

Status Epilepticus

A plain-English guide for you and your family

WHAT IS HAPPENING

Your brain has billions of nerve cells that talk to each other with tiny electric signals. Most of the time, these signals fire in balanced patterns — like a conversation where people take turns. Two main brain chemicals keep this balance: glutamate (the gas pedal that turns neurons on) and GABA (the brake pedal that quiets them down). A normal seizure happens when too many neurons fire at once, but the brain's brakes kick in within a minute or two and the seizure stops by itself. Status epilepticus (a seizure that will not stop) is different — it is a seizure that lasts longer than 5 minutes, or two seizures that happen back-to-back without the person waking up in between. When a seizure goes on that long, the GABA brakes start to fade and stop working well, so the firing keeps going even when doctors give seizure medicine. The longer it lasts, the harder it is to stop. Common triggers include missing epilepsy pills, drinking alcohol, a stroke, a bad head injury, a brain infection, very low blood sugar, or a sudden drop in blood salt. As the seizure continues, the whole body works at top speed — muscles squeeze without rest, the heart races, and waste builds up in the blood, making it too acidic. The body gets very hot from all that work. After about 30 minutes, brain cells start running out of fuel and oxygen, and some of them die. Some seizures look dramatic — the whole body shakes and jerks. Others are quiet and easy to miss — the person looks awake but confused, staring or twitching just a little. Both kinds are dangerous. That is why any seizure lasting more than 5 minutes is treated as an emergency: the clock is ticking, and fast treatment saves brain cells and lives.

What you might feel

- Shaking that won't stop for more than 5 minutes
- Multiple seizures one after another with no time to wake up in between
- Not waking up or responding after a seizure that seemed to stop
- Fast breathing or pauses in breathing
- Blue lips or fingertips
- Fever or high body temperature
- Confusion or strange behavior that lasts a long time

- Foaming or drooling from the mouth

Call the doctor right away if...

- Seizure lasting longer than 5 minutes without stopping
- Not breathing well or turning blue
- Not waking up between seizures or after the shaking stops
- First-ever seizure in someone who has never had one before
- Seizure in a pregnant woman, which could signal eclampsia (a dangerous pregnancy complication)

What the care team will do

- Check blood sugar with a fingerstick glucometer right now.
- Protect the airway by turning the patient on their side and suctioning if needed.
- Give oxygen by nasal cannula or mask to keep oxygen saturation above 94 percent.
- Start an IV line with normal saline running and give lorazepam 4 mg IV push over 2 minutes.
- Monitor heart rate, blood pressure, breathing rate, and oxygen on the cardiac monitor continuously.
- Prepare second-line seizure medicine if shaking continues past 20 minutes: levetiracetam 60 mg per kilogram IV or fosphenytoin 20 mg per kilogram PE IV.
- Check the patient's temperature and apply cooling measures like ice packs to the groin, armpits, and neck if temperature is above 101 degrees.
- Call for help and prepare for possible intubation if the seizure does not stop or the patient cannot protect their airway after medicine.

Medicines you may be given — and why

Lorazepam (Ativan)

Lorazepam boosts the power of GABA, the brain's main calming signal. GABA acts like a brake pedal on nerve cells—it tells them to slow down and stop firing. In status epilepticus (a seizure that will not stop), neurons are stuck firing over and over like a stuck car alarm. Lorazepam makes GABA's brake stronger so the alarm finally shuts off.

Midazolam (Versed)

Midazolam works exactly like lorazepam—it turns up the volume on GABA, the brain's brake signal. The big advantage is that midazolam can be given as a shot into the muscle

(intramuscular) if an IV line is not yet in place. This makes it faster to use in an emergency when every second counts.

Diazepam (Valium, rectal gel Diastat)

Diazepam is another GABA booster. Its special feature is that it can be given rectally (into the bottom) as a gel when there is no IV and no one trained to give a muscle shot. A family member or school nurse can give it, buying time until paramedics arrive.

Fosphenytoin (Cerebyx)

Fosphenytoin blocks sodium channels on nerve cells. Sodium channels are like tiny doors that swing open to let a wave of electricity race down a nerve. When too many doors keep swinging open too fast, you get a seizure. Fosphenytoin jams the doors in the closed position so the wave cannot keep going.

Levetiracetam (Keppra)

Levetiracetam targets a protein called SV2A that sits on tiny bubbles (vesicles) inside nerve terminals. These bubbles are packed with neurotransmitters—chemical messengers. When a nerve fires, the bubbles fuse to the cell wall and dump their cargo, passing the signal to the next cell. Levetiracetam slows this dumping process, so overexcited nerves cannot keep shouting to their neighbors as easily.

Valproate sodium (Depacon IV)

Valproate works on several fronts at once. It boosts GABA (the calming signal), blocks sodium channels (stopping the wave), and also blocks certain calcium channels (reducing neurotransmitter release). Think of it as turning up the brakes, jamming the gas pedal, and cutting fuel lines all at the same time.

Propofol (Diprivan)

Propofol is a powerful anesthetic that forces GABA receptors wide open, flooding nerve cells with chloride and shutting down nearly all electrical activity. It is used when seizures have not stopped after 40 minutes (refractory status epilepticus (a seizure that will not stop)) and the brain needs to be put into a controlled sleep to break the cycle.

Midazolam continuous infusion

When a single shot of midazolam is not enough, a continuous drip keeps GABA receptors supercharged around the clock. This is one step below full anesthesia—enough to silence seizures but sometimes light enough that the patient can still breathe on their own (though often a ventilator is still used for safety).

Ketamine

Ketamine blocks NMDA receptors, which are a different kind of gate on nerve cells that lets in calcium and keeps seizures revving. Unlike GABA drugs that boost the brake, ketamine cuts off one of the gas pedals. It is often used when GABA-based drugs (benzodiazepines, propofol) are losing their grip because the brain has started to resist them.

Pentobarbital

Pentobarbital is one of the most powerful brain-wave suppressors available. It opens GABA-A chloride channels even wider than benzodiazepines and also blocks certain excitatory receptors. It drives the brain into burst suppression or even electrical silence, used only when every other treatment has failed (super-refractory status epilepticus (a seizure that will not stop)).

Thiamine (Vitamin B1)

Thiamine is not a seizure drug, but it is given immediately in the emergency room if there is any chance the patient has alcoholism or malnutrition. Thiamine is a key helper molecule (cofactor) that brain cells need to burn glucose for energy. Without it, brain cells starve and can be permanently damaged. Giving thiamine before or with IV glucose prevents a catastrophic condition called Wernicke encephalopathy.

Dextrose (IV glucose)

Dextrose is simply sugar water given into a vein. The brain runs entirely on glucose—it has no backup fuel. If blood sugar drops too low (hypoglycemia), brain cells cannot fire properly, and seizures can result. Giving IV dextrose instantly restores fuel and can stop a hypoglycemic seizure within seconds.

Where this information comes from

- Neurocritical Care Society 2012 Guidelines
- American Epilepsy Society
- AAN (American Academy of Neurology) 2016 Practice Guideline

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