

CHOLERA

REPORTING INFORMATION

- **Class A:** Report immediately via telephone the case or suspected case and/or a positive laboratory result to the local public health department where the patient resides. If patient residence is unknown, report immediately via telephone to the local public health department in which the reporting health care provider or laboratory is located. Local health departments should report immediately via telephone the case or suspected case and/or a positive laboratory result to the Ohio Department of Health (ODH).
- Reporting Form(s) and/or Mechanism:
 - Immediately via telephone.
 - For local health departments, cases should also be entered into the Ohio Disease Reporting System (ODRS) within 24 hours of the initial telephone report to the Ohio Department of Health (ODH).
- [CDC Cholera and Other Vibrio Illness Surveillance Report](#) (form 52.79, rev. 8/07) is available for use to assist in local health department disease investigation and contact tracing activities. This form should be sent to ODH, and information collected from the form should be entered into ODRS where fields are available.
- Key Fields for ODRS reporting include: organism and serotype, imported, exposure site, and travel history.

AGENT

Vibrio cholerae serogroup O1 or O139. *V. cholerae* serogroup O1 includes two biotypes (classical and El Tor) and two major serotypes (Inaba and Ogawa), which may belong to either biotype.

Infectious Dose

The infectious dose has been estimated at 10^8 - 10^9 organisms; however, certain strains have been found to be more virulent. Severity of disease is usually contingent upon dose.

Note: Vibriosis, caused by the organisms *V. cholerae* non-O1 or O139, *V. parahaemolyticus* and *V. vulnificus*, is also a reportable disease in Ohio.

CASE DEFINITION

Clinical Description

An illness characterized by diarrhea and/or vomiting. Severity is variable.

Laboratory Criteria for Diagnosis

- Isolation of toxigenic (i.e. cholera toxin-producing) *Vibrio cholerae* O1 or O139 from stool or vomitus *or*
- Serologic evidence of recent infection.

Case Classification

Suspect*: A clinically compatible case with presumptive or pending lab results.

Confirmed: A clinically compatible case that is laboratory confirmed.

Not a Case: This status will not generally be used when reporting a case, but may be used to reclassify a report if investigation revealed it was not a case.

* This case classification can be used for initial reporting purposes to ODH as the Centers for Disease Control and Prevention (CDC) has not developed a classification.

Comment

The etiologic agent of a case of cholera should be reported as either *V. cholerae* O1 or *V. cholerae* O139. Illnesses caused by strains of *V. cholerae* other than toxigenic *V. cholerae* O1 or O139 should be reported as cases of vibriosis.

SIGNS AND SYMPTOMS

The infection is often mild or without symptoms, but can sometimes be severe. Approximately one in 20 (5%) infected persons will have severe disease characterized by profuse watery diarrhea, vomiting, and leg cramps. In these people, rapid loss of body fluids leads to dehydration and shock. Without treatment, death can occur within hours. In the absence of antimicrobial therapy, but with supportive therapy, diarrhea can last as long as seven days.

DIAGNOSIS

See case definition. Most hospital laboratories have the ability to identify *Vibrio cholerae*. Diagnosis of cholera is made by isolating the organism from stool or vomitus. All *V. cholerae* isolates should be sent to ODH Laboratory for confirmation. Please contact ODH Outbreak Response and Bioterrorism Investigation Team (ORBIT) at 614-995-5599 to arrange for isolates to be shipped to the ODH Laboratory. Contact the ODH Laboratory at 614-728-0544 (Monday – Friday; 8 AM – 5 PM) for specimen submission criteria.

EPIDEMIOLOGY**Source**

Primarily humans. Seawater, fish and shellfish might serve as reservoirs (due to human sewage contamination). The organism is viable for about four to seven days in water and is susceptible to drying.

Occurrence

Cholera occurs worldwide. There are 0-5 cases annually in the United States. In the U.S., there has been a modest increase in imported cases since 1991 related to travel and ongoing epidemics. Outbreaks in Haiti and Latin America have facilitated importation of cholera into the United States.

Mode of Transmission

Cholera is acquired by ingestion of food or water contaminated with *V. cholerae*. In an epidemic, the source is feces or vomitus of infected persons. *V. cholerae* can also live in coastal waters, and raw or undercooked seafood can be contaminated. Person-to-person transmission is not common.

Period of Communicability

Presumably during the diarrheal phase and usually until a few days after recovery. In untreated individuals, the organisms can be shed for as long as one week after cessation of diarrhea. A chronic carrier state can develop that persists for years. Diagnosis of such cases is difficult because the organisms tend to sequester in the gallbladder or upper intestine and escape detection in stool because acid conditions in the colon kill them. The role of asymptomatic individuals and chronic carriers in disease transmission has not been fully assessed.

Incubation Period

A few hours to 5 days, usually 2-3 days.

PUBLIC HEALTH MANAGEMENT

Case

Investigation

All cases reported to the local health department should initially be followed up with a telephone call to obtain demographic and epidemiologic data. The Enteric Case Report might be useful. Please contact ODH ORBIT immediately at 614-995-5599 when a case of *V. cholerae* is reported. Contact the diagnosing laboratory and ensure that the isolate has been sent to ODH Lab. ODH Lab sends all cholera isolates to CDC for susceptibility testing with the National Antimicrobial Resistance Monitoring System (NARMS).

Treatment

Rehydration is the cornerstone of treatment for cholera. Oral rehydration salts and, when necessary, intravenous fluids and electrolytes, if administered in a timely manner and in adequate volumes, will reduce fatalities to well under 1%.

Antibiotics reduce fluid requirements and duration of illness. Antibiotics are indicated for severe cases, which can be treated with tetracycline, doxycycline, furazolidone, erythromycin, or ciprofloxacin. When possible, antimicrobial susceptibility testing should inform treatment choices. Tetracycline is the antibiotic of choice, ridding the body of the organisms within a short period and shortening the duration of diarrhea. Furazolidone is the best choice for children <9 years of age or when the organism is resistant to tetracycline.

World Health Organization (WHO) Fluid Replacement or Treatment Recommendations

No dehydration	Oral rehydration salts	Children <2 years: 50–100 ml, up to 500 mL / day Children 2–9 years: 100–200 ml, up to 1000 mL / day Patients >9 years: As much as wanted, to 2000 mL / day
Some dehydration	Oral rehydration salts (amount in first 4 hours)	Infants <4 mos (<5 kg): 200–400 mL Infants 4–11 mos (5–7.9 kg): 400–600 mL Children 1–2 yrs (8–10.9 kg): 600–800 mL Children 2–4 yrs (11–15.9 kg): 800–1200 mL Children 5–14 yrs (16–29.9 kg): 1200–2200 mL Patients >14 yrs (30 kg or more): 2200–4000 mL
Severe dehydration	IV drips of Ringer Lactate or, if not available, normal saline and oral rehydration salts as outlined above	Age < 12 months: 30 mL/kg within 1 hour*, then 70 ml/kg over 5 hours Age > 1 year: 30 mL/kg within 30 min*, then 70 ml/kg over two-and-a-half 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

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

Additional treatment information may be found on CDC and WHO websites.

Isolation and Follow-up Specimens

Ohio Administrative Code (OAC) 3701-3-13 (D) states:

"Cholera,; a person with cholera who attends a child care center or works in a sensitive occupation shall be excluded from the child care center or work in the sensitive occupation and may return when the following conditions are met:

- (1) A child may return to a child care center after diarrhea has ceased.
- (2) A person may return to work in a sensitive occupation after diarrhea has ceased, provided that his or her duties do not include food handling.
- (3) A food handler may return to work after diarrhea has ceased and two consecutive follow-up stool specimens are negative for *Vibrio cholerae*."

Follow-up stool specimens should be obtained no earlier than 48 hours following the completion of antibiotic therapy. Collect the remaining specimen(s) not less than 24 hours apart.

Public Health Significance

Ohio food service operation rules do not allow food preparation by persons who are infected with a disease in a communicable form that can be transmitted by foods. For additional information, refer to Ohio Administrative Code (OAC) Chapter 3717-1 (Ohio Uniform Food Safety Code) Section 02.1, Management and Personnel: Employee Health.

Contacts

If the case or any household member is employed in a sensitive occupation (food handling, direct patient care, employees in child care centers who handle food or directly care for children) or attends a child care center, all household members should be tested for *Vibrio cholerae* and treated if positive.

Prevention and Control

The risk for cholera is very low for U.S. travelers visiting areas with epidemic cholera.

When simple precautions are observed, contracting the disease is unlikely.

All travelers to areas where cholera has occurred should observe the following recommendations:

- Drink only water that you have boiled or treated with chlorine or iodine. Other safe beverages include tea and coffee made with boiled water and carbonated, bottled beverages with no ice.
- Eat only foods that have been thoroughly cooked and are still hot, or fruit that you have peeled yourself.
- Avoid undercooked or raw fish or shellfish, including ceviche.
- Make sure all vegetables are cooked avoid salads.
- Avoid foods and beverages from street vendors.
- Do not bring perishable seafood back to the United States.

A simple rule of thumb is "Boil it, cook it, peel it, or forget it."

What is cholera?

Cholera is an acute, diarrheal illness caused by infection of the intestine with the bacterium *Vibrio cholerae*. The infection is often mild or without symptoms, but sometimes it can be severe. Approximately 1 in 20 infected persons has severe disease characterized by profuse watery diarrhea, vomiting and leg cramps. In these persons, rapid loss of body fluids leads to dehydration and shock. Without treatment, death can occur within hours.

Where is cholera found?

The cholera bacterium is usually found in water or food sources that have been contaminated by feces (poop) from a person infected with cholera. Cholera is most likely to be found and spread in places with inadequate water treatment, poor sanitation, and inadequate hygiene.

The cholera bacterium may also live in the environment in brackish rivers and coastal waters. Shellfish eaten raw have been a source of cholera, and a few persons in the United States have contracted cholera after eating raw or undercooked shellfish from the Gulf of Mexico.

How does a person get cholera?

A person can get cholera by drinking water or eating food contaminated with the cholera bacterium. In an epidemic, the source of the contamination is usually the feces of an infected person that contaminates water and/or food. The disease can spread rapidly in areas with inadequate treatment of sewage and drinking water. The disease is not likely to spread directly from one person to another; therefore, casual contact with an infected person is not a risk for becoming ill.

While cholera is a rare disease, those who might be at risk include people traveling to parts of Latin America, Africa or Asia where outbreaks are occurring, and people who consume raw or undercooked seafood from warm coastal waters subject to sewage contamination.

What are the symptoms of cholera?

People exposed to cholera might experience mild to severe diarrhea, occasional vomiting and dehydration.

How soon do symptoms appear?

Symptoms can appear within a few hours to 5 days after exposure, usually 2-3 days.

What is the treatment for cholera?

Because of the rapid dehydration that may result from severe diarrhea, replacement of fluids by mouth or intravenous route is critical. Antibiotics, such as tetracycline, may be used to shorten the duration of diarrhea and excretion of the organism.

Is there a vaccine for cholera?

CDC does not recommend cholera vaccines for most travelers, nor is the vaccine available in the United States. This is because the available vaccines offer incomplete protection for a relatively short period of time. There are no cholera vaccinations requirements for entry or exit in any Latin American country or the United States.

How can cholera be prevented?

The risk for cholera is low for U.S. travelers visiting areas with epidemic cholera. With simple precautions, contracting the disease is unlikely.

All people (visitors or residents) in areas where cholera is occurring or has occurred should observe the following recommendations:

- 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.
 - To disinfect your own water: boil for 1 minute or filter the water and add 2 drops of household bleach or ½ an iodine tablet per liter of water.
 - Avoid tap water, fountain drinks, and ice cubes.
- Wash your hands often with soap and clean water.
- If no water and soap are available, use an alcohol-based hand cleaner (with at least 60% alcohol).
 - Clean your hands especially before you eat or prepare food and after using the bathroom.
- Use bottled, boiled, or chemically treated water to wash dishes, brush your teeth, wash and prepare food, or make ice.
- Eat foods that are packaged or that are freshly cooked and served hot.
 - Do not eat raw and undercooked meats and seafood or unpeeled fruits and vegetables.
- Dispose of feces in a sanitary manner to prevent contamination of water and food sources.