

# PUBLIC HEALTH REFERENCE SHEET

## Tetanus



<b>Name</b>	<i>Clostridium tetani</i>
<b>Reservoir &amp; Transmission</b>	Soil, intestines of animals A puncture wound contaminated with soil, street dust, or animal or human feces; laceration, or injection (e.g., with contaminated needle)
<b>Incubation Period</b>	Usually 3–21 days; average 8 days
<b>Common Symptoms</b>	Acute onset of hypertonia or painful muscular contractions (usually jaw and neck) and generalized muscle spasms
<b>Gold Standard Diagnostic Test</b>	Diagnosis by healthcare provider in absence of more likely diagnosis. No reliable diagnostic tests are available.
<b>Risk Groups</b>	Military Service members, policemen, and others at greater than usual risk of traumatic injury. Workers in contact with soil, sewage, and domestic animals. Adults with diabetes mellitus, and unvaccinated women of reproductive age and their newborns.
<b>Geographic Significance</b>	Worldwide

### What is tetanus?

Tetanus is an acute disease that results from an infection by bacteria called *Clostridium tetani*. When these bacteria invade the body, they produce a poison (exotoxin) that causes painful muscle contractions. Tetanus is also known as "lockjaw" because it often causes a person's neck and jaw muscles to lock, making it hard to open the mouth or swallow. The spores germinate in the presence of anaerobic conditions. The bacteria produce very potent toxins, which the blood stream and lymphatic system can disseminate throughout the body.

### What is the occurrence of tetanus?

In the U.S. since 1947, reported tetanus cases have declined more than 95% and deaths from tetanus have declined more than 99%; this was in part due to continued use of tetanus antitoxin for wound management and introduction of tetanus vaccines in the 1930s and 1940s.

### How is tetanus transmitted?

Different from other vaccine-preventable diseases, tetanus 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, often cuts or puncture wounds caused by contaminated objects. Increased risk of infection includes:

- Wounds contaminated with dirt, feces, or saliva
- Wounds caused by an object puncturing the skin, such as a nail or needle
- Burns
- Crush injuries
- Injuries with dead tissue

Tetanus has also been linked to clean superficial wounds, surgical procedures, insect bites, dental infections, compound fractures, chronic sores and infections, intravenous drug use, and intramuscular injections.

### Who is at risk for tetanus?

People who have never received a tetanus vaccine, or adults who have not remained current on their 10-year booster shots are at risk of tetanus. Neonatal tetanus usually occurs because of umbilical stump infections. Diabetes, a history of immunosuppression, and intravenous drug use may be risk factors for tetanus.

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### What are the signs and symptoms of tetanus?

Typical clinical manifestations of tetanus are from toxins interfering with the release of neurotransmitters and blocking inhibitor impulses, which leads to unopposed muscle contraction and generalized spasm and are frequently induced by sensory stimuli. Seizures may occur, and the autonomic nervous system may also be affected. A common first symptom suggestive of tetanus in older children and adults is abdominal rigidity, but this can also be seen with bites of certain poisonous spiders. The incubation period for tetanus is usually 3–21 days (average 8 days), although it may range from 1 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 severe disease, and a worse outcome of the disease.

In general, tetanus symptoms include:

- Headache
- Jaw cramping
- Muscle spasms – sudden and often in the stomach
- Painful muscle stiffness all over the body
- Trouble swallowing
- Seizures
- Fever and sweating
- High blood pressure and fast heart rate

There are three clinical forms of tetanus:

- **Generalized:** Generalized tetanus is the most common form, accounting for more than 80% of cases. The most common initial sign is spasm of the jaw muscles or “lockjaw”. Other subsequent signs can include painful spasms in other muscle groups in the neck, trunk, and extremities as well as generalized, seizure-like activity or convulsions in severe cases. Even with modern intensive care, generalized tetanus is associated with death rates of 10% to 20%. Neonatal tetanus is a form of generalized tetanus occurring in newborn infants who lack the passive protection derived from maternal antibodies.
- **Localized:** Localized tetanus is an unusual form of the disease consisting of muscle spasms in a confined area close to the site of injury. Although localized tetanus often occurs in people with partial immunity and is usually mild, progression to generalized tetanus can occur.
- **Cephalic:** The rarest form, cephalic tetanus, is associated with lesions of the head or face and may also be associated with otitis media. The incubation period is short, usually 1 to 2 days. Unlike generalized and localized tetanus, cephalic tetanus results in flaccid cranial nerve palsies rather than spasm. Spasm of the jaw muscles may also be present. Like localized tetanus, cephalic tetanus can progress to the generalized form.

### What are potential complications of tetanus?

Tetanus complications include:

- Laryngospasm
- Bone fractures
- Hypertension
- Pulmonary embolism
- Aspiration pneumonia
- Death (10–20% of cases are fatal)

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### How tetanus diagnosed?

Tetanus is diagnosed by clinical examination as there are no confirmatory laboratory tests.

### How is tetanus treated?

**Tetanus is a medical emergency** requiring hospitalization, immediate treatment with human tetanus immune globulin (TIG), tetanus toxoid, drugs to control muscle spasms, aggressive wound care, and antibiotics. Depending on severity of infection, mechanical ventilation may be required. Begin or continue active immunization with a tetanus toxoid-containing vaccine as soon as the person's condition has stabilized.

### How can tetanus be prevented?

Tetanus disease does not result in tetanus immunity. Vaccination with tetanus toxoid, primary series, and periodic boosters, is recommended for infants, children, teens, and adults to prevent tetanus. The primary series is a 5-dose series of the DTaP (Diphtheria, tetanus, and acellular pertussis) vaccine starting at 2 months of age. A booster dose of Tdap (tetanus, diphtheria, acellular pertussis) or Td (tetanus, diphtheria) is recommended every 10 years. In 2023, Sanofi Pasteur, Inc. stopped manufacturing the diphtheria and tetanus toxoids absorbed vaccine, known as DT.

### What are some public health considerations?

- Note the patient's tetanus immunization history.
- There is no confirmed case classification for tetanus.

### References

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions*.

<https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines>

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Tetanus," Centers for Disease Control and Prevention (CDC), last reviewed August 29, 2022.

<https://www.cdc.gov/tetanus/index.html>

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