

## TETANUS (Lockjaw)

### REPORTING INFORMATION

- **Class B:** Report by the end of the next business day after the case or suspected case presents and/or a positive laboratory result to the local public health department where the patient resides. If patient residence is unknown, report to the local public health department in which the reporting health care provider or laboratory is located.
- Reporting Form(s) and/or Mechanism: [Ohio Confidential Reportable Disease form](#) (HEA 3334), [Positive Laboratory Findings for Reportable Disease form](#) (HEA 3333), the local health department via the Ohio Disease Reporting System (ODRS), or telephone.
- [CDC Tetanus Surveillance Worksheet](#) is available for use to assist local health department disease investigation. Information collected from the form should be entered in ODRS and not sent to the Ohio Department of Health (ODH), unless otherwise requested.

### AGENT

*Clostridium tetani*, an anaerobic, spore-forming bacillus.

### CASE DEFINITION

#### Clinical Case Definition

Acute illness with muscle spasms or hypertonia.

#### Case Classification

Probable: A clinically compatible case and diagnosis of tetanus by a health care provider or death, with tetanus listed on the death certificate as the cause of death or a significant condition contributing to death.

Not a Case: This status will not generally be used when reporting a case, but may be used to reclassify a report if investigation revealed that it was not a case.

#### Comment:

There is no definition for "confirmed" tetanus.

### SIGNS AND SYMPTOMS

The clinical symptoms are not due to infection but result from the production of a specific neurotoxin, tetanospasmin, which is produced at the site of injury and acts primarily on the spinal cord. It also acts on the brain, motor end plates and autonomic nerves.

### DIAGNOSIS

Suspicious wound or debrided tissue may be cultured anaerobically for *C. tetani*, but false negative culture results occur in up to two-thirds of patients. Diagnosis is frequently made on clinical symptoms alone.

### EPIDEMIOLOGY

#### Source

Tetanus spores are found in soil, dust and animal or human feces. Infection occurs when a wound is contaminated with tetanus spores.

**Occurrence**

Worldwide. Tetanus is seen in all ages and occurs more frequently in agricultural regions and under-developed areas where tetanus immunization is inadequate. In Ohio, 0-2 cases are reported annually.

**Mode of Transmission**

Transmission occurs when tetanus spores are introduced into the body during an injury, usually a puncture wound or laceration contaminated with soil, dust or feces. Tetanus neonatorum usually results from infection of the unhealed umbilicus, particularly when the umbilical cord is treated with contaminated substances (a practice in some developing countries). Tetanus is not transmitted person to person.

**Incubation Period**

The incubation period ranges from 3 to 21 days, depending upon the severity, location and extent of contamination of the wound. Most cases occur within 8 days of exposure, although the incubation period may range from one day to several months, depending on the kind of wound. In general, the further the injury site is from the central nervous system, the longer the incubation period. Shorter incubation periods are associated with a higher chance of death. In neonatal tetanus, symptoms occur about seven days after birth (range 4-14 days).

**PUBLIC HEALTH MANAGEMENT****Case**Treatment

Tetanus immune globulin (TIG-Human) is preferred to equine tetanus antitoxin for treatment. Although the optimal therapeutic dose has not been established, experts recommend 500 international units (IU), which appears to be as effective as higher doses ranging from 3,000 to 6,000 IU and causes less discomfort. If TIG is not available, immune globulin intravenous (IGIV) can be used at a dose of 200 to 400 milligrams per kilogram (mg/kg). However, the Food and Drug Administration has not approved IGIV for this use. In addition, anti-tetanus antibody content varies from lot to lot.

Isolation

No isolation procedures are required.

**Contacts**

No management is necessary.

**Prevention and Control**

Children should be vaccinated against tetanus with the DTaP (diphtheria toxoid in combination with tetanus toxoid and acellular pertussis) vaccine. This vaccine should be given at 2, 4, 6 and 15 to 18 months of age, and between 4 and 6 years of age. Adults with uncertain histories of a complete primary vaccination series with diphtheria and tetanus toxoid-containing vaccines should begin or complete a primary vaccination series. Older children and adults who have completed the primary series should receive Td (tetanus and diphtheria toxoid) boosters every 10 years to maintain immunity. In a small percentage of individuals, antitoxin levels fall below the minimum protective level before 10 years have elapsed. One lifetime dose of Tdap (tetanus, diphtheria, and acellular pertussis) is recommended for people 11 years of age and older as one of these boosters to provide protection against pertussis. Pregnancy is an exception to the one-dose recommendation (see below).

In February 2013, the Advisory Committee on Immunization Practices (ACIP) published updated recommendations for pregnant women, stating that:

- A dose of Tdap should be given to a pregnant woman during each pregnancy, regardless of the patient's previous history of receiving Tdap.
- The optimal timing of this dose is between 27 and 36 weeks of gestation – but it may be given at any time during the pregnancy.
- This dose should be given regardless of the interval since any previous dose of Tdap.
- A woman who did not get a dose of Tdap during her pregnancy, and has never received a dose of Tdap in the past, should get a dose of Tdap immediately post-partum. Women previously vaccinated with Tdap should not get this dose.
- A pregnant woman who is due for a routine 10-year Td booster, or for whom tetanus toxoid is indicated for wound management, should receive Tdap.

Please see the Centers for Disease Control and Prevention (CDC) website for the most current ACIP recommendations: <http://www.cdc.gov/vaccines/hcp/acip-recs/index.html>.

Ohio School Requirement: The DTaP vaccination series is required for school entry with a minimum of 4 doses if the last dose was received after the fourth birthday. A Tdap booster dose is required prior to entry to 7<sup>th</sup> grade.

**What is tetanus?**

Tetanus is an acute, often fatal disease caused by a toxin (poison) produced by the bacterium (*Clostridium tetani*). It is commonly called lockjaw. As a result of widespread immunization, tetanus is now a rare disease.

**Who gets tetanus?**

Tetanus occurs more often in older people, although in recent years increasing numbers of younger individuals have gotten tetanus. This may be due in part to an increased number of cases among young injection drug users. Almost all reported cases of tetanus are in persons who have either never been vaccinated, or who completed a series of vaccines in childhood, but have not had a booster shot in the preceding 10 years.

**How is tetanus spread?**

Tetanus is contracted through a wound which becomes contaminated with the organism. It is not transmitted from person to person.

**Where is the tetanus germ found?**

The tetanus germ is present throughout the environment and is commonly found in soil and animal manure.

**What are the symptoms of tetanus?**

A common first sign of tetanus is muscular stiffness in the jaw (lockjaw), followed by stiffness of the neck, difficulty in swallowing, rigidity of abdominal muscles, spasms, sweating and fever.

**How soon after infection do symptoms occur?**

The incubation period is usually between 3 and 21 days but may range from one day to several months, depending on the kind of wound. Shorter incubation periods are associated with more heavily contaminated wounds.

**Does past infection with tetanus make a person immune?**

No. Recovery from tetanus may not result in immunity. Second attacks can occur and immunization is indicated after recovery.

**What is the treatment for tetanus?**

Once a person develops symptoms, there is no treatment for tetanus. The best treatment is prevention with immunization. Wounds should be thoroughly cleaned and dead or devitalized tissue removed. With wounds that involve the possibility of tetanus contamination, a patient with an unknown or incomplete history of tetanus vaccination needs a tetanus/diphtheria (Td) shot and a dose of tetanus immune globulin (TIG) as soon as possible. A person with a documented series of 3 Td (tetanus/diphtheria) doses who has received a booster dose within the last 10 years should be protected. However, to ensure adequate protection, a booster dose of vaccine may still be given if it has been more than 5 years since the last dose and the wound is other than clean and minor.

**What are the complications associated with tetanus?**

Complications include spasm of the vocal cords and/or spasms of the respiratory muscles causing interference with breathing. Other complications include fractures of the spine or long bones, hypertension, abnormal heartbeats, coma, generalized infection, clotting in the blood vessels of the lung, pneumonia and death.

**Is there a vaccine for tetanus?**

An effective vaccine called tetanus toxoid has been available for many years. Tetanus toxoid in combination with diphtheria toxoid and acellular pertussis vaccine (DTaP) is given at two, four, six and 12 to 15 months of age, and between four and six years of age. Children and adults who are seven years of age or older requiring a primary series of tetanus protection should receive two doses of Td (tetanus and diphtheria) toxoid and one dose of Tdap (tetanus/diphtheria/acellular pertussis). A Td booster shot is recommended every 10 years. It is also recommended that both adolescents (age 11-18) and adults receive as a booster a one-time dose of Tdap to provide protection against pertussis.

**What can be done to prevent the spread of tetanus?**

The single most important preventive measure is immunization.