

Stroke Activation

A plain-English guide for you and your family

WHAT IS HAPPENING

A stroke happens when blood stops flowing to part of the brain, so that piece of brain tissue starts to die from lack of oxygen — like a houseplant wilting when you forget to water it. The brain runs on a steady stream of oxygen-rich blood delivered through arteries, and when one of those arteries gets clogged by a clot or bursts and bleeds, the cells downstream go dark. Time is everything: brain cells die fast without oxygen, but if doctors can clear the blockage or stop the bleeding quickly, many of those cells wake back up and the person can recover. That's why stroke teams move so fast — they need to know exactly when symptoms started, do a scan to see if it's a clot or a bleed, and then either give clot-dissolving medicine through an IV or thread a tiny wire up to the clot and pull it out, all within a few hours. The sudden weakness on one side, trouble speaking, face drooping, vision loss, or dizziness you see are all signs that a specific part of the brain has lost its blood supply, and every symptom points back to which artery is blocked. Acting fast — calling 911, getting to a stroke center, and starting treatment right away — is the only way to save brain tissue and give someone their best chance to get back to normal.

What you might feel

- Sudden weakness or numbness on one side of the face, arm, or leg
- Sudden trouble speaking or understanding words (slurred speech or confused answers)
- Sudden vision loss in one or both eyes, or double vision
- Sudden severe headache (often called the worst headache of my life)
- Sudden trouble walking, loss of balance, or dizziness
- Sudden confusion or trouble understanding what is happening around them
- High or low blood pressure reading at the time of symptom onset
- High or low blood sugar reading

Call the doctor right away if...

- Symptoms started suddenly—within seconds or minutes—rather than building slowly over hours or days.

- The person cannot lift both arms to the same height, one side of the face droops when they smile, or their speech is slurred or makes no sense (positive FAST screen).
- Worst headache of my life, especially with stiff neck, vomiting, or sudden collapse—suggests bleeding in the brain (hemorrhagic stroke) rather than a clot.
- Symptoms are still present when emergency help arrives—do NOT wait to see if they go away, because every minute of lost blood flow kills about two million brain cells.
- History of atrial fibrillation (an irregular, quivering heartbeat) (irregular heartbeat), recent heart attack, or use of blood thinners—raises the chance of a stroke caused by a clot traveling from the heart or a dangerous bleed.

What the care team will do

- Activate the stroke team immediately and document the exact time the patient was last known well (last seen normal).
- Keep the patient NPO (nothing by mouth) until a swallow screen is completed—no food, liquid, or pills by mouth.
- Check blood glucose immediately with a fingerstick and give IV dextrose if glucose is below 60 mg/dL.
- Establish large-bore IV access (18-gauge or larger) in both arms if possible and send stat labs including PT/INR, aPTT, CBC, BMP, and troponin.
- Perform and document a baseline NIH Stroke Scale (NIHSS) score and perform the FAST screen (Face droop, Arm weakness, Speech difficulty, Time to call 911).
- Monitor blood pressure every 15 minutes but do NOT lower it unless systolic is above 220 mmHg or diastolic is above 120 mmHg before tPA.
- Position the patient flat or with head of bed elevated no more than 30 degrees, and keep the patient on continuous cardiac and pulse oximetry monitoring.
- Prepare for immediate non-contrast CT scan of the head within 20 minutes of arrival (door-to-CT goal) and stay with the patient during transport.

Medicines you may be given — and why

Alteplase (tPA, tissue plasminogen activator)

Alteplase is a protein that acts like molecular scissors. It cuts apart fibrin (the sticky net that holds a blood clot together), turning a solid clot into pieces small enough for the blood to wash away. This reopens the blocked artery in the brain so oxygen-rich blood can flow again and rescue dying brain cells. It works best when given within 4.5 hours of symptom start—after that window, the brain tissue is often already dead and bleeding risk outweighs benefit.

Tenecteplase (TNK-tPA)

Tenecteplase works the same way as alteplase—it is a modified version of the same clot-busting protein. It cuts fibrin (the net holding the clot) and dissolves the blockage in the brain artery. The difference is that TNK is easier to give: one quick push into the vein instead of a long drip. Dose is weight-based (0.25 mg per kilogram, maximum 25 mg) and it can be given in the ambulance. Current evidence shows it works as well as alteplase for most strokes and may be safer with large-vessel occlusions treated with thrombectomy.

Aspirin

Aspirin blocks an enzyme inside platelets (the sticky cell fragments in blood) called cyclooxygenase-1 (COX-1). Without COX-1, platelets cannot make thromboxane A2 (a chemical signal that tells platelets to clump together). This makes the blood less sticky and reduces the chance of new clots forming. In stroke, aspirin is started 24 hours after tPA (or right away if tPA was not given) to prevent another stroke in the next few days and weeks.

Clopidogrel (Plavix)

Clopidogrel blocks a receptor on platelets called P2Y12. This receptor normally responds to ADP (adenosine diphosphate, a chemical released when blood vessels are injured) by making platelets stick to each other. By blocking P2Y12, clopidogrel prevents platelets from receiving that 'clump now' signal. It is often used with aspirin for 21 days after a minor stroke or high-risk TIA (dual antiplatelet therapy, or DAPT) to prevent early recurrent stroke, then continued alone for long-term prevention.

Atorvastatin or Rosuvastatin (high-intensity statin)

Statins block an enzyme in the liver called HMG-CoA reductase, which is the main factory for making cholesterol. When cholesterol production drops, the liver pulls LDL cholesterol (the 'bad' cholesterol) out of the blood to use for making cell membranes and hormones. This lowers LDL in the bloodstream, shrinks cholesterol plaques in artery walls, and stabilizes plaques so they are less likely to rupture and cause another stroke. Statins also reduce inflammation in blood vessel walls.

Apixaban, Rivaroxaban, Edoxaban, or Dabigatran (if atrial fibrillation (an irregular, quivering heartbeat) is found)

These drugs block specific clotting factors in the blood. Apixaban, rivaroxaban, and edoxaban directly inhibit factor Xa (the enzyme that converts prothrombin into thrombin, the main clot-builder). Dabigatran directly blocks thrombin itself. By stopping these steps in the clotting cascade, DOACs prevent the blood from forming large, organized clots—especially in the left atrium of the heart during atrial fibrillation (an irregular, quivering heartbeat). This stops clots

from traveling to the brain and causing embolic stroke. DOACs are first-line for stroke prevention in atrial fibrillation.

Labetalol or Nicardipine IV (for acute blood pressure control)

In acute blood-starved (ischemic) stroke, very high blood pressure (above 220/120 mmHg, or above 185/110 if tPA is planned) can increase the risk of bleeding into the brain. Labetalol blocks beta receptors (which slow the heart and reduce how hard it pumps) and alpha receptors (which relax blood vessel walls). Nicardipine blocks calcium channels in smooth muscle cells of artery walls, causing the vessels to relax and widen. Both drugs lower blood pressure in a controlled, gradual way. After the acute phase, blood pressure is allowed to run higher for a few days (permissive high blood pressure (hypertension)) to support blood flow to the injured brain, then slowly brought down over weeks.

Where this information comes from

- AHA/ASA Guideline for the Early Management of Patients with Acute Ischemic Stroke (2019, updated 2023)
- AHA/ASA Guideline for the Management of Spontaneous Intracerebral Hemorrhage (2022)
- National Institute of Neurological Disorders and Stroke (NINDS)
- American Academy of Neurology stroke practice guidelines

Last reviewed: 2026-07-07