

TETANUS

CDC RECOMMENDS 1 BOOSTER DOSE EVERY 10 YEARS

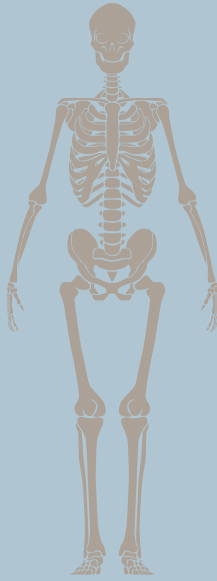
Tenivac can cause:

- + Lymphadenopathy
- + Erythematous rash
- + Maculopapular rash
- + Urticaria (hives)
- + Pruritus (itchy skin)
- + Bronchospasm
- + Angioedema
- + Paresthesia
- + Dizziness
- + Syncope (fainting)
- + Guillain-Barré syndrome
- + Vomiting
- + Myalgia (muscle pain)
- + Pain in extremities

- + Injection site reactions (including inflammation, mass, edema, induration, warmth, pruritus, cellulitis, discomfort)
- + Edema peripheral
- + Fatigue

Tdvax can cause:

- + Arthus Reactions
- + Guillain-Barré syndrome
- + Dizziness
- + Headache
- + Convulsions
- + Myalgia (muscle pain)
- + Musculoskeletal stiffness or pain
- + Arthralgia (joint pain)
- + Rash
- + Nausea



SOURCES FROM FDA + SANOFI + MASSBIOLOGICS

HOW MANY TETANUS PRODUCTS ARE THERE?

TETANUS VACCINES



DTaP
for young children

Tdap
for preteens

Td or Tdap
for adults

- ✓ 2, 4, and 6 months
- ✓ 15 through 18 months
- ✓ 4 through 6 years

✓ 11 through 12 years

✓ Every 10 years

www.cdc.gov/tetanus



Each is designed to prevent multiple illnesses.

DTaP: Diphtheria, Tetanus, and Acellular Pertussis

Tdap: Tetanus, Diphtheria, and Acellular pertussis

Td: Tetanus and Diphtheria

Please see the Dtap + Tdap posts for deep dives into adverse reactions. This post will focus on the adult booster, Td.

WHAT IS TETANUS?

Tetanus is a bacterial infection frequently referred to as "lockjaw"

Background and Epidemiology of Tetanus

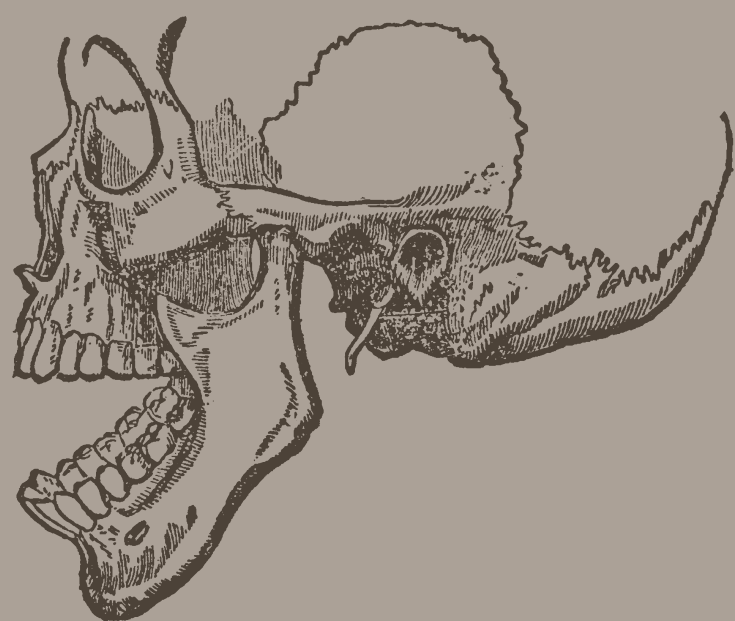
Tetanus is a life-threatening but vaccine-preventable disease caused by a potent neurotoxin produced by *Clostridium tetani*. The organism is a ubiquitous, spore-forming, motile Gram-positive bacillus found in high concentrations in soil and animal excrement. *C. tetani* spores enter the body through breaches in the skin or mucous membranes. Germination of *C. tetani* spores occurs under anaerobic conditions, such as in necrotic tissue that can result from deep puncture wounds or blunt trauma. *C. tetani* bacilli vegetate and produce tetanospasmin, a powerful exotoxin that binds irreversibly with neural tissue and causes spasms and rigidity of skeletal muscles. Direct person-to-person transmission of *C. tetani* does not occur (45).

The incubation period from injury to symptom onset varies from 3 to 21 days (median: 7 days), with extremes of 1 day to several months. The incubation period depends on the severity and site of the wound. Shorter incubation periods are associated with more severe disease and a poorer prognosis; longer incubation periods are associated with injuries furthest from the central nervous system. The course of disease is variable but is usually intense for ≥ 4 weeks before subsiding. The convalescent period is usually protracted and long-term neurologic sequelae and intellectual and behavioral abnormalities might follow recovery. The case-fatality ratio for tetanus is highest in infants and the elderly, and can be as high as 100% without high-quality medical care, but is approximately 10%–20% even in modern health care facilities (46).

Diabetes, a history of immunosuppression, and intravenous drug use may be risk factors for tetanus. [10,11] From 2009 through 2017, persons with diabetes accounted for 12% of all reported tetanus cases, and 26% of all tetanus deaths. Intravenous drug users (IDUs) accounted for 8% of cases from 2009 through 2017; [2] a cluster of cases in IDUs was noted in California in the 1990s. [11]

CDC'S HISTORY OF TETANUS

In the United States, reported mortality due to tetanus has declined at a constant rate since the early 1900s, and documented tetanus incidence has declined since the mid- to late 1940s, when national reporting of tetanus cases began (Figure 1). Several factors have contributed to the decline in tetanus morbidity and mortality, including the widespread use of tetanus toxoid-containing vaccines since the late 1940s. Other factors include improved wound care and postexposure use of tetanus immune globulin (TIG), either for prophylaxis in wound management or for treatment of tetanus. In addition, increased rural-to-urban migration with consequent decreased exposure to tetanus spores may also have contributed to the decline in tetanus mortality noted during the first half of the 20th century. [1]



According to this graph, the death rate was already drastically declining when a product was brought to market.

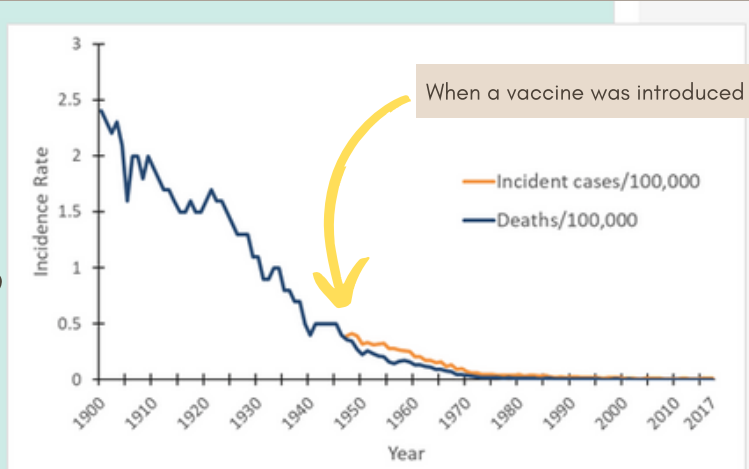


Figure 1. Mortality and incidence rates of tetanus reported in the United States, 1900–2017. [view](#)

cdc.gov/vaccines/pubs/surv-manual/chpt16-tetanus.html

Let's look at some reactions to the Tetanus shot.

MUSCULOSKELETAL STIFFNESS OR PAIN

Musculoskeletal pain refers to pain in the muscles, bones, ligaments, tendons, and nerves. You can feel this pain in just one area of the body, such as your back. You can also have it throughout your body if you have a widespread condition like fibromyalgia.

The pain can range from mild to severe enough to interfere with your day-to-day life. It may start suddenly and be short-lived, which is called acute pain. Pain that lasts for more than 3 to 6 months is called chronic pain.

Isn't this the very symptom this product is trying to prevent?

Interestingly, these products have caused the majority of Tetanus symptoms listed by the CDC.

Does this meet the definition of an effective product?

Symptoms of tetanus include:

- Jaw cramping ✓
- Sudden, involuntary muscle tightening (muscle spasms) often in the stomach ✓
- Painful muscle stiffness all over the body ✓
- Trouble swallowing ✓ Bronchospasm
- Jerking or staring (seizures) ✓
- Headache ✓
- Fever and sweating ✓ Pyrexia
- Changes in blood pressure and heart rate

URTICARIA (HIVES)

Hives are swollen, pale red bumps, patches, or welts on the skin that appear suddenly. They can happen because of allergies or other reasons. Your doctor may call them urticaria.

Hives usually itch, but they may also burn or sting. They can show up anywhere on your body, including the face, lips, tongue, throat, and ears. They range in size from a pencil eraser to a dinner plate and may join together to form larger areas known as plaques. They can last for hours, weeks, or even years.

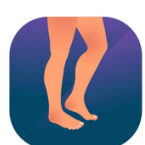


GUILLAIN-BARRÉ SYNDROME

WEAKNESS and **TINGLING** in Your Extremities are Usually the First Symptoms

GUILLAIN BARRE SYNDROME

Guillain Barre Syndrome is a Rare Disorder in which your Body's **Immune System** attacks your **Nerves**



Limb Weakness



Difficulty Swallowing



Shortness of Breath



Flaccid Paralysis

