home geo-coordinates were then plotted using an open source GIS software. On a weekly bases aggregates of cholera cases were identified and targeted for intervention. In a city section (Kaporo), a cluster of cases persisted over time despite case-home disinfection and nearby neighbor's health and hygiene education. A team of two persons (public health and WASH specialists) conducted a field investigation to understand the reason for the persistence of the disease in this neighborhood. Summary of results are presented below.

OBSERVATION

- A sectioned water pipe lays in a gutter.
- Most of the affected population work in the fishing port.
- Open defecation is observed in the water and around the fishing port.
- Children and mother are fishing at the exit of a waste water channel.
- Workers at the fishing port are well organized and groups are structured by profession: fishermen, fish traders, fish transformers, mechanics and carpenters.

FIGURE 5: REPRESENTATION OF KAPORO PERSISTENT CLUSTER OF CHOLERA CASES (A) AND SNAPSHOT OF THE AREA (B)

ACTIONS UNDERTAKEN

- Quick-fix repair of the water pipe in collaboration with the national water supply society.
- Training and equipping of water vendors in water chlorination.
- Integration of promotion messages related to the risk of open defecation in the harbor and fishing close by.
- Focus group with fishing port workers organized by profession.
- Projection of the movie "History of cholera" in the youth center.

3C

HOW TO SET UP RAPID RESPONSE TEAMS?

 **POSITIONING**	ACF recommends the use of Rapid Response Teams (RRT) for timely, epi-driven and geo-targeted interventions to maximize the impact of the response on disease transmission
 **OBJECTIVE**	To reduce cholera transmission in the community through a mobile, rapid and cost-effective delivery mechanis
 **LEAD**	Water, Sanitation and Hygiene Program Manager
 **CROSS SECTORAL COLLABORATION**	**WASH + HEALTH & NUTRITION** • Access to epidemiological data for geo- and epi-targeted interventions • Set up Multi-sectorial team with Health staff for case findings and OCV administration **WASH + MHPS** • Assess community perception of the intervention and subsequent barriers and enablers to adapt the communication, delivery mechanism and intervention

WHAT IS THE PRINCIPLE?

- A mobile response team (RRT) is a small, mobile, multi-disciplinary and mixed team consisting of trained personnel, ideally from ACF and government agencies, able to respond within 48h to cholera alerts and to protect at risk communities.
- Among the six recurrent contexts of transmission (1), the response team will concentrate on transmission within case-household and neighbor's, linked to environmental contamination and in public institutions and places.
- To efficiently reduce household and environmental transmission, targeted approaches such as Case-Area Targeted Interventions (CATIs), Case-Cluster Targeted Interventions and Health-care Facility-Based Interventions are used alone or in combination with others, depending on field conditions (2) .

WHAT EVIDENCE?

- Cholera infection risk is higher for household members of cholera patients (3) and close neighbors (4, 5, 6).
- Cholera infection risk during the first three days is 36 times greater within a 50-meter radius of a confirmed case (4). The risk remained high at distances up to 150 m and within three weeks (4).
- In Haiti, the CATI approach showed reduction in the duration of outbreaks and the number of cholera cases (7).
- In Bangladesh, promotion of hand-washing with soap and treatment of water towards case contact from the cholera treatment facility reduced transmission by approximately 50% (3)

WHAT INTERVENTIONS?

- ✓ Assessment of community perception of the intervention and subsequent barriers such as stigmatization.
- ✓ Active case findings and at-home rehydration when access to health care facilities is delayed or restricted.
- ✓ Possible administration of oral cholera vaccine depending on the context and existing national protocols
- ✓ Referral of any suspected cholera cases encountered during the intervention, at all levels.
- ✓ Support the collection and transport of samples in carry-blair for cholera confirmation when needed. Rapid Diagnostic Test can be used to quickly identify cholera cases in a population, while efforts to confirm the outbreak by culture and PCR continue.
- ✓ Investigation of the circumstances in which the case contracted cholera (1).
- ✓ Investigation of environmental risk factors around cases (water quality testing of water sources, excreta and waste-water disposal conditions, hygiene practices).
- ✓ Case-home disinfection within 48h following Standard Operating Procedures (8).
- ✓ Hygiene & Health education with delivery and demonstration of household cholera kits (9) to case-neighbors (50 to 150m around case's residence) or within cluster of cases.
- ✓ Treatment of the case household or case-clusters source(s) of drinking water when feasible and relevant (improved water facilities, > 0 FCU/100ml).
- ✓ Recording the Key Performance Indicators for the interventions and the findings of case investigation and environmental field assessment.
- ✓ Geo-referencing the case's residence (10).

WHAT HUMAN RESOURCES?

The Rapid Response Team is composed of two to four individuals combining different qualifications.

TERMS OF REFERENCE FOR RRT MEMBERS:

	COMPETENCY	ROLE
TEAM LEADER	Water or environmental health officer with basic skills in epidemiology	Team coordination ACF community perception Support cholera confirmation Case and environmental investigation
WASH TECHNICIAN	Water or environmental health officer	Case-Home disinfection Source-based water treatment
HYGIENE AND HEALTH PROMOTER	Able to speak local dialect with skills in community mobilization and awareness	Case referral / Active case findings Hygiene and Health education Household cholera kit distribution
DRIVER	Good knowledge of area	

Ideally, the RRT should be:

- Mixed with members from ACF and the government
- Gender and ethnic balanced
- Culturally appropriate (speak the local dialects)
- Able to engage local communities

Expatriate staff with epidemiology skills can be deployed if local capacity is absent or poor.

To improve cost-effectiveness and Key Performance Indicators (delay of intervention, percentage of cases responded to), community individuals with their own means of transport can be supervised, trained, hired and equipped for case-home disinfection by RRT.

WHAT MATERIAL AND EQUIPMENT?

- ✓ Household cholera kit (9)
- ✓ Household disinfection kit (9)
- ✓ A 15-20L chlorine sprayer (without metallic piece)
- ✓ Chlorine powder (e.g., calcium hypochlorite) (11)
- ✓ A 20L jerry can
- ✓ Protective equipment (i.e. raincoat, gloves, google, respirator mask, boots)
- ✓ Health and hygiene education material
- ✓ GPS tracking devices to allow for GIS
- ✓ Phone credit
- ✓ Car and/or motorbike rental

WHAT COST?

A dedicated and flexible funding mechanism is recommended to maintain adequate transport and supplies. In the country case studies below, the major cost component was car rental.

TABLE 1: COUNTRY EXAMPLE OF RAPID RESPONSE TEAMS COSTS

COUNTRY	HAITI	YEMEN	ZIMBABWE
TEAM COMPOSITION	**Four members.** 57 teams in 10 departments. **'Mixed-teams', with multi-sectoral team members from government partner** (MSPP's EMIRA) and NGOs (SI, ACTED and ACF).	Two members. Between 400 – 850 teams in 22 governorates. Non 'mixed-teams', with WASH only team members from government partner (GARWSP).	**Four members.** 8 teams. **'Mixed-teams', with multi-sectoral team members from government partner** (Harare Health Division, Environmental-Health Officers) and NGOs (Goal and Oxfam).
RESPONSE COVERAGE	**10 to 20 households per case**	20 to 21 households per day	**10 to 20 households per case**
COST	US$ 10,234 USD per team per month	US$2,400 for urban teams to US$ 3,000 for rural teams, per month	US$2,600 to US$5,600 USD per month
COST COMPONENT	Salaries and incentives, car rental, fuel and maintenance, materials and supplies, and operational and administrative costs for UNICEF	Salaries and incentives, car rental, fuel and maintenance, materials and supplies, operational and administrative costs for GARWSP	Car rental, fuel and maintenance

Source: UNICEF assessment report (2019) 'WASH Rapid Response Teams in Cholera Outbreak Settings'.

WHAT ARE THE KEY ACTIONS?

The below steps describe the process to set up Rapid Response Teams and should ideally be performed during the preparedness phase:

TA	HOD	CD	HODW
Technical Advisor (HQ)	*Head of Department*	*Country Director*	*Head of Departmentt WASH*

CD	**Step 1**	Promote with relevant government bodies, UNICEF and sectoral coordination bodies the development of a nation-wide strategy that promotes timely, epidemiology-driven and geographically-targeted interventions through RRT delivery mechanism and advocate for its inclusion in "Preparedness and Response plan".
	Step 2	Pre-identify and contact donors interested in funding RRT mechanism (UNICEF, CDC, ECHO, DFID) to ideally obtain preparedness funding or stand-by funding agreement for outbreak response.
HD	**Step 3**	Conduct a situation analysis (12) to obtain indications on response timing, possible intervention areas, targeted approaches, response intervention and population targets: • Previous cholera outbreaks pattern (cholera burden, outbreak length cholera hotspots, cholera affected areas, seasonality, risk factor, high-risk population). • Humanitarian actor's response capacity mapping in cholera hotspots. • WASH and psycho-social aspects in cholera hotspots (1,2). • Security assessment in cholera hotspots to anticipate any field deployment restriction.
HODW	**Step 4**	Agree with relevant government bodies and health sector coordination body for an easy access to epidemiological information 1) at national level for response planning purposes and 2) at operational level by Rapid Response Teams during cholera outbreaks (including case contact details, precise location and occupation). In the case of a national-wide RRT response mechanism supported by UNICEF, ACF could run a simulation of an alert-response system in its intervention area.
	Step 5	Pre-identify possible members of RRT (What human resources?) and adapt the team composition according to local competencies.
	Step 6	Develop guidelines and training module for on-site simulation and regularly inform and train the WASH and H&N program managers, field staffs and if possible pre-identified team members to be trained on basic field epidemiology (surveillance and alert system, investigation, data management, use of GPS device, cartographic output) or Identify a health staff already trained and on the RRT response strategy (1,2,8-11).
HOD	**Step 7**	Estimate, order and pre-position material and supplies for Rapid Response Team before the outbreak season and/or when the risk of cholera outbreak spread from neighboring countries increases ('What material?').
TA	**Step 8**	Pre-establish contact with research institutes to evaluate the cost-effectiveness and impact of mobile response team delivery mechanism.

ADDITIONNAL RESOURCES

- 3A ACF Cholera Operational Toolkit, Technical brief *'How to conduct epi-driven interventions?'*
- 3B ACF Cholera Operational Toolkit, Technical brief *'How to conduct geo-targeted interventions?'*
- 3E ACF Cholera Operational Toolkit, Technical brief *'How to conduct case-home disinfection?'*
- 3G ACF Cholera Operational Toolkit, Technical brief *'What are ACF standards for community cholera kits'.*
- *ACF* Lutter contre le choléra "stratégie de réponse"
- UNICEF guidance document *'Response strategy for the Water, Sanitation and Hygiene (WASH) sector during a cholera outbreak'* (Draft version).
- UNICEF assesment report 'Global Review of water, sanitation and hygiene (WASH) components in rapid response mechanisms and rapid response teams in cholera outbreak settings' (Draft version).

REFERENCES

(1) *3A ACF Cholera Operational Toolkit, Technical brief 'How to implement epi-driven interventions?'*

(2) *3B ACF Cholera Operational Toolkit, Technical brief 'How to implement geo-targeted interventions?'*

(3) *George, Christine Marie, Monira, Shirajum, Sack, David A., Rashid, Mahamud Ur, et al. (2016) 'Randomized controlled trial of hospital-based hygiene and water treatment intervention (CHoBI7) to reduce cholera'. Emerging Infectious Diseases, 22(2), pp. 233–241.*

(4) *Debes, Amanda K., Ali, Mohammad, Azman, Andrew S., Yunus, Mohammad and Sack, David A. (2016) 'Cholera cases cluster in time and space in Matlab, Bangladesh: implications for targeted preventive interventions'. International Journal of Epidemiology.*

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(6) *Weil, Ana A, Khan, Ashraful I, Chowdhury, Fahima, LaRocque, Regina C, et al. (2009) 'Clinical Outcomes in Household Contacts of Patients with Cholera in Bangladesh'. Clin Infect Dis., 15(49), pp. 1473–1479.*

(7) *Michel, Edwige, Gaudart, Jean, Beaulieu, Samuel, Bulit, Gregory, et al. (2019) 'Effectiveness of case-area targeted response interventions against cholera: a quasi-experimental study in Haiti'. Lancet, Pre-print.*

(8) *3E ACF Cholera Operational Toolkit, Technical brief 'How to conduct case-home disinfection?'*

(9) *3G ACF Cholera Operational Toolkit, Technical brief 'What are ACF standards for community cholera kits?'*

(10) *3D ACF Cholera Operational Toolkit, Technical brief 'How to map cases during cholera outbreaks?'*

(11) *2D ACF Cholera Operational Toolkit, Technical brief 'How to prepare and store chlorinated solutions using different products?'*

(12) *4A ACF Cholera Operational Toolkit, Technical brief 'What are the data to be collected for a rapid situation analysis?'*

3D

HOW TO MAP CHOLERA CASES DURING OUTBREAKS?

 **POSITIONING**	ACF recommends to map cholera cases during outbreaks to better target interventions in the community
 **OBJECTIVE**	To accurately localize cholera cases and identify potential cluster of cases in order to efficiently reduce household and environmental transmission
 **LEAD**	Data analyst or Information Management Officer
 **CROSS SECTORAL COLLABORATION**	**WASH + HEALTH & NUTRITION** • Health professionals provide patient's address to Rapid Response Team

WHAT IS THE PRINCIPLE?

- Cholera infection risk is higher for household members of cholera patients (1) and close neighbors (2, 3, 4).
- In Haiti, a targeted approach within and around patient's homes (Case Area Targeted Intervention[1]) reduced the duration of outbreaks and the number of cholera cases (5).
- ACF recommends timely, epidemiology-driven and targeted interventions in the community to efficiently reduce household and environmental transmission.
- ACF recommend to use the Case Cluster Targeted Intervention[2] as delivery mechanism, when cases cluster in time and space[3] and when performance indicators targets are not met[4].
- To enable cluster identification and thus targeted interventions, cholera patient's homes must be accurately localized and mapped either using electronic devices and software or a paper map and color pencils (with respect of data confidentiality).

1 - Case Area Targeted Intervention: a specific package of tailored interventions implemented by a mobile response team at case households and neighboring households in a defined perimeter.

2 - Case Cluster Targeted Intervention: a specific package of tailored interventions implemented by a Rapid Response Team targeting local clusters of cholera cases.

3 - A cluster of cases is defined as an aggregate of at least five cases within a radius of 50 to 150 meters depending on population density

4 - Not meeting Performance Indicators = Less than 80% of case home disinfected or More than 48 hours on average between patient admission and case household intervention over one week.

WHAT TECHNICAL OPTION TO CHOOSE?

LOCALIZE PATIENT'S HOMES

OPTION	OPTION A: USE OF MWATER SMARTPHONE APPLICATION	OPTION B: USE OF GLOBAL POSITIONING SYSTEM (GPS)	OPTION C: USE OF A PAPER MAP AND COLOR PENCILS
PREREQUISITE	• Phone/internet connection desirable to import/export data collected (but not needed at collection time) • Use of a smartphone / tablet • Download MWater Surveyor Application	• No phone/internet connection needed • Use of a GPS device	• No phone/internet connection needed • No electronic device
ADDED VALUE	• Can be used offline • Can be used to collect additional data (survey)	• Does not need phone or internet connection to localize cases or transfer data	• No specific electronic literacy/ competency required
DRAW-BACK	• Need internet connection to import/ export data collected on the field to the Mwater surveyor • Not available for Blackberry phones	• GPS device need to be rent or bought • Availability of GPS signal in the field can be critical • Limited information can be collected • Data needs to be downloaded to PC	• Further computer-based statistical analysis require the data to be digitized

CARTOGRAPHIC REPRESENTATION

OPTION	OPTION A: USE OF MWATER WEB APPLICATION	OPTION B: USE OF GLOBAL POSITIONING SYSTEM (GPS)	OPTION C: USE OF A PAPER MAP AND COLOR PENCILS
PREREQUISITE	• No GIS competency • Internet connection	• Basic GIS competency • No internet connection	• No GIS competency • No internet connection
ADDED VALUE	• User friendly web application with good support • Cases can be logged and linked to different surveys • Can be linked to other mapping software • Distance between /around cases can be mapped	• Distance between and around cases can be easily calculated • Further basic/advanced statistical analysis can be performed	• No specific competency required
DRAW-BACK		• Significant GIS skills required	• No further statistical analysis possible

ACF recommends to use **MWater Surveyor (option A) to geo-reference patient's household.** ACF also recommends to use **MWater Portal (option A) to map cholera cases.** Maps can be downloaded in the MWATER Surveyor application to facilitate offline geo-referencing. Data folder can be exported in CSV / XLS format for further analysis and representation such as calculation of distance (buffer) or cluster analysis using an open source GIS software (QGIS).

WHAT HUMAN RESOURCES?

Ideally, a Data Analyst or Information Management Officer.

TERMS OF REFERENCE

- Experience of managing large database
- Ideally, experience of a GIS software (preferably open source like Quantum GIS)
- Ideally, experience on disease outbreak case mapping
- Ideally, experience of working with geo-referenced data

WHAT EQUIPMENT AND SOFTWARE?

LOCALIZE PATIENT'S HOMES

OPTION A	• MWater Surveyor Application • A smartphone using IOS 10.0 with at least one gigabyte of disk space (allow upload of local GIS layers, e.g. OSM, administrative boundaries) • A Global Positioning System (GPS) - optional
OPTION B	• A Global Positioning System (GPS) device
OPTION C	• Seven color pencils and paper – ideally a printed map of the area

CARTOGRAPHIC REPRESENTATION

OPTION A	• MWater Portal • QGIS software (preferably use the latest stable release version)
OPTION B	• QGIS software (preferably use the latest stable release version) • Add plugin in QGIS to work with Open street map data and MMQGIS (buffer representation around case)
OPTION C	• Seven color pencils and paper - ideally a printed map of the area

WHAT ARE THE KEY ACTIONS, BY PHASE OF OUTBREAK?

BEFORE THE OUTBREACK

TA	HOD	PM	RRT	DA
Technical Advisor (HQ)	*Head of Department*	*Program Manager*	*Rapid Response Team*	*Data Analyst*

HOD

Step 1 Advocate with relevant government bodies and sectoral coordination bodies on a strategy that promotes geographically-targeted approaches.

Step 2 Contribute to sectoral and multi-sectoral response documents using this technical brief.

Step 3 Agree with relevant government bodies and health sector coordination body on the principles for geo-referencing patients' homes and thus on the need for easy access to patient unique ID, address and contact phone numbers by rapid response teams. It should be mentioned that personal raw georeferenced data is used for operational purpose only and must respect data confidentiality local legal framework *(cf Technical Brief n°4A)*.

Step 4 Assess the internal mapping capacity and if needed pre-identified a resource to be trained *(cf Technical Brief n°4A)*.

Step 5 Regularly inform or train (onsite simulation) the WASH program managers and field staffs on how map cholera cases using MWater Surveyor application as well as GPS and QGIS.

TA

Step 6 Pre-establish contact with research institute to conduct cluster analysis study and evaluate the effectiveness and impact of case-cluster targeted intervention during cholera outbreak.

DURING THE OUTBREAK

TA	HOD	PM	RRT	DA
Technical Advisor (HQ)	*Head of Department*	*Program Manager*	*Rapid Response Team*	*Data Analyst*

The standard operating procedures to map cholera cases have been developed for the preferred option using MWater Surveyor application.

USE OF MWATER TOOLBOX PLATFORM ON THE DATA ANALYST'S COMPUTER

DA

Step 1 Log into Mwater portal: https://portal.mwater.co/
If this is your first use, create an account with your ACF email address by choosing the username: 'ACF.country_code.email_name

DESIGN OF MWATER FORM AND DEPLOYMENT TO THE RAPID RESPONSE TEAM MEMBERS

DA

Step 1 Create a new survey in MWater Portal under the menu SURVEYS.

> Click CREATE NEW SURVEY, then build a new survey in the DESIGN Tab. This can be shared between users by giving other users VIEW permission under the Tab SETTINGs. Import an existing form from an external file in the XLSForm format

PM

Step 2 Create a form corresponding to the field questionnaire with the following minimum information:

> "Add date"
> "Record your current location"
> Add a SITE Question with the Question Text "Add a Site for this Household
> "Patient unique ID" corresponding to the ID used in the Cholera Treatment Facility registration form and ACF intervention monitoring database
> "Patient name and surname"
> "Admission date" with multiple choice option

Any other survey questions (e.g., context of transmission, source of drinking water, type of sanitation facilities) and relevant metadata in layout & settings can be added.

Step 3 Preview the form and test the application.

DA

Step 4 Deploy by adding the usernames of enumerators in Deployment tab
> create a new deployment

SHARING OF PROJECT

RRT

Step 1 The project can be shared between users by giving other uses VIEW permission under the Tab SETTINGS." (step 1 of Design a form)

INSTALLATION OF MWATER SURVEYOR ON EACH RAPID RESPONSE TEAM MEMBERS' SMARTPHONE

DA

Step 1 Using your phone, go to your Applications and open Play Store. Search for MMwater Surveyor.

Step 2 Install MWater Surveyor on your phone.

Step 3 Once, installed, create a user name and share with the program manager for the survey. The project can be shared between users by giving other uses VIEW permission under the Tab SETTINGS." (step 1 of Design a form)

Step 4 Once your user name has been added to the deployment by the Admin you will have access to the survey form.

COLLECTING AND SAVING

RRT

Step 1 Collect cholera patient's details (e.g. full name, date of admission, address, two phone numbers[5]) from the Cholera Treatment Facility.

Step 2 Introduce the team members and their role to the community leaders, inquire if there is any stigmatization associated to the response and seek agreement for intervention (first intervention).

Step 3 Introduce the team members and their role to cases' household and seek agreement for geo-referencing the patient's home.

Step 4 Create a new Site for the household in Surveyor application and then START a survey linked to this SITE and select the survey. When collecting data if GPS coordinates is not available (for example if you're inside a building) it can be entered manually or using an external GPS device with the same coordinate reference system.

Step 5 On the created site page, choose "Launch a survey related to this site", and select the survey

Step 6 Once you are done in collecting the information. With once you complete the form you will see the option SUBMIT.

Step 7 For DRAFT Forms, go to MY SURVEYS and select the survey. Check and update the information for the survey and click SUBMIT to finalise the survey.

Step 8 If working ofline, click on SYNC on the HOME page when you have connect to send the data to the server.

IDENTIFYING CLUSTER OF CASES

DA

Step 1 Monitor data collection using MWater Portal after login (see project summary and data).

Step 2 View collected points using the "map" function under project data. Case household can be created in a DASHBOARD, add a map and use "adminision date" to chose the colour of the map point data.

PM

Step 3 Display only the cases admitted in the last three to seven days (depending on the outbreak intensity) using the function create a filter in the dashboard setting (select add a quick filter).

Step 4 Print screen the map every three to seven days and distribute to the Rapid Respond Teams for intervention in cluster of cases.

DA

Step 5 Back in the survey, use the Responses tab to export the data in CSV format (old format with "/" as separator) for later use in QGIS - Optional

GOING FURTHER USING GQIS 3.4 SOFTWARE

DA

Step 1 Install Quantum GIS (QGIS Desktop, see for user page.

Step 2 Create a QGIS project.

Step 3 Display OpenStreetMap (OSM) layers for the area of interest (webmap service using web/quick map services/OSM menu or static OSM file using the OSMdownloader plugin).

Step 4 Upload the data in CSV to create a point layers (using latitude (X) and longitude(Y) coordinates in WGS 84).

Step 5 Explore the map and create buffer (50-150m) around points using the MMQGIS plugin (buffer menu).

Step 6 create a field map for operation using the layout function (export in image format.svg or pdf possible).

AFTER THE OUTBREAK

TA	HOD	PM	RRT	DA
Technical Advisor (HQ)	*Head of Department*	*Program Manager*	*Rapid Response Team*	*Data Analyst*

DA

Step 1 Anonymize the database (removing name and surname) and archive the database.

PM

Step 2 Contribute to the data analysis and interpretation of results of cluster analysis and impact studies *(cf Technical Brief n°4A).*

Step 3 Update and/or produce additional Standard Operating Procedures related to response delivery mechanism.

ADDITIONNAL RESOURCES

- ACF Cholera Operational Toolkit, *Technical brief n°3A 'How to conduct epi-driven interventions?'*
- ACF Cholera Operational Toolkit, *Technical brief n°3B 'How to conduct geo-targeted interventions?'*
- ACF Cholera Operational Toolkit, *Technical brief n°3C 'How to set up Rapid Response Teams?'*
- Mwater Portal
- QGIS tutorial

REFERENCES

(1) *UNICEF (2019), "Response strategy for the Water, Sanitation and Hygiene (WASH) sector during a cholera outbreak: guidance document"*

(2) *George, Christine Marie, Monira, Shirajum, Sack, David A., Rashid, Mahamud Ur, et al. (2016) 'Randomized controlled trial of hospital-based hygiene and water treatment intervention (CHoBI7) to reduce cholera'. Emerging Infectious Diseases, 22(2), pp. 233–241.*

(3) *Debes, Amanda K., Ali, Mohammad, Azman, Andrew S., Yunus, Mohammad and Sack, David A. (2016) 'Cholera cases cluster in time and space in Matlab, Bangladesh: implications for targeted preventive interventions'. International Journal of Epidemiology.*

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3E

HOW TO CONDUCT CASE-HOME DISINFECTION?

 **POSITIONING**	ACF conducts disinfection of patient's home as part of the WASH package to reduce transmission at household level
 **OBJECTIVE**	To reduce and further prevent cholera transmission among cases' household members
 **LEAD**	Water, Sanitation and Hygiene Program Manager
 **CROSS SECTORAL COLLABORATION**	**WASH + HEALTH & NUTRITION** • Access to patient location by health professionals is granted for disinfection team • Possibly set up Multi-sectoral team with Health staff for case findings

WHAT IS THE PRINCIPLE?

- Cholera infection risk is higher for household members of cholera patients (1) and close neighbors (2, 3, 4).
- Highest levels of *Vibrio cholerae* (≥5,000 CFU/100 cm^2) consistently found in the kitchen, close to patients' beds, and around the latrine in Haiti and Democratic Republic of Congo (DRC) (5).
- *Vibrio cholerae* concentrations significantly reduced following household spraying, with limited recontamination within 24 hours in Haiti and DRC (5).
- Effectiveness of chlorine spraying limited if interventions are delayed (3-5 days) (5).
- High rate of self-reported use of cholera disinfection kits in Haiti (6).

WHAT INTERVENTION?

CHLORINE SPRAYING	A rapid response team sprays chlorine on latrines and other potentially contaminated surface [7]
DISTRIBUTION OF HOUSEHOLD DISINFECTION KIT	Family members are provided with supplies and clear instructions [7]

While the effectiveness of household disinfection kits and chlorine spraying are currently under investigation, the means by which household decontamination should be conducted considering local practices and preferences as well as scientific evidence has not been defined. A combination of both interventions may be needed for effective home disinfection.

WHAT HUMAN RESOURCES?

The Rapid Response Team is composed of two to four individuals combining different qualifications. At the onset and tail of outbreaks, the WASH technician is in charge of case-home disinfection. Yet, to improve cost-effectiveness and Key Performance Indicators (delay of intervention, percentage of cases responded to), community individuals with their own means of transport can be supervised, trained, hired and equipped for household disinfection by RRT according to the below terms of reference.

TERMS OF REFERENCE

- Previous experience on cholera home disinfection or cholera response
- Community influencer
- Belongs to the targeted population

WHAT MATERIAL AND SUPPLIES?

- Household disinfection kit (Technical brief n°3E).

And/or

- A 15-20L high quality chlorine sprayer (without metallic piece) and Chlorine powder (e.g., calcium hypochlorite). Verify the expiry date.
- Protective equipment (raincoat, apron, gloves, chemical goggles, respirator mask, boots).
- Information, Education, Communication (IEC) materials.
- Geo-referencing device (e.g., GPS, smartphone application).
- Phone credit.

WHAT TIMING?

- Intervention takes place **within 1-2 days** upon patient admission
- Intervention last for **30 min to 1h** by household

WHAT ARE THE KEY ACTIONS, BY PHASE OF OUTBREAK?

BEFORE THE OUTBREACK

DT	HOD	PM	LD
Disinfection Team	*Head of Department*	*Program Manager*	*Logistic Department*

HOD	**Step 1**	Agree with relevant government bodies and sectoral coordination bodies (e.g., WASH cluster, WASH working group) on the protocol for household disinfection (ref. Which option to use?).
PM	**Step 2**	Identify the most appropriate individual network to conduct the intervention (ref. What human resources?).
	Step 3	Agree on the collaboration terms (e.g., daily incentives, transport fees, phone credit).
	Step 4	Train the team with on-site simulation exercises.

DURING THE OUTBREAK

DT	HOD	PM	LD
Disinfection Team	*Head of Department*	*Program Manager*	*Logistic Department*

The below standard operating procedures were developed for case-home disinfection through the delivery of disinfection kit from the cholera treatment facility or through on-site chlorine spraying and disinfection distribution. In certain circumstances, one option can be preferred o both can be implemented simultaneously as described in the decision making process tool for geo-targeted intervention *(Technical brief n°3B)*.

OPTION 1: HOUSEHOLD DISINFECTION KIT DELIVERED FROM THE CHOLERA TREATMENT FACILITY

DT	**Step 1**	Identify for each cholera patient, a member of household to be trained and equipped. The patient's kinship should be able to disinfect the patient's home as soon as possible (1-2 days).
	Step 2	Inform the participant about cholera signs and symptoms, cholera transmission, protective behaviors, health seeking behaviors (i.e. drink rehydration solutions and go to the nearest cholera treatment facility, rehydration point or any health facility without delay).
	Step 3	Train the participant on using all the items of the cholera disinfection kit - if possible using a fake house.
	Step 4	Deliver a cholera disinfection kit with instructions drawings.
	Step 5	Investigate the circumstances under which the patient became ill.
	Step 6	Ideally, geo-reference the patient's home, if access to the household is granted and if there is no associated stigma. This will help identify clusters of cases.

OPTION 2: ON-SITE CHLORINE SPRAYING AND HOUSEHOLD DISINFECTION KIT DISTRIBUTION

DT	**Step 1**	Wear your protective equipment.
	Step 2	Go to the cholera treatment facility you refer to.
	Step 3	Collect cholera patient's details (full name, address, home numbers of at least two patient's contacts).
	Step 4	Prepare a 2% chlorine solution and fill the sprayer. Prepare a 0.2% chlorine solution and fill in a jerrycan *(cf Technical Brief n°2D)*.
	Step 5	Introduce the team members and their role to the community leaders and seek agreement for intervention (first intervention).
	Step 6	Introduce the team members and their role to the case-household and seek consent for intervention.
	Step 7	Ask the family member if there is anyone suffering from vomiting or diarrhea and refer to the nearest cholera treatment facility, rehydration corner or any health facility.
	Step 8	Inform the household members about cholera signs and symptoms, cholera transmission, protective behaviors and health seeking behaviors.
	Step 9	Ask the family member where the patient has vomited or defecated and any beddings, vessels and objects he has touched while he was sick at home.
	Step 10	Identify a person in the household that will be able to disinfect the home if a second case occur and ask him to follow the disinfection protocol.
	Step 11	Spray with the 2% chlorine solution the latrine slab and potentially soiled surfaces such as the kitchen and around the patients' beds (vomits and feces should be first wiped away in latrine or buried) maintaining 30 cm from surfaces.
	Step 12	Clean with the 0,2% chlorine solution potentially soiled material and objects (dishes).
	Step 13	Soak soiled clothes, beddings and other articles with local laundry detergent and then left to dry.

DT

Step 14 Left the soiled matrasses and other items that can't be washed sun dry and then ask the household member to return the matrasses.

Step 15 Deliver a cholera disinfection kit with instructions drawings and show the participant how to use all the items including the water treatment product.

Step 16 Geo-reference the case's residence *(Technical brief n°3D)* and investigate of the context of transmission *(Technical brief n°3A).*

Step 17 Go to the next patient's home or come back to the cholera treatment facility.

AFTER THE OUTBREACK

DT	HOD	PM	LD
Disinfection Team	*Head of Department*	*Program Manager*	*Logistic Department*

IN CASE OF CLOSURE OF INTERVENTION BEFORE THE END OF THE OUTBREAK

HOD

Identify the relevant government or civil society bodies to hand over the intervention.

Ensure that trained disinfection teams are maintained.

Sign donation certificate for material and supplies.

IN CASE OF CLOSURE OF INTERVENTION BY ACF

LD

Clean properly the material used with running water and dry completely before storage (ensure that there is no chlorine residual).

Store chlorine in a ventilated room protected from heat, light and moisture in non-metallic containers tightly closed with lids and record the expiry date.

⚠ ***Thresholds for closure of interventions: no cases over three consecutive weeks.***

MONITORING AND EVALUATION

KEY PERFORMANCE INDICATORS

- Number of case-home disinfected (>80%)
- Number of hours between patient admission and household disinfection-Delay of intervention (<48h)

EFFECTIVENESS STUDY

- Post-distribution monitoring survey focusing on satisfaction and ease of use
- Kit uptake evaluation (e.g., measure of the Free Residual Chlorine in drinking water, observed use of kit items)
- Quasi-experimental study assessing the risk of secondary contamination after household disinfection and the vibrio cholera concentration level following Household disinfection in collaboration with a research institute

ADDITIONNAL RESOURCES

- ACF Cholera Operational Toolkit, Technical brief n°3B 'How to conduct geo-targeted interventions?'
- ACF Cholera Operational Toolkit, Technical brief n°3C 'How to set up Rapid Response Teams?'
- ACF Cholera Operational Toolkit, Technical brief n°3E 'What are ACF standards for community cholera kits'
- MSF management of a cholera epidemic
- ACF Lutter contre le cholera https://www.actioncontrelafaim.org/wp-content/uploads/2018/01/manuel_pratique_cholera_acf.pdf
- UNICEF Guidance note 'Water, sanitation and hygiene interventions implemented during a cholera outbreak (Draft)

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3F

HOW TO REDUCE CHOLERA TRANSMISSION DURING BURIALS AND FUNERALS?

 **POSITIONING**	ACF is willing to support existing community network in conducting safe burial and funeral ceremonies
 **OBJECTIVE**	To reduce cholera transmission associated with the preparation, transport and burial of cholera corpses and with unhygienic conditions during funeral ceremonies while respecting local customs
 **LEAD**	Water, Sanitation and Hygiene Program Manager
 **CROSS SECTORAL COLLABORATION**	**WASH + MHPS** • Build trust and collaboration with local persons in charge of mortuary rituals • Identify with them risky practices, explain the risks and agree on acceptable adjustments to ensure basic hygiene measures • Assess community perception of the context-modified interventions and potential barriers and enablers to adapt communication and interventions

WHAT EVIDENCE?

- Localized outbreaks of cholera have been linked to mortuary rituals including transporting, washing, preparing and touching the dead body of suspected cholera cases during funerals and burials, as well as attending a funeral feast under unhygienic conditions (1-8).
- Policies enforcing proper disinfection of cholera corpses and restrictions on funeral feasts during a large-scale cholera epidemic in Guinea-Bissau were found to be practical and effective measures to prevent cholera transmission (1,2).
- Interventions for safe corpse management was the source of dramatic conflicts during Ebola outbreaks (9, 10).

WHAT INTERVENTION?

SAFE MORTUARY RITUALS *including corpse preparation and burial*	Safe handling, management of cholera corpses, and use of appropriate burial grounds are promoted.
SAFE FUNERAL CEREMONY	Hygienic practices in compliance with funeral procedures are promoted and safe funeral kits are provided.

⚠ ***Imposing strict burial and funeral procedures may lead to opposition in reporting deaths and eventually increased disease transmission (11). It is essential to enable people to conduct funerals according to their custom while advising and supporting basic hygiene precautions (10-12).***

WHAT HUMAN RESOURCES?

Identify a team of people acknowledged by the community (red cross volunteers, healthcare workers, community leaders, traditional leaders, religious leaders).

TERMS OF REFERENCE

- Traditionally involved or experienced in preparing the bodies of deceased cholera cases

And/or

- Able to ensure safe hygiene practices during funerals while respecting local customs

WHAT MATERIAL AND SUPPLIES?

- **Material and supplies for dead body handling, preparation and burial**
  - ✓ Protective equipment: raincoat, reusable plastic apron, reusable rubber gloves, google, respirator mask, boots)
  - ✓ Chlorine powder: sodium dichloroisocyanurate (NaDCC) granules,55% active chlorine or calcium hypochlorite (HTH®) granules, 65-70% active chlorine
  - ✓ 2x 10L bucket
  - ✓ Sponge
  - ✓ Cotton
  - ✓ Non porous body bag

⚠ ***Only the protective equipment and the 10L bucket can be reused.***

- **Safe funeral kit to be used during ceremony (13)**
  - ✓ 1x hand washing station with soap for 10 people *(Refer to the WASHEM project for handwashing facilities design)*
  - ✓ 1x bar soap or liquid soap for 10 people (250g/ml of soap)
  - ✓ Household Water Treatment products or methods to treat 2L per person
  - ✓ Improved water containers to store 2L per person
  - ✓ if PUR®, provide 2x buckets x10L and filtering cloth
  - ✓ Clear instruction drawings

⚠ ***The handwashing station, improved water containers and buckets can be reused.***

**Refer to the WASHEM project for handwashing facilities design* https://www.washem.info/news/how-can-implementers-use-evidence-to-inform-their-handwashing-programme-design pour Wash'em

WHAT ARE THE KEY ACTIONS, BY PHASE OF OUTBREAK?

BEFORE THE OUTBREACK

PM	MHPS	FT	BT
Program Manager	*MHPS*	*Funeral Team*	*Burial Team*

MHPS

Step 1 Conduct a situation analysis to i) collect key information on population beliefs, mortuary rituals and perceptions of safe interventions and ii) identify who is responsible for handling, preparing and burying the corpse (Annex 1) (14) .

Step 2 Identify the sequence of mortuary rituals when cholera transmission could occur, communicate and explain it to community, traditional and religious leaders (Annex 1).

Step 3 In concertation with the relevant leaders and the people involved during the mortuary rituals, design acceptable adaptations of traditional practices to minimize the risk of transmission while respecting local customs and legislation and ensuring community understanding and willingness to adopt adjustments (Annex 1).

TA

Step 4 Advocate for and agree with relevant government bodies and sectoral coordination bodies on a protocol(s) for adapted safe burials and funerals procedures considering customs and on a mechanism to define further protocols in case of persistent opposition of the community.

Step 5 Identify all individuals involved in the intervention (What human resources?).

Step 6 Agree on the collaboration terms (e.g., daily incentives, transport fees, phone credit).

Step 7 Set up an alert system to be informed of community cholera-suspected death – context dependent.

Step 8 Train all those involved in the field and equip them (What material?) to ensure the safe handling and management of the cholera corpse, the establishment of an appropriate burial ground and the conduct of funeral procedures defined in step 3.

DURING THE OUTBREAK

PM	MHPS	FT	BT
Program Manager	*MHPS*	*Funeral Team*	*Burial Team*

⚠ ***Thresholds for onset of outbreak response in ACF intervention area: one suspected death of cholera.***

PM

Step 1 Conduct step 1 to step 8 of the section "before the outbreak" if not done during the preparedness phase.

The procedures below are standards and must be adapted in concertation with leaders and people involved in mortuary rituals (step 1 and step 3 of 'before the outbreak' section) to allow safe burial and funeral while respecting local customs. Yet, in case of disapproval by the deceased family or the community during the procedures, the team in charge should listen, try to understand the reason behind the opposition and define together a safe solution satisfying both parties. ACF management team can also enquire with working groups or clusters about similar obstacles that were encountered by other organizations and the way they solve it (real-time lesson-leant process).

SAFE AND DIGNIFIED BURIAL PROCEDURE

BT

Step 1 Wear protective equipment (What material and supplies?).

Step 2 Prepare a 2% chlorine solution (15).

Step 3 Wash the corpse with a 2% chlorine solution, using a sponge or a cloth. This can be done by the family members if they are wearing protective equipment and are informed of the risks of cholera transmission and trained on safe procedures.

Step 4 Plug all orifices (mouth, anus) with cotton soaked in a 2% chlorine solution to avoid body fluids from leaking.

BT

Step 5 Bandage the head so that the mouth remains shut (the face can be left showing).

Step 6 Place the corpse in a non-porous body bag or wrap the body in a plastic sheet, to keep any fluids from overflowing when transporting it. The nature and appearance of the bag/sheet need to be carefully discussed with the family and the community and adapted as much as possible to the beliefs of the community.

Step 7 Identify with the relevant community leaders and the family of the deceased a place to cremate or bury the corpse – considering the wishes or religious confession of the deceased, as close as possible to the place of death to limit risks of contamination during transport. In case of burial, the grave should be located at least 50 meters from a water source and at least 1.5 meters above the water table.

Step 8 Cremate or bury the dead body as soon as possible, preferably within 24 hours of death. This delay should be carefully negotiated with the community and the family.

Step 9 Burry or incinerate the sponge and disinfect the protective equipment with a 0,2% solution with 30 minutes' contact time (15).

Step 10 Disinfect clothing, bedding and all surfaces that have been in contact with the dead body while he was sick at home with a 0.2% chlorine solution. Clothes and bedding can alternatively be boiled and dried in direct sunlight.

Step 11 At the end of the procedure, wash hands thoroughly with 0.05% chlorine solution or soap.

⚠ ***Ask those present not to:***
- empty the intestines of the deceased
- wash or touch the body without adequate protection and information
- drink the water used to wash the body (see Ebola lessons learned)
- kiss or hug the deceased

SAFE FUNERAL PROCEDURES

PM

Step 1 The relevant authorities (community, traditional, religious leaders – context-dependent) introduce the person who will be in charge of promoting the basic hygiene practices during the funeral ceremony and seek consent of the family and community for intervention.

FT

Step 2 If the family agrees, treat and store drinking water in improved storage containers to reach 15L per person.

Step 3 Install handwashing facilities with soap every 10 participants and encourage mourners to wash their hands with running water and soap at critical times - after going to the latrine, after touching the corpse (including clothing or bedding), before food preparation, and before eating, drinking or smoking.

Step 4 Ensure that food is served hot and prepared under hygienic conditions as determined in the previous steps.

AFTER THE OUTBREAK

PM

Step 1 Draw lesson learnt through the organization of a team workshop.

Step 2 Update and/or produce additional Standard Operating Procedures related to ACF response in the community.

⚠ ***Thresholds for closure of interventions: no cases between three consecutive weeks***

ADDITIONNAL RESOURCES

- 2D ACF Cholera Operational Toolkit, Technical brief *'How to prepare and store chlorinated solutions?'*
- 3G ACF Cholera Operational Toolkit, Technical brief *'What are ACF standards for community cholera kits?'*
- 4A ACF Cholera Operational Toolkit, Technical brief *'What are the data to be collected for a rapid situation analysis?'*
- ACF Lutter contre le choléra, chapitre *'Décès communautaires'*
- UNICEF Cholera toolkit, annex 9D 'Safe care of the dead'
- MSF Cholera guidelines, chapter 'Corpses and funerals'
- UNICEF Guidance note *'Water, sanitation and hygiene interventions implemented during a cholera outbreak'* (Draft).

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(10) *WHO, How to conduct safe and dignified burials of a patient who has died from suspected or confirmed Ebola or Marburg virus disease, https://apps.who.int/iris/bitstream/handle/10665/137379/WHO_EVD_GUIDANCE_Burials_14.2_eng.pdf;jsessionid=C800CAF568C8F0D074EC1474674C495E?sequence=1*

(11) *ACF (2013), 'Lutter contr le choléra'*

(12) *MSF (2018), 'Management of a cholera epidemic'*

(13) *3G ACF Cholera Operational Toolkit, Technical brief 'What are ACF standards for community cholera kits? https://www.actioncontrelafaim.org/wp-content/uploads/2018/01/manuel_pratique_cholera_acf.pdf*

(14) *4A ACF Cholera Operational Toolkit, Technical brief 'What are the data to be collected for a rapid situation analysis?'*

(15) *2D ACF Cholera Operational Toolkit, Technical brief 'How to prepare and store chlorinated solutions?'*

ANNEX 1 / RISK ASSESMENT TOOL FOR MORTUARY RITUALS AND FUNERAL CEREMONY

TOOL FOR STEPS 1, 2 AND 3

This tool must be completed for each religion.

In addition, specificities due to the deceased's status must also be documented (male/female; other specificities: traditional leader, religious leader, pregnant women, child etc.) as these characteristics determine both the ritual sequences and the person responsible for the rituals who need to receive the training and equipment. We recommend completing the tool for each local specific situation.

STEP 1. SITUATION ANALYSIS

Information can be rapidly collected during interviews with community representatives and health professionals.

Local religions:

- ☐ Muslim
- ☐ Christian
- ☐ Other: .....

Who is responsible for the death management (preparation of the corpse, burials and funerals)?

.....

Perceptions of safe practices intervention

PREVIOUS EXPERIENCE	NO PREVIOUS EXPERIENCE
When:	Hygienic practices in compliance with funeral procedures are promoted and safe funeral kits are provided.
Who was responsible for safe procedure:	
Concerns:	Concerns:
Experience of refusal:	
Problem-solving procedure:	Suggestion of problem-solving procedure in case of refusal:
Key messages:	Suggestion of key messages:
How to improve the procedure:	

Who should be included in the discussion for defining adaptations of practices and safe procedures?

.....

Information relatives to the traditional practices (one tool per social status)

1. Who is the deceased?

RELIGION	GENDER	AGE CATEGORY	SPECIFIC SOCIAL STATUS	MEMBERSHIP
☐ Muslim ☐ Christian ☐ Other:	☐ Male ☐ Female	☐ Child ☐ Young ☐ Married ☐ Pregnant ☐ Senior	☐ Leader ☐ Religious ☐ Other:	☐ From the community ☐ Foreigner

2. When the death occurs in a health facility, who is responsible for:1

SEQUENCE	STATUS OF THE PERSON IN CHARGE1	NAME OF THE IDENTIFIED PERSON TO BE CONSULTED, TRAINED AND INFORMED
Handling the body		
Washing and preparing the body		
Transporting the body		
Collecting and transporting the decease's belonging		
Burials		
Funerals		

3. When the death occurs at home (private place), who is responsible for:

SEQUENCE	STATUS OF THE PERSON IN CHARGE1	NAME OF THE IDENTIFIED PERSON TO BE CONSULTED, TRAINED AND INFORMED
Handling the body		
Washing and preparing the body		
Transporting the body		
Collecting and transporting the decease's belonging		
Burials		
Funerals		

STEP 2. IDENTIFICATION OF RISKS

The risk will be identified when doing interviews with the person responsible for the sequence.

SEQUENCE	SHORT DESCRIPTION OF LOCAL PRACTICES	IDENTIFIED RISK	WHO IS AT RISK
Handling the body			
Washing and preparing the body			
Transporting the body			
Collecting and transporting the decease's belonging			
Burials			
Funerals			

STEPS 3: INVENTORY OF ACCEPTABLE ADAPTATIONS OF PRACTICES WITH THE COMMUNITY

Acceptable adaptations must be listed with relevant community representatives during a focus group discussion. [2]

SEQUENCE	LOCAL PRACTICES	IDENTIFIED RISK	ACCEPTABLE ADAPTATIONS[2]	ACCEPTABLE EQUIPMENT	KEY COMMUNICATION MESSAGES
Handling and transporting the body					
Washing and preparing the body					
Collecting and transporting the decease's belonging					
Burials					
Funerals					

1 - Parent: who? Health professional, religious leader, traditional healer, male/female? Etc.

2 - WHO's protocol for safe and dignified burials proposes religion-specific alternatives https://apps.who.int/iris/bitstream/handle/10665/137379/WHO_EVD_GUIDANCE_Burials_14.2_eng.pdf;jsessionid=F92A8229C40B46D6074FA6DD1E61023E?sequence=1

3G

WHAT ARE ACF STANDARDS FOR COMMUNITY CHOLERA KITS?

OBJECTIVE

To reduce cholera transmission at household level and during funerals and population gatherings, through the delivery of supplies and instructions

LEAD

Water, Sanitation and Hygiene Program Manager

CROSS SECTORAL COLLABORATION

WASH + HEALTH & NUTRITION

- Include ORS sachets for early rehydration in community cholera kits
- In health and nutrition projects, have the team trained in treating water for ORS preparation and in Household Water Treatment use

WASH + MHPS

- Assess potential stigmatization for recipients of kit distribution

WHAT TYPE AND CONTENT FOR CHOLERA KITS?

HOUSEHOLD CHOLERA KIT*,** (Technical brief n°3B and 3D)

TARGETS

→ Cholera patient's household

→ Neighbors of cholera patients

→ At risk population group (depending on the context)

→ Beneficiaries of ACF health and nutrition programs in at risk areas

- ✓ 10x Oral Rehydration Salts sachets per person to provide one month supply
- ✓ 2x bar or liquid Soap per person to provide one month supply (500g/ml of soap)
- ✓ household water treatment product or method to treat 7,5L per person per day for 30 days
- ✓ 1x improved water container***
- ✓ if PUR®, provide 2x buckets x10L and filtering cloth
- ✓ 1x hand washing facilities****
- ✓ clear instruction drawings

⚠ ** Adapt the quantity of supplies to the average household size*

⚠ *** Distribute supplies for one month only (1)*

⚠ ****Avoid introducing an unfamiliar water container in crises and epidemics (2)*

⚠ *****Refer to the WASHEM project for handwashing facilities design*

HOUSEHOLD DISINFECTION KIT (Technical brief n°3D)

TARGETS
- Cholera patient's household

- 1x bottle of commercial bleach of 2.6-4% of active chlorine (1L)
- 1x sachet of local laundry detergent (approx. 20g)
- 1x bucket for cleaning purposes
- 1x cleaning cloth
- 1x scrubbing brush
- clear instructions drawings

SAFE FUNERAL KIT OR POPULATION GATHERING KIT (Technical brief n°3F)

TARGETS
- Any funeral of a cholera-like suspected deaths
- Population gatherings within or close to affected communities (ceremonies, religious festivals)

- hand washing facility* with soap for 10 people (2)
- 1x bar or liquid soap for 10 people (250g/ml of soap)
- household water treatment products or methods to treat 7,5L per person
- improved water containers to store 2L per person
- if PUR®, provide 2x buckets x10L and filtering cloth
- clear instruction drawings

**Refer to the WASHEM project for handwashing facilities design*

WHAT OPTIONS FOR HOUSEHOLD WATER TREATMENT?

Evaluation should be conducted prior to the outbreak to select the appropriate water treatment method(s) in a given context, considering (3):
- The existing HWT methods in use
- Uptake by the community
- Capacity to scale-up production and/or distribution (availability in local markets, prepositioning)

Avoid introducing an unfamiliar water treatment option in crises and epidemics [2]

The below tables present the most used products for household water treatment, either chlorine or non-chlorine based and considerations for dosage and usage

CHLORINE-BASED PRODUCTS

PRODUCT TYPE / METHOD	EXAMPLES	CONSIDERATIONS FOR DOSAGE/USAGE*
CHLORINE TABLET** *(Sodium dichloroisocyanurate tablets)*	Aquatabs® 7-167mg, NaDCC	Add one tablet of 7–167 mg to a 1– to 20-liter water container (final FRC concentration 0.2-1.0 mg/L).
LIQUID CHLORINE** *(Sodium hypochlorite solutions)*	Commercial bleach, Oasis®, Sur'Eau®, Lifeguard Purification Systems®, WaterGuard® (150-250ml)	Add one cap of a bottle of a 1–1.25% sodium hypochlorite solution to a 20-liter water container (final FRC concentration 0.2-1.0 mg/L).
COMBINATION OF FLOCCULENT AND DISINFECTANT	P&G PUR® 4g	Add the content of a P&G Water PURifier sachet to 10L of water (final FRC concentration 0.2-10mg/L).

** To be determined through a jar test.*

*** Chlorine tablets and solutions should be preferably used when Turbidity <20NTU, otherwise flocculation is needed before. Double dosing of chlorine tablets can be used between 20 and 100 NTU (4,5).*

NON-CHLORINE BASED PRODUCTS

PRODUCT TYPE / METHOD	EXAMPLES	CONSIDERATIONS FOR DOSAGE/USAGE*
BOILING *(Sodium dichloroisocyanurate tablets)*		Users heat their water to 100°C for at least one minute.
SOLAR DISINFECTION	SODIS® (www.sodis.ch)	Users place a clear container (e.g., 1.5-liter plastic bottle) on their roof in the sun for 6–48 hours, depending on amount of sunlight.
FILTER USED FOR WATER TREATMENT	Simple screens/nylons and cloths, ceramic candles or buckets, activated carbon, slow/bio sand and hollow-fiber filters.	⚠ ***These options reduce the concentration of suspended matters/solids (turbidity) and must be used in combination with a treatment method during cholera outbreaks.***
TRADITIONAL FLOCCULATING PRODUCTS MOST LIKELY AVAILABLE LOCALLY	gypsum, moringa leaves/ seeds/ powder, alum stone, raket (https://www.cdc.gov/safewater/chlorination-pretreatment.html)	

ADDITIONNAL RESOURCES

- ACF Cholera Operational Toolkit, Technical brief n°3B 'How to conduct geo-targeted interventions?'
- ACF Cholera Operational Toolkit, Technical brief n°3D 'How to conduct case-home disinfection?'
- ACF Cholera Operational Toolkit, Technical brief n°3F 'How to reduce cholera transmission during burials and funerals?'
- ACF Lutter contre le choléra, chapter 'Response interventions' https://www.actioncontrelafaim.org/wp-content/uploads/2018/01/manuel_pratique_cholera_acf.pdf
- MSF publication 'Uptake of household disinfection kits as an additional measure in response to a cholera outbreak in urban areas of Haiti' https://pubmed.ncbi.nlm.nih.gov/24334836/
- UNICEF Guidance note 'Water, sanitation and hygiene interventions implemented during a cholera outbreak' (Draft).
- WASHEM – Improving Hand washing in Emergencies. https://www.washem.info/news/how-can-implementers-use-evidence-to-inform-their-handwashing-programme-design

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4

ASSESSMENT, MONITORING & EVALUATION, LEARNING

4A What are the data to be collected for a rapid situation analysis? p.141
4B How to measure the performance of a cholera response? p.149
4C How to interprete cholera facility indicators? p.153
4D What standards for WASH services in Cholera Treatment Facilities? p.157

4A

WHAT ARE THE DATA TO BE COLLECTED FOR A RAPID SITUATION ANALYSIS?

 **POSITIONING**	ACF regularly implements Health, WASH and MHPS interventions during cholera outbreaks and is willing to initiate case management activities (if no medical actors are present or in capacity to respond)
 **OBJECTIVE**	To inform ACF emergency response positioning and intervention delivery
 **LEAD**	Health and Nutrition Head of Departmentt
 **CROSS SECTORAL COLLABORATION**	**HEALTH & NUTRITION + WASH + LOGISTICS + HUMAN RESOURCES** • The situation analysis is performed by a multi-disciplinary team

WHAT IS THE PRINCIPLE?

- A public health situation analysis (ideally performed before the outbreak) is an assessment of the extent to which health services effectively address health needs in order to obtain indications on response timing, possible intervention areas, targeted approaches, response intervention and population targets.
- Regular analysis of baseline data (person, place, time) is valuable for efficient monitoring of the cholera situation. It is particularly valuable to identify high-risk population, places, practices and contexts of transmission.
- This will lead to:
  - Understand cholera epidemiology in a given context.
  - State whether a cholera outbreak is unlikely, probable (based on the number of patients fulfilling the case definition), or confirmed (based on culture results). and determine the level of risk of a severe outbreak.
  - Understand coordination mechanisms and use standardized and harmonized strategies.
  - To identify potential areas of surveillance system and safe and dignified managament of cholera cases strengthening.
  - To develop understanding of social, cultural, political, linguistic and WASH context and design effective and contextualized interventions.

HOW TO PROCEED STEP BY STEP?

In order to build a situation analysis report, the fbelow steps are suggested. The timeline can vary from two weeks during the preparedness phase to a few days at the the onset of an utbreak.

1 FORM A MULTI-DISCIPLINARY TEAM OF OUTBREAK EXPERIENCED PERSONNEL AT MISSION LEVEL

- Include personnel from Health and Nutrition, WASH, Logistic and Human Resources departments.

2 DETERMINE A FRAMEWORK FOR THE SITUATION ANALYSIS (CAN BE DONE BEFORE THE OUTBREAK), WITH THE FOLLOWING ELEMENTS

- Overview of cholera epidemiology with previous cholera outbreaks patterns analysis.
- Identification of cholera hotspots and key contextual factors (infrastructure, movements of population, social determinants) that can affect the spread of the disease.
- Assesment of Health and WASH services and social determinants aspects in cholera hotspots.
- Security assessment in cholera hotspots to anticipate any field deployment restriction.
- Policy and regulatory frameworks.
- Stakeholder analysis and capacity mapping.

3 COLLECT KEY INFORMATION AND DATA AS PER THE FRAMEWORK

- Identify what information is already available.
- Identify what information is still required.
- Collect the required information.

4 COMPILE AND WRITE THE REPORT

- In three parts: description, analysis and recommendations.
- Short (5 pages) but sufficiently detailed to inform decisions on further action.
- Dated with name of the country/region specified, author's name and position.

5 DISSEMINATE THE REPORT

- ACF internal mission
- Local Ministry of Health and coordination body
- National coordination mechanism

WHAT SITUATION ANALYSIS FRAMEWORK?

GOAL	WHICH TYPE OF DATA?	WHERE TO FIND IT?	HOW TO INTERPRETE?
TO UNDERSTAND CHOLERA EPIDEMIOLOGY IN A GIVEN CONTEXT *(ideally, before an outbreak)*	**Epidemiology synthesis of previous cholera outbreaks trends and patterns** **Information needed:** • cholera burden • outbreak length • cholera hotspots • cholera affected areas • seasonality • risk factors/ contexts of transmission • high-risk population: age, gender, occupation, geographic origin/ place of residence or work location	1. Look for cholera epidemiology summary and hotspots classification in the existing UNICEF cholera factsheets (information available for 22 countries in Africa) (1). 2. If the information for the concerned country is not available in these, then: > **Consult Ministry of Health** surveillance department and WHO Country Office for historical cholera data (at national and district level): Sitrep, weekly number of cholera cases and deaths datasets, anonymized line lists, cholera outbreak investigation report, cholera outbreak response report. > **Conduct a review of published and 'grey literature'** including epidemiological report from WHO (2), Promed-mail (3) and Relief web (4). > Gather information regarding potential **student thesis or research projects.** > **Apply the GTFCC** tool using 10 years' time frame (5) **or use the UNICEF method** (6) to identify hotspots.	• Estimate the caseload, and duration of previous outbreaks and thus the resources needed (7), the response timeframe and required funding. • Identify areas where cholera outbreaks regularly occur (hotspots) and thus potential areas for preparedness and response. • Identify less frequently affected areas but vulnerable to cholera outbreak. Those are potential areas of intervention if ACF is already present there. • Improve timeliness of intervention by anticipating outbreak onset. • Improve effectiveness of intervention by identifying common risk factors, contexts of transmission, at risk practices and at risk population group.
TO DETERMINE IF A CHOLERA OUTBREAK IS UNDERWAY *(during an outbreak)*	**Information needed to determine if an outbreak is underway[1]:** • cholera case definition • number of cholera/ Acute Watery Diarrhea (AWD) suspected cases • number of cholera suspected death • Rapid Diagnostic Test (RDT) results • laboratory confirmation results	1. **Consult Ministry of Health** surveillance department and WHO Country office (at national and district level) for cholera case definition, updated cholera outbreak information and RDT or laboratory results. 2. **Attend coordination meetings** (at national and district level) such as situation update and Cholera Task Force. 3. **Consult health coordination body** such as Health cluster for meetings minutes. 4. **Review existing or draft National Cholera Plan** (Cholera elimination plan, cholera response plan, cholera preparedness plan) and **surveillance Working Group SOPs.**	• **In areas with no history of cholera:** The appearance of any case or cluster of cases of AWD meeting the cholera case definition, and subsequently confirmed by culture, can be considered an outbreak. • **In areas where cholera is known to occur:** > If there are no historical data: for a given location, a doubling of the number of cases meeting the clinical case definition of cholera over 2 to 3 consecutive weeks can be considered an outbreak. > If data from previous years are available (same calendar period and location): calculate the average number of expected cases per week in non-epidemic periods. An increase in the weekly average number of cases above this non-epidemic average indicates a developing outbreak. ⚠ ***In all cases, the definitive declaration of an outbreak is the responsibility of the health authority and depends on laboratory culture confirmation.*** • **Identify support** needed for laboratory confirmation of cholera cases.

1 - In general, a cholera outbreak is defined as any increase in the number of cholera cases compared to the expected number for a given place over a particular period of time.

GOAL	WHICH TYPE OF DATA?	WHERE TO FIND IT?	HOW TO INTERPRETE?
TO EVALUATE THE SEVERITY OF AN ONGOING OUTBREAK *(during an outbreak)*	**OUTBREAK SEVERITY** **Information needed:** • Previous cholera outbreaks dynamics and patterns • Current number of cases and deaths • Current affected areas • Current outbreak onset • Affected population • Current or future population movement • WASH and Health services in cholera affected areas • Current meteorological conditions	1. **Look for cholera retrospective epidemiological study** on the regional cholera platform online resources (available for 18 countries in Africa) (1). 2. If the information regarding history of outbreaks is not available in these, then: > **Consult Ministry of Health** surveillance department and WHO Country office for historical cholera data (at national and district level). > **Conduct a review of published and grey literature.** > Gather information in **student thesis or research project projects.** 3. **Consult Ministry of Health** surveillance department and WHO Country office (at national and district level) for updated cholera outbreak information. 4. **Attend coordination meetings** (at national and district level) such as situation update and Cholera Task Force meetings. 5. **Consult Ministry of Water** (at national and district level) for information on the WASH services delivery.	• Determine the level of risk for the population mortality, morbidity and probability of extension. The level of risk grows as the below number of risk factors increases: > History of outbreaks with high attack rates, high case fatality rates, or large geographical extension. > No outbreak in the preceding 2-3 years (loss of innate immunity from prior infection). > Current outbreak with high case fatality rates. > Divergence from the pattern typical of previous outbreaks: onset prior to the usual season, location in an area where outbreaks were previously unknown, early involvement of a large number of individuals affected, early geographic extension. > Emergence in population-dense communities (e.g. slums, refugee camps) or in mobile populations (e.g., IDPs, seasonal workers). > Emergence during or right before large community gatherings (e.g., religious festivals, fishing seasons, ceremonies). > Disruption of water and sanitation systems or access to care or lack of Human Resources to manage the outbreak > Current meteorological conditions outside the norm (either very rainy or very dry). • Estimate the resources needed (7), the response timeframe and required funding.
TO REACH COMMON GOALS USING STANDARDIZED AND HARMONIZED STRATEGIES *(ideally, before an outbreak)*	**COORDINATION** **Information needed:** • Description of coordination bodies and mechanisms (8) • Identify existing mechanisms for information sharing and high-quality information management • Stakeholder analysis and mapping • Policies, legislations and standard operating procedures • Funding streams	1. **Consult national Cholera Working Group, Crisis Committee or Task Force:** meeting frequency, membership, terms of reference. 2. **Consult surveillance, Logistics, Health, WASH, Social mobilization, and Camp Coordination (CCCM) clusters or sectorial working groups:** meeting frequency, sectorial groups Terms of Reference, stakeholder mapping, SOP and guidelines for data sharing, funding mapping and opportunitie. 3. **Consult District Management Team** or equivalent coordination body at district level: meetings frequency, stakeholder mapping, SOP or guidelines, data sharing practices. 4. **Review existing or draft National Cholera Plan** (Cholera elimination plan, cholera response plan, cholera preparedness plan).	• Identify the different coordination mechanisms and bodies and understand their roles and responsibilities and how they work, analyse the role ACF can play in terms of coordination (8). • Understand the roles and responsibilities of government departments, national and international partners, institutions and donors, including identification of areas for collaboration and coordination. • Assess the relevancy of ACF positioning (geographically or for a certain type of activities) and ensure there is no overlap with other actors. • Identify where ACF can contribute in terms of defining the preparedness and response strategy, technical guidelines and SOPs (response threshold, data-sharing agreement, use of Rapid Response Teams, use of targeted and epi-driven approaches, case mapping). • Understand funding streams, be informed of any funding opportunities and raise advocacy concerns.

GOAL	WHICH TYPE OF DATA?	WHERE TO FIND IT?	HOW TO INTERPRETE?
TO IDENTIFY POTENTIAL AREAS OF SURVEILLANCE SYSTEM STRENGTHENING *(ideally, before an outbreak)*	**SURVEILLANCE** **Information needed:** • Capacity for early detection • Capacity for laboratory confirmation • Capacity to conduct data collection and reporting, analysis and interpretation of data, and production and dissemination of cholera reports	1. **Review national cholera surveillance SOPs or guidelines:** collection, transportation and storage of laboratory specimens, the national laboratory guidelines, the laboratory quality assurance system and its past evaluations, verification and investigation of outbreak alerts, ongoing reporting schedule and data sharing, mechanisms for community-based surveillance, and mechanisms for cross-border surveillance. 2. **Review the capacities and resources** for public health surveillance: existence of Field Epidemiology Training Programme, national public health research institutions, laboratory capacities, international agreements with reference laboratory. Assess capacity for Health-Care Workers (HCWs) and Community Health Workers (CHWs) on case detection, data collection, management and reporting procedures. 3. **Assess the availability of laboratory supplies and consumables** and the capacity for laboratory confirmation.	• Identify any potential gap in terms of community-based surveillance, use of Rapid Diagnostic Tests (RDTs), specimen collection and transport. • Identify any potential gap in terms of laboratories with culture or polymerase chain reaction confirmation capabilities (laboratory supplies and consumables, capacity building). • Identify any potential gap in terms of epidemiological data collection, reporting and analysis.
TO IDENTIFY GAPS IN TERMS OF SAFE AND DIGNIFIED MANAGEMENT OF CHOLERA CASES *(ideally before the outbreak)*	**CASE MANAGEMENT** **Information needed:** • Capacity in terms of early detection and referral. • Capacity in terms medical treatment: triage, hydration therapy, complementary therapy and discharge. • Adherence to Infection, Prevention and Control recommended measures: hand hygiene, food preparation and handling, laundry, waste management, cleaning and disinfection, vector control, dead body management. • Adherence to Water, Sanitation and Hygiene standards: potable water, Oral Rehydration Solutions, chlorinated solutions, latrines, showers and bathing units, waste water and drainage, health and hygiene education.	1. **Review national guidance, SOPS and protocols** related to treatment and referral protocols: SOPs on screening, diagnosing and treating patients, including comorbidities and pregnant women, procurement/logistics, supply chain and stockpiling for materials and equipment; human resources training and deployment plan; guidelines on infection prevention and control (IPC), and tools for reporting and monitoring. 2. **Assessment of Cholera Treatment Facilities** detailing gaps in the availability of human resources, medicines, medical equipment, medical supplies, RDT, infrastructure and access to WASH services (9) and IPC measures using ACF tools (10). 3. **Assess availability of guidelines and protocols at the CTF** and their use by personnel and with affected populations. 4. **Assess availability of communication materials** on accessing cholera care at the community level, on community awareness of early identification of cholera symptoms, or trust in services to seek early treatment. 5. **Assess community-based surveillance:** capacity for Health-Care Workers (HCWs) and Community Health Workers (CHWs) on case detection and referral and RDT use.	• Assess the relevancy and feasibility of ACF positioning on case management activities (11). • Fill in any potential gap in terms of Human Resources, material and supplies to adhere to medical treatment protocol, IPC recommended measures and WASH services standards. • Provide needed procedures, guidelines, protocols and communication material. • Identify community-based networks and partners that would be engaged in promoting early care seeking and referrals to CTF.

GOAL	WHICH TYPE OF DATA?	WHERE TO FIND IT?	HOW TO INTERPRETE?
TO DEVELOP UNDERSTANDING OF WASH CONTEXT AND CONDUCT EFFECTIVE AND CONTEXTUALIZED INTERVENTIONS *(ideally, before an outbreak)*	**WASH** **Information needed:** • Level of knowledge and guidance for WASH response delivery mechanism and activities in controlling cholera outbreak • WASH vulnerabilities and existing level of WASH service delivery • Adherence to the regulatory framework by service providers • Monitoring of water quality in all sources • Understanding of community barriers / enablers to WASH response intervention	• Review any past assessments on WASH response interventions: Knowledge, Attitudes and Practices surveys, water quality testing surveys, post-distribution monitoring survey, kit uptake evaluation, effectiveness or impact studies. • Review the policy and regulatory framework for WASH, including national guidance, protocols and SOPs: timely, epi-driven and geo-targeted delivery mechanisms (Rapid Response Teams, CATI, case-cluster interventions, healthcare facility-based interventions), case-home disinfection, safe burials and funerals, safe food and hygiene, source-based water treatment, Household water treatment (HWT) options, cholera kits, water quality monitoring (policy, supplies and tools), excreta disposal, waste water management, hand-washing promotion and facilities. • Mapping WASH vulnerabilities and assessing the existing WASH services delivery and practices at household, community and institutional levels (market, school, harbour, bus station): factors that further aggravate transmission dynamics, type of water source, drinking water service provider, HWT options in use, handwashing practices and facilities, excreta disposal, waste water management, future or ongoing projects, stakeholders' analysis and resilience capacities to respond to cholera outbreaks, level of community engagement, community perceptions and beliefs and social norms related to WASH practices and response intervention.	• Develop understanding of WASH vulnerabilities and existing WASH service delivery and practices. • Mitigate any social barrier preventing the response to be successful (including socio-anthropological aspects). • Design effective delivery mechanism and response interventions considering population beliefs, practices, and community resilience capacity. • Contribute to WASH working group strategy, guidance, protocol and SOPs (12-18). • Benefit from lesson learnt from other WASH programs.
TO DEVELOP UNDERSTANDING OF SOCIAL, CULTURAL, POLITICAL AND LINGUISTIC CONTEXT AND DESIGN CONTEXTUALIZED INTERVENTIONS *(ideally, before an outbreak)*	**COMMUNITY ENGAGEMENT** **Information needed:** • Kknowledge about the disease, its spread, and its prevention and potential response intervention. • Multi-sectoral approach to community engagement: coordination and sharing of information across sectors and stakeholders. • Knowledge of political, social and cultural dynamics that shape people's relationship to the disease and to the response interventions. • Knowledge of community stakeholders to consult and engage when shaping and conducting response interventions.	• **Review any past assessments** of risk communication or community engagement interventions: Knowledge, Attitudes and Practices surveys, qualitative and anthropological analysis, trust in formal health-care systems, O&M of infrastructure. • **Review of national guidance and protocols** on health education, health promotion, social mobilization and behaviour change, including the availability of locally contextualized information, education, communication. • **Identify key community stakeholders:** community leaders, CHWs, traditional healers, trade unions; identify who is responsible for handling, preparing and burying the corpse (16). • **Review the social, cultural, political and linguistic context:** collect key information on population beliefs, mortuary rituals and perceptions of safe interventions (16); ability of households to access and/or afford the resources to enable behavioural change; political willingness to stop the outbreak, factors influencing the use of health services. • **Identify existing initiatives** to strengthen community participation across sectors and linkages to other diseases control and prevention program (e.g. polio, rotavirus, meningitis, typhoid, viral haemorrhagic fevers).	• Develop understanding of linkages between community and health systems and WASH services. • Mitigate any social barrier preventing the response to be successful (including socio-anthropological aspects. • Design efficient delivery mechanism and response interventions considering population beliefs, practices, community resilience capacity and appropriate community stakeholders. • Align messages and communication materials among stakeholders, adapt messages to each audience and needs. • Benefit from lessons learnt from other initiatives from the Health, Education and Communication sector.

ADDITIONNAL RESOURCES

- GTFCC Surveillance working group (2019), *'Framework for the development and monitoring of a multi-sectoral National Cholera Plan'* http://plateformecholera.info/attachments/article/821/NCP%20Framework%20Final.pdf
- GTFCC Surveillance working group (2017), *'Interim Guidance Document on Cholera Surveillance'* https://www.gtfcc.org/wp-content/uploads/2019/10/gtfcc-interim-guidance-document-on-cholera-surveillance.pdf
- MSF (2018) *'Management of a cholera epidemic'*, chapter 2.6 'Data analysis' https://medicalguidelines.msf.org/en/viewport/CHOL/english/2-6-data-analysis-23448739.html

REFERENCES

(1) *UNICEF (2014) West and Central Africa cholera factsheets: https://plateformecholera.info/index.php/cholera-in-wca/cholera-factsheet ; Eastern and Southern Africa: https://plateformecholera.info/index.php/about-cholera-in-esa-region/cholera-fact-sheets*

(2) *WHO wer : http://www9.who.int/wer/en/*

(3) *ProMED-Mail: https://promedmail.org*

(4) *Reliefweb update: https://reliefweb.int/updates*

(5) *GTFCC tool to identify cholera hotspots: http://www.gtfcc.org/wp-content/uploads/2019/11/gtfcc-tool-for-identification-of-cholera-hotspots.xlsx*

(6) *UNICEF method to identify cholera hotspots: https://plateformecholera.info/attachments/article/791/Cholera%20Study%20South%20Sudan_PowerPoint%20presentation.pdf*

(7) *2F ACF Cholera Operational Toolkit, Technical brief 'What resource needs for Cholera Treatment Facilities '*

(8) *1A ACF Cholera Operational Toolkit, Technical brief 'What are the external coordination mechanisms'*

(9) *4D ACF Cholera Operational Toolkit, Technical brief 'What standards for WASH services in Cholera Treatment Facilities'*

(10) *2H ACF Cholera Operational Toolkit, Technical brief 'What are the key measures for Infection, Prevention and Control in Cholera Treatment Facilities'*

(11) *2A ACF Cholera Operational Toolkit, Technical brief 'How to be ready for case management?'*

(12) *3A ACF Cholera Operational Toolkit, Technical brief 'How to implement epi-driven interventions?'*

(13) *3B ACF Cholera Operational Toolkit, Technical brief 'How to implement geo-targeted interventions?'*

(14) *3C ACF Cholera Operational Toolkit, Technical brief 'How to set up Rapid Response Teams?'*

(15) *3E ACF Cholera Operational Toolkit, Technical brief 'How to conduct case-home disinfection?'*

(16) *3F ACF Cholera Operational Toolkit, Technical brief 'How to reduce cholera transmission during burials and funerals?'*

(17) *3G ACF Cholera Operational Toolkit, Technical brief 'What are ACF standards for community cholera kits?'*

(18) *3D ACF Cholera Operational Toolkit, Technical brief 'How to map cases during cholera outbreaks?*

4B

HOW TO MEASURE THE PERFORMANCE OF A CHOLERA RESPONSE?

 **POSITIONING**	ACF regularly implements WASH and MHPS interventions during cholera outbreaks and is willing to initiate case management activities (if no medical actors are present or in capacity to respond)
 **OBJECTIVE**	To conduct real-time evaluation of ACF intervention during cholera outbreaks and implement corrective actions as deemed necessary
 **LEAD**	Health and Nutrition Head of Departmentt
 **CROSS SECTORAL COLLABORATION**	**HEALTH & NUTRITION + WASH + LOGISTICS + HUMAN RESOURCES** • Key performance indicators are multi-sectorial

WHAT IS THE PRINCIPLE?

- The performance indicators are intended to promote measurement of progress towards meeting the standard and to drive continuous learning and improvement in the quality and accountability of humanitarian responses (1).
- The below key Performance Indicators (KPI) are a set of indicators that enable real-time evaluation of ACF response during cholera outbreaks across technical and support departments.
- Recommended targets are proposed in the below framework. They can be adapted to challenges met on the field and to comply with national guidelines.
- Ideally, KPI should be calculated on a weekly basis and attached to ACF weekly situation reports (2).

WHAT KEY PERFORMANCE INDICATORS FRAMEWORK?

	WHAT PERFORMANCE INDICATOR?		HOW TO CALCULATE?	WHAT TARGET?	WHAT RECOMMENDATION?
COORDINATION					
NATIONAL LEVEL	Relevancy of ACF intervention	Appropriate service delivery and resources mobilized to respond to assessed needs and risks.		• Aligned with national situation analysis • Complied with standards	• Use evidence and related technical brief.
FIELD LEVEL	Effectiveness of Integration	Percentage of mixed RRTs composed of government and ACF members.	Number of RRTs composed of government and ACF members over the total number of RRTs.	• >50%	• Increase linkages between government and ACF members.
CASE MANAGEMENT					
MEDICAL TREATMENT	Quality of medical care	Case Fatality Rate in each cholera treatment facilities ran by ACF.	Number of cholera facility deaths over the total number of patients admitted during an epidemiological week1.	• <1%	• Re-train medical staff • Asses location, type or number of CTFs.
	Adequate management of drug	Number of days in a week, essential medical supplies (drug module) were in shortage.	Count the number of days RL, ORS, infusion sets or catheters were in shortage.	• 0	• Anticipate drug stock out and purchase delay.
INFECTION, PREVENTION AND CONTROL (IPC)	Efficacy of IPC measures	Number of cases suspected to have contracted the diseases in each cholera treatment facility ran by ACF.	Investigate cases and count the number of cases suspected to have contracted the disease in the CTF (health personnel, caretaker, visit) during an epidemiological week.	• 0	• Ensure regular monitoring of IPC practices. • Reinforce where needed IPC measure.
		IPC measure score from the checklist (3).	Fill in the IPC checklist.	• 45/45	
WASH STANDARD	Quantity of potable water	Liters of potable water available daily in each cholera treatment facility ran by ACF.	Interview with staff. Visual inspection of water storage facility.	• 60 liters per patient • 15 liters per caregiver • Storage for three days of water supply	• Increase water access. • Improve water quality.
		Level of free residual chlorine at point of delivery at pH < 8.0 after 30 minutes of contact time in each cholera treatment facility ran by ACF.	Measure Free Residual Chlorine using a dpd indicator test at point of delivery 30 min after chlorination.	• Free residual chlorine (FRC) level of at least 0.5 mg/L	

*1 - Example: 60 cholera cases and 1 death have been recorded in the health facility over the pas week. The Case Fatality Rate is 1.7% (CFR=1/60*100).*

	WHAT PERFORMANCE INDICATOR?		HOW TO CALCULATE?	WHAT TARGET?	WHAT RECOMMENDATION?
SURVEILLANCE					
COMMUNITY SURVEILLANCE AND REFERRAL	Efficacy of community surveillance and referral	Number of cholera cases referred.	Number of cholera cases suspected to have contracted the diseases in the community who have been identified and referred to a cholera treatment facility ran by ACF.	• 100% of suspected cases identified in the community, are seen at the cholera treatment facility ran by ACF.	• Increase early identification of cholera cases.
COMMUNITY REPORT COMPLETENESS	Efficacy of cholera active case finding	Percentage of report from ACF trained community volunteers fully completed and received on time.	Number of report received over the total number of community volunteers.	• >80%	• Improve the coverage of cholera response intervention.
COMMUNITY RESPONSE					
	Exhaustiveness of intervention	Percentage of cases for whom case-home disinfection was conducted.	Number of patients for whom home disinfection was conducted over the total number of patients admitted during an epidemiological week.	• 80%	• Combined different targeted delivery mechanism (Technical brief n°3B).
	Completeness of intervention (minimum package)	Percentage of cases were household disinfection, health and hygiene education and source-based water treatment in and around case's residence were conducted.	Number of patients[2] for whom home disinfection, health and hygiene education of at risk neighbors and source-based water treatment were conducted over the total number of patients admitted during an epidemiological week.	• 80%	• Combined different targeted delivery mechanism (Technical brief n°3B).
	Timeliness of intervention	Average number of hours between patient admission and household disinfection.	For each patient admitted during an epidemiological week, calculate the number of hours between admission and home disinfection. Sum up the hours for all the patients and divide by the number of patients.	• 48 hours	• Combined different targeted delivery mechanism (Technical brief n°3B).
	Strong community accountability	Percentage of communities feedbacks adressed[3].	Count the number of communities feedback addressed over the total number of feedbacks.	• 100% of communities feedback addressed.	• Consult the community before any intervention and associate them in the intervention design.

2 - This number only refers to the case-households and not the neighbors (even though they will be targeted).

3 - Communities provide feedback on ACF interventions either through a hotline or an alternative feedback system.

	WHAT PERFORMANCE INDICATOR?		HOW TO CALCULATE?	WHAT TARGET?	WHAT RECOMMENDATION?
SUPPORT FUNCTIONS					
LOGISTICS	Timeliness of supplies delivery	Percentage of purchase request processed on time.	TBD[4]	• 80%	• Review the supply plan. • Hire dedicated logistic resources for the cholera outbreak response. • If possible, activate emergency logistics procedure.
HUMAN RESOURCES	Efficacy of recruitment	Number of post vacant.	Count the number of position advertised that were not fulfilled.	• 0	• Widen the geographical areas of recruitment. • Broaden the profile of applicants (e.g., consider university student application). • If possible, activate human resources logistics procedure.
COMMUNI-CATION	Regular internal communication	Number of Sitreps disseminated among ACF mission and HQ staff members.	Count the number of Sitrep validated during an epidemiological week.	• 1 Sitrep per week	• Review internal process for the redaction of Sitreps.
FUNDING	Adequate funding	Funding are available on time and meet financial needs.		• 100% of financial needs covered on time	• Regularly monitor funding gaps. • Facilitate funds release in emergency.
FUNDING	Appropriate use of financial resources	Resources are used for agreed activities.		• 100% of budget executed	• Monitor regularly budget. • Anticipate discussion with donors.

ADDITIONNAL RESOURCES

- 2B ACF Cholera Operational Toolkit, Technical brief *'How to set up Cholera Treatment Facilities?'*
- 3B ACF Cholera Operational Toolkit, Technical brief *'How to conduct geo-targeted interventions?'*
- 3E ACF Cholera Operational Toolkit, Technical brief *'How to conduct case-home disinfection?'*
- Core Humanitarian Standard (2015), *"CHS guidance note and indicators"* https://corehumanitarianstandard.org/files/files/CHS-Guidance-Notes-and-Indicators.pdf

4C

HOW TO INTERPRETE CHOLERA FACILITY INDICATORS?

 **POSITIONING**	ACF is willing to initiate case management activities if no medical actors are present or in capacity to respond
 **OBJECTIVE**	To provide field missions with information on how to interpret cholera facility indicators during cholera outbreaks
 **LEAD**	Health and Nutrition Head of Departmentt
 **CROSS SECTORAL COLLABORATION**	**HEALTH & NUTRITION AND WASH** • The indicators of geographic origin, sex, professional activity and age can give indication on high risk population groups and thus contribute to the adjustment of outreach response activities

WHAT IS THE PRINCIPLE?

- The cholera facility indicators are intended to enable real-time evaluation and improvement in the quality and accountability of ACF case management.
- Epidemiological indicators can be further analyzed to produce incidence map or epidemiological curve and thus provide an insight into the cholera outbreak dynamic.
- Some indicators enable identification on high risk population group and geographic location of cases and thus contribute to the adjustment of outreach response activities.
- Patient personal and medical information should be recorded in an electronic database and must respect data confidentiality local legal framework.
- Recommended targets and interpretation are proposed in the below framework. They can be adapted to challenges met on the field and to comply with national guidelines.
- Ideally, cholera facility indicators should be calculated on a weekly basis.

WHAT CHOLERA FACILITY INDICATORS FRAMEWORK?

MAIN INDICATORS	HOW TO CALCULATE?	WHAT TARGET?	HOW TO INTERPRETE?
WEEKLY NUMBER OF ADMISSIONS	Number of patients admitted during an epidemiological week[1].	Should not exceed bed capacity	• Indication on the evolution of the epidemic • Indication on the Intensity of transmission • Evaluation of supply, bed capacity and HR needs
WEEKLY CASE FATALITY RATE	Number of cholera facility deaths over the total number of patients admitted during an epidemiological week[2].	<1%	• Quality of medical treatment • Late presentation of the patients (>1%) • Treatment accessibility issues (>1%) • Issue with the location, type or number of CTFs
DEHYDRATION LEVEL (WHO)	Number of patients with severe dehydration level over the total number of patients admitted during an epidemiological week. Same calculation for patients with moderate dehydration and with no dehydration.	**Single CTC receiving all cases with no supporting CTU or ORP** • Severe 25-30% • Moderate 30-40% • None 30-40% **Referral CTC with supporting CTU and/or ORP** • Severe 70-80% ORP • Very few or no severe cases	• Accessibility issues • Appropriateness of location, type and number of CTFs • Dehydration diagnostic accuracy • Staff training levels • Appropriate use of resources e.g., Dehydration may be overestimated to justify IV treatment that is perceived as more effective • Care seeking behavior e.g. if very high number of severe cases- may mean that population only seek help as last resort • Indication of health and hygiene education effectiveness • Evaluation Supply, bed capacity and HR needs
GEOGRAPHIC ORIGIN[3]	Number of patients by geographical location (e.g., city section, blocks, neighborhood, villages) during an epidemiological week.	If many cases arrive from outside the catchment area of the treatment facility, response strategy may need to be reviewed.	• Indication on the geographical spread of the epidemic • Appropriateness of the location of the facility • Information on how to geographically target interventions

OTHER DATA	HOW TO CALCULATE?	WHAT TARGET?	HOW TO INTERPRETE?
AGE[4]	Number of patients admitted during an epidemiological week by age group, usually: • 1-4 • 5-14 • 15-60+ • 60+	**Non-endemic (no existing population immunity)** • Proportion of cases will usually be similar to overall demographics of affected population e.g. < 5 years 17-20% **Endemic (some existing immunity)** • < 5 years more common e.g. 25-35%	• Identification of at-risk population group • Information on which population group to target with health and hygiene education activities • Common risk factor among a population group to investigate
SEX	Number of female patients over the total number of patients admitted during an epidemiological week. Number of male patients over the total number of patients admitted during an epidemiological week.	Usually, 50% female 50% male but highly dependent on population demographics and context.	• Identification of at-risk population group • Information on which population group to target with health and hygiene education activities • Common risk factor among a population group to investigate

1 - An epidemiological usually starts on Sunday and ends the following Saturday. However, discrepancy between countries can occur.

*2 - Example: 60 cholera cases and 1 death have been recorded in the health facility over the pas week. The Case Fatality Rate is 1.7% (CFR=1/60*100).*

3 - Accuracy and high-resolution scale is crucial. The lowest administrative unit should be recorded.

4 - Towards the end of the outbreak, this figure may increase as other AWD diseases will begin to reappear e.g. rotavirus.

PROFESSIONAL ACTIVITY *(optional)*	Number of patient by professional activity over the total number of patient admitted during an epidemiological week.	Context-dependent.	• Identification of at-risk population group • Information on which population group to target with health and hygiene education activities • Common risk factor among a population group to investigate
STATUS: DISPLACED/ RESIDENT/ REFUGEES *(optional)*	Number of patient by status over the total number of patient admitted during an epidemiological week.	Context-dependent	• Identification of at-risk population group • Information on which population group to target with health and hygiene education activities • Common risk factor among a population group to investigate
CONTEXT OF TRANSMISSION[5]	Investigate cases using the case investigation form (1).	• case households and neighbors • public institutions and places • population gatherings • cholera treatment facilities • burials and funerals and • environmental contamination	• understanding the context of Vibrio cholera transmission • Selection of a targeted approach and appropriate WASH packages (1)
OCV STATUS	OCV vaccination status of admitted patient.	Not applicable	• Evaluation of vaccine and vaccine strategy effectiveness
PREGNANCY	Number of pregnant patients over the total number of patients (male and female) admitted during an epidemiological week.	2-6% of admissions depending on demographics of affected population, if mostly women this may be higher.	• If low, pregnant women not accessing care • Identification of at-risk population group • Information on which population group to target with health and hygiene education activities • Common risk factor among a population group to investigate
TYPE OF DISCHARGE	Number of patients discharged from the facility per outcome over the total number of patients discharged during an epidemiological week.	**99%** discharged as cured Leave against medical advice= 0%	• Quality of treatment • Access to CTF • Acceptability of the treatment by the community
AVERAGE LENGTH OF STAY	Number of days each patients stay in the facility over the total number of patients admitted during an epidemiological week.	Maximum 3 days unless comorbidity e.g. SAM, HIV, pregnancy, malaria.	• Quality of medical treatment • Acceptability (acceptance ?) and quality of care (comfort, culturally sensitive) External factors (e.g. population displacement)
AVERAGE CONSUMPTION OF RINGERS LACTATE AND ORS PER PATIENT	Number of ORS sachets used over the total number of patients admitted during an epidemiological week. Liters of ringers lactate used over the total number of patients admitted during an epidemiological week.	Average per patient in CTC • 8-10 ORS sachets • On IV treatment 8-10 liters of ringers lactate	• Prescription errors • Appropriate use of resources • Accuracy of the clinical monitoring of patients • Stock out of ORS or RL?

ADDITIONNAL RESOURCES

- 4B ACF Cholera Operational Toolkit, Technical brief 'What are the key performance indicators to use'
- 3A ACF Cholera Operational Toolkit, Technical brief 'How to implement epi-driven interventions?'

REFERENCES

(1) *A3 ACF Cholera Operational Toolkit, Technical brief 'How to implement epi-driven interventions?'*

(2) *The West and Central Africa Cholera Platform (2017), 'Overview of the strategy to control and prevent cholera in West and Central Africa The "Shield and Sword" concept'.*

(3) *ACF (2013), 'Lutter contre le choléra'*

5 - The transmission context is defined as the circumstances in which a person will most likely contract the disease (2,3). Six recurrent contexts have been identified

4D

WHAT STANDARDS FOR WASH SERVICES IN CHOLERA TREATMENT FACILITIES?

 **POSITIONING**	ACF is a global signatory of the Core Humanitarian Standard (CHS), committed to adhere to the respect of global WASH standards and will position itself on cholera WASH response if relevant
 **OBJECTIVE**	To ensure good infection prevention control practices and keep patients safe and comfortable in Cholera Treatment Facilities
 **LEAD**	Water, Sanitation and Hygiene Program Manager
 **CROSS SECTORAL COLLABORATION**	**WASH + HEALTH & NUTRITION** • Health and Nutrition teams to know and apply WASH standards (e.g. WASH in Nut programs in a cholera context)

WHAT IS THE PRINCIPLE?

The functionality of a Cholera Treatment Facility (CTF) heavily relies on the adequate provision of WASH services and this is ensured by respecting the related standards. Given the importance of Infection Prevention and Control (IPC) for cholera outbreaks, a thorough daily monitoring of all WASH activities in CTF is needed to prevent cross-contamination within the CTF context of transmission.

WASH and IPC activities have been distinguished by the GTFCC.

IPC measures include (1):

- Access and move restriction
- Hands hygiene
- Use of Personal Protective Equipment
- Safe food preparation and handling
- Laundering soiled linens and clothes
- Managing waste (2)
- Vector Control

WHAT MONITORING FOR THE WASH STANDARDS IN CTF?

The below table can be used as a **checklist** by ACF Staff who are working in (or visiting) the CTF, WASH PM or WASH Head of Departmentts Coordinators, and even by CTC Staffs assigned to daily quality monitoring.

Date of evaluation: / / Name of evaluator: _____	Position of evaluator: _____ Contact of evaluator: _____
Healthcare facility Name: _____ Location (District, Town, Village): _____ Decimal Degrees Long: _____ Decimal Degrees Lat: _____ □ Hospital □ Clinic post □ □Mobile Clinic □ Cholera Treatment Centre □ Cholera Treatment Unit □ Therapeutic Feeding Centre □ Other Healthcare facility focal point: _____ Contact: _____	Number of Staff: _____ Number of inpatient: _____ Occupancy Rate: _____ % Outpatients/Day: _____

WHAT	WHAT EXPECTED OUTCOMES?	HOW TO MONITOR?	WHAT TARGET?	WHAT SCORE?
WATER QUALITY	Water for drinking, cooking, personal hygiene, medical activities, cleaning and laundry is treated, disinfected and safe for the purpose intended.[1]	Water quality testing at randomly selected water points.	□ Coliforms 0 TTC/100ml □ FRC 0.5-1mg/l □ Turbidity <5 NTU	__ / 3 __ / 3 __ / 1
WATER QUANTITY	Sufficient water is available all throughout the CTF at all times for infection control, medical activities personal hygiene, drinking, laundry and food preparation purposes.[2]	Interview with staff in every department. Visual check?	□ 60 l/day for patients □ 15 l/day for caregivers □ Storage >3 days □ 10l /patient/day ORS	__ / 2 __ / 2 __ / 1 __ / 2
WATER ACCESS	Sufficient water-collection points and water-use facilities are available in all CTF wards to allow convenient access to water for medical activities, infection control activities, drinking, personal hygiene, food preparation, laundry and cleaning.[3]	Visual inspection (turn on tap) of all water points.	□ All taps functional	__ / 7

1 - Free from Fecal contamination: 0 TTC/100ml; sufficient Residual chlorine: 0.5-1mg/l at distribution point; Least Turbidity: <5 NTU.

2 - No reported water shortage: 60 l/patient/day + 15 l/caregiver/day + storage for 3 days for both patients and caregivers of water supply.

3 - Water available in every CTF area where healthcare is delivered and all service areas.

EXCRETA DISPOSAL	Sufficient numbers of adequate, accessible, appropriate and safe toilets for staff, patients and caretakers that do not contaminate the health-care setting or water supplies (one functional toilet per 20 users).[4]	Visual inspection of every toilet/latrine cubicle. Observation walk around CTF perimeter.	☐ All toilets/latrine clean and functional ☐ CTF grounds free from open defecation	__ / 5 __ / 4
HYGIENE	Sufficient functional handwashing stations are available in each ward.[5] Correct hygiene is encouraged by hygiene promotion activities, posters, IEC, and by management of staff, patients and caregivers.[6] Sufficient number of adequate, appropriate and accessible showers are available in the designed area (at least one functional per 50 users).[7]	Visual inspection of all handwashing stations. Interview with 4 randomly selected in-patients/ caregivers ("were you informed on essential hygiene behaviors on arrival?") Visual inspection of all handwashing stations.	☐ Handwashing with soap and water or 0.05% chlorinated solution available in every ward ☐ Patients/caregivers informed on essential behaviors within 30mn of arrival ☐ All showers clean and functional	__ / 4 __ / 3 __ / 3
Use the space below or additional pages to capture any additional notes, comment, and recommendations. Action, or drawing.				*Total Score* */ 40* *(add all individual scores together)*
As soon as it is filled, send this form to: _____@_____				

Source: Adapted from: WHO (2011) WASH in Health Facilities in emergencies Guide

ADDITIONNAL RESOURCES

- 2B ACF Cholera Operational Toolkit, Technical Brief 'How to set up Cholera Treatment Facilities?'
- 2H ACF Cholera Operational Toolkit, Technical Brief 'What key measures for Infection, Prevention and Control in Cholera Treatment Facilities?'
- 2E ACF Cholera Operational Toolkit, Technical Brief 'How to manage waste in Cholera Treatment Facilities?'
- WHO WASH in Health Facilities in emergencies Guide https://wash.unhcr.org/download/wash-in-health-care-facilities-in-emergencies-who/
- UNICEF Cholera Toolkit 8E Establishing cholera treatment sites including infection control (WASH) https://sites.unicef.org/cholera/Cholera-Toolkit-2013.pdf

REFERENCES

(1) *ACF Cholera Operational Toolkit, Technical Brief 'What key measures for Infection, Prevention and Control in Cholera Treatment Facilities'*
(2) *ACF Cholera Operational Toolkit, Technical Brief 'How to manage waste in Cholera Treatment Facilities'*

4 - All toilets / latrines clean and functional and CTF grounds free from open defecation.
5 - Handwashing station with Soap and water or 0.05% chlorine solution, available in every CTF area where healthcare is delivered and all service areas.
6 - Patients and caregivers informed of essential hygiene behaviors within 30mn of arrival.
7 - All showers clean and functional.

5

KEY SUPPORT FUNCTIONS

5A What human resources organigram for a cholera outbreak response? p.163

5B What are the the emergency logistics procedures? p.167

5A

WHAT HUMAN RESOURCES ORGANIGRAM FOR A CHOLERA OUTBREAK RESPONSE?

 **POSITIONING**	ACF will provide medical treatment only if the country office is able to in terms of resources and expertise and if no other actor is able to respond.
 **OBJECTIVE**	To ensure a good organization of Human Resources, which is key for an optimal management of the staff
 **LEAD**	Human Resources - Head of Departmentt
 **CROSS SECTORAL COLLABORATION**	**HUMAN RESOURCES + WASH + HEALTH & NUTRITION + LOGISTICS**

WHAT TYPE OF CHOLERA RESPONSES AND HUMAN RESOURCES?

Overall, we can define three main interventions components in a cholera response:

- **WASH component:** Related to WASH activities. In this component, WASH staff are deployed in the community and supporting health facilities: Water trucking, WASH kits distribution, Cleaning and disinfection of CTC/CTUs, etc.
- **Health component**: Setup of health facilities (CTC, CTU, ORPs), of Community Surveillance, Referral network and other activities intended to provide direct healthcare to people affected by the outbreak disease or surveillance. Health staff and another staff like logisticians, storekeepers and others, supporting their performance. Refer to 2F for the recommend staffing for this component.
- **Case-area targeted interventions (CATI)**: Rapid Response Teams (with staff of both sectors, WASH and Health) deployed in geographic areas with increased prevalence of cholera, performing WASH activities (Households Disinfection, WASH kits distribution, etc.) and Health activities (oral vaccination, referral, chemoprophylaxis, etc.). Refer to 3C for the recommend staffing for this component.

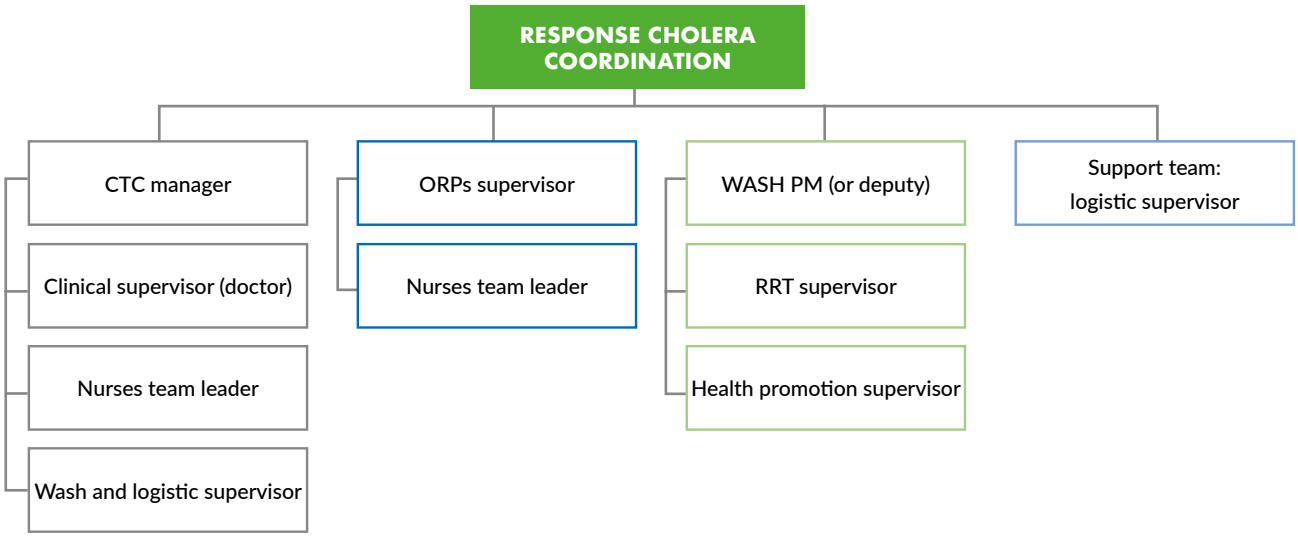
These components are activated according to the response. Historically most ACF's responses were only included the WASH completed. The SOPs explains how to expand responses to incorporate the CATI and Case Management Component. The SOPs 2F and 3C detail the staffing needs for the individual components. This brief details how these teams can be integrated into a single team depending on the scale of the response.

- **Large scale response:** These are interventions that typically have all components, with multiple sub-components running in parallel and with an important capacity to receive beneficiaries. For example, a response of this type can have several CTUs or ORPs, and a CTC with over 50-60 beds, or water trucking and RRTs developing WASH activities in neighborhoods. In addition, this response can have several Rapid Response Teams deploying CATI activities in different geographical areas.
- **Small scale response:** Interventions of limited capacity, with usually not so many different options, and/or with not all the sub-component presents. For example, limited WASH activities and not a CTC (CTUs only) or just a CTC of 30-35 beds, with no RRTs working in the area or just one RRT.

WHAT STAFF NEEDS AND ORGANIGRAMS BY RESPONSE?

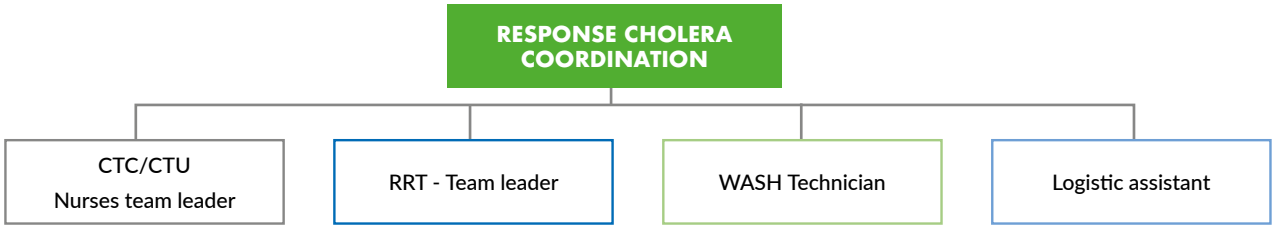
COMPREHENSIVE LARGE SCALE RESPONSE (ALL THREE COMPONENTS)

In these responses, it's usual to have a manager or supervisor for every service, to supervise the large number of staff members, as for example, a CTC manager, a RRT supervisor, etc. Usually there is an epidemiologist in charge of mapping, preparing databases and organizing the statistics of health facilities, who works directly with the general coordinator. The best way of organizing the staff is dividing them into teams and assigning a team leader to each of them. Then, the service supervisor will coordinate with those team leaders, as we can see in the organigram below. For example, an ORP supervisor with many ORPs to follow can organize his/her team having one team leader for every "X" ORPs, increasing the capacity to support them. In this situation, the general coordinator and the supervisors/managers will have a first line of coordination, and the second will be between them and the team leaders. There is also a support/logistic supervisor who has a transversal role, providing assistance to all response components. In addition, if the CTC has many staff members in every shift, or if there are many ORPs, it will be necessary to have one or more team leaders to link the staff with the ORP supervisor. A special case is the RRT supervisor, who even if has the position of supervisor, is under the WASH DPM coordination. This is because usually there are two or more RRTs working in different geographic areas and that can require an important amount of coordination.



SMALL SCALE COMPREHENSIVE RESPONSE

Due to the reduced number of staff members, the general coordinator can directly coordinate with team leaders, or even directly with the staff members, and usually supervisors or managers are not needed. In this situation, the Response coordinator is directly in charge of mapping, preparing databases and organizing the statistics of health facilities. The response coordinator for this type of response has a wider variety of roles, assuming directly some responsibilities as coordinating the supplying chain, HR management, mapping, preparing databases and organizing the statistics of health facilities, etc. In these type of responses, the Response cholera coordinator manages directly all these services, acting through their team leaders, and in the case of WASH activities, through a WASH technician. A logistic assistant provides some transversal support.



WASH RESPONSE

If there is no CTU component then the response will include WASH and CATI. For this set up, WASH teams have sufficient experience to adapt their organograms as per normal programs. If the project includes a CATI component (strongly recommended) identify a health supervisor for the rapid response teams and a focal point for managing the epidemiology data.

ADDITIONNAL RESOURCES

- 2C ACF Cholera Operational Toolkit, Technical brief 'How to set up cholera treatment facilities'
- 2F ACF Cholera Operational Toolkit, Technical brief 'How to manage cholera treatment facilities'
- 3C ACF Cholera Operational Toolkit How to set up Rapid Response Teams
- MSF Management of a Cholera Epidemic. August 2017. Appendix 18. Job descriptions, CTC.

5B

LOGISTICS & SUPPLY CHAIN BRIEFING NOTE

 **POSITIONING**	ACF follows professional and transparent procedures to make the most effective use of resources
 **OBJECTIVE**	This document does not define new procedures, but give some pieces of advice, to effectively support in cholera response
 **LEAD**	Logistics Head of Departmentt
 **CROSS SECTORAL COLLABORATION**	**HEALTH & NUTRITION + WASH + MHPS + LOGISTICS + HUMAN RESOURCES + FINANCE** • Hold regular Logistics & Supply coordination meetings with all departments involved

INTRODUCTION

Emergency procedures do not exist, as in any case the Kit Log procedures remain valid (Supply Chain, Logistic Support…), thus please refer to the adequate Kit Log chapters.

Many people may be involved in logistics and supply chain operations in a cholera response team. The role of the logistics team is to give operational support to programs, with close adherence to internal and donor protocols and procedures. This can include:

- **Supply chain:** responsible for procurement, transport, customs, delivery and stock[1] management.
- **Equipment:** needs' forecasting, management, maintenance, and implementation of equipment management procedures.
- **Infrastructure**[2]**:** design, setup, management according to our standards.
- **Fleet:** right sizing forecasting, management, maintenance, and implementation of our Fleet management procedures.

1 - Critical to setup with program (refer to SOP 2C - How to manage Cholera Treatment Facilities), the needed Stock Minimum = Buffer Stock (consumption during the standard replenishment period) + Security Stock (potential consumption during the period linked to the context complexity) to avoid any shortage.

2 - Energy, ICT, premises.

ENACTING EMERGENCY PROCUREMENT POLICIES AND PROCEDURES

When a cholera response hits, simplified emergency procurement policies and procedures could be enacted to ensure that procurement can be fast enough to meet the emergency needs while also ensuring adequate levels of accountability[3].

Lessons learned have consistently demonstrated that in the **first stages of a cholera response**, regular procurement procedures are overly cumbersome or inadequate to deal with the fast-paced and urgent demands required for cholera response's procurement. Simplified procedures could be put in place for the emergency period with the support of your HQ log advisor and through a derogation request procedure[4].

Derogation *(in this context)* is the full or partial cancellation of the required procurement procedure. Logistic Head of Departmentt must request derogation when he/she thinks it will not be possible to respect Action Against Hunger standard procurement procedures or a particular donor rule.

A derogation request is not granted automatically[5] and it is important to look at each Donor's rules and contract to choose the right process. Therefore, in order to avoid risk of derogation refusal during an emergency response, the logistics team must reinforce as much as possible its preparedness.

Filing out the internal derogation request is mandatory in case-by-case basis, but submit a derogation request to donor(s) is not always required and should be analyzed with your HQ Log advisor.

We do insist that the preparedness work has to be done before a cholera response (framework agreement, contingency stock…) and the derogation is an option in case logistic is not ready or some markets are not covered by framework agreement.

BEFORE - EMERGENCY PREPAREDNESS RESPONSE PLAN

As part of your mission Emergency Preparedness Response Plan (EPRP), you should be ready[6] to participate to situation analysis and to collect key information related to logistic support needed. Moreover, you should have pre-positioned material *(mission contingency stock, decentralized stock, international ACF stock, etc.)* and/or supplies *(pre-selected suppliers, running Framework Agreement(s) and contract(s)[7] template)* ready for outbreak.

Please refer to the SOP 2B *(How to set up Cholera Treatment Facilities)*, 2F *(What resource needs for Cholera Treatment Facilities)* and 3C *(How to set up Rapid Response Teams)*, to have better overview about the programs needs on the first days of an outbreak. In term of supply chain, you must aim to have a preparedness strategy for each market indicated in the SOPs *(mainly NFI, chlorination, PPE kit, and medical supply)*. You can discuss the different market strategy options with your HQ Log advisor.

In addition of the programs needs mentioned above, you must anticipate and prepare in advance for the logistics needs *(facilities, vehicles, IT, Telecom…)* that would be required to support the cholera response.

Finally you must be involved in the proposals development before or/and during the response in matter to ensure that all logistics aspects are considered and integrated for the Cholera response.

Be very careful on the chlorine storage requirement (refer to SOP 2D - *How to prepare and store chlorinated solutions*), contingency equipment running maintenance[8], and of course medical storage follow up.

DURING - SUPPORT IMPLEMENTATION

Even if a close follow up of the project supply plan with the programs managers will represent most of your log team workload, cholera response 's infrastructure support could become highly time consuming and your main pain point if it is not tackle properly from the beginning.

Firstly, regarding supply[9], be very close of your programs needs schedule and constraints. You can see the type of supply you will have to deal with in the following SOP 2F *(What resource needs for Cholera Treatment Facilities)*, 3E *(How to conduct case-home disinfection)*, 3F *(How to reduce cholera transmission during burials and funerals)*, 3G *(What are ACF standards for community cholera kits)*.

3 - https://www.careemergencytoolkit.org/programme-support/16-procurement/3-enacting-emergency-procurement-policies-and-procedures/
4 - Or also named waiver by some donors. See Annex 1.
5 - Please refer to ACF Kit Log Procurement Guideline page 33 for more information.
6 - A log manager (focal point) trained and ready to be involved in a Rapid Assessment Team.
7 - For example : CTF construction template contract.
8 - Motor pump, dewatering pump, generator, etc. should follow a proper maintenance schedule and be turned on every 6 months.
9 - It is not only procurement, you should focus on, but also this type of response require special attention to transport, delivery and storage management.

Secondly, regarding infrastructure, cholera response design will have a huge impact on the support setup requirement:

- **ICT:** Rapid Response Team (and after, mobile program teams too) will need as fast as possible all equipment to run their assessment (mobile device, GIS[10], nomad setup, etc.) and start the response. Please refer to the SOP 3C *(How to set up Rapid Response Teams)*
- **Premises[11] & Energy[12]:** Usually both go together. Setup of Cholera Treatment Facilities (CTC or CTU) will require a huge investment in terms of construction, maintenance and 24h/7d power supply, which is critical.
- **Waste management:** This type of project require very strict hygiene and waste management protocols. Then refer to the SOP 2E *(How to manage waste in Cholera Treatment Facilities)* and to our Kit log - Waste Management Guideline in our "Environment" chapter.

Thirdly, size your log team HR accordingly to handle the workload surge and support adequately. In case of a cholera response, it is common to specialize positions (e.g. log water trucking, log distribution, emergency log coordinator) and even to have dedicated program logistician[13] in case of a huge volume of activities.

Fourthly, coordination is key, internally and externally with existing system[14] in place during a cholera response. Usually we can share information, means, and rationalize our efforts to increase our quality service.

AFTER - ANALYSE AND IMPROVE

At the cholera response's closure phase, logistic department should participate actively to the three following steps:

- **STEP 1** – Draw lesson learnt internally through the organization of a team workshop
- **STEP 2** – Contribute to the data collection and cleaning, and interpretation of results of effectiveness and impact study. Update the logistics part of the mission Emergency Preparedness and Response Plan accordingly to the outputs of the analysis of the "After Action Review".
- **STEP 3** – Update and/or produce additional Standard Operating Procedures related to ACF response

More practically, please refer to the "OPENING/CLOSURE" chapter of the kit log, but keep in mind that you should at least[15]:

- Ensure all Purchase Dossiers are closed and suppliers are paid.
- Consolidate records for potential future audit or evaluation.
- Manage remaining stock according to donors & internal policies (donation, transfer, contingency stock, disposal, etc.)
- Reallocate equipment and assets ensuring donor and internal policies are followed.

ADDITIONNAL RESOURCES

- 2B ACF Cholera Operational Toolkit, Technical Brief 'How to set up Cholera Treatment Facilities'
- 2D ACF Cholera Operational Toolkit, Technical Brief 'How to prepare and store chlorinated solutions'
- 2E ACF Cholera Operational Toolkit, Technical Brief 'How to manage waste in Cholera Treatment Facilities'
- 2F ACF Cholera Operational Toolkit, Technical Brief 'What resource needs for Cholera Treatment Facilities'
- 3C ACF Cholera Operational Toolkit, Technical Brief 'How to set up Rapid Response Teams'
- 3E ACF Cholera Operational Toolkit, Technical Brief 'How to conduct case-home disinfection'
- 3F ACF Cholera Operational Toolkit, Technical Brief 'How to reduce cholera transmission during burials and funerals'
- 3G ACF Cholera Operational Toolkit, Technical Brief 'What are ACF standards for community cholera kits'
- Kit log : Emergency Log-Admin Procedure
- Logistic cluster
- MSF, management of a cholera epidemic
- Factsheet on Contingency Stock
- Emergency Preparedness and Response Plan
- International Contingency Stock
- Decentralized Stock

10 - Geographic Information System.

11 - Please refer to http://www.missions-acf.org/kitlog/HTML/3.6-civilengineeringEN.html and MSF guidelines, link at the end of this document.

12 - Please refer to http://www.missions-acf.org/kitlog/HTML/3.5-energyEN.html

13 - Haïti 2010 earthquake response, each PM (WaSH, FSL, NUT and SMPS) had a dedicated Logistician to manage their supply, fleet, distribution, etc. in coordination with the logistic department.

14 - UN log coordination lead by WFP or log cluster if activated, NGO coordination platform, national coordination mechanism like Sphere in India, etc.

15 - This list is not exhaustive.

ANNEX 1 / DEROGATION REQUEST

Mission: .....

Contract Reference and Title: .....

Donor code / Contract code: .....

Type of market: □ Supplies □ Work □ Services

Products: .....

DESIGNATION	QUANTITY	UNIT	UNIT PRICE (€)	MEMBERSHIP (€)

Derogation request is: □ Internal (Action Against Hunger procedure) □ External (donor rule)

Procedure that should apply :

Arguments and explanations of the reasons why this procedure is not applicable:

Procedure to be applied :

REQUESTER		VALIDATION
Logistics Referent (Field)	**Country Director**	**HQ**
Date : Name : Signature :	Date : Name : Signature :	Date : Name : Signature :

NOTES

FOR FOOD.
FOR WATER.
FOR HEALTH.
FOR NUTRITION.
FOR KNOWLEDGE.
FOR CHILDREN.
FOR COMMUNITIES.
FOR EVERYONE.
FOR GOOD.
FOR ACTION.
AGAINST HUNGER.

ACTION AGAINST HUNGER

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