

Vibrio vulnificus

FACT SHEET FOR HEALTH CARE PROVIDERS

Every year millions of Americans consume raw molluscan shellfish, especially oysters and clams. For some people, however, eating raw or undercooked molluscan shellfish can cause serious illness or death from *Vibrio vulnificus*.

Vibrio vulnificus is a gram-negative bacterium and is considered the most lethal of the vibrios inhabiting brackish and salt water. This bacterium is not the result of bacteriological or chemical pollution of marine waters, but occurs naturally in warm, coastal areas, such as the Gulf of Mexico. *V. vulnificus* is found in higher concentrations from April through October when coastal waters are warm.



AT-RISK POPULATION

Most healthy individuals are not at risk for *V. vulnificus* infection. Persons at high-risk include those with liver disorders, including hepatitis, cirrhosis and liver cancer; hemochromatosis; diabetes mellitus; and those with immunocompromising conditions, such as HIV/AIDS, cancer, or undergoing their treatments. Individuals who take prescribed medication to decrease stomach acid levels or who have had gastric surgery are also at risk.

INFECTION

Filter-feeding shellfish, such as oysters and clams, concentrate *V. vulnificus* in their tissues. When a person eats these shellfish raw or undercooked, the bacteria enter the digestive tract and multiply rapidly. In addition to ingestion, high-risk individuals can become infected when cuts, burns or sores come in contact with seawater containing *V. vulnificus*.

RESULTING ILLNESS

V. vulnificus infections are associated with three distinct clinical syndromes:

- **Primary septicemia** occurs after food containing *V. vulnificus* is consumed and the bacteria invade the bloodstream via the digestive tract. The illness is characterized by fever and chills, and is usually accompanied by nausea, vomiting and diarrhea. A sharp drop in blood pressure commonly occurs, with possible outcomes of intractable shock and death. The majority of patients also develop painful skin lesions. The skin initially appears red. Blisters develop quickly and erode into necrotic ulcers.
- **Gastroenteritis** occurs after ingestion of food containing *V. vulnificus*. Patients with gastroenteritis have a relatively milder syndrome consisting of vomiting, diarrhea and abdominal cramps. Patients with gastroenteritis may require hospitalization, but rarely die.
- **Wound infection** results when skin lacerations or abrasions come in direct contact with seawater containing *V. vulnificus*. Additionally, wound infections can occur during acute, penetrating marine injuries. These infections typically begin with swelling, redness, and intense pain around the infected site. Fluid-filled blisters often develop and progress to tissue necrosis in a rapid and severe process resembling gas gangrene. Fifty percent of patients with *V. vulnificus* infected wounds require surgical debridement or amputation. In some patients, infection spreads to the bloodstream, and in such cases death commonly occurs.

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DIAGNOSIS

Although *V. vulnificus* infection is diagnosed by routine stool, wound or blood culture, laboratories should be notified when this infection is suspected so that a special growth medium can be used to increase the diagnostic yield.

TREATMENT

The mainstays of medical treatment for *V. vulnificus* infections are prompt antimicrobial therapy and supportive care. The American Medical Association and the Centers for Disease Control and Prevention recommend treating the patient with tetracycline and intravenous doxycycline with ceftazidime.

LONG-TERM SEQUELAE

V. vulnificus infection is usually an acute illness in healthy persons. Those who recover should not expect long-term consequences. Infection in high-risk individuals, however, has a 50 percent case fatality rate. High-risk individuals who recover from wound infection often develop necrosis that frequently requires skin grafting or limb amputation.

CASE REPORTING

Requirements for disease reporting are mandated at the state level. For current and complete information on *V. vulnificus* reporting requirements in your state, consult your state health department or their website.

REDUCING THE RISK OF INFECTION

V. vulnificus infection case reviews have indicated a median time period of 48 hours or less from hospital admission to death. This underscores the limited effectiveness of treatment and the importance of prevention.

High-risk individuals should abstain from eating raw oysters or clams. *V. vulnificus* infection can also be avoided by eating only thoroughly cooked shellfish. High-risk persons may also prevent *V. vulnificus* infection by avoiding contact of cuts, burns or sores with marine waters.

PREVENTION RECOMMENDATIONS

- Instruct high-risk patients not to eat raw oysters or clams.
- Encourage high-risk patients to eat well-cooked oysters and clams.
- Provide high-risk patients, including immunocompromised individuals, with information about the risk of eating raw oysters or clams. Free copies of the brochure "The Risk of Eating Raw Oysters: Advice for Persons with Liver Disease, Diabetes and Weakened Immune Systems" are available through the ISSC website (www.issc.org) or by calling 1-800-416-4772.

References

- American Medical Association, Centers for Disease Control & Prevention, US Food & Drug Administration (2001): *Diagnosis and Management of Foodborne Illnesses, A Primer for Physicians*
- Daniels N and Shafaie A (2000): *A Review of Pathogenic Vibrio Infections for Clinicians*, J Infectious Medicine 17(10):665-685.
- U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition (2000): *Foodborne Pathogenic Microorganisms and Natural Toxins Handbook, Bad Bug Book*



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