

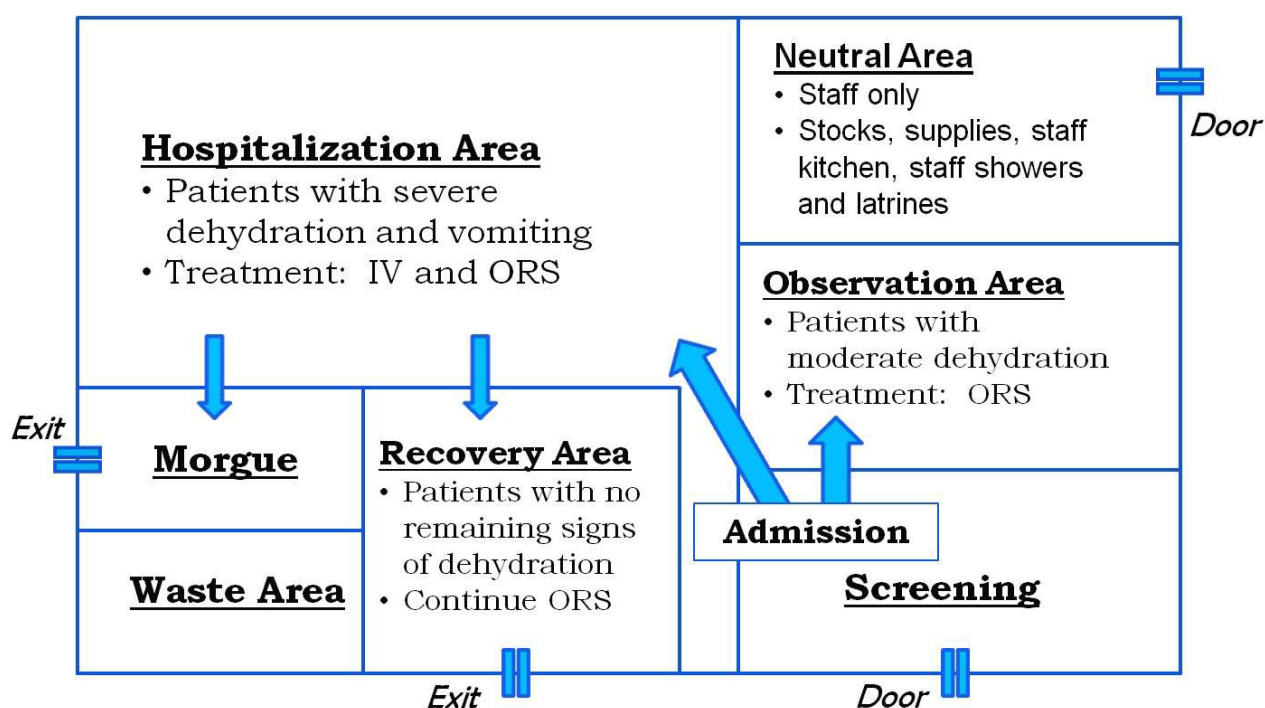
Guidelines for Water, Sanitation and Hygiene in Cholera Treatment Centres

During an outbreak of cholera, most patients can be treated in existing health facilities. However, health officials may decide to set up a temporary Cholera Treatment Center (CTC) either in part of the existing facility or as a separate areas.

How to choose a site for a CTC

Cholera Treatment Centers should be:

1. Where patients can easily access the facility
2. Located away from water sources and functioning facilities (e.g. schools, markets, dispensaries)
3. Separated from other patient wards, if located within an existing healthcare facility
4. Easy to clean



Infection Control

At the Entry/Exit Point

- At the entry/exit point a footbath or preferably a guard with sprayer will be employed for spraying and disinfecting feet. The spraying or footbath also has the objective to make staff and visitors aware of the contamination they are potentially bringing into the different areas.
- If footbaths are installed, they should be trays with cloth or sponge soaked in 0.2 % chlorine solution and changed twice per day or when the cloth appears dirty.
- It is important to note that after chlorine solution preparation, the calcium deposits at the bottom of the container should not be used in the sprayers, as this will cause blockages. Plastic sprayers adapted to resist strong concentrations of chlorine should be used. Do not use the metal sprayers used for Indoor residual spraying campaigns (eg from the mark Hudson or Sumitomo)

Infection Control

At Admission

- Patients and caregivers should enter through the patient entrance area where their feet and shoes will be disinfected with a 0.2 % chlorine solution by a sprayer preferably, or footbath.
- All people entering or leaving will need to wash their hands with a 0.05% chlorine solution.
- Disinfect the patient's transportation: 0.05% solution for stretchers and beds or 0.2% for vehicles.
- Wash patient and caretaker clothes in a 0.05% solution for 30 minutes, then rinse with clean water and dry under the sun. Tell caretakers not to wash their infected clothes close to water sources like rivers streams and or wells.
- Restrict and control movements into and within the wards as much as possible.
- Restrict admission and care to one caretaker per patient.

During Hospitalization

- Wash hands with soap or 0.05% chlorine solution before and after examining each patient.
- Gloves should also be made available for those touching blood, chlorine and chlorinated solutions.
- Disinfect the shelters, beds, and floor at least twice daily with the 0.2% solution.
- Disinfect the showers, latrines, and washing areas with the 0.2% solution.
- Dispose of stools of patients collected in buckets with 1cm of 2% chlorine solution in latrines
- Wash and disinfect with 0.05% solution the clothes and bed linens of cholera patients frequently and separately from other clothing
- If caretakers are providing food to patients ensure all cooking utilities are washed with a 0.2% chlorine solution

At Discharge

- Ensure the person has basic knowledge on cholera and is aware of hygiene measures to protect his/her family. (discharged patients might still be able to transmit cholera for a small number of days if basic hygiene is not respected)
- Provide the person with soap and chlorine (discharge kit).

Burial

- In case of death, wash the body of the deceased with a 2% solution in a reserved area, close the orifices of the body with chlorinated cotton wool (2%), and wrap the body in a sheet or place in a body bag, if available.
- The burial must be done immediately.

Hygiene and Health education

Professional staff and community health workers must train caretakers and patients on basics of cholera, including common transmission routes and ways on how one can protect oneself

Water, Hygiene, and Sanitation

WATER

Water supply

Patients: Approximately 30–60 liters of treated water per patient per day is needed for drinking, cleaning, bathing, and washing clothes.

- Caregivers: Around 5 liters of treated water per caregiver per day is needed.
- Ensure clearly marked containers of ORS are available at all wards
- Ensure enough water is stored (preferably 4 days storage)

Water quality

- All drinking water and water for consumption (ORS) in a CTC should be chlorinated to give a residual of 0.5 mg/l or 0.5–1 mg/l where pH is ≥ 8
- Water can only be effectively chlorinated if turbidity (cloudiness of fluid) is < 20 Nephelometric Turbidity Units (NTU)
- Quantity of chlorine per patient per day for all needs (including storage/preparedness) is approximately 100 g of HTH/patient/day.

Drinking water storage

- Drinking water and ORS solutions should be stored separately from water for other uses and should be made easily available for patients and caretakers
- Drinking water and ORS solutions should be stored in clearly marked closed containers, water should be drawn by spigot or tap

Chlorine solution storage

- Only one person in each shift should be in charge of preparing the different chlorine solutions.
- Often 125 litre containers with taps are used to prepare the solutions (preferably two drums for each solution). These should be clearly marked with the solution that it is used for, to avoid accidents.
- Different coloured containers or buckets can also be used to call attention to the different concentrations.

Hygiene

Hygiene education should be given to all medical and not medical staff to keep everyone aware of the rules related to hygiene and the dangers of not adhering to them.

Promotion should concentrate on:

- Hand-washing after dealing with each patient or after handling contaminated items
- Hand-washing at critical times (after toilet use before handling or eating food)
- Changing into protective clothing when entering the area. When leaving, protective clothing should not be taken home.
- Kitchen/food hygiene (Only kitchen staff should be allowed into the kitchen area)

Protective clothing

Protective clothing should be made available for all staff working in the center, including boots and protective clothing that can be easily removed before leaving the center. Gloves should also be made available for those manipulating blood, excreta, chlorine, and chlorinated solutions.

Food hygiene

For CTCs or health facilities with kitchens, strict rules should be set for preparing and serving food including:

- Upon entering the kitchen (each time), hands must be washed with a 0.05 chlorine solution.
- Food must be stored so that it is only handled by kitchen staff.
- Only kitchen staff is allowed inside the kitchen.
- Only kitchen staff is to serve food.
- Disinfect plates and cutlery by soaking them for 5 minutes in a basin filled with 0.2% chlorine solution.
- Food provided by relatives should be handled following the same hygiene criteria.

Laundry

The laundry area should be located close to the area producing the most contaminated waste; soiled materials from the entire CTC including blankets, gowns, and protective clothing should be washed. Large plastic tubs can be used for laundry.

- Soiled bedding and clothes should be taken to the laundry area and washed in 0.05% chlorine solution
- If chlorine is not available, patient's bedding and clothing can be disinfected by stirring them for 5 minutes in boiling water and drying them in direct sunlight.
- Bedding can also be disinfected by washing with soap and thoroughly drying in direct sunlight. (it is advised not to use mattresses in CTC as they are difficult to clean)
- In order to minimize contamination of the washing area, the patient's clothing and other articles can be disinfected by drying them in the sun before washing.

Cleaning the facility

- Floors of the centre should be made of concrete or covered with plastic sheeting for easier cleaning. Use squeeze-mops or similar equipment with 0.2 % chlorine solution to disinfect the ward floors up to four times per day. Spray cholera beds with 0.2 % chlorine solution, as appropriate, and between each occupant.
- Clean latrines several times a day with 0.2 % chlorine solution with mops and/or sprayed. This includes the slabs the door and door handle and the walls up to 1m (or height of splashes). Additional chlorine does not need to be poured into the latrine.

Ambulance/vehicle cleaning

Transport vehicle should be cleaned by centre staff with a 0.05 % chlorine solution.

SANITARY FACILITIES

Showers

- There should be one (bucket) shower area for every 50 people (male and female). Bucket showers are preferred to minimize the amount of waste water
- There should be a minimum of two shower rooms (male and female) for staff in neutral areas.

Bathing areas should be connected to a soakaway that is contained inside the CTC. Soakaways (for most soils) must be located at least 30 meters from any groundwater source and the bottom of any latrine is at least 1.5 meters above the water tables. Grease-traps should be considered where soap is used or when the CTC is likely to remain open over a longer period.

The patient shower areas should be big enough for a minimum of two people (caregiver and patient).

Hand-washing area

Handwashing facilities with a 0.05 chlorine solution) should be made available at all latrines, all tents (patient and administrative), kitchen, mortuary, waste area

- Soap is not required when a 0.05 % chlorine solution is used.
- Soakaways must be located at least 30 meters from any groundwater source and the bottom of any latrine is at least 1.5 meters above the water tables.
- All staff, patients and caretakers and visitors have convenient, visible facilities for washing their hands.
- All patients, caretakers, and visitors are taught and encouraged to wash their hands.
- All staff must wash their hands before and after examining patients
- Staff and patients must wash their hands when exiting the latrines and treatment areas or the CTC

Latrines

There should be one latrine for every 20 persons in observation, and one latrine for every 50 patients in hospitalization (most won't use them) plus one or two in the neutral area for the staff.

- All liquid human waste is disposed of in a latrine, or is buried.
- Soakaways (for most soils) must be located at least 30 meters from any groundwater source and the bottom of any latrine is at least 1.5 meters above the water tables.
- Semi-solid waste is incinerated or burned where possible.
- Plastic slabs are useful in an emergency because installing them is quick and they are easy to clean.
- Toilets should be independent and not connected to the main sewer system,
- When toilets are full (0.5 m from the surface) than new latrines should be dug. Old latrines should be covered by soil and made in accessible for scavengers (rats, etc)

Buckets for cholera beds

Because most of the hospitalized patients will not be able to use a latrine, buckets (10–15 liters) should be placed under the hole in the cholera bed and at the bedside for vomit. The bucket can be raised on a block to prevent splashing of the surrounding area. A number of buckets should also be provided for the Observation area. Approximately 1 cm of 2 % chlorine solution should be put into the bucket before it is placed under the bed. The bucket should be emptied in nearby latrines used by cholera patients.

WASTE MANAGEMENT

Segregation and storage

No waste that is generated in the CTC should leave the CTC.

Different types of waste are produced in the CTC that need to be disposed of correctly in order to reduce transmission of cholera and other diseases related to medical waste. Waste can be divided for segregation and disposal purposes into three categories:

- *Softs*: cottons, gauze, plastics, syringes, paper (waste—contaminated or uncontaminated that can be burned)
- *Organic*: food residues, human tissue (waste that cannot be burned)
- *Sharps*: needles, lancets, ampoules, glass (waste that can cause injury and transmit disease if not disposed of properly)

Waste zone

A waste area is planned within the CTC and comprises:

- A drum burner (with a dry area to store the bins)—to burn soft waste
- An organic pit (with a lid to prevent flies/mosquitoes)—for organic waste and the ash produced from the burner. Check that access to pit is restricted.
- A sharps pit to receive the containers collecting the needles, lancets, ampoules, and similar items.
- Upon closure of the CTC, the organics pit should be backfilled and the sharps filled with concrete or similar material to encapsulate the sharps and to protect future users of the land.

Waste water

The most contaminated waste water will come from the mortuary, showers, laundry, and kitchen washing area. Waste water from this area must, therefore, be disposed of in soak pits possibly after first going through grease traps (so that the soak pit does not become clogged). Soakaways must be located at least 30 meters from any groundwater source and the bottom of any soakaway pit is at least 1.5 meters above the water tables.

Site drainage

Drains should be constructed around the outside of each of the structures in the center to canalize rainfall and drain out of the CTC. Although rainwater run-off may contain some contamination, it is considered to be of low risk. If it is not feasible to dispose of all water from a rainfall in the CTC arrangements must be made to collect rainwater from the CTC and drain out, where possible, to an existing drainage.

Handling Bodies of Deceased Cholera Patients

Bodies of deceased cholera patients must be disinfected with a 2% chlorine solution.

People who wash and prepare the body of a deceased patient must:

- Wear gloves, an apron, and a mask.
- Clean the body with chlorine solution inside the mortuary with 2% chlorine solution.
- Fill the mouth and anus of the body with cotton wool soaked with 2% chlorine solution as soon as possible.
- Bandage the head to keep the mouth shut.
- Do not empty the intestines.
- Where many bodies must be stored, quicklime (calcium oxide, CaO) can be used to dry up and neutralize liquids and reduce the odors produced.

If possible, physical contact between the family and the body should be prevented. If this is not possible, the family must be made aware of the need to:

- Wash hands with soap in running water after touching the body.
- Avoid putting hands in the mouth after touching the body.
- Disinfect the deceased patient's clothing and bedding by stirring in boiling water for 5 minutes or by drying them thoroughly in the sun before and after normal washing.
- Avoid conducting a wake.
- Recommend immediate burial.
- Family members who handle the body should not prepare food for 24 hours.

For transporting bodies

- Body-carriers should wear gloves.
- Bodies should be carefully wrapped.
- The body should be moved as soon as possible to the mortuary because fluids will start to evacuate the body.
- Where body bags are available, they should be used to transport the body for burial. If not available, the body can be wrapped in a cloth sheet soaked in 2% chlorine.

Mortuary

The mortuary should be located alongside the waste zone. A closed tent (plastic, material) should be designated for deceased persons' bodies to prevent access to bodies. The mortuary structure should enable effective cleaning inside, with drainage canals that flow into a soak pit (body fluids are likely to be highly contaminated). It should have an entrance from inside the CTC and an exit to allow collection of the body. If a CTC is not able to build a morgue, rapid burial is recommended. The body should be prepared following the same criteria as above.

HOW TO MAKE A CHLORINE SOLUTION			
	0.05%	0.2%	2%
HTH (70% active chlorine)	1 table spoon in 20 litres of water	1 table spoon in 5 litres of water	2 table spoons in 1 litre of water
Bleach (5%)	14 table spoons in 20 litre of water or ¼ cup in 20 litres of water	20 table spoons in 5 litres of water	2 cups in one litre
Use	Washing hands and clothing (soak for 15 minutes) Skin disinfection Use within 24 hours	Disinfecting of beds, floors, latrines, floors, kitchen utilities of patient etc Use within 3 days; use with gloves	Disinfection of vomit and stool Disinfecting dead bodies (clean or spray with this solution before last offices) Use with gloves

Note: one cup is 200ml, One tablespoon is 10ml

9.7. Table of Water, Hygiene and Sanitation Needs in a 100 Beds CTC (160 patients)

30 patients in Observation, 100 patients in Hospitalisation, 30 patients in Recovery, 1 care-giver/patient (160)

Facilities	Patient Area 1 Screening Observation	Patient Area 2 Hospitalisation Isolation	Patient Area 3 Recovery	Neutral Area	Mortuary	Waste Zone	Total
Water							
Containers for drinking water (typically 125 l container)	2 (1/tent)	5 (1/tent)	2 (1/tent)	1 (1/tent for staff)			10
Containers of ORS (typically 125 l container)	2 (1/tent)	5 (1/tent)	2 (1/tent)				9
Taps (supplying drinking water)	1 (at showers)	2 (at laundry, shower)	1 (at showers)	1 (at kitchen)			5
Storage capacity (typically in bladders)				28.8 m ³ (2 x 15m ³)			
Bathing							
Showers (Minimum 2, 1 for male, 1 for female)	2	4	2	2 (for staff)			10
Hygiene							
Containers for hand washing with 0.05% chlorine solution (typically 125 l container)	4 (entrance, latrine area + 1/tent)	7 (entrance, latrine area + 1/tent)	4 (entrance, latrine area + 1/tent)	4 (latrine, dish rinsing, 2 in chlorine prep. area)	1 (outside tent)	1 (for bin rinsing)	21
Containers for 0.2 % chlorine solution (typically 125 l container)		2 (chlorine solution area)		2 (chlorine prep. area)			4