CONDITION

Tetanus

Tetanus is a serious condition in which a bacterial toxin causes muscle stiffness and painful spasms.

WHAT IT IS
Serious toxin-related condition causing muscle stiffness and spasms

BODY SYSTEM
Nervous system and muscles

MAIN SYMPTOMS
Locked jaw, muscle stiffness, painful spasms, trouble swallowing

WHAT CAUSES IT
Infection by toxin-producing *Clostridium tetani* bacteria

HOW IT IS DIAGNOSED
Clinical examination; no test reliably confirms it

MAIN TREATMENT
Antitoxin, wound care, antibiotics, and intensive supportive care

CAN IT BE CURED?
Sometimes - prompt intensive treatment can succeed

IS IT AN EMERGENCY?
Yes - suspected symptoms after a wound

LONG-TERM OUTLOOK
Often prolonged recovery, with risk of death in severe cases

Overview

Tetanus is a serious condition caused by a toxin made by the bacterium Clostridium tetani . The toxin affects the nervous system, causing muscles to become rigid or go into painful spasms.

The bacteria form hardy spores that are found widely in soil, dust, and animal manure. Spores can enter the body through broken skin. Deep puncture wounds are a well-known route, but tetanus can also follow burns, crush injuries, contaminated cuts, injections, surgery, or wounds that seemed minor.

Tetanus does not spread from person to person. Rust itself does not cause tetanus, although a rusty or dirty object may create a puncture wound and carry contaminated soil.

Symptoms often begin in the jaw and neck. The term "lockjaw" refers to jaw stiffness that makes opening the mouth difficult. Spasms may later affect the chest, abdomen, back, and limbs. Severe tetanus can interfere with breathing, swallowing, heart rate, and blood pressure.

Tetanus needs urgent hospital treatment. Vaccination has made it preventable in many cases, but having tetanus once does not create reliable immunity. People who recover still need vaccination.

Symptoms

Symptoms usually develop several days to several weeks after bacteria enter a wound. A shorter time between injury and symptoms can be linked with more severe illness. In some cases, the original wound has already healed or is too small to be noticed.

Possible early symptoms include:

As the condition develops, muscles may tighten suddenly and painfully. Light, noise, touch, or routine care can trigger these spasms. A strong back spasm may make the body arch.

Other symptoms can include sweating, fever, a fast heartbeat, unstable blood pressure, and difficulty breathing. The person usually remains conscious, which can make the spasms especially distressing.

Most recognised cases affect muscles throughout the body. This is called generalised tetanus. Localised tetanus causes stiffness and spasms near the injury, although it can progress. A rare form involving nerves in the head may follow an injury or infection around the head and face.

Neonatal tetanus affects newborn babies, usually when the mother lacks protective immunity and the umbilical cord is cut or cared for in unclean conditions. It causes poor feeding, stiffness, and spasms and is a medical emergency.

- Jaw stiffness or difficulty opening the mouth
- Neck stiffness
- Trouble swallowing
- Tight or rigid abdominal muscles
- Pain or tingling near the wound

Causes and risk factors

The bacteria that cause tetanus can grow when their spores enter damaged tissue with little

oxygen. They then release tetanospasmin, a powerful nerve toxin. This toxin blocks chemical signals that normally allow muscles to relax.

Tetanus is more likely when a wound contains dead or badly damaged tissue. Wounds associated with greater concern include:

Tetanus can occasionally develop after surgery, dental infection, childbirth, or another injury that was not recognised.

The main personal risk factor is not being fully vaccinated or not having recommended booster vaccinations. Risk is also higher when vaccination records are unknown. Older adults may have less protection if they were never fully vaccinated or have missed boosters.

A clean-looking wound does not completely rule out risk. However, tetanus is not caused by touching soil or rust when the skin is intact.

- Deep punctures, including nail injuries
- Wounds contaminated with soil, manure, or saliva
- Crush injuries, burns, or frostbite
- Animal or human bites
- Wounds containing a foreign object
- Chronic ulcers or infected wounds
- Injuries linked with injecting drugs

Diagnosis

There is no blood test, scan, or wound culture that can reliably confirm or exclude tetanus. Diagnosis is based mainly on the pattern of muscle stiffness and spasms, the examination, vaccination history, and any recent wound.

A wound culture may sometimes find C. tetani , but a negative result does not rule out tetanus. The bacteria may also occasionally be found in wounds of people who do not have the condition.

Healthcare teams may perform other tests to look for conditions that can cause similar symptoms. These include reactions to certain medicines or drugs, low calcium levels, meningitis, seizures, poisoning, and other neurological conditions.

Treatment should not be delayed while waiting for test results when the clinical signs suggest tetanus.

Treatment and management

Tetanus is treated in hospital, often in an intensive care unit. Care focuses on neutralising toxin that has not yet attached to nerves, stopping further toxin production, controlling spasms, and supporting breathing and circulation.

Tetanus immune globulin, sometimes called TIG or tetanus antitoxin, provides ready-made antibodies against the toxin. It can neutralise toxin that is still moving through the body, but it cannot remove toxin already attached to nerve endings.

The wound is cleaned, and dead or contaminated tissue may be removed. This procedure is called debridement. Antibiotics like amoxicillin or doxycycline are used to kill the bacteria and reduce further toxin production.

Medicines may be needed to reduce muscle spasms and provide sedation. Care may take place in a quiet, darkened room because noise, light, and touch can trigger spasms.

If breathing or swallowing muscles are affected, a breathing tube and mechanical ventilator may be needed. Fluids, nutrition, blood-clot prevention, skin care, and treatment for unstable heart rate or blood pressure may also be required.

Vaccination is started or continued during recovery because the amount of toxin needed to cause tetanus is too small to produce dependable natural immunity. The exact vaccine plan is based on age and previous vaccination records.

Complications

Severe spasms can close the vocal cords or stop the breathing muscles from working normally. Saliva or stomach contents may enter the lungs, causing aspiration pneumonia.

Strong muscle contractions can cause fractures or muscle damage. Long periods in bed can contribute to blood clots, pressure injuries, infections, and physical weakness.

The toxin can also disrupt the automatic nervous system, which controls functions such as heart rate and blood pressure. This may cause sudden swings in blood pressure, abnormal heart rhythms, heavy sweating, or fever.

Tetanus can be fatal, even with intensive care. Risk is influenced by factors such as age, vaccination status, how quickly symptoms appeared, and whether breathing or circulation is affected.

Prevention

Tetanus is largely preventable through vaccination. Protection is built through an initial vaccine series and maintained with booster doses. The recommended schedule differs by age, pregnancy status, vaccination history, and country.

If your routine vaccines are overdue or your records are uncertain, this can usually be reviewed during a non-urgent primary care or vaccination appointment. Vaccination is still recommended after recovery from tetanus.

Prompt wound care also reduces risk. Wash cuts and punctures with clean running water, remove visible dirt if it can be removed safely, and cover the wound with a clean dressing. Do not seal dirt inside a wound or use harsh chemicals that may damage tissue.

After an injury, a healthcare professional may recommend a tetanus-containing vaccine, tetanus immune globulin, or both. This decision is based on the type of wound and your vaccination history. Antibiotics are not routinely used solely to prevent tetanus after an injury.

Clean childbirth practices, sterile equipment, and vaccination during pregnancy help prevent maternal and neonatal tetanus.

No preventive approach offers absolute protection, but staying up to date with vaccination greatly lowers the risk.

Living with it and what to expect

Recovery from tetanus is often slow because toxin already attached to nerve endings cannot be removed. Nerves must form new connections before muscle control returns. This may take weeks or months.

People with severe illness may spend a prolonged time in intensive care. Breathing support can be needed until spasms settle and respiratory muscles work reliably. As the condition improves, medicines and mechanical support are gradually reduced.

Weakness, stiffness, tiredness, swallowing difficulty, and reduced mobility may continue after the spasms stop. Physiotherapy, occupational therapy, nutritional support, and sometimes speech and swallowing therapy can help with rehabilitation.

Many survivors regain their previous level of function, but recovery is not identical for everyone. Some have ongoing weakness, pain, reduced stamina, or emotional effects after intensive care. Follow-up may include checking breathing, mobility, nutrition, wound healing, mental well-being, and completion of the vaccine series.

Tetanus does not become a long-term contagious infection, and you cannot pass it to family

members. Routine follow-up after discharge is different from emergency care: it focuses on rehabilitation, vaccination, and recovery rather than immediate control of spasms.

When to get medical help

Call emergency services immediately if you or someone else develops jaw stiffness, painful muscle spasms, difficulty swallowing, or breathing problems, especially after a wound. Do not drive yourself if spasms or breathing problems are present.

Seek urgent medical advice after a wound if:

Also seek care if you cannot clean the wound fully or remove a foreign object safely. Do not wait for stiffness or spasms to develop.

A routine appointment is appropriate when you have no concerning wound or symptoms but want to check whether your vaccinations are up to date.

- It is deep, punctured, crushed, burned, badly contaminated, or contains a foreign object
- It was caused by an animal or human bite
- Soil, manure, or saliva entered it
- Dead tissue is present or the wound is becoming infected
- You have not completed tetanus vaccination
- Your vaccination history is unknown
- A clinician previously advised tetanus protection because of immune problems

Common questions

Can you get tetanus from rust?

Rust does not cause tetanus. The concern is that a rusty object may be dirty and may create a deep puncture where bacterial spores can grow. A puncture from a clean, non-rusty object can also carry risk.

Is tetanus contagious?

No. Tetanus does not spread through coughing, touching, or close contact. It develops when bacterial spores enter damaged skin and produce toxin.

How soon after a cut does tetanus start?

Symptoms commonly begin within days to several weeks, although the timing is not the same

for everyone. Do not wait for symptoms before having a concerning wound assessed because preventive treatment works before tetanus develops.

Can I get tetanus if I was vaccinated?

Vaccination gives strong protection, but protection can decrease over time and no vaccine is completely effective. Risk is much higher when the initial series was not completed, boosters were missed, or vaccination history is unknown.

Does having tetanus make me immune?

No. The tiny amount of toxin that causes illness usually does not trigger reliable immunity. Vaccination is still needed after recovery.

Do all cuts need a tetanus shot?

No. The decision is based on the wound and your vaccination history. Clean minor wounds are managed differently from punctures, bites, burns, crush injuries, and wounds contaminated with soil or dead tissue.

Sources

- Centers for Disease Control and Prevention. Clinical Overview of Tetanus
- Centers for Disease Control and Prevention. Clinical Care of Tetanus
- Centers for Disease Control and Prevention. Clinical Guidance for Wound Management to Prevent Tetanus
- Centers for Disease Control and Prevention. Epidemiology and Prevention of Vaccine-Preventable Diseases: Tetanus
- World Health Organization. Tetanus
- UK Health Security Agency. Tetanus: The Green Book, Chapter 30