



# Cholera

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Over 90% of <i>V. cholerae</i> infections reported in Washington are due to non-toxigenic strains which cause “vibriosis”, not “cholera”. Therefore, <i>V. cholerae</i> infections should be reported and investigated as vibriosis unless, in the 5 days prior to onset, the case has traveled to or had close contact with a traveler to a region with recent cholera activity--a current list can be found on the European Centre for Disease Prevention and Control website: <a href="http://www.ecdc.europa.eu/en/all-topics-z/cholera/surveillance-and-disease-data/cholera-monthly#">www.ecdc.europa.eu/en/all-topics-z/cholera/surveillance-and-disease-data/cholera-monthly#</a>. Note: <i>V. cholerae</i> toxin testing is currently only available at CDC and results take &gt;1 months.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Signs and Symptoms</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• Mild or asymptomatic infection frequent, especially serogroup O1 El Tor biotype</li> <li>• For minority of infections, sudden onset of profuse painless watery diarrhea (rice water stool), nausea, and vomiting</li> <li>• Untreated disease results in rapid dehydration fatal within hours (50% mortality)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Incubation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Usually 2-3 days, range few hours to five days                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Case classification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Clinical criteria:</b> Common symptoms – diarrhea a/o vomiting; severity is variable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Confirmed:</b> clinically compatible with either isolation of <b>toxigenic</b> <i>Vibrio cholerae</i> or serologic evidence of recent infection; non-toxigenic <i>V. cholerae</i> is reported as vibriosis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Differential diagnosis</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Classic rice-water diarrhea and rapid dehydration are unique. Less severe illness may be similar to other bacterial and viral diarrheas, amoebic dysentery; consider travel and other exposures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Treatment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Rehydration, antibiotics if severe (may be resistance)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Duration</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Variable; communicable up to several months after symptoms end                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Exposure</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Human feces through contaminated food (bare hand contact, shellfish) or water during travel (especially Africa, South and Southeast Asia), contact with recent arrival                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Laboratory testing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>Local Health Jurisdiction (LHJ) and Communicable Disease Epidemiology (CDE) arrange testing if patient is being treated – urgent</p> <ul style="list-style-type: none"> <li>• Clinical labs can detect <i>V. cholerae</i> DNA by PCR and some clinical Labs and WA PHL can isolate <i>V. cholerae</i>. CDC tests for cholera toxin (results take &gt;1 month)</li> </ul> <p><b>Best specimens:</b> Stool in Cary-Blair</p> <ul style="list-style-type: none"> <li>• Hospital to keep all specimens <b>cold, ship cold</b> according to PHL requirements<br/><a href="https://doh.wa.gov/public-health-provider-resources/public-health-laboratories/lab-test-menu">https://doh.wa.gov/public-health-provider-resources/public-health-laboratories/lab-test-menu</a></li> <li>• Specimen Collection and Submission Instructions<br/><a href="https://www.doh.wa.gov/Portals/1/Documents/5240/SCSI-Ref-Vib-ID-V1.pdf">https://www.doh.wa.gov/Portals/1/Documents/5240/SCSI-Ref-Vib-ID-V1.pdf</a></li> </ul> |
| <b>Public health actions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | LHJ immediately contacts CDE 877-539-4344 for diagnosis and treatment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>EMERGENCY</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>• Obtain isolate or stool (if PCR+ for <i>V. cholerae</i>) for testing at PHL and CDC</li> <li>• Interview for risk situation (e.g., exposed in Washington or another state) using the CDC form: <a href="https://www.cdc.gov/national surveillance/pdfs/cdc5279-covis-vibriosis-508c.pdf">https://www.cdc.gov/national surveillance/pdfs/cdc5279-covis-vibriosis-508c.pdf</a></li> <li>• Exclude from sensitive occupation or setting and exclude from food preparation for others</li> <li>• After symptoms end, require two negative stools 24 hours apart off antibiotics before returning to sensitive occupation or setting</li> <li>• Identify those exposed to case and those sharing case’s exposure (e.g., travel companions) and test as needed</li> <li>• Complete WDRS data entry and attach the CDC COVIS form to 206-324-1060</li> </ul> <p><i>Infection Control:</i> standard precautions, contact precautions if infant or incontinent</p>           |

# Cholera

## 1. DISEASE REPORTING THE DISEASE AND ITS EPIDEMIOLOGY

### A. Purpose of Reporting and Surveillance

1. To identify persons infected with toxigenic *Vibrio cholerae* and prevent transmission from them.
2. To identify sources of transmission (e.g., contaminated water or a contaminated lot of shellfish) and prevent further transmission from such sources.

### B. Legal Reporting Requirements

1. Health care providers and Health care facilities: *immediately* notifiable to **local health jurisdiction**.
2. Laboratories: Toxigenic *Vibrio cholerae* O1 or O139 *immediately* notifiable to **local health jurisdiction**, submission required – isolate or if no isolate available, specimen associated with positive result, 2 business days.
3. Local health jurisdictions: *immediately* notifiable to the Washington State Department of Health (DOH) Communicable Disease Epidemiology (CDE): 1-877-539-4344.

### C. Local Health Jurisdiction Investigation Responsibilities

1. Ensure that laboratories submit specimens to DOH Public Health Laboratories (PHL).
2. Implement appropriate infection control measures.
3. Report all *confirmed* cases (toxigenic *V. cholerae*) to CDE (see definition below).  
Complete the DOH cholera case report form  
<https://www.doh.wa.gov/Portals/1/Documents/5100/210-021-ReportForm-Cholera.pdf>
4. In addition, for confirmed cases, complete the CDC Cholera and Other Vibrio Illness Surveillance Report form and fax to CDE at 206-364-1060  
<https://www.cdc.gov/nationalsurveillance/pdfs/cdc5279-covis-vibriosis-508c.pdf> Enter the case into Washington Disease Reporting System (WDRS) entering only the Administrative, Demographics, Public Health Issues, and Public Health Interventions sections.
5. Report person with nontoxigenic strain of *V. cholerae* as vibriosis using on the vibriosis case report form <https://www.doh.wa.gov/Portals/1/Documents/5100/210-052-ReportForm-Vibriosis.pdf>

## 2. DISEASE REPORTING

### A. Etiologic Agents

*Vibrio cholerae* are Gram-negative bacteria. The organism may be free-living or associated with estuarine bivalves, crustaceans, algae, and fish. Toxigenic strains of serogroup O1 (biotypes Classical and El Tor with serotypes Inaba, Ogawa and rarely Hikojima) or O139 cause cholera. Nontoxigenic *V. cholerae* serogroups cause vibriosis,

not cholera, and locally acquired cases have been associated with consumption of raw or undercooked oysters harvested in Washington State.

## B. Description of Illness

- Sudden onset of profuse painless watery stools (rice water stool), nausea and vomiting early in the course of illness, and, if untreated, rapid dehydration, acidosis, and circulatory collapse fatal within hours (untreated case-fatality up to 50%, treated <1%)
- Mild or asymptomatic infection is frequent, especially for serogroup O1 El Tor biotype.
- A similar illness can be caused by non-toxicogenic *Vibrio cholerae* which is reported as vibriosis.

## C. Cholera in Washington State

4 reports of toxigenic *V. cholerae* 1992-2013, all travel associated: 1992 (2 cases, Cambodia), 2002 (Philippines), 2013 (Haiti). Note: Non-toxicogenic *V. cholerae* has been isolated from Puget Sound, Washington, and 0-6 (average 2.3) vibriosis infections reported per year due to **non-toxicogenic** *V. cholerae* per year in Washington State.

## D. Reservoirs

Human (case, carrier). Cholera is endemic in much of the developing world with potential for exposures to contaminated food and water during travel. *V. cholerae* can occur naturally in aquatic environments including the Gulf of Mexico.

## E. Modes of Transmission

Food or water contaminated by infected human feces, particularly raw fruits and vegetables, beverages, shellfish and ice. There has been recent cholera activity in Asia (Afghanistan, Bangladesh, India, Nepal, Philippines) and Africa (Benin, Cameroon, Democratic Republic of Congo, Ethiopia, Malawi, Nigeria, Tanzania, Zimbabwe). A current list of countries with cholera activity can be found here:

[www.ecdc.europa.eu/en/all-topics-z/cholera/surveillance-and-disease-data/cholera-monthly#](http://www.ecdc.europa.eu/en/all-topics-z/cholera/surveillance-and-disease-data/cholera-monthly#)

Direct person-to-person spread is rare. Where *V. cholerae* occur naturally in coastal regions, consuming raw or undercooked shellfish harvested in these regions is a risk. Sporadic cases occur that are linked to shellfish from the Gulf of Mexico.

## F. Incubation Period

From a few hours to 5 days, usually 2–3 days.

## G. Period of Communicability

Communicable usually until a few days after recovery but occasionally several months.

## H. Treatment

Primarily oral or parenteral rehydration therapy. Antibiotics for those who are more severely ill; antibiotic choice depends on local resistance patterns (often doxycycline; if pregnant or child use azithromycin).

## I. Public Health Interventions

- Immediate report to Communicable Disease Epidemiology (CDE) 206-418-5500

- Laboratory submission for confirmation
- Advise standard precautions in hospital; contact precautions if diapered or incontinent
- Require 2 negative stool results before returning to sensitive settings
- Identify risk situation (e.g., consumed shellfish in the United States, no travel)
- Notify other potentially exposed persons (e.g., notify tour group lead)

### 3. CASE DEFINITIONS

#### A. Clinical Criteria for Diagnosis

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

#### B. Laboratory Criteria for Diagnosis

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

#### C. Case Definition (1996)

Confirmed: a clinically compatible case that is laboratory confirmed.

#### D. Comment

Illness caused by *V. cholerae* other than toxigenic *V. cholerae* O1 or O139, such as serogroups O141 and O75, are reported as vibriosis, not as cholera.

### 4. DIAGNOSIS AND LABORATORY SERVICES

#### A. Diagnosis

Diagnosis is most commonly made by isolation of toxigenic *V. cholerae* from feces. Laboratory personnel need to be notified when cholera is suspected because identifying *V. cholerae* by culture is optimized by using special techniques. Laboratories in Washington are required to submit isolates to PHL for confirmatory testing.

#### B. Tests Available at Washington State Public Health Laboratories (PHL)

PHL provide isolate confirmation/identification for *Vibrio cholerae*. Organisms identified as *V. cholerae* are then sent to CDC for cholera toxin testing and subtyping. Contact Office of Communicable Disease Epidemiology for approval prior to submitting specimens. Serologic testing for anti-cholera toxin or vibriocidal antibody is not available at PHL.

Note that PHL requires all clinical specimens have two patient identifiers, a name **and** a second identifier (e.g., date of birth) both on the specimen label and on the submission form. Due to laboratory accreditation standards, specimens will be rejected for testing if not properly identified. Also include specimen source and collection date. For details about specimen collection and shipping see:

<https://www.doh.wa.gov/ForPublicHealthandHealthcareProviders/PublicHealthLaboratories/MicrobiologyLabTestMenu>

### C. Specimen Collection

For stool culturing, use a sterile applicator swab to collect specimen, insert the swab into Cary-Blair transport medium, push the cap on tightly, label with two identifiers (e.g., name and date of birth) and mail immediately. For details of specimen requirements see:

<https://www.doh.wa.gov/Portals/1/Documents/5240/SCSI-Ref-Vib-ID-V1.pdf>

All isolates and specimens need to be shipped according to PHL requirements

<https://doh.wa.gov/public-health-provider-resources/public-health-laboratories/lab-test-menu>

## 5. ROUTINE CASE INVESTIGATION

### A. Identify Potential Sources of Infection

Ask about possible exposures during the 5 days before onset. Interview the case and others who may be able to provide pertinent information, most importantly:

1. Travel outside the United States.
2. Consuming untreated water or potentially contaminated food or shellfish during travel.
3. Contact with recent foreign arrivals.
4. Contact with sewage or human excreta.
5. Consumption or handling of raw/undercooked shellfish in the United States.

### B. Case management

1. Hospitalized patients should be cared for using standard precautions. Contact precautions should be used for diapered or incontinent persons for the duration of illness.
2. Aggressive rehydration, oral or intravenous, is essential for severe cases. See: <https://www.cdc.gov/cholera/treatment/index.html>

3. **Work or Day Care Restrictions:** Persons should not work as food handlers, day care workers, or health care workers or attend school or day care while they have diarrhea.

Communicable Disease Epidemiology recommends that food handlers, child care workers, healthcare workers, and child care attendees with confirmed or highly suspect cholera have two negative stool specimens before returning to work or child care. The stool specimens should be collected 24 hours apart and not sooner than 48 hours after the last dose of antibiotics, if antibiotics were given.

4. Cases should not prepare any food for others while symptomatic with diarrhea.
5. Cases should be educated regarding effective hand washing, particularly after caring for diapered children, after using the toilet, after handling soiled clothing or linens, and before preparing food.

### C. Identify Potentially Exposed Persons

Identify travel companions and close contacts. Contacts with symptoms consistent with cholera should be referred to a health care provider for evaluation and diagnostic testing.

Asymptomatic travel companions should be educated about symptoms and told to consult a health care provider for testing and treatment if symptomatic. Chemoprophylaxis of

asymptomatic close contacts is generally not recommended in this country as secondary transmission is rare, but may be indicated if there is high likelihood of fecal exposure.

#### D. Environmental Evaluation

No environmental evaluation is needed for infections associated with international travel.

*Vibrio* proliferate rapidly at room temperatures, so shellfish containing even low levels of organisms at harvest can become highly contaminated if not handled properly. If the illness is associated with shellfish from the United States, interview the patient to determine the shellfish vendor, the type and source of shellfish consumed, and how the shellfish were prepared and handled prior to consumption (see Vibriosis guideline for more guidance). Complete the CDC surveillance report form <https://www.cdc.gov/nationalsurveillance/pdfs/cdc5279-covis-vibriosis-508c.pdf> and convey the information collected as soon as possible to Office of Communicable Disease Epidemiology (206-418-5500 or 877-539-4344).

### 6. MANAGING SPECIAL SITUATIONS

#### A. Outbreaks

If you suspect a cholera outbreak, contact Office of Communicable Disease Epidemiology (206-418-5500) and begin an investigation immediately.

### 7. ROUTINE PREVENTION

#### A. Immunization Recommendations:

There is currently no licensed vaccine available in the United States, and no other country or territory requires vaccination against cholera as a condition for entry. Two oral vaccines are used internationally. Supplies may be limited.

#### B. Prevention Recommendations <https://www.cdc.gov/cholera/prevention/index.html>

The risk for cholera is low for U.S. travelers visiting areas with epidemic cholera. When precautions are observed, contracting the disease is unlikely. All travelers to areas where cholera has occurred should observe the following recommendations:

1. 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.
2. Eat only foods that have been thoroughly cooked and are still hot, or fruit that you have peeled yourself.
3. Avoid undercooked or raw fish or shellfish, including ceviche (raw fish marinated in citrus juice.)
4. Make sure all vegetables are cooked and avoid salads.
5. Avoid foods and beverages from street vendors.
6. Do not bring perishable seafood back to the United States.

## ACKNOWLEDGEMENTS

This document is a revision of the Washington State Guidelines for Notifiable Condition Reporting and Surveillance published in 2002 which were originally based on the Control of Communicable Diseases Manual (CCDM), 17<sup>th</sup> Edition; James Chin, Ed. APHA 2000. We would like to acknowledge the Oregon Department of Human Services for developing the format and select content of this document.

## UPDATES

**January 2011:** The Legal Reporting Requirements section has been revised to reflect the 2011 Notifiable Conditions Rule revision.

**July 2016:** Front page added, sections 1 and 2 reversed in order; sections 5 (Routine Case Investigation) and 6 (Controlling Further Spread) combined.

**May 2018:** Standard review and WDRS update.

**December 2022:** For 2023 WAC revision combined provider and facility reporting requirement, updated laboratory submission (Section 1B); added instructions that *V. cholerae* lab result should initially create a vibriosis case, not a cholera case.

**December 2023:** For 2024 WAC revision updated laboratory submission.

**June 2024:** CDC links updated

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