



# TETANUS

1. **Agent:** Exotoxin of *Clostridium tetani*, a Gram-positive, spore forming bacillus.
2. **Identification:**
  - **Symptoms:** Acute paralytic disease due to tetanus toxin produced by tetanus bacilli; characterized by painful muscle contractions, starting in masseter and neck muscles causing trismus or “lockjaw,” difficulty swallowing, jerking or staring, seizures, headaches and fever. Muscle contraction sometimes confined to region of injury in localized tetanus, but often, patients will have generalized tetanus with disease presenting in a descending pattern. Spasms can last weeks.
    - Neonatal tetanus is a form of generalized tetanus affecting newborn infants when they are born to a non-immunized mother. It occurs particularly when stump is cut with unsterile instrument.
  - **Differential Diagnosis:** Hypocalcemic tetany, reaction to antipsychotic and anti-depressive medications, central nervous system (CNS) disturbances, various types of poisonings.
  - **Diagnosis:** Clinical history, immunization history and anaerobic culture of suspicious wound or debrided tissue. Diagnosis is usually made clinically by excluding other possibilities.
3. **Incubation:** 3 to 21 days, dependent on character, extent, and location of wound; average 8-10 days. The further the injury site is from the central nervous system, the longer the incubation period. In neonatal tetanus, symptoms appear 4-14 days after birth, averaging 7 days.
4. **Reservoir:** Organism is normal member of intestinal flora of animals and man; frequently found in soil worldwide.
5. **Source:** Soil, dust, animal or human feces, plaster, sutures, injection drug use.
6. **Transmission:** Tetanus spores enter the body usually through a cut or wound; occasionally from parenteral injection. Neonatal tetanus occurs through infection of umbilical stump.
7. **Communicability:** Not contagious from human to human.
8. **Diagnosis:** Diagnosis is clinical. *C. tetani* can be recovered from patients without clinical symptoms. Healthcare providers diagnose tetanus by looking for clinical signs and symptoms.
9. **Specific Treatment for cases:**
  - **Hospitalization:** For supportive care and maintenance of adequate airway
  - **Wound care:** Necrotic and/or foreign material should be removed.
  - **Tetanus immune globulin (TIG):** Removes unbound tetanus toxin. CDC and AAP Red Book recommends that patients with tetanus be treated immediately with 500 IU intramuscular injection of TIG. IVIG can be given if TIG not available.
  - **Agents to control muscle spasm**
  - **Antibiotics:** Oral (or IV) metronidazole (30 mg/kg/day) given in 4 divided doses (maximum 4 g/day) for 10 to 14 days. Parenteral penicillin G, 100,000 U/kg/day, every 4 to 6 hours can be given as an alternative.
  - **Immunization:** The disease does not confer immunity. The primary series of immunizations is needed and should be initiated as soon as patient’s condition is stabilized. Following a properly administered primary series, most people retain antitoxin levels that exceed the minimal protective level for 10 years after the last dose.

## REPORTING PROCEDURES

1. **Reportable.** (California Code of Regulations, Section 2500.) Report case or suspect case within 7 calendar days from the time of identification by mail, telephone, fax, or electronic report.



2. **Report Forms:** [TETANUS SURVEILLANCE WORKSHEET](#)  
[INSTRUCTIONS FOR COMPLETING THE TETANUS SURVEILLANCE WORKSHEET](#)

[SUPPLEMENTAL INJECTING DRUG USE](#)

3. **Epidemiologic Data:**

- a. Description of wound including: date of injury, anatomic site, type, contamination, depth, and signs of infection.
- b. Immunization history including number of doses, dates administered, and type of vaccine.
- c. History of military or National Guard service, as evidence of past immunization.
- d. Medical care for the presumptive wound or lesion that led to tetanus before tetanus symptoms began, including information about non-acute wounds and associated medical history.
- e. Clinical course: type of tetanus disease, TIG therapy given.

**CONTROL OF CASE, CONTACTS & CARRIERS**

Investigate within 7 days.

**CASE:**

- **Confirmed:** Not applicable
- **Probable:** In the absence of a more likely diagnosis, an acute illness with muscle spasms or hypertonia AND diagnosis of tetanus by a healthcare provider; OR death, with tetanus listed on the death certificate as the cause of death or a significant condition contributing to death

**ISOLATION FOR CASE:** Not required.

**QUARANTINE FOR CONTACTS:** Not applicable.

**PREVENTION-EDUCATION**

1. DTaP (diphtheria, tetanus, and acellular pertussis), Td (tetanus, diphtheria), and Tdap (tetanus, diphtheria, and acellular pertussis) vaccines all protect against tetanus. Children need five doses of DTaP between ages 2 months and 6 years, and a Tdap booster at age 11 or 12. Adults need a booster every 10 years after the primary series has been completed. The Tdap vaccine is recommended for one of the booster doses in adults aged 18-64 years. Additionally, 1 dose of Tdap should be used with each pregnancy, as well as in adults and adolescents who have or anticipate having close contact with an infant younger than 12 months, and for health care personnel. (Please consult current [Advisory Committee on Immunization Practices](#) recommendations on the use of Tdap vaccine.)
  - Recovery from disease does not result in immunity. Primary immunization is indicated after recovery for adults and neonates.
2. Consult [CDC's Clinical Overview of Tetanus](#) including summary of risk factors, [Clinical Guidance for Wound Management to Prevent Tetanus](#), and [Vaccination Information](#).
3. Remove foreign matter from wounds by through cleansing. Give TIG in a preventive dose, as indicated for contaminated wounds. For persons with unknown or uncertain history of receiving prior doses of tetanus toxoid containing vaccines, they should complete a primary series as part of routine wound management. For contaminated "dirty" wounds, a Td should be given even if the person has received 3 or more doses of a tetanus toxoid containing vaccine, if 5 or more years have elapsed since the last dose. See below table regarding Tetanus prophylaxis for more details of vaccine as well as B71 Tetanus Immunoglobulin (<http://publichealth.lacounty.gov/ip/providers/B71/TIG%209-13-18.pdf>)



**Guide to Tetanus Prophylaxis with TIG in Routine Wound Management**

| History of adsorbed tetanus toxoid-containing vaccines (doses) | Clean, minor wounds DTaP, Tdap or Td <sup>†</sup> | Clean, minor wounds TIG <sup>‡</sup> | All other wounds* DTaP, Tdap or Td <sup>†</sup> | All other wounds* TIG <sup>‡</sup> |
|--|---|--------------------------------------|---|------------------------------------|
| Unknown or < 3 doses   | Yes   | No                                   | Yes   | Yes                                |
| ≥3   | No <sup>§</sup>                                   | No                                   | No**  | No                                 |

\*Such as, but not limited to, wounds contaminated with dirt, feces, soil, or saliva; puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frostbite.

<sup>†</sup>DTaP is recommended for children younger than age 7 years. Tdap is preferred to Td for persons age 11 years or older who have not previously received Tdap. Persons age 7 years or older who are not fully immunized against pertussis, tetanus, or diphtheria should receive one dose of Tdap (preferably the first) for wound management and as part of the catch-up series; if additional tetanus toxoid-containing doses are required, either Td or Tdap vaccine can be used.

<sup>‡</sup>People with HIV infection or severe immunodeficiency who have contaminated wounds (including minor wounds) should also receive TIG, regardless of their history of tetanus immunizations.

<sup>§</sup>Yes, if ≥10 years since the last tetanus toxoid-containing vaccine dose.

\*\*Yes, if ≥5 years since the last tetanus toxoid-containing vaccine dose.

4. Immunization is not contraindicated during pregnancy. Prevention of neonatal tetanus can be accomplished by prenatally immunizing the mother. Un-immunized mothers should receive one dose of Tdap during pregnancy and another dose of tetanus toxoid or Td at

least 4 weeks apart; the 3rd dose should be given 6-12 months after the 2nd dose and preferably at least 2 weeks before the expected delivery date.

5. California law requires exclusion from school if immunization status is not in compliance with *California Code of Regulations*, Title 17.
6. Education of mothers, relatives, and attendants in the practice of strict asepsis of the umbilical stump of newborn infants.

**DIAGNOSTIC PROCEDURES:**

Consult the Public Health Laboratory.