Cholera Information for Health Care Providers Going to Haiti

This document is intended to provide a brief overview of the current outbreak situation, basic epidemiology, diagnosis and management of patients with cholera, and prevention and infection control guidance for health care providers traveling to Haiti. For more complete training on cholera, please refer to: http://www.cdc.gov/haiticholera/training/hcp_materials.htm.

Current Outbreak

An outbreak of cholera was confirmed in Haiti on October 21, 2010. The outbreak strain has been identified as *Vibrio cholerae* serogroup O1, serotype Ogawa, biotype El Tor. Previous to this outbreak, cholera had not been documented in Haiti for decades. For a cholera outbreak to occur, two conditions have to be met: (1) there must be significant breaches in the water, sanitation, and hygiene infrastructure used by groups of people, permitting large-scale exposure to food or water contaminated with *V.cholerae* organisms; and (2) cholera must be present in the population. While it is unclear how cholera was re-introduced to Haiti, both of these conditions now exist.

Mode of Transmission

- Toxigenic *V.cholerae* are free-living organisms found in fresh and brackish water
- Cholera infections are most commonly acquired from drinking water in which *V. cholerae* is found naturally or into which it has been introduced from the feces of a symptomatic or asymptomatically infected person
- Other common vehicles include contaminated fish and shellfish, produce, or leftover food that have not been properly reheated
- Transmission from person-to-person, including to health-care workers during epidemics, has rarely been documented

Clinical Presentation and Diagnosis

- Cholera infection is most often asymptomatic or results in a mild gastroenteritis
- Approximately one in 20 (5%) infected persons will have severe disease characterized by acute, profuse watery diarrhea, described as “rice-water stools,” and vomiting, leading to dehydration
- Signs and symptoms of dehydration include tachycardia, loss of skin turgor, dry mucous membranes, hypotension, and thirst. Additional symptoms, including muscle cramps, are secondary to the resulting electrolyte imbalances
- If untreated, volume depletion can rapidly lead to hypovolemic shock and death
- A suspected case of cholera is defined as profuse, acute watery diarrhea in a patient
- Laboratory testing is not required once an outbreak has been confirmed

Preventive Measures

- Drink and use safe water
    - Drink only bottled, boiled, or chemically treated water and bottled or canned carbonated beverages. When using bottled drinks, make sure that the seal has not been broken.
    - Use safe water to brush your teeth, wash and prepare food, and make ice.
    - ***Piped water sources or tap water and drinks sold in cups or bags may not be safe and should be boiled, treated with chlorine, or avoided.***
    - ***Ice should be avoided unless is known to have been made from safe water.***
    - **To be sure water is safe to drink and use:**
    - Boil it or treat it with a chlorine product or household bleach.
    - If boiling, bring your water to a complete boil for at least 1 minute.
    - To treat your water with chlorine, use one of the locally available treatment products such as Aquatabs®, Dlo Lavi, Gayden Dlo, or PuR® and follow the instructions.
    - If a chlorine treatment product is not available, you can treat your water with household bleach. Add 8 drops of household bleach for every 1 gallon of water (or 2 drops of household bleach for every 1 liter of water) and wait 30 minutes before drinking.
    - If chlorine treatment is not available, you can treat your water with ½ an iodine tablet per liter of water.
    - Always store your treated water in a clean, covered container.
- Wash your hands often with soap and safe water.
    - Before you eat, prepare food, feed others, and after using the toilet.
    - Before and after caring for someone ill with diarrhea, including patients.
    - If no water and soap are available, use an alcohol-based hand cleaner (with at least 60% alcohol).
    - If soap and alcohol-based hand cleaner are not available, scrub hands often with ash or sand and rinse with safe water.
- Use latrines or bury your feces; do not defecate in or near any body of water.
    - Use latrines or other sanitation systems, like chemical toilets, to dispose of feces.
    - Wash hands with soap and safe water after defecating.
    - Clean latrines and surfaces that may have been fecally contaminated using a solution of 1 part household bleach to 9 parts water.

    What if I don't have a latrine or chemical toilet?
    - Defecate at least 30 meters away from any body of water and then bury your feces.
    - Dispose of plastic bags containing feces in latrines, at collection points if available, or bury them in the ground. Do **not** put plastic bags in chemical toilets.

        - Dig new latrines or temporary pit toilets at least a half-meter deep and at least 30 meters away from any body of water.
    - Cook food well, keep it covered, eat it hot, and peel fruits and vegetables yourself.
        - Boil it, cook it, peel it, or leave it.
        - Be sure to cook seafood, especially shellfish, until it is very hot all the way through.
        - ***Avoid raw foods other than fruits and vegetables you have peeled yourself.***
    - Clean up safely – in the kitchen and in places for bathing and washing clothes.
        - Wash yourself, your children, diapers, and clothes 30 meters away from drinking water sources.

Infection Control in Health Care Settings

- Chemoprophylaxis with antibiotics is not indicated for health care providers
- Hand washing with soap and clean water should be done before and after each patient contact
- If no water and soap are available, use an alcohol-based hand cleaner (with at least 60% alcohol)
- Several chlorine solutions are used for disinfection (solution calculations are based on using unscented household bleach with 5–6 % active chlorine):
    - 2% chlorine
        - Made using 3 parts water and 2 parts bleach
        - Used for disinfecting vomit, feces, and corpses
    - 0.5% chlorine
        - Made using 9 parts water and 1 part bleach
        - Used for foot baths, cleaning floors, bedding, latrines
    - 0.05% chlorine
        - Made using 9 parts water and 1 part 0.5% chlorine solution
        - Used for bathing soiled patients, hand washing, rinsing dishes, laundry

Vaccine

At this time, CDC does not recommend cholera vaccines for travelers, including health care providers, since their risk of contracting the disease is extremely low.

Clinical Management of Patients

- Rapid high-volume oral or intravenous rehydration will save lives
- Appropriate administration of antibiotics can reduce duration of illness and reduce spread of disease

Cholera patients should be evaluated and treated quickly. Early administration of oral rehydration salt (ORS) solution is the mainstay of cholera treatment and should begin as soon as symptoms develop, continue while the patient seeks medical care, and be maintained until hydration returns to normal in the health-care facility. ORS solution, combined with intravenous rehydration for those with severe dehydration, has been shown to reduce mortality rates to <1%. Health-care facilities in Haiti will need considerable assistance in preparing their facilities to provide the rapid clinical assessment and aggressive rehydration treatment necessary to reduce the risk for death from severe cholera.

Symptoms of Moderate or Severe Cholera

- Profuse, watery diarrhea
- Vomiting
- Leg cramps

Signs and Symptoms of Dehydration

Some dehydration	**Severe dehydration**
• Restlessness and irritability • Sunken eyes • Dry mouth and tongue • Increased thirst • Skin goes back slowly when pinched • Decreased urine • Infants: decreased tears, depressed fontanels	• Lethargy or unconsciousness • Very dry mouth and tongue • Skin goes back very slowly when pinched ("tenting") • Weak or absent pulse • Low blood pressure • Minimal or no urine

ORAL REHYDRATION

Dehydrated patients who can sit up and drink should be given ORS solution immediately and be encouraged to drink. It is important to offer ORS solution frequently, measure the amount drunk, and measure the fluid lost as diarrhea and vomitus. Patients who vomit should be given small, frequent sips of ORS solution, or ORS solution by nasogastric tube. ORS solution should be made with safe water. Safe water means the water has been boiled or treated with a chlorine product or household bleach.

Guidelines for treating patients with some dehydration Approximate amount of ORS solution to give in the first 4 hours to patients with some dehydration. Use the patient's age only when you do not know the weight:						
Age	<4 mo.	4-11 mo.	12-23 mo.	2-4 yr.	5-14 yr.	≥15 yr.
Weight (kg)	<5	5-7	8-10	11 -15	16-29	≥30
ml	200-400	400-600	600-800	800-1200	1200-2200	2200-4000

- 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 for older children and adults is 100 ml ORS every five minutes, until the patient stabilizes.
- If the patient requests more than the prescribed ORS solution, give more.
- For infants, encourage the mother to continue breast-feeding.

Notes:

1. The volumes and time shown are guidelines based on usual needs. If necessary, amount and frequency can be increased, or the ORS solution 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.
2. During the initial stages of therapy, while still dehydrated, adults can consume as much as 1000 ml of ORS solution per hour, if necessary, and children as much as 20 ml/kg body weight per hour.
3. Reassess the patient after 1 hour of therapy and then every 1 to 2 hours until rehydration is complete.
4. Resume feeding with a normal diet when vomiting has stopped.

INTRAVENOUS REHYDRATION

Patients with severe dehydration, stupor, coma, uncontrollable vomiting, or extreme fatigue that prevents drinking should be rehydrated intravenously.

Intravenous solutions	
Best	**Ringer's Lactate Solution**
Acceptable*	Normal saline*
Unacceptable	Plain glucose (dextrose) solution

**Acceptable in emergency, but does not correct acidosis and may worsen electrolyte imbalance.*

Guidelines for treating patients with severe dehydration
Start intravenous fluids (IV) immediately. If the patient can drink, give ORS solution by mouth while the IV drip is set up.
Give 100 ml/kg Ringer's Lactate Solution divided as follows:

Age	First give 30 ml/kg IV in:	Then give 70 ml/kg IV in:
Infants (<12 mos.)	1 hour*	5 hours
Older (>1 yr.)	30 minutes*	2 ½ hours

** Repeat once if radial pulse is still very weak or not detectable.*

- Reassess the patient every 1-2 hours and continue hydrating. If hydration is not improving, give the IV drip more rapidly. 200ml/kg or more may be needed during the first 24 hours of treatment.
- Also give ORS solution (about 5 ml/kg per hour) as soon as the patient can drink.
- After 6 hours (infants) or 3 hours (older patients), perform a full reassessment. Switch to ORS solution if hydration is improved and the patient can drink.

Signs of adequate rehydration

- Skin goes back normally when pinched
- Thirst has subsided
- Urine has been passed
- Pulse is strong

ANTIBIOTICS

An antibiotic given orally will reduce the volume and duration of diarrhea. Treatment with antibiotics is recommended for moderately and severely ill patients, particularly for those patients who continue to pass large volumes of stools during rehydration treatment, and including all patients who are hospitalized. Do not give antibiotics to asymptomatic persons. Zinc given orally can reduce the duration of most infectious diarrhea in children. No drugs should be given for treatment of diarrhea or vomiting besides antibiotics and zinc.

Appropriate oral antibiotics (give one of these) ** ALL BY MOUTH**

- These recommendations are based on the antibiotic resistance profile of *V. cholerae* isolates from the Haiti cholera outbreak, as reported on December 14, 2010, and local drug availability.
- Multiple first choice and second choice options are presented. Selection of antibiotics should be based on individual case consideration and available medications.

Patient classification	First choice	Second choice
Adults (non-pregnant)	Doxycycline: 300 mg by mouth in one dose	Azithromycin:1 gram in a single dose Tetracycline: 500 mg 4 times a day for 3 days Erythromycin: 500 mg 4 times a day for 3 days
Pregnant women	Azithromycin: 1 gram in one dose	Erythromycin: 500 mg 4 times a day for 3 days
Children ≥12 months old and capable of swallowing pills and/or tables	Azithromycin: 20 mg/kg in one dose Erythromycin: 12.5 mg/kg 4 times a day for 3 days Doxycycline: 2-4 mg/kg in one dose*	Tetracycline: 12.5 mg/kg 4 times a day for 3 days
Children <12 months old and others unable to swallow pills and/or tablets	Azithromycin oral suspension: 20 mg/kg in one dose Erythromycin oral suspension: 12.5 mg/kg 4 times a day for 3 days Doxycycline oral suspension: 2-4 mg/kg in one dose*	Tetracycline oral suspension: 12.5mg/kg 4 times a day for 3 days

** Doxycycline is safe for treatment of cholera in children at the recommended dose. The Pan American Health Organization recommends doxycycline as a second-line choice because of limited regional availability and to avoid future overuse in children.*

Zinc supplementation

Zinc supplementation significantly reduces the severity and duration of most childhood diarrhea caused by infection. When available, supplementation (10-20 mg zinc per day) should be started immediately.

Videos on the assessment of dehydration and the treatment of cholera are available at:

http://www.cdc.gov/haiticholera/video/

What to do if you Become Ill After Leaving Haiti

If you get watery diarrhea within five days of returning from Haiti or the Dominican Republic, seek medical care right away. Replacing the water and salt lost from your body is the most important part of cholera treatment. Do not travel again until you are well.

For more information and tips about traveling to Haiti, visit www.cdc.gov/haiticholera.