



Vibriosis

Non-cholera *Vibrio* infections

Colorado Communicable Disease Manual

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The Disease and Its Epidemiology

A. Etiologic Agent

Non-cholera *Vibrio* infections (referred hereafter as *Vibrio* infections) are caused by bacteria in the genus *Vibrio*. The most commonly reported species in Colorado are *Vibrio parahaemolyticus*, *Vibrio alginolyticus* and *Vibrio vulnificus*, although approximately a dozen pathogenic species exist. This chapter does not address cholera (infection caused by toxigenic *Vibrio cholerae* serogroup O1 or O139). If a cholera case is suspected, contact CDPHE for assistance.

B. Clinical Description

Vibrio infections can result in diarrhea, wound infection or septicemia. Infection with most *Vibrio* species, including *parahaemolyticus*, *mimicus* and *fluvialis* usually results in a diarrheal illness. Symptoms can include watery diarrhea, abdominal cramps, nausea, vomiting, fever and headache. *Vibrio parahaemolyticus* and *Vibrio alginolyticus* infections can result in wound infections, and less often, septicemia. Ear infections due to various *Vibrio* species are also reported.

In contrast, *Vibrio vulnificus* infections generally result in septicemia or severe wound infections. The case fatality rate among persons with septicemia is approximately 50%.

Persons with liver disease, decreased gastric acidity, diabetes, peptic ulcers or immunosuppression are at higher risk to acquire illness and to develop more severe illness.

C. Reservoirs

Vibrio naturally live in marine coastal environments or in brackish water. Most species are halophilic (salt tolerant). Most *Vibrio* species that cause illness are not found naturally in Colorado, however, ample opportunity exists for Colorado residents to be exposed to *Vibrio spp.* during travel to coastal areas or when consuming raw or undercooked seafood such as oysters, crab or shrimp. The presence of *Vibrio spp.* in water is not a sign of pollution. The amount of *Vibrio spp.* in water is directly related to the water temperature, increasing with rising water temperatures.

D. Modes of Transmission

Vibrio enteritis is usually a result of ingesting the organism in raw or undercooked seafood (such as oysters, crab or shrimp). Wound infections can occur when a person with a wound has contact with seawater or a person sustains cuts while handling raw shellfish. Septicemia can occur through ingestion of raw or undercooked seafood or seawater contact in a person with a wound.

E. Incubation Period

The incubation period for *Vibrio* infections is species-dependent. For *V. parahaemolyticus*, the usual period is 12-24 hours with a range of 4-30 hours. The incubation period for *V. vulnificus* is usually 12 hours to 3 days.

F. Period of Communicability or Infectious Period

Non-cholera *Vibrio* infections are not known to spread from one person to another.

G. Epidemiology

Vibrio infections are reported throughout the year in Colorado, however, reported cases peak in the summer months, presumably because water temperatures are warmer then. *Vibrio* infections became reportable statewide in 2006. Before that they were reportable only in the Denver metro area. During 2010-2014, on average 9 cases were reported per year in Colorado. This number has increase substantially with the use of multiplex PCR panels that include *Vibrio*, with 16 cases reported during 2015 and 26 cases during 2016.

Colorado *Vibrio* statistics are available at the CDPHE website:

<https://www.colorado.gov/pacific/cdphe/foodborne-illness-data>

Case Definition

Clinical Description

An infection of variable severity characterized by watery diarrhea, primary septicemia, or wound infection. Asymptomatic infections may occur, and the organism may cause extraintestinal infections.

Laboratory Criteria for Diagnosis

Confirmed:	Isolation of a species of the family <i>Vibrionaceae</i> (other than toxigenic <i>V. cholera</i> O1 or O139 which are reportable as cholera), from a clinical specimen.
Supportive:	Detection of a species of the family <i>Vibrionaceae</i> in a clinical specimen using a culture-independent diagnostic test (CIDT), such as PCR.

Case Classification

Confirmed:	A case that meets the confirmed laboratory criteria (culture). Confirmed cases can include asymptomatic infections.
Probable:	<ul style="list-style-type: none"> A case that meets the supportive laboratory criteria for diagnosis (a positive CIDT and negative culture or a positive CIDT where culture was not performed), OR A clinically compatible case that is epidemiologically-linked to a case that meets the supportive or confirmatory laboratory criteria.

Reporting Criteria

What to Report to the Colorado Department of Public Health and Environment (CDPHE) or local health agency

- Confirmed, probable and suspected *Vibrio* infections.
- Vibrio* infections should be reported within 7 days of diagnosis or a positive laboratory test (suspected cholera infections are 24-hour reportable conditions).
- Cases should be reported using the Colorado Electronic Disease Reporting System (CEDRS), or fax or telephone to CDPHE or local health departments. See below for phone and fax numbers.
- Suspected foodborne/enteric disease outbreaks should be reported to CDPHE or local health departments within 24 hours, even if the causative agent is not yet known.

Purpose of Surveillance and Reporting

- To identify cases for investigation and potential outbreaks
- To monitor trends in disease incidence

Important Telephone and Fax Numbers

CDPHE Communicable Disease Epidemiology Branch

- Phone: 303-692-2700 or 800-866-2759
- Fax: 303-782-0338
- After hours: 303-370-9395

CDPHE Microbiology laboratory: 303-692-3480

Communicable Disease (CD) Manual website:

<https://www.colorado.gov/pacific/cdphe/communicable-disease-manual>

State Laboratory Services

Laboratory Testing Services Available

The services listed below are for public health purposes; clinical laboratories are not charged for these services.

- CDPHE Laboratory requests all *Vibrio* isolates or clinical material from clinical laboratories be submitted for confirmation and speciation.
- The CDPHE Microbiology Laboratory will test stool or rectal swab specimens for the presence of *Vibrio*, if this testing is warranted for public health purposes.

Note: Authorization from the CDPHE Communicable Disease Branch is required before submitting implicated food items to the CDPHE Laboratory.

- For more information contact the CDPHE Microbiology Laboratory.
- See Disease Control Measures, section E (Environmental Measures) below, for more information about food testing.

Case Investigation

Interview all cases of *Vibrio* infection including symptomatic persons with an epidemiologic link to a confirmed case and others whose symptoms are suspected to be caused by *Vibrio* to determine:

- Potential source of infection, and implement control measures as appropriate (including notification of the state where seafood was harvested, if appropriate)
- If others are ill (i.e., could this be an outbreak?)

Local public health agencies have primary responsibility for interviews of sporadic cases in their jurisdictions. Smaller agencies should consult with regional epidemiologists to establish primary responsibility for interviews of sporadic cases. CDPHE is available to assist with case investigation.

A. Case Investigation / Forms

For each case, complete the CDC Cholera and Other *Vibrio* Illness Surveillance Report form available on the [Communicable Disease manual](#) website. Interview all cases, regardless of specimen source (stool, blood, wound, urine, etc.). Complete the CEDRS record for all cases and send the completed form to CDPHE. If an outbreak is suspected, please contact CDPHE for assistance.

The primary goal of interviewing is to determine the patient's most likely source of infection and, if it is a food item that was consumed in the US, to gather enough information to be able to perform an

investigation of an implicated establishment and/or provide detailed information to the state where the seafood was harvested.

Pages 1-3 of the CDC Cholera and Other *Vibrio* Illness Surveillance Report form should be completed by the public health professional who interviews the patient. Page 4 should be completed if the illness is suspected to be due to consumption of seafood in the US. If the patient ate the seafood in Colorado, this section should be completed jointly by the person interviewing the case and by an environmental health specialist who visits the implicated establishment. If the food item was eaten in the US, but not in Colorado, complete as much of page 4 as possible and fax the form to CDPHE promptly. CDPHE will contact the state health department in which the exposure occurred.

If an outbreak is suspected, outbreak-specific interview forms should be used. Please contact CDPHE (303-692-2700) to report the outbreak and/or for assistance.

B. Identify and Evaluate Contacts

Symptomatic Contacts

- Unlike most other enteric illnesses, person-to-person transmission is not believed to occur, so a detailed investigation of possible spread to others is not indicated. Cases in sensitive occupations (food handling, child care, etc.) can return to work or school when symptoms have resolved.
- Please notify CDPHE if symptomatic contacts are identified, as this could indicate a possible outbreak.
- Complete a case investigation form for all epidemiologically-linked individuals having symptoms compatible with *Vibrio* infection. These contacts are probable cases and should be interviewed to determine potential source of exposure.
- Refer symptomatic individuals who have not previously been tested to their health care providers for stool cultures. If testing will be performed by CDPHE, refer to the Instructions for Enteric and Food Specimen Packaging and Shipping on the [Specimen Collection Guidelines](#) webpage.
- CDPHE recommends that people who are experiencing symptoms submit stool specimens through their health care provider rather than to the state laboratory for several reasons:
 - ▶ The patient will receive appropriate medical care for the illness.
 - ▶ Results will be known more quickly if stool is tested by a commercial laboratory than if tested at the state laboratory.
- Symptomatic contacts should be entered into CEDRS as probable cases of *Vibrio* infection. (It is helpful if you enter the CEDRS ID numbers of the lab-confirmed cases to whom probable cases are epi-linked in the CEDRS case notes.)

C. Reported Incidence Is Higher than Usual/Outbreak Suspected

If the number of reported cases of *Vibrio infection* in your jurisdiction is higher than usual, or if an outbreak is suspected, investigate to determine the source of infections. Consult with a CDPHE Communicable Disease Epidemiologist. CDPHE staff can assist local public health agencies to investigate outbreaks and determine a course of action to prevent further cases, and can coordinate surveillance of cases that cross county lines.

Disease Control Measures

[Vibrio](#) information is available on the CDC website.

A. Treatment

Vibrio enteritis usually resolves in less than a week without treatment. Patients with bloodstream or wound infections are treated with antibiotics and are usually hospitalized.

B. Prophylaxis

No prophylactic treatment of close contacts is recommended.

C. Education

- Persons at high risk for *Vibrio* infections, including persons with liver disease, decreased gastric acidity, diabetes, peptic ulcers or immunosuppression should not consume raw seafood, especially oysters.
- Educate all cases about the risks of consuming raw or undercooked seafood or exposing wounds to seawater.
- Although oysters should always be obtained from reputable sources, eating oysters from “clean” waters or in restaurants with high turnover does not provide protection, since *Vibrio* naturally live in waters where oysters are harvested.

D. Managing Special Situations

Food Handlers / Child Care / Preschool / School / Community Residential Programs / Health Care Facilities

Infection with *Vibrio spp* (non-cholera) is not believed to be transmitted from person to person. In general, once the case’s symptoms resolve, the case may return to work or school and no further follow up is necessary.

E. Environmental Measures

- If the likely source of a case’s infection is a food item consumed in a Colorado establishment, the establishment should be inspected as soon as possible.
 - ▶ During the inspection the environmental health specialist should obtain copies of the shellfish tags that accompanied the implicated seafood and should assess whether there is any evidence of mishandling at the establishment.
 - ▶ This information should be added to the case report form and forwarded to CDPHE as soon as possible after the inspection.
- If the likely source of a case’s infection is a food item consumed in the US, but not in Colorado, please notify CDPHE as soon as possible.
 - ▶ CDPHE will coordinate the seafood investigation with out-of-state agencies.
 - ▶ This information should be added to the case report form and forwarded to CDPHE as soon as possible.
- Implicated food items must be removed from the environment.
- A decision about testing suspect/implicated food items must be made in consultation with the CDPHE Communicable Disease Branch.
- If a commercial product is suspected, the CDPHE Communicable Disease Branch will coordinate follow-up with the CDPHE Division of Environmental Health and Sustainability and relevant outside agencies.
- The Instructions for Enteric and Food Specimen Packaging and Shipping are available on the [Specimen Collection Guidelines](#) webpage.
- The general policy of the CDPHE Laboratory and the Communicable Disease Branch is only to test food samples associated with outbreaks, not in single cases.
- For single cases, CDPHE may suggest that the holders of food locate a private laboratory that will test food, or that they store the food in their freezer for a period of time in case additional reports are received.
- The CDPHE laboratory can test food samples associated with isolated cases of illness on a fee for service basis. For more information, contact the CDPHE Microbiology Laboratory.

References

American Academy of Pediatrics. *2015 Red Book: Report of the Committee on Infectious Diseases, 30th Edition*. Illinois, Academy of Pediatrics, 2015.

CDC Website: <http://www.cdc.gov/> (click on “Diseases and Conditions”)

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Heymann DL, ed. *Control of Communicable Diseases Manual, 20th Edition*. Washington, DC, American Public Health Association, 2015.

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