

Seizure and Status Epilepticus Stabilization

A plain-English guide for you and your family

WHAT IS HAPPENING

Your brain runs on two kinds of signals: go-signals that tell brain cells to fire, and stop-signals that tell them to calm down. Normally these two balance each other, so your brain works smoothly. A seizure happens when the stop-signals fail and the go-signals run wild, like a car with no brakes racing downhill. Most seizures stop on their own in a minute or two once the brain's emergency brakes kick back in. But if a seizure keeps going past 5 minutes, or if seizures keep coming back without the person waking up in between, that is called status epilepticus (a seizure that will not stop) — the brain's brakes are truly broken and it cannot stop the runaway on its own. Common triggers that break the balance include: skipping seizure medicine, stopping alcohol suddenly after heavy drinking, a stroke cutting off blood to part of the brain, an infection like meningitis, electrolytes (salt minerals in the blood) swinging too low or too high, street drugs or certain prescription medicines, a brain tumor pressing on tissue, or eclampsia (very high blood pressure in pregnancy that irritates the brain). During the seizure, the whole brain fires at once, so the body shakes hard, the person cannot answer you, breathing may slow or stop for stretches, the heart races, and muscles can break down and leak protein into the blood. After the shaking stops, the brain is exhausted and confused — that confusion is the brain rebooting, not a separate problem. Every weird finding you see flows from that one upstream break: the balance between stop and go tipped, and now the body is scrambling to keep oxygen and blood flowing while the seizure burns through energy. The danger is that a long seizure can starve the brain of oxygen, cause permanent brain damage, break down muscle so badly that the kidneys fail, or let food and spit slide into the lungs. That is why we treat fast: benzodiazepines at 5 minutes to boost the stop-signal, a second seizure medicine at 20 minutes if it is still going, and anesthetic to force the brain to sleep at 40 minutes if nothing else works. The goal is to stop the seizure, find and fix the trigger, and protect the brain before the window closes.

What you might feel

- Repeating jerking movements of the arms, legs, or whole body that the person cannot stop

- Staring blankly and not responding when you call their name or touch them
- Confusion or sleepiness that does not clear up after a few minutes
- Eyes rolled back, eyelids fluttering, or unusual eye movements
- Lips turning blue or skin looking dusky gray
- Foaming or drooling at the mouth
- Loss of bladder or bowel control
- Fever

Call the doctor right away if...

- Seizure lasting longer than 5 minutes, or a second seizure starting before the person wakes up fully
- Lips or face turning blue, gasping, or not breathing normally
- Pregnant woman having a seizure
- Seizure after a head injury
- Confusion or weakness that does not improve 15–20 minutes after shaking stops

What the care team will do

- Protect the airway by turning the patient on their side, removing objects from the mouth, and suctioning if needed; give oxygen by nasal cannula or non-rebreather mask to keep oxygen saturation above 94%.
- Check blood glucose with a finger-stick immediately; if glucose is below 60 mg/dL, give 1 ampule (25 grams) of dextrose 50% IV push after securing IV access.
- Give lorazepam (Ativan, a benzodiazepine that calms brain electrical activity) 4 mg IV push over 2 minutes, or midazolam 10 mg into the muscle or nose if no IV access, within the first 5 minutes of seizure.
- Start two large-bore IV lines (18-gauge or larger) and draw blood for complete blood count, comprehensive metabolic panel (tests for electrolytes, kidney, and liver), magnesium, anti-epileptic drug levels, and toxicology screen.
- If seizure continues after 5 minutes, give a second-line anti-seizure medicine: fosphenytoin 20 PE/kg IV (phenytoin equivalent per kilogram of body weight) at 100 to 150 PE per minute, OR levetiracetam (Keppra) 60 mg/kg IV over 10 minutes, OR valproate 40 mg/kg IV over 10 minutes.
- Monitor blood pressure, heart rate, and oxygen saturation continuously; watch for blood pressure drop (systolic below 90 mmHg) or slow breathing (respiratory rate below 10 per minute) after benzodiazepines.

- Document seizure type (whole body shaking or one-sided), duration in minutes, eye position, and how long after the seizure until the patient responds to commands.
- Keep the patient on their side after the seizure stops and do not give food or drink until the patient is fully awake and can protect their airway.

Medicines you may be given — and why

Lorazepam (Ativan)

Lorazepam boosts GABA, the brain's main 'stop' signal. GABA tells neurons to slow down and rest. During a seizure, brain cells fire wildly without stopping. Lorazepam makes GABA receptors more sensitive, so each GABA molecule has a stronger calming effect. This quiets the electrical storm and stops the seizure within two to three minutes.

Midazolam (Versed)

Midazolam works the same way as lorazepam—it boosts GABA, the brain's natural brake signal, to stop the wild electrical firing of a seizure. The difference is midazolam can be given into muscle (IM) or sprayed into the nose if an IV line is not ready yet. It works within two to five minutes.

Fosphenytoin (Cerebyx)

Fosphenytoin blocks sodium channels on neurons. Sodium channels are tiny gates that let sodium rush into a neuron to make it fire. During a seizure, these gates open and close wildly. Fosphenytoin jams the gates in the closed position, so neurons cannot fire over and over. This stops the seizure from restarting and keeps the brain calm after the benzodiazepine has stopped the initial storm.

Levetiracetam (Keppra)

Levetiracetam attaches to a protein called SV2A on the surface of synaptic vesicles (tiny bubbles inside nerve endings that hold neurotransmitters). When SV2A is tweaked by levetiracetam, neurons release less glutamate, the brain's main 'go' signal. Less glutamate means less wild firing, so the seizure stops and does not restart. Levetiracetam is very safe and does not mess with heart rhythm or blood pressure the way fosphenytoin can.

Valproate (Depacon)

Valproate works on several brain targets at once. It boosts GABA (the brain's brake signal) by blocking the enzyme that breaks GABA down, so GABA stays around longer. It also jams sodium channels to stop rapid firing, and it calms certain calcium channels that help neurons talk to each other. This triple action makes valproate very effective against many seizure types, but it has more side effects than levetiracetam.

Propofol (Diprivan)

Propofol is a powerful anesthetic that acts like a super-strong benzodiazepine. It directly opens GABA-A chloride channels without even needing GABA to bind first. This floods neurons with chloride, making them completely silent. Propofol is used when seizures continue despite two rounds of medicine (refractory status epilepticus (a seizure that will not stop)). It puts the brain into a deep sleep so the electrical storm can fully stop. Brain waves are monitored with EEG to reach 'burst suppression'—a pattern where the brain fires briefly then goes quiet, showing the seizure is controlled.

Midazolam continuous infusion

When given as a continuous drip instead of a one-time dose, midazolam keeps GABA receptors strongly activated around the clock. This holds the brain in a calm, controlled state and prevents the seizure from restarting. It is used for refractory status epilepticus (a seizure that will not stop), just like propofol, but may be chosen if propofol's heart risks are too high or if the patient has a soybean or egg allergy.

Pentobarbital (Nembutal)

Pentobarbital is the most powerful seizure-stopping drug available. Like propofol and midazolam, it acts on GABA-A receptors, but it also directly opens chloride channels even when GABA is absent, and it blocks glutamate receptors (the brain's 'go' signal). This double action creates the deepest brain suppression possible. It is reserved for super-refractory status epilepticus (a seizure that will not stop)—seizures that keep going even after propofol or midazolam. The goal is burst suppression on EEG for 24 to 48 hours, giving the brain time to reset.

Dextrose (D50 or D10)

The brain runs entirely on glucose (blood sugar). If blood sugar drops below about 40 mg/dL, neurons run out of fuel and start misfiring, which can cause a seizure. Dextrose is pure glucose given by IV to instantly raise blood sugar and restore the brain's energy supply. The seizure stops within seconds to minutes once glucose is back to normal. This is why every seizing patient gets a fingerstick glucose check and IV dextrose if the level is low.

Thiamine (Vitamin B1)

Thiamine is a vitamin the brain needs to burn glucose for energy. Chronic alcohol use and severe malnutrition deplete thiamine stores. If you give dextrose to someone without thiamine, their brain tries to use the glucose but cannot process it properly, and this can trigger Wernicke encephalopathy—a devastating injury to the memory and balance centers (mammillary bodies, thalamus, cerebellum). Giving thiamine first or at the same time as

dextrose prevents this. Thiamine does NOT stop the seizure directly, but it protects the brain during resuscitation.

Magnesium sulfate

Magnesium is an electrolyte that normally sits inside cells and helps keep neurons calm. It blocks NMDA receptors (a type of glutamate receptor that can cause excitotoxicity—damage from too much firing). In eclampsia (seizures during pregnancy caused by very high blood pressure), magnesium levels drop and blood vessels in the brain spasm. Magnesium sulfate raises magnesium, stops blood vessel spasm, and blocks NMDA receptors, ending the seizure and protecting the baby and mother. It is the first-line treatment for eclamptic seizures, NOT a benzodiazepine.

Antibiotics (e.g., ceftriaxone, vancomycin, acyclovir)

Infections of the brain (encephalitis) or the lining around the brain (meningitis) cause inflammation and swelling, which irritate neurons and lower the seizure threshold. Bacteria, viruses, and fungi can all do this. Antibiotics kill bacteria (ceftriaxone for common bacteria like pneumococcus and meningococcus; vancomycin for resistant staph). Acyclovir stops herpes simplex virus from copying itself, which is critical because herpes encephalitis loves the temporal lobes (the same area that starts many seizures) and causes severe, repeated seizures. Treating the infection reduces inflammation, stops neuron irritation, and prevents more seizures.

Where this information comes from

- American Academy of Neurology (AAN) 2016 guideline on status epilepticus
- Neurocritical Care Society status epilepticus guideline 2012 (updated 2016)
- American Epilepsy Society
- CDC Epilepsy Program

Last reviewed: 2026-07-07