CONDITION

Bilateral tonic-clonic seizure

Learn what happens during a bilateral tonic-clonic seizure, possible causes, how it is diagnosed and treated, and when emergency help is needed.

WHAT IT IS
Seizure causing bilateral stiffening and rhythmic jerking

BODY SYSTEM
Nervous system

MAIN SYMPTOMS
Loss of awareness, body stiffening, rhythmic jerking, postictal confusion

WHAT CAUSES IT
Epilepsy or temporary brain disturbance

HOW IT IS DIAGNOSED
Clinical assessment supported by EEG

MAIN TREATMENT
Cause correction and antiseizure medicine

CAN IT BE CURED?
Sometimes - temporary causes can be corrected

IS IT AN EMERGENCY?
Sometimes - lasting five minutes or longer

LONG-TERM OUTLOOK
Variable, with injury and SUDEP risks if uncontrolled

Overview

A bilateral tonic-clonic seizure is a seizure that causes stiffening and rhythmic jerking on both sides of the body. Awareness is lost during the event. "Tonic" refers to muscle stiffening, while "clonic" refers to repeated jerking.

This term describes what the seizure looks like, but it does not always identify where the seizure began. Some start in networks on both sides of the brain at once. Others begin in one area of the brain and then spread to both sides. The second type is called a focal-to-bilateral tonic-clonic seizure.

A seizure happens when a sudden burst of abnormal electrical activity disrupts normal brain function. One seizure does not necessarily mean a person has epilepsy. Epilepsy is a condition involving an ongoing tendency to have unprovoked seizures. A seizure may instead be

triggered by a temporary problem, such as very low blood sugar, alcohol withdrawal, infection, or a recent brain injury.

Most bilateral tonic-clonic seizures stop on their own within a few minutes. Even so, a first seizure needs prompt medical assessment. A seizure lasting five minutes or longer is a medical emergency because it may become status epilepticus, a prolonged seizure state requiring urgent treatment.

Symptoms

The person may have warning symptoms before losing awareness, especially if the seizure begins in one part of the brain. These symptoms may include an unusual smell or taste, a rising feeling in the stomach, sudden fear, visual changes, or tingling. Some seizures begin without any warning.

During the tonic phase, the person loses awareness and the body becomes stiff. They may fall if standing. Tightening of the chest and throat muscles can produce a cry or groan. Breathing may briefly appear difficult, and the lips or face may look blue or gray.

The clonic phase follows. The arms and legs jerk in a repeated, rhythmic pattern. Saliva may collect around the mouth. The person may bite the side of the tongue or lose bladder control. These findings can support the diagnosis, but they do not occur with every seizure.

After the jerking stops, the person enters a recovery period called the postictal phase. Breathing usually becomes more regular, but the person may remain deeply sleepy or confused. Other possible symptoms include:

A witness may provide important details because the person having the seizure usually cannot remember the event. If it is safe, noting the start time and recording a video can help a clinician understand what happened.

Not every episode of shaking is an epileptic seizure. Fainting, heart rhythm problems, sleep disorders, movement disorders, and functional seizures can sometimes look similar. Medical assessment is needed to tell them apart.

- Headache, nausea, or muscle soreness
- Temporary difficulty speaking or remembering events
- Irritability, fear, or embarrassment
- Weakness affecting part of the body
- Fatigue lasting for hours or, sometimes, longer

Causes and risk factors

A bilateral tonic-clonic seizure can occur as part of an epilepsy syndrome or because of a temporary disturbance affecting the brain.

Possible immediate causes include:

Long-term conditions that may increase seizure risk include previous stroke, significant brain injury, developmental brain differences, brain tumors, and some genetic conditions. In many people with epilepsy, tests do not find one clear cause.

For someone who already has epilepsy, seizures may be more likely after missed antiseizure medicine, sleep loss, illness, heavy alcohol use, or exposure to a personal trigger. These factors may provoke a seizure in a susceptible person, but they do not by themselves prove the cause of epilepsy.

Some medicines and recreational drugs can lower the brain's seizure threshold. A clinician should review all prescription medicines, nonprescription products, supplements, alcohol use, and substance exposure. Medicines should not be stopped suddenly unless an appropriate healthcare professional advises it, because abrupt withdrawal can itself cause seizures.

- Low blood sugar or a major change in blood sodium
- Stroke or bleeding in or around the brain
- Brain infection, such as meningitis or encephalitis
- Recent head injury
- High fever in some young children
- Alcohol or sedative withdrawal
- Toxic exposure or certain medicine effects
- Severe lack of oxygen
- Eclampsia, a pregnancy complication involving high blood pressure and seizures

Diagnosis

The first step is to determine whether the event was likely an epileptic seizure and whether an urgent cause is present. The clinician will ask what happened before, during, and after the episode. Information from witnesses is often essential.

The assessment may include questions about previous brief spells, staring episodes, unusual sensations, morning muscle jerks, fainting, head injuries, infections, pregnancy, alcohol or drug

use, family history, and current medicines.

A physical and neurological examination checks alertness, strength, coordination, sensation, and other signs of a brain or medical problem. Depending on the circumstances, testing may include:

An EEG can support a diagnosis and may help classify the seizure type, but a normal EEG does not rule out epilepsy. Likewise, an abnormal result must be interpreted together with the person's history.

Clinicians may diagnose epilepsy after two unprovoked seizures or, in some situations, after one unprovoked seizure when tests and clinical findings show a high likelihood of further seizures. The decision requires an individualized specialist assessment.

- Blood tests to look for glucose, electrolyte, infection, kidney, or liver problems
- An electrocardiogram, or ECG, to check for a heart rhythm problem that could cause collapse
- An electroencephalogram, or EEG, to record electrical activity in the brain
- Brain imaging, usually magnetic resonance imaging, or MRI, when a structural cause is possible
- Computed tomography, or CT, when rapid imaging is needed, such as after an injury or when bleeding is suspected
- Pregnancy testing when relevant to treatment or imaging decisions

Treatment and management

During a seizure, the priority is to prevent injury and support breathing. A bystander should remain calm, time the seizure, and stay with the person.

Helpful first-aid steps include:

Do not put fingers, food, water, or objects in the person's mouth. A person cannot swallow their tongue, and forcing something into the mouth may injure the teeth, jaw, or airway. Do not give food, drink, or pills until the person is fully alert.

Call emergency services if:

A person with established epilepsy may have a written emergency plan and prescribed rescue medicine for prolonged or repeated seizures. Family members or caregivers should use it only as they have been trained and should follow its instructions about when to seek emergency help.

Long-term treatment depends on why the seizure occurred and the chance that it will happen again. Correcting an immediate cause, such as low blood sugar or an electrolyte disturbance, may be the main treatment for a provoked seizure.

For epilepsy, antiseizure medicine can reduce the risk of future seizures. The choice depends on the seizure type, age, other health conditions, possible interactions, pregnancy considerations, and potential side effects. Treatment should be selected and reviewed by a clinician rather than started, changed, or stopped without guidance.

If medicines do not control seizures, a specialist may discuss other options, including epilepsy surgery, implanted stimulation devices, or medically supervised dietary therapy. These treatments are appropriate only for selected patients after detailed evaluation.

Daily risk reduction may include taking medicine consistently, getting regular sleep, limiting alcohol, and keeping a record of seizures and possible triggers. Safety planning may involve showers rather than unsupervised baths, supervision while swimming, care around heights and open flames, and using safer cooking methods.

Driving restrictions vary by location and may depend on the cause of the seizure and the length of time without another event. A healthcare professional can explain the applicable reporting and licensing rules.

- Move sharp, hot, or hard objects away.
- Place something soft under the person's head.
- Loosen tight clothing around the neck.
- Turn the person onto their side when it can be done safely.
- Allow the seizure to run its course without holding the person down.
- Stay nearby until the person is awake and able to communicate.
- The seizure lasts five minutes or longer.
- Another seizure starts before the person recovers.
- Breathing does not return to normal after the seizure.
- The person remains unusually unresponsive.
- The seizure occurs in water.
- There is a serious injury.
- The person is pregnant or has diabetes.
- It is the person's first known seizure.

Complications

Falls and uncontrolled movements can cause cuts, burns, broken bones, dental injuries, or head injuries. A seizure in water can lead to drowning. Food, saliva, or vomit may enter the airway, although turning the person onto their side after the active movements ease can help drainage.

Status epilepticus is a seizure lasting five minutes or longer, or repeated seizures without recovery between them. It requires emergency treatment because prolonged seizure activity can interfere with breathing and other body functions.

A first seizure may also be the sign of a serious underlying condition, such as stroke, infection, bleeding, or a major metabolic problem. This is why prompt evaluation matters even if the person appears to recover.

People with epilepsy have a small risk of sudden unexpected death in epilepsy, known as SUDEP. The risk is higher in people with ongoing generalized or bilateral tonic-clonic seizures, especially when they occur at night. Good seizure control and regular use of prescribed medicine are important parts of reducing risk. A specialist can discuss practical steps without assuming that every person has the same level of risk.

Follow up

After a first suspected seizure, arrange prompt medical assessment even if emergency care was not required. A clinician may refer the person to a neurologist or an epilepsy specialist for further testing and review.

Routine follow-up should address test results, seizure classification, medicine effectiveness, side effects, sleep, mood, work or school needs, driving, pregnancy planning, and safety. A seizure diary can record the date, duration, possible triggers, injuries, recovery time, and whether rescue medicine was used.

Contact the treating clinician sooner if seizures become more frequent, last longer than usual, change in pattern, or cause new injuries. New medicine side effects, missed doses, pregnancy, or plans for pregnancy also deserve timely discussion.

Seek emergency help for a seizure lasting five minutes or longer, repeated seizures without recovery, persistent breathing difficulty, serious injury, a seizure in water, or failure to regain usual awareness. New one-sided weakness, a severe sudden headache, fever with neck stiffness, or signs of stroke also require urgent emergency assessment.

Sources

- Fisher RS, Cross JH, French JA, et al. "Operational Classification of Seizure Types by the International League Against Epilepsy: Position Paper of the ILAE Commission for Classification and Terminology." Epilepsia . 2017;58(4):522-530.
- National Institute for Health and Care Excellence. Epilepsies in Children, Young People and Adults . NICE Guideline NG217. Published 2022; updated 2025.
- Centers for Disease Control and Prevention. "First Aid for Seizures." Reviewed May 2024.
- Krumholz A, Wiebe S, Gronseth GS, et al. "Evidence-Based Guideline: Management of an Unprovoked First Seizure in Adults." Neurology . 2015;84(16):1705-1713.
- Trinka E, Cock H, Hesdorffer D, et al. "A Definition and Classification of Status Epilepticus: Report of the ILAE Task Force on Classification of Status Epilepticus." Epilepsia . 2015;56(10):1515-1523.
- Harden C, Tomson T, Gloss D, et al. "Practice Guideline Summary: Sudden Unexpected Death in Epilepsy Incidence Rates and Risk Factors." Neurology . 2017;88(17):1674-1680.