

Vibriosis (non-cholera)

Signs and Symptoms	<ul style="list-style-type: none"> <i>Vibrio parahaemolyticus</i>, non-toxicogenic <i>V. cholerae</i>, <i>V. fluvialis</i>, etc.: watery diarrhea, abdominal cramps, vomiting, low-grade fever, etc. <i>V. vulnificus</i>: soft tissue infections and septicemia, typically in immunosuppressed. Note: <i>V. vulnificus</i> infections associated with consumption of WA harvested bivalves has not been reported, though the organism has been found in WA oysters. <i>V. alginolyticus</i>: wound infections, cellulitis and acute otitis media or externa 	
Incubation	12–24 hours; range 4–96 hours	
Case classification	Clinical criteria: Varies by agent. Diarrhea (<i>V. parahaemolyticus</i> , and others), soft tissue infection and septicemia (<i>V. vulnificus</i>), and cellulitis or otitis (<i>V. alginolyticus</i>)	
	<table border="1"> <tr> <td>Confirmed: culture confirmed</td> <td>Probable: clinically compatible case with epidemiologic link to a case meeting any laboratory criteria OR a clinically compatible case with positive culture-independent diagnostic test (CIDT)</td> </tr> </table>	Confirmed: culture confirmed
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Differential diagnosis	Norovirus infection, other enteric bacterial infections (including non-reportable infections), parasitic diarrhea, etc.	
Treatment	Rehydration for diarrhea; antibiotics if invasive infection (cellulitis, septicemia)	
Duration	Days to weeks. No carrier state. No person-to-person transmission.	
Exposure	Consumption of raw or inadequately cooked seafood (especially bivalves), cross-contamination from seafood drippings or seawater, or skin exposure to salt or brackish water (particularly if there are skin wounds or cuts).	
Laboratory testing	<p>Clinical labs should submit specimens associated with positive <i>Vibrio</i> results, including isolates or CIDT+ stools.</p> <ul style="list-style-type: none"> Washington State Public Health Laboratories (PHL) can culture and speciate. Best specimens: stool in enteric transport media (Cary-Blair); isolate PHL labs orders must be placed using the PHL Lab Web Portal Vibrio specimen collection and submission Instructions Testing of food samples associated with outbreaks is rarely recommended and must be approved by OCDE: Vibrio food sample collection and submission instructions 	
Public health actions	<p>LHJ can consult with OCDE (206-418-5500) for case and outbreak investigation. For individual confirmed or probable cases:</p> <ul style="list-style-type: none"> Identify potential exposures and complete the WDRS form Please contact OCDE immediately for clinical lab results indicating <i>V. vulnificus</i> Identify potential outbreaks from common sources. Obtain details about shellfish or seafood consumption, foods potentially cross-contaminated. For wounds or ear infections, obtain dates and exact location of water exposure. Local Environmental Health should conduct a focused Environmental Assessment (EA) and collect seafood source (e.g., shellfish tags) for cases associated with commercial bivalve shellfish consumption. Obtain harvest location for illnesses associated with recreational harvest. <p><i>Infection Control:</i> Standard precautions should be taken. Contact precautions should be used for diapered or incontinent persons for the duration of the illness.</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* species (including *V. cholerae*): notifiable to local health jurisdiction within 24 hours; specimen submission – isolate or specimen associated with a positive result (2 business days). Note: laboratories are required to report *V. cholerae* serotype O1 or O139 results immediately to the LHJ but lack the ability to serotype so these are reported as vibriosis.
4. Local health jurisdictions: notifiable to Washington State Department of Health (DOH) Office of Communicable Disease Epidemiology (OCDE) within 7 days of case investigation completion or summary information required within 21 days of initial notification.

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 event ID. Use the WDRS event ID for all communications regarding the case (including communications about shellfish tags).
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.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agents

Vibriosis is caused by infection with pathogenic species of the family Vibrionaceae which includes *Vibrio alginolyticus*, non-toxigenic *Vibrio cholerae*, *Vibrio cincinnatiensis*, *Photobacterium damsela*, subsp. *Damsela*, *Vibrio fluvialis*, *Vibrio furnissii*, *Grimontia hollisae*, *Vibrio metschnikovii*, *Vibrio mimicus*, *Vibrio parahaemolyticus* and *Vibrio vulnificus*.

In Washington state, the species of *Vibrio* most often identified in patient specimens are (in descending order): *V. parahaemolyticus*, *V. alginolyticus*, non-toxigenic *V. cholerae*, *V. fluvialis*, *Grimontia hollisae*, *V. vulnificus*, *V. mimicus* and *V. furnissii*.

Vibrio species that naturally inhabit coastal waters in the United States and Canada are present in higher concentrations during warm summer months therefore vibriosis cases peak during the summer months.

Note: All *V. cholerae* isolates are sent to CDC for toxigenicity testing. In Washington State, >94% *V. cholerae* patient cultures are non-toxigenic and cause the disease “vibriosis”, not “cholera”. Investigate cases positive for *V. cholerae* (either by PCR or culture) as vibriosis unless, during the 7 days prior to onset, the case either visited a country with cholera transmission or had contact with a person who had visited a country with cholera transmission (see: <https://www.ecdc.europa.eu/en/all-topics-z/cholera/surveillance-and-disease-data/cholera-monthly>).

B. Description of Illness

Vibrio parahaemolyticus, non-toxigenic *V. cholerae*, *V. fluvialis*, *Grimontia hollisae* and *V. furnissii* primarily causes a diarrheal illness characterized by watery diarrhea often accompanied by abdominal cramps, vomiting, and low-grade fever. Bloody diarrhea is rare. People usually develop symptoms within 24 hours of exposure (range is 1-4 days) and symptoms typically last about 3 days.

V. mimicus can cause a cholera-like illness with profuse watery diarrhea.

V. alginolyticus most commonly causes cellulitis and acute otitis externa.

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

C. Vibriosis in Washington State

The number of vibriosis reports ranges from 90 to 218 per year and varies from year to year depending on environmental conditions.

Most vibriosis cases in the United States occur between April and October. During the summer months, the DOH Shellfish Program uses shellfish traceback data to identify *Vibrio parahaemolyticus* illnesses associated with specific growing areas in Washington. They conduct this traceback using data from shellfish tags collected in response to vibriosis reports by local EH programs in Washington, other states and Canada. When multiple illnesses are attributed to a particular growing area, the DOH shellfish program can impose harvest restrictions.

While *V. vulnificus* has been found in Washington oysters tested during routine environmental monitoring, infections associated with consumption of oysters harvested in Washington or exposure to salt or brackish water in Washington State have not been reported. **If WA shellfish or water exposure is suspected as the source of a *V. vulnificus* infection, please contact OCDE immediately.**

D. Reservoirs

Vibrio species naturally occur in coastal waters. Though *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.

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 raw or inadequately cooked seafood, especially molluscan bivalves such as oysters.
2. Ingestion of foods cross-contaminated with seawater or raw seafood drippings.
3. Exposure of cuts or wounds to salt or brackish water.

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 *Vibrio* 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 salt or brackish water.

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 or identification of *Vibrio* DNA in stool using PCR.

B. Tests Available at PHL

Clinical labs are required to submit specimens associated with positive *Vibrio* results, including isolates or PCR positive stools. PHL performs culture on stool and confirms and speciates isolates. In an outbreak, PHL can also culture stool for *Vibrio* species, however, referral of cases to a health care provider for testing and treatment is recommended. Contact OCDE for approval prior to submitting specimens for culture.

C. Specimen Collection and Submission

Note that PHL requires that all clinical specimens include 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: [Specimen collection and submission instructions for Enteric Pathogen Screen](#)

PHL labs orders must be placed using the PHL [Lab Web Portal](#).

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.

A. Interview Case

1. Interview case using the WDRS case report form:
2. Interviewing tips:
 - *If case consumed seafood from restaurant*, look up the restaurant menu online and ask:
 - What was the date and time of meal?
 - Which meal was eaten: dinner, brunch, happy hour, etc.?
 - Which menu did the case order from: dinner, special oyster menu, bar or happy hour menu?
 - What is the exact name and description of the item (the online menu can help)?

- How much/how many did they eat?
- Do they have receipts, photos, etc.?
- If case consumed seafood from a seafood stand or grocery store, look up the seafood stand or store online to see what they typically sell and ask:
 - What type of seafood was purchased?
 - The date and time of purchase
 - The date and time of consumption
 - How was the seafood handled between the time it was purchased and eaten?
 - Do they have a receipt?
 - If they purchased bivalve shellfish, do they still have the tag attached to the plastic net the shellfish was sold in?
 - If they purchased pre-shucked bivalve shellfish, do they still have the container (jar and lid) it was sold in?
- *If case consumed recreationally harvested seafood:* Gather details about who harvested the shellfish or other seafood, 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 case traveled outside the United States:* Obtain travel dates and locations visited and detailed restaurant exposure as above.
- *If case had skin exposure to brackish or saltwater:* Obtain date and exact location of exposure (beach name, closest intersection, etc.).

B. Washington Disease Reporting System (WDRS) Data Entry

1. Enter cases into WDRS and include the WDRS event ID on all communications related to shellfish tags and seafood traceback.
2. Enter symptom, underlying condition and exposure data into WDRS.
3. For *Vibrio* gastroenteritis associated with seafood exposure, evaluate the case’s seafood history with the following table--the first seafood (from the top down) the case affirms having eaten in the 4-96 hours prior to onset should be investigated as the likely source of infection:



4. For seafood suspected of causing vibriosis complete the following fields in WDRS (some relevant fields remain hidden until these key fields are completed):
 - Enter last consumed date for all seafood exposures.
 - For the seafood identified in #3 above, answer “Yes” to “This seafood is suspected of causing this illness”.
 - In the WDRS field “Additional relevant information on product preparation”, include details on which menu the case ordered from, the exact name of the item from the menu, the meal (brunch, lunch, dinner, happy hour) and the time of meal.
 - You must enter the “Name of the location where seafood was obtained” before you can enter the address, etc. of the venue.
 - The section after “Were seafood tags, invoices or labels available” does not need to be completed.

C. Environmental Assessment

An Environmental Assessment, which may include collection of shellfish tags for bivalve shellfish, 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).

The following strategies (*Thank you to Public Health—Seattle & King County for sharing these*) should be used by environmental health staff when taking photos of shellfish tags:

- Only include a maximum of 4 tags in the same photo
- Take a picture of the front of the tag. If there is information on the back of the tag, take a photo of the back too.
- Please avoid shadows or light reflection on the tags
- Directly send photo from the photo gallery on the phone via email to avoid any compression of the photo’s quality.
- Always select sending original quality

Below are three scenarios where an Environmental Assessment and possible tag collection are warranted:

1. 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 EH:

- a. Perform an Environmental Assessment to collect tags and determine whether there was evidence of improper storage, specifically:
 - i. Holding temperature violations, cross-contamination, co-mingling of live and dead shellfish, improper storage, etc.

- b. 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).
- c. Complete the [Field Investigation Worksheet \(Part II\)](#)
- d. Submit shellfish tags along with the EA form to the DOH Shellfish Program via email at sf.illness@doh.wa.gov.

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

- a. Contact EH in the LHJ where the commercial establishment is located and request that they perform an Environmental Assessment and collect tags as in section C1.
- b. Contact DOH OCDE or DOH Shellfish program who can facilitate requests to EH programs in other LHJs.

3. 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 (including in Canada), LHJ CD Epi should:

- a. Contact the DOH Shellfish Program by sending an email to sf.illness@doh.wa.gov or calling DOH OCDE at 206-418-5500. DOH will facilitate requesting and environmental assessment and tag collection from the other state/province.

6. CONTROLLING FURTHER SPREAD

A. Infection Control Recommendations

1. Vibriosis is not spread from person-to-person. 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. As with all diarrheal disease cases, 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 testing is not required.

C. Contact Management

Household and other close contacts are generally not at risk for infection since the infection is 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 diarrhea stops, 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 an environmental assessment of the facility and obtain food history related to consumption of shellfish. Note: environmental assessments may need to be coordinated with the agency that regulates the facility such as the WA Department of Social and Health Services or the WA DOH Health Systems Quality Assurance, etc.

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. People who are immunocompromised (including persons who are pregnant) or have chronic liver disease should not eat raw seafood, including oysters. Anyone who wants to avoid vibriosis should eat only cooked seafood. *Vibrio* does not alter the appearance, taste, or odor of seafood.
2. Cook seafood, including molluscan shellfish (oysters, clams, and mussels, scallops), 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.

3. 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>.
4. Avoid cross-contamination of cooked seafood and other foods with raw seafood and juices from raw seafood.
5. Always keep shellfish cold 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.

December 2022: For 2023 WAC revision combined provider and facility reporting requirement, updated laboratory submission (Section 1B)

December 2023: For 2024 WAC revision updated laboratory submission.

May 2024: Added combined provider and facility reporting requirement included in WAC revision 2022 and updated laboratory submission (Section 1B) from WAC revision 2023. References to PFGE were removed and PCR testing, interviewing tips, seafood assessment graphic and photography strategies for shellfish tags were added.

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