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VIMS

Marine Resource Advisory

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Potential Risk of Vibrio Infection in Virginia

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People in high-risk categories should be alert to the risk of *Vibrio vulnificus* infection from eating raw shellfish and by exposing cuts and scrapes to salt water or by receiving puncture wounds from marine animals. Others can also rarely suffer wound infections.

Chronic conditions that may make a person more susceptible to vibrio infection include liver disease, kidney disease, cancer, diabetes, and blood disorders like leukemia. People with high iron levels in their blood, from liver disease, for example, are more vulnerable to bacterial infection. In addition, use of immunosuppressive drugs, steroid therapy or chemotherapy, and alcohol may increase risk. If the immune system is suppressed, it is difficult for the body to fight the bacteria.

To avoid the risk of blood poisoning, persons in these categories should avoid eating raw shellfish, especially oysters. Cooked seafood should pose no threat to these persons, and properly chilled raw oysters pose no threat to healthy persons.

Infection can also be caused by a new puncture or by exposure of existing wounds or ulcers to salt water. Chronic disease conditions like diabetes or arthritis may also increase risk of wound infection, but some healthy individuals can become infected. Watermen can be exposed to vibrio infection while harvesting or cleaning shellfish and working in seawater. Everyone should avoid puncture wounds when working in salt water by wearing gloves and protective clothing.

Certainly a high-risk person should report to his or her doctor a severe reaction to raw shellfish, and everyone should report any unusual skin infection that results from a wound in salt water. Incubation is rapid; symptoms like fever, chills, low blood pressure, diarrhea and seizures can appear within 16

hours. Skin sores or lesions are characterized by redness, swelling, and frequently intense pain. The drugs commonly used to treat *V. vulnificus* are tetracyclines, chloramphenicol and aminoglycoside antibiotics. Skin infections from vibrio can result in amputation of affected limbs or, in severe cases, can cause death.

V. vulnificus has recently been identified as a dangerous, salt-requiring bacteria. It has been isolated from seawater, sediment, plankton and animals. The risk of infection from ingestion is associated with raw oysters. Oysters, clams, crabs, fish spines, and barnacles can cause wound infections. Most infections occur between May and October when salinity and temperature are highest.

V. vulnificus is one of several types of vibrio bacteria which occur world-wide. One of the most notorious vibrio species is cholera, which causes severe diarrhea in primarily undeveloped countries, but rarely in North America. The high mortality rate is primarily due to shock from severe dehydration. Vibrio bacteria, including *V. vulnificus* and types resembling *V. cholera*, occur naturally along United States coastal waters, including the Chesapeake Bay.

Incidence of *Vibrio vulnificus* infections is rare; less than 100 people have died from diagnosed cases in the 10 years since the disease has been recognized. Infections occur twice as frequently among men as women and mostly in those over the age of 40. In a vibrio disease study in southern Louisiana, the chance of infection from ingestion of raw shellfish was 1 in 200,000. The chance of a wound infection was 1 in 300,000. Fatality rates for high-risk persons from ingestion range from 46 to 61 percent. The possibility of death from wound infections is 7 to 22 percent.

Ten cases of *V. vulnificus* were diagnosed by the Virginia State Health Lab between 1974 and 1979, according to Dr. Carl Armstrong, director of Virginia's Division of Health Hazards Control. Of these 10 cases, three were blood poisoning from eating. Of these three, one died. Five cases were skin infections, and two cases were of indeterminate cause. Nine of the 10 patients were males over 51; of these, two had histories of alcohol abuse and liver disease, one each had diabetes, lung cancer, or arthritis, and four had no disease history. The tenth case was an 8-year old girl who contracted a vibrio ear infection when swimming in salt water with a perforated eardrum; she recovered with antibiotic treatment. During that six-year period, other cases of vibrio infections may have occurred that were not reported or not diagnosed.

Among four cases with *V. vulnificus* skin infections reported since 1980 in Tidewater Virginia, two very sick patients were admitted to Rappahannock General Hospital in Kilmarnock. The first patient, an elderly male, had been treated with steroids and chemotherapy for many years for severe rheumatoid arthritis. Frequently exposed to salt water, the patient had many scrapes and wounds on his arms and legs. He became ill with a high fever, nausea, diarrhea, and blisters on the skin on his left arm. Shortly thereafter, he was admitted to the hospital in shock and gravely ill. *V. vulnificus* was identified in culture specimens from his blood, stool and skin lesions. Despite aggressive therapy with appropriate


antibiotics, this man died.

The second patient at Rappahannock was an elderly woman who had diabetes and recurrent breast cancer. While she was handling a peeler crab trap in salt water, a catfish spine punctured her left hand. The following day she had a high fever and sudden swelling and redness of her entire left hand. *V. vulnificus* was isolated from her blood, and she responded extremely well to antibiotics.

In 1981 a retired construction worker in Newport News was infected with vibrio by picking crabs. Because he had recently had a lung removed, his system had no strength to fight the infection. After three weeks in Riverside and Johnston-Willis Hospitals, his left arm was amputated to save his life.

During the summer of 1984 an elderly male punctured his left forearm with a catfish spine. He was admitted to the Williamsburg Hospital emergency room with fever, chills, sweat, nausea, vomiting and chest pain. This man had had coronary artery bypass surgery 18 months earlier. During his nine-day hospitalization, his wound infection was identified as vibrio. Skin grafts were necessary to treat the dead tissue on his left arm.

Vibrio vulnificus infections are rare, but high-risk persons should be aware of the threat to them and should take special precautions to eat shellfish well-cooked. Everyone should avoid puncture wounds when handling marine animals by wearing protective clothing and avoid exposing existing cuts to salt water.



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