Noncholera *Vibrio* Infections

Summary

Noncholera *Vibrio* infections are caused by bacteria in the same family as those that cause cholera. These salt-tolerant gram-negative bacilli are commonly found in warm coastal waters and infection can result from consuming raw or undercooked seafood or exposing a wound to sea water. Noncholera *Vibrio* species cause three major syndromes: diarrhea, wound infections and septicemia. A mild, self-limited diarrheal illness is the most common syndrome in healthy persons. However, bowel and wound infections in persons who are immunocompromised or have chronic liver disease can result in serious illness and death. Infection can be prevented by cooking seafood adequately, handling raw seafood with care, and avoiding exposure of abrasions to sea water.

Agent

About a dozen *Vibrio* species can cause human illness, known as vibriosis. The most common species causing human illness in the United States are *V. parahaemolyticus*, which can cause acute gastroenteritis, *V. vulnificus*, and *V. alginolyticus* which can cause primary septicemia and wound infections, particularly in persons with impaired immune function and chronic liver disease. Other pathogenic species include *V. cholerae* of serogroups other than O1 and O139, *V. mimicus,* V. *fluvialis, V. furnissii, V. hollisae, V. damsel*.

Transmission

Reservoir**:**

Noncholera *Vibrio* species are commonly found in salt water and naturally inhabit coastal waters of the United States and Canada. Concentrations are usually higher in warm summer months.

Mode of transmission:

- V. *parahaemolyticus* gastroenteritis is usually acquired from raw or undercooked seafood, especially oysters. Wound infections may result from exposure of abrasions or wounds to seawater or seafood.

Period of communicability:

- Not normally considered to be communicable from person to person, although theoretically transmission could occur through human fecal contamination of food or water. In this case, the potential period of communicability would be limited to the period of excretion, usually several days.

Clinical Disease

Incubation period:

In general, the median incubation period for gastroenteritis is typically 24 hours with a range of 5 to 92 hours. *V. parahaemolyticus* – usually 12 to 24 hours, with a range of 4 to 30 hours; V. *vulnificus* – usually 12 to 72 hours with a range of 12 hours to 7 days. Wound infections and septicemia have an incubation period of 1 to 7 days.

Illness:

Noncholera *Vibrio* species are associated with three major syndromes: diarrhea, wound infection, and septicemia. Diarrhea is the most common and is characterized by acute onset of watery stools, often with abdominal cramping, nausea, vomiting and fever. Skin and soft-tissue infections can develop in contaminated wounds. Persons with impaired immune function or chronic liver disease are susceptible to septicemia from bowel or skin infections, often resulting in shock, bullous or necrotic skin lesions, and death. Wound Infections caused by *V. vulnificus* may start as redness and swelling at the site of the wound that can then progress to affect the whole body. *V. vulnificus* typically causes a severe and life-threatening illness characterized by fever and chills, decreased blood pressure and blood-tinged blistering skin lesions.

Most people with mild illness typically recover after about 3 days and suffer no long-term consequences.

Laboratory Diagnosis

Noncholera *Vibrio* species can be isolated from stool, blood, or wound exudate cultures. The laboratory should be notified when *Vibrio* infection is suspected, since appropriate media is not used routinely by most clinical laboratories. All noncholera *Vibrio* isolates should be submitted to New Mexico Department of Health Scientific Laboratory Division for confirmation.

Treatment

Most episodes of diarrhea caused by noncholera *Vibrio* species are mild and self-limited and do not require treatment other than oral rehydration. Antimicrobial therapy may benefit those with severe diarrhea, wound infection, or septicemia.

Surveillance

Case Definition:

Laboratory criteria – Isolation of noncholera *Vibrio* from a clinical specimen.

Confirmed – A case that is laboratory confirmed.

Probable – A clinically compatible case that is epidemiologically linked to a confirmed case.

Reporting:

Report all suspected or confirmed cases of noncholera *Vibrio* infection to the Epidemiology and Response Division (ERD) at 505-827-0006. Information needed includes: patient's name, age, sex, race, ethnicity, home address, home phone number, occupation, and health care provider.

Laboratory confirmed cases should also be reported to the New Mexico Environment Department Shellfish Specialist at 505-362-8861, who will coordinate all environmental investigation and traceback activities with the appropriate local, state, tribal and federal regulatory agencies.

Case Investigation:

Complete the CDC Cholera and Other Vibrio Illness Surveillance (COVIS) report form and mail to the Epidemiology and Response Division P.O. Box 26110, Santa Fe, New Mexico 87502-6110, or fax to 505-827-0013. Investigation information should also be entered in NM-EDSS per established procedures.

Control Measures

1. Case management
   1.1. Isolation:
      1.1.a Exclude symptomatic persons from food handling and direct care of infants, elderly, immunocompromised, and hospitalized or institutionalized patients.
      1.1.b For hospitalized patients, standard precautions should be used.
      1.1.c For diapered or incontinent children, contact precautions should be used.
   1.2. Prophylaxis: Not applicable.
2. Contact management
   2.1. Isolation: None required.
   2.2. Prophylaxis: Not applicable.
3. Prevention
   3.1. Seafood should be cooked adequately, and raw seafood should be handled with care. Children and persons with impaired immune function or chronic liver disease should not eat raw seafood, especially raw oysters or clams.
   3.2. Uncooked mollusks and crustaceans should be handled with care, cross contamination of cooked seafood through contact with preparation surfaces or containers should be avoided.
   3.3. Abrasions occurring while in contact with saltwater should be rinsed with clean fresh water as soon as possible.
   3.4. Immunization: Not applicable.

Management of noncholera *Vibrio* infections in Childcare Centers

1. Outbreaks of noncholera *Vibrio* infections in childcare centers have not been documented.
2. Management of isolated cases
   2.1. When a case of noncholera *Vibrio* infection occurs among a childcare center attendee, that child should be excluded until s/he is asymptomatic, and the stools are formed. Asymptomatic children may return to childcare without follow-up stool cultures.
   2.2. When a case of noncholera *Vibrio* infection occurs among a childcare center staff member, that person should be excluded from their work duties until they are asymptomatic as defined above.
   2.3. A case of noncholera *Vibrio* infection in a childcare facility should prompt the search for other cases among children and staff members of the facility, as well as household members or other close contacts of the index case. Stool cultures should be obtained on other symptomatic persons.
   2.4. The childcare center should review its infection control protocols with staff, and emphasize the following:

- In addition to standard precautions, contact precautions are recommended for diapered or incontinent children. Frequent hand washing routines for staff and children should be implemented.
- Frequently mouthed objects should be cleaned and sanitized daily. Items should be washed with dishwashing detergent and water, then rinsed in freshly prepared (daily) household bleach solution (dilute 1 cup bleach in 9 cups of water.)
- Food handling and diaper changing areas should be physically separated and cleaned daily.
- Diaper changing surfaces should be nonporous and cleaned with a freshly prepared (daily) household bleach solution (dilute 1 cup bleach in 9 cups of water). Cleaning and sanitizing diaper changing surfaces after each use is required.
- Ideally institute and maintain a system of stool monitoring (i.e., diaper logs) for all infants and children who are not toilet trained. Diaper logs are not required by regulation but are recommended whenever a day care attendee is diagnosed with an enteric pathogen. At a minimum, diaper logs should document the quality (e.g., formed, loose, watery, blood present, mucus present) and time of each diaper change. The log should be reviewed each day with the center director, or their designated personnel, and personnel from NMDOH who are being consulted and/or investigating individual cases, clusters, or outbreaks at the center. The purpose of the log is to assist in the identification of potential new cases, to prioritize testing recommendations, and assist in determining if exclusion of the infant or child is necessary until infection can be ruled out.
- Disposable diapers and soiled disposable wiping cloths should be discarded in a secure, foot-activated, plastic lined container. If available, nonporous gloves should be worn when changing diapers.

References

American Academy of Pediatrics. In: Kimberlin, DW, et al eds. Red Book: 2021-2022 Report of the Committee on Infectious Diseases. 32ndt ed. Itasca, IL: American Academy of Pediatrics; 2021.

Heymann, DL, ed. Control of Communicable Diseases Manual. 21st edition. Washington, DC: American Public Health Association; 2022.

See Non-Cholera Vibrio Infections Fact Sheets (English) (Spanish)