Vibrio parahaemolyticus

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To determine if there is a source of infection of public health (e.g., a food handler or commercially distributed food product) and to stop transmission from such a source.
2. To assess the risk of the case transmitting infection to others, and to prevent such transmission.
3. To identify other cases.

B. Laboratory And Physician Reporting Requirements

Laboratories and physicians are required to report within one working day of identification/diagnosis. Reports should not be delayed for serotyping or final laboratory confirmation.

C. Local Health Department Reporting and Follow-Up Responsibilities

1. Report all confirmed and presumptive (but *not* suspect) cases to DHS-HS by the end of the calendar week of initial physician/lab report. If the investigation has not been completed, send in at least a preliminary report (with the demographics and available information) by faxing the first page of the *Vibrio parahaemolyticus* case investigation form (available on the ACDP web site at *http://www.dhs.state.or.us/publichealth/odpe/guidelns/forms/index.cfm*). Note that isolation of any *Vibrio* species from any site is reportable.
2. Begin follow-up investigation within one working day. Submit a copy of the completed case investigation form to the DHS-HS within seven days of initial report. Fax is preferable to mail. Report *Vibrio parahaemolyticus* infection on the appropriate forms. Call ACDP with all non-parahaemolyticus *Vibrio* reports.
3. Ensure that labs forward the first isolate from each patient to the OSPHL for serotyping.
4. As indicated, complete summary forms for waterborne or foodborne disease outbreaks (available on web page) when investigation is complete. ACDP epidemiologists will typically be involved as well along with the shellfish program at the food safety division of Department of Agriculture in *Vibrio* outbreak investigations.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agents

Vibrio parahaemolyticus spp. are gram-negative bacilli. The two main human pathogens are *V. cholerae* and *V. parahaemolyticus*. *V. parahaemolyticus* naturally inhabits coastal waters in the United States and Canada and is present in higher concentrations during summer; it is a halophilic, or salt-requiring organism.

B. Description of Illness

An acute bacterial enteric disease characterized in its severe form with sudden onset, profuse, painless diarrhea, occasional vomiting, and, in untreated cases, rapid dehydration, acidosis, circulatory collapse, hypoglycemia in children, and renal failure. In severe, untreated cases, death may occur within a few hours, and the case-fatality rate may exceed 50%; with proper treatment, the rate is <1%.

C. Reservoirs

Humans; recent observations in the USA, Bangladesh and Australia clearly demonstrated that environmental reservoirs exist, apparently in association with copepods or other zooplankton in brackish water or estuaries. Food has also been associated often through contaminated waters at some point in the preparation process. The lifespan of *Vibrio* spp. outside the human host is usually less than 5 days. Survival in foods is even more limited; however, refrigerated shellfish are an excellent source of the bacterium.

D. Modes of Transmission

Although infection can be acquired through ingestion of food or water contaminated directly or indirectly with feces or vomitus of infected persons, in the USA, most sporadic cases of infection follow the ingestion of raw or inadequately cooked seafood. Commonly recognized vehicles or mechanisms of transmission include:

1. Inadequately cooked or raw shellfish;
2. Other foods cross-contaminated with any of the above;
3. Contaminated produce;
4. Contaminated and inadequately treated drinking water;
5. Person-to-person spread can occur when an infected person fails to wash hands thoroughly after defecation, but is surprisingly uncommon (reflecting high infectious dose). It is more likely to occur when the infected person has diarrhea, rather than during the carrier state.

E. Incubation Period

Usually 12–24 hours; range, 4–30 hours.

F. Period of Communicability

No cases of person-to-person transmission have been identified.

G. Treatment

Treatment is not necessary in most cases of *V. parahaemolyticus* infection. There is no evidence that antibiotic treatment decreases the severity or the length of the illness.

Patients should drink plenty of liquids to replace fluids lost through diarrhea. In severe or prolonged illnesses, antibiotics such as tetracycline, ampicillin or ciprofloxicin can be used. The choice of antibiotics should be based on antimicrobial susceptibilities of the organism.

3. CASE DEFINITIONS, DIAGNOSIS, AND LABORATORY SERVICES

A. Confirmed Case Definition

Persons from whom *Vibrio parahaemolyticus* is cultured (again, from *any* site).

B. Presumptive Case Definition

Diarrhea and fever in someone epidemiologically linked to a confirmed case.

C. Suspect Case (*not* reportable to OHS)

Anyone with an undiagnosed, non epi-linked, febrile diarrheal illness. A physician should suspect *V. parahaemolyticus* infection if a patient has watery diarrhea and has eaten raw or undercooked seafood, especially oysters, or when a wound infection occurs after exposure to seawater.

D. Services Available at the Oregon State Public Health Laboratory

The OSPHL provides isolate confirmation/identification, serotyping, and stool culturing for *Vibrio parahaemolyticus* species. *Vibrio parahaemolyticus* organisms can be isolated from cultures of stool, wound, or blood.

N.B.– Stool specimens will not be cultured unless obtained before initiation of antimicrobials, or after 48 hours have passed since discontinuation of antimicrobials.

4. ROUTINE CASE INVESTIGATION

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

A. Identify Potential Sources of Infection.

Ask about potential exposures during the 4 days before onset, including:

1. Name, diagnosis, and telephone number or address of any acquaintances or household members with similar illnesses (*N.B.*—anyone meeting the presumptive case definition should be reported and investigated in the same manner as a confirmed case);
2. Name, date, and location of any restaurant meals;

3. Date, location, and sponsor of any public gathering where food was consumed;
4. Consumption of raw/undercooked shellfish;
5. Travel outside the United States or contact with others known to have traveled outside the United States;
6. Attendance or employment at a day care facility by the case or a household member.

B. Identify Potentially Exposed Persons

If a putative shellfish vehicle is identified, interview others who partook of the same item.

C. Environmental Evaluation

If the source of infection appears to be associated with a restaurant, or public drinking water supply.

5. CONTROLLING FURTHER SPREAD

A. Patient/Household Education

As indicated, provide basic instruction to cases and potentially exposed persons about 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. Isolation of Cases

Cases should be cared for using standard precautions.

Isolation: Strict isolation is not necessary. Less severe cases can be managed on an outpatient basis with oral rehydration and an appropriate antimicrobial agent. Effective handwashing and basic procedures of cleanliness must be practiced.

C. Occupational Restrictions

None.

D. Environmental Measures

Although oysters can be harvested legally only from waters free from fecal contamination, even legally harvested oysters can be contaminated with *V. parahaemolyticus* because the bacterium is naturally present in marine environments. *V. parahaemolyticus* does not alter the appearance, taste, or odor of oysters.

6 MANAGING SPECIAL SITUATIONS

A. Case is a Food Handler

Absent particularly suspicious circumstances, no special follow-up is warranted. Consult with ACDP epidemiologists if you have concerns.

B. Food Served at a Public Gathering Implicated

Determine the source of shellfish.

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

Determine if there has been any unusual incidence of diarrheal illness within the past week. If so, investigate these reports to with an eye towards identifying possible common-source outbreaks or any continuing sources of exposure. If indicated, conduct a sanitary inspection of the facility and food history related to consumption of shellfish. The extent of further investigation depends on circumstances. Consult with ACDP epidemiologists.

D. Prevention

1. Do not eat raw oysters or other raw shellfish;
2. Cook shellfish (oysters, clams, mussels) thoroughly. For shellfish in the shell, either: (a) boil until the shells open and continue boiling for 5 more minutes, or (b) steam until the shells open and then continue cooking for 9 more minutes. Do not eat those shellfish that do not open during cooking. Boil shucked oysters at least 3 minutes, or fry them in oil at least 10 minutes at 375°F;

3. Avoid cross-contamination of cooked seafood and other foods with raw seafood and juices from raw seafood;
4. Eat shellfish promptly after cooking and refrigerate leftovers;
5. Avoid exposure of open wounds or broken skin to warm salt or brackish water, or to raw shellfish harvested from such waters;
6. Wear protective clothing (e.g., gloves) when handling raw shellfish.