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Background

AWD/Cholera is a bacterial disease predominantly transmitted through the fecal-oral route and resulting in an explosive onset of diarrhea which could be fatal in a short period of time. Rapid loss of fluids and electrolytes causes hypoglycemia, metabolic acidosis, acute renal failure and death in 48 hours.

AWD/Cholera has been endemic in the Somalia with the most common cause of outbreaks being the serogroup 01, Ogawa biotype El Tor.

Periodic outbreaks had been known to occur in areas inundated by floods and subsequent contamination of drinking water by bacterium Vibrio AWD/Cholera present in sewers and leaking septic tanks. Unsanitary conditions, inadequate toilet facilities and lack of clean water in most evacuation centers as well as in the inundated communities foster the spread of AWD/Cholera.

Measures for the prevention of AWD/Cholera have not changed much in recent decades, and mostly consist of sanitation and providing clean potable water for the populations potentially affected. Health education and good food hygiene are equally important in prevention. In particular, systematic hand washing should be taught.

The cornerstone of treatment is still fluid replacement at the early onset of the disease. The role of antibiotics is adjunctive since it shortens the duration of illness by rapidly clearing the organism from the body. Once an outbreak is detected, the usual intervention strategy is to reduce mortality by ensuring prompt access to treatment and controlling the spread of the disease.

Standard clinical case definition:
The standard case definition of cholera is defined as follows: in an area where there is a cholera epidemic, a patient aged 5 years or more develops acute watery diarrhea, with or without vomiting.

Clinical features of AWD/Cholera
AWD/Cholera is a dehydrating diarrheal illness. The symptoms and signs are caused by rapid and profound loss of fluid and electrolytes in watery diarrhea and vomitus. Infection with AWD/Cholera is associated with a range of clinical symptom. Of total persons with infection, 75% are asymptomatic, Most of the 25% with symptomatic infections have mild illness.

Approximately 2% of those infected will have severe AWD/Cholera (sometimes called "AWD/Cholera gravis"). Another 5% will have moderate illness that brings them to medical attention, but does not require hospitalization.

After the initial intestinal purge, diarrhea becomes very watery with flecks of mucus and has the appearance of “rice water stool.” The person with a severe or moderate case presents with profuse watery diarrhea leading to dehydration and electrolyte loss,
vomiting because of acidosis, and having leg cramps because of hypokalemia. Severe diarrhea can be nearly continuous and can exceed 1 liter per hour. Persons most likely to have severe infection are those who ingest a high dose of organisms, those whose gastric acid production has been diminished by gastrectomy or antacid therapy, and those who have blood group O. In addition people with co-morbidities such as mal nutrition and reduced immunity due to HIV/AIDS.

**Diagnosis of AWD/Cholera**
- Clinical presentation is that of voluminous, rapidly dehydrating diarrhea of sudden onset which could be fatal in as short as 48 hours after onset.
- Rapid AWD/Cholera Dipstick Test
- Dark Field Microscopy
- Request for a Rectal Swab for Stool Culture.

**Case management of AWD/Cholera**
The detailed treatment of cholera cases using the standard case management is shown on the chart below. The main requirements for case management are as follows:

### Assessment of Hydration Status (Severity)

<table>
<thead>
<tr>
<th>Adequate Hydration</th>
<th>Moderate Dehydration</th>
<th>Severe Dehydration</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No thirst</td>
<td>• Restlessness and</td>
<td>• Lethargy or</td>
</tr>
<tr>
<td></td>
<td>irritability</td>
<td>unconsciousness</td>
</tr>
<tr>
<td>• Skin goes back</td>
<td>• Sunken eyes</td>
<td>• Very dry mouth</td>
</tr>
<tr>
<td>normally when</td>
<td>• Dry mouth and</td>
<td>and tongue</td>
</tr>
<tr>
<td>pinched</td>
<td>tongue</td>
<td>• Skin goes back</td>
</tr>
<tr>
<td>• Passing urine</td>
<td>• Increased thirst</td>
<td>very slowly when</td>
</tr>
<tr>
<td>• Pulse strong</td>
<td>• Skin goes back</td>
<td>pinched (also</td>
</tr>
<tr>
<td></td>
<td>slowly when pinched</td>
<td>known as “tenting”</td>
</tr>
<tr>
<td></td>
<td>• Decreased urine</td>
<td>• Weak or absent</td>
</tr>
<tr>
<td></td>
<td>• Infants: decreased</td>
<td>pulse</td>
</tr>
<tr>
<td></td>
<td>tears, depressed</td>
<td>• Low blood pressure</td>
</tr>
<tr>
<td></td>
<td>fontanels</td>
<td>• Minimal or no urine</td>
</tr>
</tbody>
</table>

### Rehydration Therapy
Successful treatment of AWD/Cholera depends on rapid replacement of fluid and electrolyte losses, for which oral rehydration solution (ORS) is recommended. Before discovery of rehydration therapy, 30–50% of patients with typical severe AWD/Cholera died; now, with proper treatment, mortality is 1% or less. Approximately 80–90% of patients can be treated with ORS, and patients who initially require IV therapy usually can eventually switch to ORS.

Oral rehydration therapy for patients with no dehydration
Patients who have diarrhea and no signs of dehydration should receive ORS after each loose stool to maintain hydration until diarrhea stops, as indicated below. Because clinical status may deteriorate rapidly, these patients may initially need to be kept under monitoring, especially when they live far from a health facility or treatment center, or when correct home treatment cannot be guaranteed.

### ORS amounts to prevent dehydration (WHO recommended)

<table>
<thead>
<tr>
<th>Age</th>
<th>Amount of ORS after each loose stool (mls)</th>
<th>ORS quantity needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 24 months</td>
<td>50-100</td>
<td>Enough for 500mls/day (1 sachet)</td>
</tr>
<tr>
<td>2-10 years</td>
<td>100-200&quot;</td>
<td>Enough for 1000mls/day</td>
</tr>
<tr>
<td>Over 10 years</td>
<td>As much as needed</td>
<td>Enough for 2000mls/day (2 sachets)</td>
</tr>
</tbody>
</table>

If the treatment is administered at home, give enough ORS sachets for 2 days’ treatment and instruct the patient (or caregiver) to prepare the ORS with safe water. (Safe water is water that is bottled with an unbroken seal, has been boiled, or has been treated with chlorine.) Advise patients or caregivers to come back immediately if condition deteriorates (e.g., repeated vomiting, increased number of stools, drinking or eating poorly).

### Guidelines for treating patients with some dehydration

The approximate amount of ORS to give in the first 4 hours to patients with some dehydration is determined by the weight of the person. Use the patient’s age only when you do not know the weight.

Treat with ORS, 75 ml/kg over ~4 hours. The patient should be kept under observation. The following age-specific plan may be used for giving ORS:

<table>
<thead>
<tr>
<th>Age</th>
<th>Less than 4 months</th>
<th>4-11 months</th>
<th>12-23 months</th>
<th>2-4 years</th>
<th>4-14 years</th>
<th>&gt;15 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (Kg)</td>
<td>&lt;5</td>
<td>5-7</td>
<td>8-10</td>
<td>11-15</td>
<td>16-29</td>
<td>30</td>
</tr>
<tr>
<td>Volume (ml)</td>
<td>200-400</td>
<td>400-600</td>
<td>600-800</td>
<td>800-1,200</td>
<td>1,200-2,200</td>
<td>2,200-4,000</td>
</tr>
</tbody>
</table>

The approximate amount of ORS (in milliliters) can also be calculated by multiplying the patient’s weight in kg by 75.

A rough estimate of oral rehydration rate is 100cc ORS every 5 minutes, until the patient stabilizes.

If the patient requests more than the prescribed ORS, give more.

For Infants:
• Encourage the mother to continue breast-feeding.

Notes:

a) The volumes and time intervals shown are guidelines provided on the basis of usual needs. If necessary, amount and frequency can be increased, or the ORS can be given at the same rate for a longer period to achieve adequate rehydration. Similarly, the amount of fluid can be decreased if hydration is achieved earlier than expected.

b) During the initial stages of therapy, while still dehydrated, adults can consume as much as 1,000 ml of ORS per hour, if necessary, and children as much as 20 ml/kg body weight per hour.

c) Reassess the patient after 1 hour of therapy and then every 1 to 2 hours until rehydration is complete. Ensure adequate intake of ORS and count the number of cups consumed. Record the number and nature of stools and vomitus.

d) Resume feeding with a normal diet when vomiting has stopped.

Guidelines for treating patients with severe dehydration

Intravenous Rehydration

Patients with severe dehydration, stupor, coma, uncontrollable vomiting, or extreme fatigue that prevents drinking should be rehydrated intravenously. Intravenous solutions that are recommended for this purpose include Ringers lactate solution. If not available, normal saline may be used.

Start intravenous fluids (IV) immediately. Hang infusion bags high and use two IV lines, if necessary. If the patient is conscious and can drink, give ORS by mouth while the IV drip is set up. Give 100 ml/kg Ringer’s Lactate Solution, divided as follows:

<table>
<thead>
<tr>
<th>Age</th>
<th>First give 30 ml/kg IV In:</th>
<th>Then give 70 ml/kg IV In:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants (&lt;12 mos.)</td>
<td>1 hour*</td>
<td>5 hours</td>
</tr>
<tr>
<td>Older (&gt;1 yr.)</td>
<td>30 minutes*</td>
<td>2 ½ hours</td>
</tr>
</tbody>
</table>

Reassess the patient every 1–2 hours and continue hydrating. If hydration is not improving, give the IV drip more rapidly. As much as 200 ml/kg or more may be needed during the first 24 hours of treatment. Check for rapid respiratory rate, which can be a sign of possible overhydration.

• Also give ORS (about 5 ml/kg per hour) as soon as the patient can drink.
• Record liters of IV fluids and cups of ORS administered on a fluid balance chart. Mark quantity consumed per hour on each IV fluid bag. Record the volume and nature of the stool and the presence of urine output.
• After 6 hours (infants) or 3 hours (older patients), perform a full reassessment. Switch to ORS if hydration is improved and the patient can drink.

Antimicrobial Therapy
Antimicrobial therapy is very helpful, though may not be required, in the treatment of AWD/Cholera –hydration is the mainstay of treatment. Antimicrobials reduce the total volume of fluid lost, shorten the duration of diarrhea, and reduce the length of carriage of AWD/Cholera in the feces – all of which optimize resource utilization in an outbreak setting.

An antibiotic given orally will reduce the volume and duration of diarrhoea. Treatment with antibiotics is recommended for:

1. **Moderately and severely dehydrated** patients,
2. Patients who **continue to pass large volume of stools** during rehydration treatment, and
3. **All hospitalized patients**. Do not give antibiotics to asymptomatic persons.

Zinc given orally, though not an antibiotic can reduce the duration of most infectious diarrhoea in children. No drugs besides antibiotics and zinc for treatment of diarrhoea or reduction of duration of symptoms and carriage of vibrio should be given.

**Summary of antibiotics use in AWD/Cholera case management**

<table>
<thead>
<tr>
<th>Patient classification</th>
<th>First choice</th>
<th>Second choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults (non-pregnant)</td>
<td>Doxycycline: 300 mg by mouth in one dose</td>
<td>Azithromycin: 1 gram in a single dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tetracycline: 500 mg 4 times a day for 3 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Erythromycin: 500 mg 4 times a day for 3 days</td>
</tr>
<tr>
<td>Pregnant women</td>
<td>Azithromycin: 1 gram in a single dose</td>
<td>Erythromycin: 500 mg 4 times a day for 3 days</td>
</tr>
<tr>
<td>Children &gt;12 months old and capable of swallowing pills or tablets</td>
<td>Azithromycin: 20 mg/kg in one dose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Erythromycin: 12.5 mg/kg 4 times a day for 3 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Doxycycline: 2–4 mg/kg in a single dose</td>
<td>Tetracycline: 12.5 mg/kg 4 times a day for 3 days</td>
</tr>
<tr>
<td>Children &lt;12 months old and others unable to swallow pills or tablets</td>
<td>Azithromycin oral suspension: 20 mg/kg in a single dose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erythromycin oral suspension: 12.5 mg/kg 4 times a day for 3 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Doxycycline oral suspension: 2–4 mg/kg in a single dose</td>
<td>Tetracycline oral suspension: 12.5 mg/kg 4 times a day for 3 days</td>
</tr>
</tbody>
</table>

*Note. The antibiotics for use should be the ones available in the country or the national therapeutic guidelines.*
Zinc Supplementation
Zinc supplementation significantly reduces the severity and duration of AWD/Cholera in children and other childhood diarrheal illnesses. A recommended dosage of 10–20 mg zinc per day by mouth should be started immediately, if available, and continued as long as the diarrhea lasts.

Identifying and treating complications

Complications from rehydration therapy for AWD/Cholera are unusual, and more so rare. Clinicians should be aware of these complications and of the proper approach to management. The possibility of complications should not prevent aggressive rehydration therapy in AWD/Cholera patients.

Hypoglycemia
Second to dehydration, hypoglycaemia is the most common lethal complication of AWD/Cholera in children. Hypoglycaemia is the result of diminished food intake during acute illness.

Drinking ORS early and restarting feeding can prevent hypoglycaemia. For patients under IV rehydration who can drink without difficulty, give ORS orally as soon as possible.

If hypoglycaemia is suspected (e.g., lethargy, convulsions, eyes rolled back) give 1ml/kg of glucose 50% by slow IV injection.

Acute pulmonary edema
Acute pulmonary edema may be caused by over hydration from excessive IV rehydration. It is a risk among elderly, young children, and severely anemic patients. Use of sodium chloride 0.9% instead of Ringer’s Lactate Solution can also contribute to this condition.

Oral rehydration does not cause pulmonary edema.
Signs of IV fluid overload include dry cough, dyspnea, puffy eyelids in children, bulging fontanelle in infants, edema of the lower limbs, and basal crepitations on auscultation.

Management of edema
- Put patient in a half-sitting position, legs hanging out of the bed.
- Slow down infusion rate as much as possible.
- Administer furosemide (if available) by slow IV injection in the following dosages:

Children: 1 mg/kg per injection, Adults: 40 mg per injection
- If needed, repeat the same dose after 15 minutes, according to the patient’s condition (maximum dose in adults: 250 mg).

Renal failure (anuria)
This rare complication occurs when shock is not rapidly corrected. Urine output normally resumes within 6 to 8 hours after starting rehydration. Patients should be checked for urine output before discharge from the AWD/Cholera treatment center (CTC). If urine
output has not resumed, check that the patient is correctly rehydrated and try furosemide (if available) in 1 mg/kg IV under close medical supervision.

**Hypokalemia**

Hypokalaemia (Low Potassium levels of less than 3.5mmol/l) should be suspected if repeated episodes of painful cramps occur. This may happen after the first 24 hours of IV rehydration if patients do not eat or do not drink ORS (ORS provides enough potassium). *If cramps occur, try to correct with ORS.*

**Setting up Cholera treatment facilities**

**Cholera Treatment Center (CTC)**

During an outbreak of AWD/Cholera, most patients can be treated in existing health facilities. However, during some outbreaks, particularly AWD/Cholera, health officials may decide to set up a temporary AWD/Cholera Treatment Center (CTC), either in part of the existing facility or as separate areas. The purpose of a CTC is to provide rapid and efficient treatment for many patients.

There are no rigid rules to follow in deciding when to set up a CTC and what the ideal location for such a center would be. However, experience suggests that a temporary treatment center is usually needed when:

1. A large number of patients with acute watery diarrhea accompanied with deaths are reported from an area where transportation to the nearest health facilities is difficult.
2. An epidemic of acute watery diarrhea involves a large area and is spreading.

Establishing a CTC necessitates identification of suitable sites, organization of patient flow, pre-position of supplies, stocks of drugs and other material, and infection control.

**Cholera Treatment units (CTUs)**

If AWD/Cholera-affected areas are too far from a CTC, access to care can be problematic. In these circumstances, a AWD/Cholera treatment unit (CTU) can be established. A CTU is designed as an intermediate step, at which severe cases can receive IV hydration. Typical CTUs have 20-30 beds, and many are staffed with few or no physicians, 2-3 nurses, 2-3 nurse auxiliaries and some ancillary support staff. CTUs are most often equipped to treat AWD/Cholera via oral or IV hydration for mild to moderately ill patients – however, severe or complicated cases should be transferred (after stabilization) to a CTC.

CTUs follow the same organizational structure, patient flow rules, and hygiene practices as CTCs. CTUs can be opened and closed quickly – and can be moved from one place to another based on epidemiologic findings. In large rural areas, several CTUs may be needed – particularly when there are long distances or difficult terrain between CTCs.
**Oral Rehydration Points (ORPs)**

ORPs are satellite stations wherein the simplest forms of AWD/Cholera are treated. Many medical facilities, especially in rural areas, do not have the capacity to deal with a large number of patients.

ORPs have two objectives:
1. To reduce pressure on overburdened CTCs
2. To screen severely dehydrated patients for referral to a CTC

They can be decentralized to the community level and be the first point of contact in areas where CTCs or temporary care health facilities do not exist. These are usually manned by community health workers (CHWs) who should receive training and regular supplies to be able to achieve given objectives. It is preferable to have one single CTC and several ORPs rather than multiple CTCs. A CTC operates 24 hours a day; whereas ORPs can operate 12–24 hours a day.

**Dead Body Management**

**Handling Bodies of dead Cholera Patients**

Engage community and religious leaders in the management of dead bodies. Failure to engage these leaders may lead to resistance from the communities and the people may even decline to refer the sick to health facilities. The method of handling bodies of dead cholera patients is detailed in Annex (4).

**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.

**Annexes**

**Annex 1: Treatment Flowchart for Cholera Cases**

**Annex 2. Essential rules for establishment of a Cholera Treatment Centre**

**Annex 3: Preparation of Chlorinated Solution**

**Annex 4: Dead Body Management**
Annex 1: Treatment Flowchart for Cholera Cases Using Standard Case Definition

Any patient ≥ 2 years presenting with acute watery or rice watery diarrhoea with or without vomiting and with signs of dehydration should be suspected as a case of cholera during an outbreak (children <2 years can also be affected during an outbreak). Acute watery diarrhea – passage of watery or liquid stools ≥ 3 times in last 24 hours.

Management of patients presenting with acute watery diarrhoea

<table>
<thead>
<tr>
<th>Assess</th>
<th>Condition</th>
<th>Normal</th>
<th>Irritable/Less active*</th>
<th>Lethargic / Comatose*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyes</td>
<td>Normal</td>
<td>Sunken</td>
<td>Sunken</td>
<td></td>
</tr>
<tr>
<td>Tongue</td>
<td>Normal</td>
<td>Dry</td>
<td>Dry</td>
<td></td>
</tr>
<tr>
<td>Thirst</td>
<td>Normal</td>
<td>Thirsty (drinks eagerly)*</td>
<td>Unable to drink*</td>
<td></td>
</tr>
<tr>
<td>Skin pinch</td>
<td>Normal</td>
<td>Goes back slowly*</td>
<td>Goes back very slowly*</td>
<td></td>
</tr>
<tr>
<td>Radial pulse</td>
<td>Normal</td>
<td>Reduced</td>
<td>Uncountable or absent*</td>
<td></td>
</tr>
</tbody>
</table>

Diagnosis

- If at least 2 signs including 1 (*) sign is present, diagnose Moderate Dehydration
- If moderate dehydration plus 1 of the (*) signs are present, diagnose Severe Dehydration

Management

A

B

C
A. No sign of dehydration – ORS
- 50 ml ORS per kg body weight over 6 hours plus ongoing losses
- Send patient to home with 4 packets of ORS
- Feeding should be continued
- Return if condition does not improve or deteriorates
- Maintain hydration, replace continuing fluid losses until diarrhoea stops

B. Moderate dehydration – ORS
- 80 ml ORS per kg body weight over 4 – 6 hours plus ongoing losses
- Patient should be kept under observation for 6 - 12 hours
- Feeding should be continued
- Reassess the dehydration status frequently - hourly.

C. Severe dehydration – IV Sodium, potassium, bicarbonate solution (Ringer’s lactate)
- Start IV fluid immediately (100 ml/kg)

Children < 1 year: give 100ml/kg IV in 6 hours, as follows 30 ml / kg in the first 1 hour then
70 ml / kg in the next 5 hours

Adults and Children ≥ 1 year: give 100 ml/kg IV in 3 hours, as follows 30 ml / kg as rapidly as possible within 30mn and then
70 ml / kg in the next 2 1/2 hours

- Monitor regularly and reassess rehydration status
- Encourage the patient to take ORS solution (5ml/kg per hour) as soon as he/she is able to drink
- Start antibiotic after initial rehydration (4-6 hours)
- Maintain hydration, replace continuing fluid losses until diarrhoea stops
Antibiotics in cholera outbreak for South Sudan

- Antibiotics should be given ONLY to cases with SEVERE DEHYDRATION. This should be done under supervision of a MEDICAL DOCTOR in a HEALTH FACILITY
- Choice of antibiotics depends on local sensitivity pattern

*First line drug (except in pregnancy)*
- **For adults:** Ciprofloxacin, 1g (500 mg x 2) – single dose after correction of severe dehydration
- **For children:** Ciprofloxacin susp. 20 mg/kg – single dose after cessation of vomiting (if any)

*Second line drug*
- **For adults:** Azithromycin, 1g (500 mg x 2) – single dose after correction of severe dehydration
- **For children:** Azithromycin susp. 20 mg/kg – single dose after cessation of vomiting (if any)
Annex 2. Essential rules for establishment of a Cholera Treatment Centre

When to Open a CTC
During an outbreak of AWD/Cholera, most patients can be treated in existing health facilities. However, during some outbreaks, particularly AWD/Cholera, health officials may decide to set up a temporary AWD/Cholera Treatment Center (CTC), either in part of the existing facility or as separate areas. The purpose of a CTC is to provide rapid and efficient treatment for many patients.

There are no rigid rules to follow in deciding when to set up a CTC and what the ideal location for such a center would be. However, experience suggests that a temporary treatment center is usually needed when:

1. A large number of patients with acute watery diarrhea accompanied with deaths are reported from an area where transportation to the nearest health facilities is difficult.
2. An epidemic of acute watery diarrhea involves a large area and is spreading.

Establishing a CTC necessitates identification of suitable sites, organization of patient flow, pre-position of supplies, stocks of drugs and other material, and infection control.

Location of CTC

How to choose a site for a CTC
A CTC should be in a place where patients can be adequately treated, and that patients can reach easily; the nearer the patients, the lower the case fatality rate (CFR) can be. The specific objective of operating a CTC is to bring emergency health care services as close as possible to patients who otherwise would be at risk of death during AWD/Cholera epidemics. The CTC may be in an existing health facility, or other existing building, such as a school or community hall. If there is no suitable building, the CTC could be set up in a tent in a field. Health authorities and communities should be involved in the selection of sites and their preparation. The CTC should not be close to a water source or any other functioning public structures (e.g., schools, dispensaries, markets).

When planning, consider the following characteristics (or where they can be arranged quickly):
- Good drainage away from the site (Do not select low ground or depressions.)
- Good access for patients and supplies (Consider the distance and availability of transport.)
- To market = 100 m
- To water source = 40 m on sandy soil, 15 m, if clay
- To other buildings and dwellings = 100m
- Easy to clean
- Ventilation
- Light (ideally electricity), especially in hospital wards
- Provisions for disposal of excreta, vomit, or medical and other waste
- Convenient hand-washing and toilet facilities
- Concrete floor, or, if temporary structure, a plastic sheeting cover
• Adequate space
• Ward capacity = 2.5m² per patient + 1 attendant
• A 29m² tent can accommodate 10 patients + attendants
• A 82m² tent can accommodate 30 patients + attendants

CTCs can be opened and closed very quickly, based on epidemiological findings. Do not hesitate to move a CTC from one place to another, if necessary. Flexibility must be maintained throughout the course of the epidemic.

**Cholera Treatment units (CTUs)**
If AWD/Cholera-affected areas are too far from a CTC, access to care can be problematic. In these circumstances, a AWD/Cholera treatment unit (CTU) can be established. A CTU is designed as an intermediate step, at which severe cases can receive IV hydration. Typical CTUs have 20-30 beds, and many are staffed with few or no physicians, 2-3 nurses, 2-3 nurse auxiliaries and some ancillary support staff. CTUs are most often equipped to treat AWD/Cholera via oral or IV hydration for mild to moderately ill patients – however, severe or complicated cases should be transferred (after stabilization) to a CTC.

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ORPs are satellite stations wherein the simplest forms of AWD/Cholera are treated. Many medical facilities, especially in rural areas, do not have the capacity to deal with a large number of patients. ORPs have two objectives:

1. To reduce pressure on overburdened CTCs
2. To screen severely dehydrated patients for referral to a CTC

They can be decentralized to the community level and be the first point of contact in areas where CTCs or temporary care health facilities do not exist. These are usually manned by community health workers (CHWs) who should receive training and regular supplies to be able to achieve given objectives.

It is preferable to have one single CTC and several ORPs rather than multiple CTCs. A CTC operates 24 hours a day; whereas ORPs can operate 12–24 hours a day.

**Organization**
The layout of a building probably cannot be changed, but plans can be made for making the best use of the space available (see Figure 1). The CTC is organized into separate areas, following two key principles:

1. Isolation of the entire facility from other public structures (dispensary, school, market)
2. Separation of patients (contaminated area) from the “neutral area” (not contaminated)

Patient and staff flow should accommodate the following:

• **Patient care**
  - An entry/observation ward
  - Provision for administering ORS
  - A ward for patients who are very ill and require intensive care
  - A ward for patients who are recovering

• **Storeroom(s), staff room**

• **Prevention and hygiene**
  - Washing and cleaning areas, laundry area
    - Convenient hand-washing stations
    - Water treatment, preparation of chlorine solution
    - Kitchen (where feasible)

• **Environment and waste**
  - Toilets (latrines)
    - Safe waste disposal (incinerator, dustbins)
    - Morgue

• **Security**
  - Watchman for information and patient flow control
  - Fences
  - Protection of stocks (food, drugs, supplies)

**Functions to be ensured in the CTC**

The design may be adapted to the situation, but **five areas** have to be well defined and restricted for their intended use to respect the clean flow of air and limit the spread of infection:

1. **Admission and screening area** where all the new arrivals have to go through for triage and registration
2. **Observation area** where patients with moderate dehydration receive oral rehydration therapy
3. **Hospitalization area** where patients with severe dehydration or vomiting are treated with IV and oral rehydration
4. **Neutral area** for the kitchen, stocks, changing room, and rest room for the personnel
5. **Recovery area** where hospitalized patients proceed from the hospitalization area for continued oral rehydration after being upgraded from severe dehydration to mild or moderate dehydration
Annex 3: Preparation of Chlorinated Solution

<table>
<thead>
<tr>
<th>Chlorine Product</th>
<th>Hands, Skin, Bedding and Laundry</th>
<th>Floors, surfaces, equipment.</th>
<th>Corpses and Body fluids** (Diarrhea, Vomit in large containers)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Final concentration: 0.05% active chlorine</td>
<td>Final concentration: 0.5% active chlorine</td>
<td>Final concentration: 2% active chlorine. Wait at least 2 hours before dumping</td>
</tr>
<tr>
<td>Household bleach (5% active)</td>
<td>0.1 liters of bleach to 9.9 liters of water (WRITE: 0.05%)</td>
<td>1 liter of bleach mixed with 10 liters of water (WRITE: 0.5%)</td>
<td>4 liters of bleach mixed with 6 liters of water (WRITE: 2%)</td>
</tr>
<tr>
<td>Household bleach (30% active chlorine)</td>
<td>Add 16 grams or 1 tablespoon to 10 liters of water (WRITE: 0.05%)</td>
<td>16 grams or 1 tablespoon to 1 liter of water (WRITE: 0.5%)</td>
<td>64 grams or 4 tablespoons to 1 liter of water (WRITE: 2%)</td>
</tr>
<tr>
<td>Calcium hypochlorite powder or chlorine granules (70% active chlorine)</td>
<td>7 grams or 1/2 a tablespoon to 10 liters of water (WRITE: 0.05%)</td>
<td>7 grams of 1/2 a tablespoon to 1 liter of water (WRITE: 0.5%)</td>
<td>28 grams or 2 tablespoon to 1 liter of water (WRITE: 2%)</td>
</tr>
</tbody>
</table>

* ALWAYS label the solutions with a permanent marker.

** Note that if chlorine is limited, body fluids can be treated with a final concentration of 0.5% chlorine, but the fluids must be held and occasionally stirred for at least 6 HOURS before dumping.
Annex 4: Dead Body Management

Handling Bodies of dead Cholera Patients

Engage community and religious leaders in the management of dead bodies. Failure to engage these leaders may lead to resistance form the communities and the people may even decline to refer the sick to health facilities.

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:
1. Wear gloves, an apron, and a mask.
2. Clean the body with chlorine solution inside the mortuary with 2% chlorine solution.
3. Fill the mouth and anus of the body with cotton wool soaked with 2% chlorine solution as soon as possible.
4. Bandage the head to keep the mouth shut.
5. Do not empty the intestines.
6. 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:
1. Wash hands with soap after touching the body.
2. Avoid putting hands in the mouth after touching the body.
3. 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.
4. Avoid conducting a wake.
5. Recommend immediate burial.
6. Family members who handle the body should not prepare food for 24 hours.

For transporting bodies
1. Body-carriers should wear gloves.
2. Bodies should be carefully wrapped.
3. The body should be moved as soon as possible to the mortuary because fluids will start to evacuate the body.
4. 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.