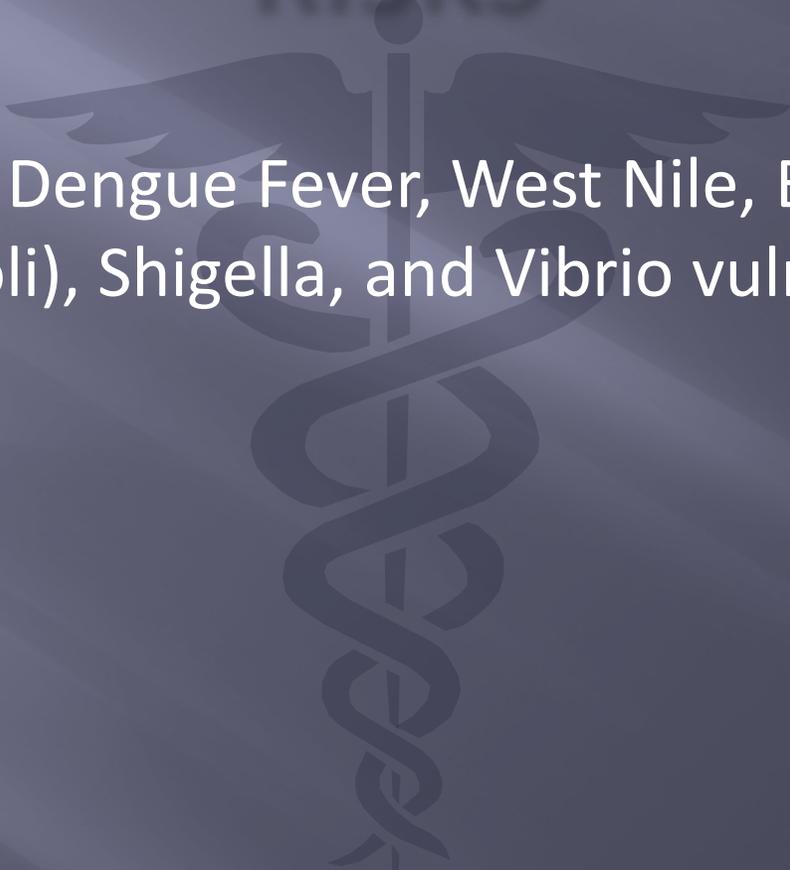


HURRICANE HARVEY POST STORM HEALTH RISKS

Tetanus, Zika, Dengue Fever, West Nile, Escherichia coli (E. coli), Shigella, and Vibrio vulnificus



About Tetanus

- ▣ Commonly known as “lockjaw”
- ▣ Tetanus is different from other vaccine-preventable diseases because it does not spread from person to person. The bacteria are usually found in soil, dust, and manure and enter the body through breaks in the skin — usually cuts or puncture wounds caused by contaminated objects.
- ▣ Today, tetanus is uncommon in the United States, with an average of 30 reported cases each year. Nearly all cases of tetanus are among people who have never received a tetanus vaccine, or adults who don't stay up to date on their 10-year booster shots.

Common Ways Tetanus Gets Into Your Body

- ▣ The spores can get into the body through broken skin, usually through injuries from contaminated objects. Certain breaks in the skin are more likely to get infected with tetanus bacteria. These include:
 - Wounds contaminated with dirt, poop (feces), or spit (saliva)
 - Wounds caused by an object puncturing the skin (puncture wounds), like a nail or needle
 - Burns
 - Crush injuries
 - Injuries with dead tissue

Time from Exposure to Illness

- ▣ The incubation period — time from exposure to illness — is usually between 3 and 21 days (average 10 days), although it may range from one day to several months, depending on the kind of wound. Most cases occur within 14 days. In general, shorter incubation periods are seen with more heavily contaminated wounds, more serious disease, and a worse outcome (prognosis)

Symptoms

Tetanus is often called “lockjaw” because one of the most common signs of this infection is tightening of the jaw muscles. Tetanus infection can lead to serious health problems, including being unable to open the mouth and having trouble swallowing and breathing.

- ▣ The first sign is most commonly spasms of the muscles of the jaw, or “lockjaw.”
- ▣ Jaw cramping
- ▣ Sudden, involuntary muscle tightening (muscle spasms) — often in the stomach
- ▣ Painful muscle stiffness all over the body
- ▣ Trouble swallowing
- ▣ Jerking or staring (seizures)
- ▣ Headache
- ▣ Fever and sweating
- ▣ Changes in blood pressure and a fast heart rate

Complications

- ▣ Serious health problems that can happen because of tetanus include:
 - Uncontrolled/involuntary tightening of the vocal cords (laryngospasm)
 - Broken bones (fractures)
 - Infections gotten by a patient during a hospital visit (hospital-acquired infections)
 - Blockage of the main artery of the lung or one of its branches by a blood clot that has travelled from elsewhere in the body through the bloodstream (pulmonary embolism)
 - Pneumonia, a lung infection, that develops by breathing in foreign materials (aspiration pneumonia)
 - Breathing difficulty, possibly leading to death (1 to 2 in 10 cases are fatal)

Diagnosis and Treatment

▣ **Diagnosis**

- Doctors can diagnose tetanus by examining the patient and looking for certain signs and symptoms.
- There are no hospital lab tests that can confirm tetanus.

▣ **Treatment**

- Tetanus is a medical emergency requiring:
 - ▣ Care in the hospital
 - ▣ Immediate treatment with medicine called human tetanus immune globulin (TIG)
 - ▣ Aggressive wound care
 - ▣ Drugs to control muscle spasms
 - ▣ Antibiotics

Prevention, Vaccination and Good Wound Care

- ▣ Vaccination and good wound care are important to help prevent tetanus infection. Doctors can also use a medicine to help prevent tetanus in cases where someone is seriously hurt and doesn't have protection from tetanus vaccines.
 - **Vaccination**
 - Being up to date with your tetanus vaccine is the best tool to prevent tetanus. Protection from vaccines, as well as a prior infection, do not last a lifetime. This means that if you had tetanus or were vaccinated before, you still need to get vaccinated regularly to keep a high level of protection against this serious disease. Tetanus vaccines are recommended for people of all ages, with booster shots throughout life. [Learn who needs to be vaccinated and when\(https://www.cdc.gov/vaccines/vpd/dtap-tdap/public/index.html\)](https://www.cdc.gov/vaccines/vpd/dtap-tdap/public/index.html).
 - **Good Wound Care**
 - ▣ Immediate and good wound care can also help prevent infection.
 - ▣ Don't delay first aid of even minor, non-infected wounds like blisters, scrapes, or any break in the skin.
 - ▣ Wash hands often with soap and water or use an alcohol-based hand rub if washing is not possible.
 - ▣ Consult your doctor if you have concerns and need further advice.

Zika, Dengue Fever and West Nile

Also expect an increase in Zika, Dengue Fever and West Nile cases.

▣ Dengue Fever:

- ▣ Dengue hemorrhagic fever (DHF) is characterized by a fever that lasts from 2 to 7 days, with general signs and symptoms consistent with dengue fever. When the fever declines, warning signs may develop. This marks the beginning of a 24 to 48 hour period when the smallest blood vessels (capillaries) become excessively permeable (“leaky”), allowing the fluid component to escape from the blood vessels into the peritoneum (causing ascites) and pleural cavity (leading to pleural effusions). This may lead to failure of the circulatory system and shock, and possibly death without prompt, appropriate treatment. In addition, the patient with DHF has a low platelet count and hemorrhagic manifestations, tendency to bruise easily or have other types of skin hemorrhages, bleeding nose or gums, and possibly internal bleeding.
- ▣ For more information visit: <https://www.cdc.gov/dengue/clinicallylab/clinical.html>

West Nile Virus

- **No symptoms in most people.** Most people (8 out of 10) infected with West Nile virus do not develop any symptoms.
- **Febrile illness (fever) in some people.** About 1 in 5 people who are infected develop a fever with other symptoms such as headache, body aches, joint pains, vomiting, diarrhea, or rash. Most people with this type of West Nile virus disease recover completely, but fatigue and weakness can last for weeks or months.
- **Serious symptoms in a few people.** About 1 in 150 people who are infected develop a severe illness affecting the central nervous system such as encephalitis (inflammation of the brain) or meningitis (inflammation of the membranes that surround the brain and spinal cord).
- Symptoms of severe illness include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis.
- Severe illness can occur in people of any age; however, people over 60 years of age are at greater risk. People with certain medical conditions, such as cancer, diabetes, hypertension, kidney disease, and people who have received organ transplants, are also at greater risk.
- Recovery from severe illness might take several weeks or months. Some effects to the central nervous system might be permanent.
- About 1 out of 10 people who develop severe illness affecting the central nervous system die.

Escherichia coli (E. coli), Shigella, and Vibrio vulnificus

▣ E.coli

- Enterotoxigenic *Escherichia coli* (*E. coli*), or ETEC, is an important cause of bacterial diarrheal illness. Infection with ETEC is the leading cause of travelers' diarrhea and a major cause of diarrheal disease in lower-income countries, especially among children. ETEC is transmitted by food or water contaminated with animal or human feces. Infection can be prevented by avoiding or safely preparing foods and beverages that could be contaminated with the bacteria, as well as washing hands with soap frequently.

Escherichia coli (E. coli), Shigella, and Vibrio vulnificus

- ▣ *Shigella* germs are present in the stools of infected persons while they have diarrhea and for up to a week or two after the diarrhea has gone away. *Shigella* is very contagious; exposure to even a tiny amount of contaminated fecal matter—too small to see— can cause infection. Transmission of *Shigella* occurs when people put something in their mouths or swallow something that has come into contact with stool of a person infected with *Shigella*. This can happen when:
 - ▣ Contaminated hands touch your food or mouth. Hands can become contaminated through a variety of activities, such as touching surfaces (e.g., toys, bathroom fixtures, changing tables, diaper pails) that have been contaminated by stool from an infected person. Hands can also become contaminated with *Shigella* while changing the diaper of an infected child or caring for an infected person.
 - ▣ Eating food contaminated with *Shigella*. Food may become contaminated if food handlers have shigellosis. Produce can become contaminated if growing fields contain human sewage. Flies can breed in infected feces and then contaminate food when they land on it.
 - ▣ Swallowing recreational (for example lake or river water while swimming) or drinking water that was contaminated by infected fecal matter.
 - Symptoms of shigellosis typically start 1–2 days after exposure and include:
 - Diarrhea (sometimes bloody)
 - Fever
 - Abdominal pain
 - Tenesmus (a painful sensation of needing to pass stools even when bowels are empty)
 - *Shigella* is often resistant to antibiotics.

Escherichia coli (E. coli), Shigella, and Vibrio vulnificus

▣ Vibrio vulnificus

■ What are *Vibrio* bacteria?

- ▣ *Vibrio* bacteria naturally live in certain coastal waters and are present in higher concentrations between May and October when water temperatures are warmer.

■ How do people get vibriosis?

- ▣ Most people become infected by eating raw or undercooked shellfish, particularly oysters. Certain *Vibrio* species can also cause a skin infection when an open wound is exposed to brackish or salt water. Brackish water is a mixture of fresh and sea water. It is often found where rivers meet the sea.

■ Symptoms:

- ▣ When ingested, *Vibrio* bacteria can cause watery diarrhea, often accompanied by abdominal cramping, nausea, vomiting, fever, and chills. Usually these symptoms occur within 24 hours of ingestion and last about 3 days. Severe illness is rare and typically occurs in people with a weakened immune system.
- ▣ *Vibrio* bacteria can also cause a skin infection when an open wound is exposed to brackish or salt water. Brackish water is a mixture of fresh and sea water. It is often found where rivers meet the sea.

For More Information

- Please visit <https://www.cdc.gov/>
- ▣ **On a side note - Mental Health Issues Will Worsen**
 - People also will be dealing with emotional or mental issues, particularly those who already have mental health problems.