

## Vibriosis (non-cholera)

<b>Signs and Symptoms</b>	<ul style="list-style-type: none"> <li><i>Vibrio parahaemolyticus</i>, nontoxigenic (non-O1, non-O139) <i>V. cholerae</i>, <i>V. mimicus</i>: sudden onset watery diarrhea often with cramping. Bloody diarrhea, vomiting, headache, and low grade fever may occur</li> <li><i>V. vulnificus</i>: soft tissue infections and septicemia</li> <li><i>V. alginolyticus</i>: cellulitis and acute otitis media or externa</li> </ul>	
<b>Incubation</b>	12–24 hours; range 4–96 hours	
<b>Case classification</b>	<b>Clinical criteria:</b> Vary by agent. Diarrhea ( <i>V. parahaemolyticus</i> , <i>V. cholerae</i> , <i>V. mimicus</i> ), soft tissue infection and septicemia ( <i>V. vulnificus</i> ), and cellulitis or otitis ( <i>V. alginolyticus</i> )	
	<table border="1"> <tr> <td><b>Confirmed:</b> culture confirmed</td> <td><b>Probable:</b> clinically compatible case with epidemiologic link to a case meeting any laboratory criteria OR a clinically compatible case with positive culture-independent diagnostic testing</td> </tr> </table>	<b>Confirmed:</b> culture confirmed
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<b>Differential diagnosis</b>	Campylobacteriosis, parasitic diarrhea, salmonellosis, shigellosis, STEC infection, viral gastroenteritis, yersiniosis	
<b>Treatment</b>	Rehydration for diarrhea; antibiotics if invasive infection (cellulitis, septicemia)	
<b>Duration</b>	Days to weeks. No carrier state. No person-to-person transmission.	
<b>Exposure</b>	Inadequately cooked or raw seafood, cross-contamination from seafood or seawater, or immersion in salt water (particularly if there are skin wounds or cuts)	
<b>Laboratory testing</b>	<p>Local Health Jurisdiction (LHJ) and Communicable Disease Epidemiology (CDE) can arrange testing if an outbreak is suspected</p> <ul style="list-style-type: none"> <li>Washington State Public Health Laboratories (PHL) can culture and strain type (PFGE)</li> <li><b>Best specimens:</b> stool or swab in transport medium; isolate</li> <li>Unless transported by 24 h keep all specimens <b>cold, ship cold</b> with Microbioloy form <a href="https://www.doh.wa.gov/Portals/1/Documents/5230/302-013-Micro.pdf">https://www.doh.wa.gov/Portals/1/Documents/5230/302-013-Micro.pdf</a></li> <li>Specimen Collection and Submission Instructions (stool or isolate) <a href="https://www.doh.wa.gov/Portals/1/Documents/5240/SCSI-Ent-PathScr-V1.pdf">https://www.doh.wa.gov/Portals/1/Documents/5240/SCSI-Ent-PathScr-V1.pdf</a> <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>	<p>LHJ can consult with CDE 877-539-4344 for testing in potential outbreak investigations. For individual confirmed or probable cases:</p> <ul style="list-style-type: none"> <li>Identify potential exposures and complete the <a href="#">WDRS form</a></li> <li>Identify potential outbreaks from common sources</li> <li>Obtain details about shellfish or seafood consumption, food potentially cross-contaminated, or exposure to salt water</li> <li>For shellfish ask about type, when and where obtained, storage, preparation, where consumed, and contact information for any commercial product</li> <li>For water exposure ask about date and exact location</li> <li>Local EH should investigate any commercial product</li> <li>Submit page 5 of the <a href="#">WDRS form</a> with shellfish tags to DOH Shellfish Program via email at <a href="mailto:sf.illness@doh.wa.gov">sf.illness@doh.wa.gov</a> or fax to 360-236-2257.</li> <li>Educate case about hand washing and safe food handling</li> </ul> <p><i>Infection Control:</i> standard precautions with added contact precaution for diapered or incontinent persons</p>	

# 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) Office of 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-toxigenic strains of *V. cholerae* are reported as cases of vibriosis. Persons with toxigenic strains of *V. cholerae* (O1 or O139) are reported as cholera cases.

### C. Local Health Jurisdiction Investigation Responsibilities

1. Begin investigation within one working day. Enter case in Washington Disease Reporting System (WDRS) immediately to generate a WDRS case ID that will be used in tracking.
2. Interview case using the WDRS interview form (<https://www.doh.wa.gov/Portals/1/Documents/5100/210-052-ReportForm-Vibriosis.pdf>)
3. Facilitate environmental investigation, as indicated.
4. To track progress through the investigation, use the Vibrio checklist.

## 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-toxigenic *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.

Nontoxigenic (non-O1, non-O139) *V. cholerae* causes a diarrheal illness. *V. mimicus* can cause a cholera-like illness.

*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.

### 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 shellfish-associated 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 organisms while filter feeding.

*V. parahaemolyticus* and *V. vulnificus* are halophilic (i.e. salt-requiring). Nontoxigenic (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

1. Supportive:
  - Culture-independent diagnostic testing for a species of the family *Vibrionaceae* (other than toxigenic *Vibrio cholerae* O1 or O139) from a clinical specimen.
2. Confirmatory:
  - Isolation of a species of the family *Vibrionaceae* (other than toxigenic *Vibrio cholerae* O1 or O139) from a clinical specimen.

### C. Case Definition (2017)

1. Probable: A case that meets the supportive laboratory criteria for diagnosis, or a clinically compatible case that is epidemiologically linked to a case that meets the supportive or confirmatory laboratory criteria for diagnosis.
2. Confirmed: A case that meets the confirmed laboratory criteria for diagnosis.

## 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.

### 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. For details

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

### 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: <https://www.doh.wa.gov/Portals/1/Documents/5230/302-013-Micro.pdf>

## 5. ROUTINE CASE INVESTIGATION

Communicable Disease Epidemiology (CD Epi) at the Local Health Jurisdiction will interview the case and others who may be able to provide pertinent information. In the event shellfish or other seafood were from a commercial source (restaurant, market or grocery, food truck, other commercial enterprise), an environmental health investigation is also required and shellfish tags must be collected. Use the Vibrio checklist to track progress of investigation.

### A. Enter case in WDRS

1. Enter case in Washington Disease Reporting System (WDRS) immediately to generate a WDRS case ID that will be used in tracking.

### B. Interview Case

1. Interview case using the WDRS case report form:
2. Interviewing tips:
  - *If recreational harvest:* Gather details about who harvested the shellfish or other seafood (including contact information in the event additional information needs to be gathered), when and where it was harvested, storage conditions, and how the items were prepared (served raw, if cooked, how cooked, possibilities for cross-contamination in storage or preparation).
  - *If shellfish or seafood were from a commercial source (restaurant, market/grocery, food truck or other commercial establishment):* If possible, use the restaurant/market menu online when interviewing the case. Be aware, however, that the shellfish eaten may have been a special item not on the menu. To pinpoint dates and times of the meal, ask the case to look at receipts, online bank statements, or calendars. Some restaurants serve multiple types of shellfish, and it is crucial to pinpoint *as closely as possible* which shellfish were eaten. If possible, have the case look at pictures of shellfish during the interview, or describe what the various types of shellfish look like to assist in recall.
  - *If case handled raw shellfish:* Determine the type of shellfish and source (market, recreational harvest, restaurant, other source). Obtain specific details about the exact type of shellfish and exactly where they were harvested and served.

- *If travel outside the United States:* Obtain travel dates and locations visited.
- *If skin exposure to seawater:* Obtain date and exact location of exposure (beach name and location).
- *If consumption of untreated water:* Obtain date and exact location of exposure.

### C. Environmental Evaluation

Environmental evaluation is needed if there was a commercial source for the shellfish or seafood (that is, if shellfish/seafood were from a restaurant, market/grocery, food truck or other commercial establishment). Below are three common scenarios.

**1. If case consumed shellfish or other seafood from a commercial establishment (restaurant, grocery/market, food truck or other commercial establishment) in the same jurisdiction as residence, LHJ CD Epi should request that LHJ EH:**

- a. Perform a field investigation to collect tags and determine whether there was evidence of improper storage, cross-contamination, or holding temperature violations.
- b. Provide page 5 and ask them to complete the “Commercial Vendor Information”.
- c. Collect shellfish tags for the implicated product (be as specific as possible regarding what product is suspected to ensure that the appropriate tags are collected).
- d. Complete the [Field Investigation Worksheet \(Part II\)](#)
- e. Submit WDRS page 5 with shellfish tags to DOH Shellfish Program via email at [sf.illness@doh.wa.gov](mailto:sf.illness@doh.wa.gov) or fax to 360-236-2257.

**2. If case consumed shellfish or other seafood from a commercial establishment (restaurant, grocery/market, food truck or other commercial establishment) in a different county than the county of residence (but still within Washington), LHJ CD Epi should:**

Contact EH in the LHJ where the commercial establishment is located and request that they perform an environmental investigation and collect tags as in section C1.

**3. If case consumed shellfish or other seafood from a commercial establishment (restaurant, grocery/market, food truck or other commercial establishment) in a state other than Washington, LHJ CD Epi should:**

Contact DOH CDE at 206-418-5500. DOH CDE will facilitate environmental investigation and tag collection.

Be sure to still complete the WDRS case report up to the top of page 5.

## 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**

Because vibriosis is not transmitted person-to-person, there are no individual isolation control measures necessary. If a case is a food handler, or in another high-risk occupation, counsel them to exclude themselves from work until symptoms stop, as would be the recommendation for any diarrheal illness.

**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 OCDE 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 DOH 24 hour PSP Hotline 1-800-562-5632 or website for information on shellfish harvest closures due to marine biotoxins or *Vibrio* <https://www.doh.wa.gov/CommunityandEnvironment/Shellfish/RecreationalShellfish>.
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.

July 2015: Updates to streamline and make more clear the case investigation process.

January 2017: Culture-independent diagnostic testing added as presumptive laboratory; front page added.

April 2018: Standard review and update for WDRS.