

Vibriosis (non-cholera)

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To identify sources of transmission (e.g., commercially distributed food product or shellfish collection area) and to prevent further transmission from such sources.
2. When disease is due to privately collected shellfish, to inform those individuals how to reduce their risk of exposure.

B. Legal Reporting Requirements

1. Health care providers: notifiable to local health jurisdiction within 24 hours.
2. Health care facilities: notifiable to local health jurisdiction within 24 hours.
3. Laboratories: *Vibrio* (non-cholera) species notifiable to local health jurisdiction within 24 hours; specimen submission - culture (2 business days).
4. Local health jurisdictions: notifiable to Washington State Department of Health (DOH) Communicable Disease Epidemiology (CDE) within 7 days of case investigation completion or summary information required within 21 days of initial notification.

Note: Persons with non-toxicogenic strains of *V. cholerae* are reported as cases of vibriosis. Persons with toxicogenic strains of *V. cholerae* (O1 and O139) are reported as cases of cholera.

C. Local Health Jurisdiction Investigation Responsibilities

1. Begin investigation within one working day. If a case has consumed Molluscan shellfish, determine the source of the shellfish and report details, including copies of shellfish tags, to CDE or DOH Shellfish Programs as soon as possible so that appropriate regulatory actions can be taken.
2. Report all *confirmed* and *probable* cases to CDE through the Public Health Issues Management System (PHIMS) using the DOH vibriosis case report form <http://www.doh.wa.gov/notify/forms/vibriosis.pdf>.
3. In addition, for confirmed cases, complete CDC Cholera and Other Vibrio Illness Surveillance Report form http://www.doh.wa.gov/notify/forms/CDC5279_COVISvibriosis.pdf and fax to CDE.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agents

Vibriosis is caused by infection with pathogenic species of the family *Vibrionaceae*. Genera that more commonly cause human illness include *Vibrio* and *Grimontia*. The most important non-cholera human pathogens in the *Vibrio* genus are *Vibrio parahaemolyticus*, *V. vulnificus*, non-toxicogenic *V. cholerae*, and *V. mimicus*. Species that less commonly cause human illness include *V. alginolyticus*, *V. fluvialis* and *G. hollisae*. *Vibrio* species that naturally inhabit coastal waters in the United States and

Canada and are present in higher concentrations during warm summer months.

B. Description of Illness

Vibrio parahaemolyticus primarily causes a diarrheal illness characterized by sudden onset of watery diarrhea often accompanied by abdominal cramping. Bloody diarrhea (<15% of cases), vomiting, headache, and low grade fever also can occur.

V. vulnificus is a virulent organism that most commonly causes soft tissue infections and septicemia in persons with immunocompromising conditions, liver disease and other chronic illnesses. Septicemia can occur after ingestion of the organism in undercooked shellfish or exposure of a wound to seawater containing the organism. *V. vulnificus* is responsible for almost all the seafood-related deaths in the United States; the case fatality rate is approximately 25%.

V. alginolyticus most commonly causes cellulitis and acute otitis media or externa while nontoxicogenic (non-O1, non-O139) *V. cholerae* causes a diarrheal illness. *V. mimicus* can cause a cholera-like illness.

C. Vibriosis in Washington State

The number of vibriosis reports varies from year to year depending on environmental conditions. In 2006, a large outbreak of vibriosis occurred in Washington involving at least 110 residents.

Vibrio parahaemolyticus is endemic to the estuaries of Washington as are several other *Vibrio* species. To date, no *V. vulnificus* and *V. mimicus* infections have been reported associated with aquatic origins within Washington.

Most vibriosis cases in the United States occur between April and October. During the warmer months of the year, the DOH Shellfish Program routinely monitors shellfish from Washington growing waters for the presence of *V. parahaemolyticus* and will impose harvest restrictions if growing areas are linked to human illness.

D. Reservoirs

V. parahaemolyticus and *V. vulnificus* naturally occur in coastal waters. Although *V. parahaemolyticus* is ubiquitous in the United States (including Washington), *V. vulnificus* occurs at highest concentrations along the Gulf coast and in the Northeast. Molluscan shellfish become contaminated with the organism while filter feeding.

V. parahaemolyticus and *V. vulnificus* are halophilic (i.e. salt-requiring). Nontoxicogenic (non-O1, non-O139) *V. cholerae* can live in both freshwater and salt water.

E. Modes of Transmission

In the United States, most sporadic cases of vibriosis (non-cholera) follow the ingestion of raw or inadequately cooked seafood, particularly oysters. Common vehicles or mechanisms of transmission include:

1. Ingestion of inadequately cooked or raw seafood.
2. Ingestion of foods cross-contaminated with seawater or raw seafood.
3. Exposure of cuts or wounds to seawater.

F. Incubation Period

12–24 hours; range 4–96 hours.

G. Period of Communicability

Person-to-person transmission probably does not occur, suggesting the infective dose for immunocompetent persons is high. There is no carrier state.

H. Treatment

Treatment for gastroenteritis is primarily oral rehydration and supportive therapy. Antibiotics are generally not necessary in most cases of *V. parahaemolyticus* gastroenteritis but may be indicated if the diarrhea is severe. Cellulitis and septicemia caused by *V. vulnificus* require rapid treatment with appropriate antibiotics.

3. CASE DEFINITIONS

A. Clinical Criteria for Diagnosis

Vibriosis should be suspected if a patient has watery diarrhea and has eaten raw or undercooked seafood, especially oysters, or when a wound infection or sepsis occurs after exposure to seawater.

B. Laboratory Criteria for Diagnosis

Isolation of a species of the family *Vibrionaceae* (other than toxigenic *Vibrio cholerae* O1 or O139) from a clinical specimen.

C. Case Definition

1. Probable: A clinically compatible case that is epidemiologically linked to a confirmed case.
2. Confirmed: A case that is laboratory confirmed.

4. DIAGNOSIS AND LABORATORY SERVICES

A. Diagnosis

The diagnosis is made by isolation of a species of the family *Vibrionaceae* from stool, blood or wounds.

Laboratory personnel need to be notified when vibriosis is suspected because identifying the organism by culture requires techniques that are not routinely performed.

B. Tests Available at PHL

Laboratories in Washington are required to submit *Vibrio* isolates to PHL, which provides isolate confirmation/identification. In an outbreak, PHL will also culture stool for *Vibrio* species. Contact CDE for approval prior to submitting specimens for culture.

Note that PHL require 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.

C. Specimen Collection

For stool culturing, use a sterile applicator swab to collect stool, insert the swab into Cary-Blair transport medium, break off the stick at the score line below the lid of the bottle, push the cap on tightly, seal with pressure-sensitive labeling tape and mail immediately.

Enclose a completed PHL Microbiology form with each isolate and stool specimen.

<http://www.doh.wa.gov/EHSPHL/PHL/Forms/Microbiology.pdf>

5. ROUTINE CASE INVESTIGATION

Interview the case and others who may be able to provide pertinent information.

A. Identify Potential Sources of Infection

Take a detailed food history. Ask about the following during the 4 days before onset:

1. Acquaintances or household members with a similar illness. Obtain the person's name, diagnosis, and telephone number or address. (Note: Anyone meeting the probable case definition should be reported and investigated in the same manner as a confirmed case).
2. Consumption of raw/undercooked shellfish or other seafood. Obtain the type of shellfish/seafood, date of meal, date of purchase and source of shellfish (e.g., recreational harvest, seafood market).
3. Handling of raw shellfish.
4. Meals from restaurants or other food services. Obtain the name and location of the facility and date of the meal.
5. Travel outside the United States. Obtain travel dates and locations visited.
6. Skin exposure to seawater. Obtain the date and location of exposure.
7. Consumption of untreated water. Obtain the date and location of exposure.

B. Identify Potentially Exposed Persons

If a shellfish vehicle is identified, interview others who ate the same item.

C. Environmental Evaluation

If illness was associated with shellfish, interview the patient and/or contact the restaurant to determine what shellfish was consumed, and how it was prepared and handled prior to consumption. Since *Vibrio* organisms proliferate rapidly at room temperatures, shellfish containing very low levels of organisms at harvest can become highly contaminated if not handled properly.

As soon as possible, obtain the shellfish labeling tags from the retail sites and collect information about the supplier and harvest site of the shellfish. Convey the source information to CDE (206-418-5500 or 877-539-4344) or to the DOH Shellfish Program email at: sf.illness@doh.wa.gov

In the event of an outbreak, consult with CDE or the DOH Shellfish Program whether sampling of implicated shellfish is indicated. In most circumstances, shellfish samples for

laboratory testing are obtained from harvesting areas rather than from retail or household sources.

6. CONTROLLING FURTHER SPREAD

A. Infection Control Recommendations

1. Hospitalized patients should be treated with standard precautions. Contact precautions should be used for diapered or incontinent persons for the duration of the illness.
2. The case should be educated regarding effective hand washing, particularly after using the toilet, changing diapers, and before preparing or eating food.
3. As indicated, the case should be instructed on the importance of proper food handling and adequate cooking of shellfish; and avoidance of cross-contamination of other foods by raw shellfish or contaminated seawater.

B. Case Management

Follow up culturing not required.

C. Contact Management

Household and other close contacts are generally not at risk for infection since the infection is probably not directly transmitted person-to-person.

D. Management of Other Exposed Persons

Other exposed persons should be educated about symptoms and told to consult a health care provider for diagnostic testing and treatment if indicated.

E. Environmental Measures

The DOH Shellfish Program will decide whether a product recall or harvesting restrictions are warranted after receiving the information collected in Section 5C above.

7. MANAGING SPECIAL SITUATIONS

A. Case is a Food Handler

Instruct the case not to work as a food handler until diarrhea ceases. With the exception of particularly suspicious circumstances, no further follow-up is warranted.

B. Food Served at a Public Gathering Implicated

Determine the source of shellfish and how the shellfish were handled prior to consumption.

C. Case Works at a Health Care or Residential Care Facility

Determine if there has been increased incidence of diarrheal illness within the past week. If so, investigate these reports to identify possible common source outbreaks or continuing sources of exposure. A facility may have requirements for reporting to their licensing agency. If indicated, conduct a sanitary inspection of the facility and obtain food history related to consumption of shellfish.

D. Outbreaks

If you suspect an outbreak, contact CDE and begin an investigation immediately.

8. ROUTINE PREVENTION**A. Immunization Recommendations:** None**B. Prevention Recommendations**

1. Do not eat raw oysters or other raw shellfish, particularly if you are immunocompromised or have chronic liver disease. *V. parahaemolyticus* does not alter the appearance, taste, or odor of oysters.
2. Before harvesting shellfish, consult the 24 hour PSP Hotline 1-800-562-5632 or the DOH website: <http://ww4.doh.wa.gov/gis/mogifs/biotoxin.htm> for information on shellfish harvest areas closed due to marine biotoxins or *Vibrio*.
3. Cook Molluscan shellfish (oysters, clams, and mussels) thoroughly so that they reach a minimum internal temperature of 145°F (63°C) for 15 seconds. Do not eat those shellfish that do not open during cooking. Note that cooking does not affect marine biotoxins.
4. Avoid cross-contamination of cooked seafood and other foods with raw seafood and juices from raw seafood.
5. Keep shellfish cold at all times after purchase until preparation or consumption.
6. Eat shellfish promptly after cooking and refrigerate leftovers.
7. Wear protective clothing (e.g., gloves) when handling raw shellfish.
8. Avoid exposure of open wounds or broken skin to warm salt or brackish water, or to raw shellfish harvested from such waters.

UPDATES

January 2011:

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

January 2012:

Case definition updated to include reclassified species within family Vibrionaceae.