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URL of this page: <https://medlineplus.gov/stroke.html>

Stroke

Also called: Brain attack, CVA

What is a stroke?

A stroke happens when there is a loss of blood flow to part of the brain. Your brain cells cannot get the oxygen and nutrients they need from blood, and they start to die within a few minutes. This can cause lasting brain damage, long-term disability, or even death.

If you think that you or someone else is having a stroke, call 911 right away. Immediate treatment may save someone's life and increase the chances for successful rehabilitation and recovery.

What are the types of stroke?

There are two types of stroke:

- Ischemic stroke [<https://medlineplus.gov/ischemicstroke.html>] is caused by a blood clot [<https://medlineplus.gov/bloodclots.html>] that blocks or plugs a blood vessel in the brain. This is the most common type; about 80% of strokes are ischemic.
- Hemorrhagic stroke [<https://medlineplus.gov/hemorrhagicstroke.html>] is caused by a blood vessel that breaks and bleeds into the brain.

Another condition that's similar to a stroke is a **transient ischemic attack**

[<https://medlineplus.gov/transientischemicattack.html>] (TIA). It's sometimes called a "mini-stroke." TIAs happen when the blood supply to the brain is blocked for a short time. The damage to the brain cells isn't permanent, but having a TIA puts you at much higher risk of having a stroke.

Who is at risk for a stroke?

Certain factors can raise your risk of a stroke. The major risk factors include:

- High blood pressure [<https://medlineplus.gov/highbloodpressure.html>] . This is the primary risk factor for a stroke.
- Diabetes [<https://medlineplus.gov/diabetes.html>] .
- Heart diseases [<https://medlineplus.gov/heartdiseases.html>] .Atrial fibrillation [<https://medlineplus.gov/atrialfibrillation.html>] and other heart diseases can cause blood clots that lead to stroke.
- Smoking [<https://medlineplus.gov/smoking.html>] . When you smoke, you damage your blood vessels and raise your blood pressure.
- **A personal or family history of stroke or TIA**
- **Age.** Your risk of stroke increases as you get older.
- **Race and ethnicity.** People who are African Americans or Hispanic have a higher risk of stroke.

There are also other factors that are linked to a higher risk of stroke, such as:

- Alcohol and illegal drug use
- Not getting enough physical activity
- High cholesterol [<https://medlineplus.gov/cholesterol.html>]

- Unhealthy diet
- Having obesity [<https://medlineplus.gov/obesity.html>]

What are the symptoms of a stroke?

The symptoms of a stroke often happen quickly. They include:

- Sudden numbness or weakness of the face, arm, or leg (especially on one side of the body)
- Sudden confusion, trouble speaking, or understanding speech
- Sudden trouble seeing in one or both eyes
- Sudden difficulty walking, dizziness, loss of balance or coordination
- Sudden severe headache with no known cause

The F.A.S.T. test can help you remember what to look for if you think someone is having a stroke. Think "FAST" and look for:

- **F**ace drooping on one side when smiling.
- **A**rm weakness occurs when the arms are raised, and one arm drifts downward.
- **S**peech is slurred or strange.
- **T**ime to call 911.

If you think that you or someone else is having a stroke, call 911 right away. Every minute counts during a stroke.

How are strokes diagnosed?

To make a diagnosis, your health care provider will

- Ask about your symptoms and medical history
- Do a physical exam, including a check of
 - Your mental alertness
 - Your coordination and balance
 - Any numbness or weakness in your face, arms, and legs
 - Any trouble speaking and seeing clearly
- Run some tests, which may include
 - Diagnostic imaging [<https://medlineplus.gov/diagnosticimaging.html>] of the brain, such as a CT scan [<https://medlineplus.gov/ctscans.html>] or MRI [<https://medlineplus.gov/mriscans.html>] .
 - Heart tests [<https://medlineplus.gov/hearthealthtests.html>] , which can help detect heart problems or blood clots that may have led to a stroke. Possible tests include an electrocardiogram [<https://medlineplus.gov/lab-tests/electrocardiogram/>] (EKG) and an echocardiography.

What are the treatments for stroke?

Treatments for stroke include medicines, surgery, and rehabilitation. Which treatments you get depend on the type of stroke and the stage of treatment. The different stages are:

- **Acute treatment**, to try to stop a stroke while it is happening
- **Post-stroke rehabilitation**, to overcome the disabilities caused by the stroke
- **Prevention**, to prevent a first stroke or, if you have already had one, prevent another stroke

Acute treatments for ischemic stroke are usually medicines:

- You may get tPA, (tissue plasminogen activator), a medicine to dissolve the blood clot. You can only get this medicine within 4 hours of when your symptoms started. The sooner you can get it, the better your chance of recovery.
- If you cannot get that medicine, you may get medicine that helps stop platelets from clumping together to form blood clots. Or you may get a **blood thinner** [<https://medlineplus.gov/bloodthinners.html>] to keep existing clots from getting bigger.
- If you have carotid artery disease, you may also need a procedure to open your blocked carotid artery.

Acute treatments for hemorrhagic stroke focus on stopping the bleeding. The first step is to find the cause of bleeding in the brain. The next step is to control it:

- If high blood pressure is the cause of bleeding, you may be given **blood pressure medicines** [<https://medlineplus.gov/bloodpressuremedicines.html>] .
- If an **aneurysm** [<https://medlineplus.gov/brainaneurysm.html>] is the cause, you may need aneurysm clipping or coil embolization. These are surgeries to prevent further leaking of blood from the aneurysm. It also can help prevent the aneurysm from bursting again.
- If an **arteriovenous malformation** [<https://medlineplus.gov/arteriovenousmalformations.html>] (AVM) is the cause of a stroke, you may need an AVM repair. An AVM is a tangle of faulty arteries and veins that can rupture within the brain. An AVM repair may be done through
 - Surgery
 - Injecting a substance into the blood vessels of the AVM to block blood flow
 - Radiation to shrink the blood vessels of the AVM

Stroke rehabilitation [<https://medlineplus.gov/strokerehabilitation.html>] can help you relearn skills you lost because of the damage. The goal is to help you become as independent as possible and to have the best possible quality of life.

Prevention of another stroke is also important, since having a stroke increases the risk of getting another one. Prevention may include heart-healthy lifestyle changes and medicines.

Can strokes be prevented?





If you have already had a stroke or are at risk of having a stroke, you can make some heart-healthy lifestyle changes [<https://medlineplus.gov/howtopreventheartdisease.html>] to try to prevent a future stroke:

- Eating a heart-healthy diet
- Aiming for a healthy weight
- Managing stress [<https://medlineplus.gov/stress.html>]
- Getting regular physical activity [<https://medlineplus.gov/howmuchexercisedoineed.html>]
- Quitting smoking [<https://medlineplus.gov/quittingsmoking.html>]
- Managing your blood pressure [<https://medlineplus.gov/howtopreventhighbloodpressure.html>] and cholesterol levels [<https://medlineplus.gov/howtolowercholesterol.html>]


If these changes aren't enough, you may need medicine to control your risk factors.

NIH: National Institute of Neurological Disorders and Stroke

Start Here

- **Stroke** [<https://www.ninds.nih.gov/health-information/stroke>]  (National Institute of Neurological Disorders and Stroke)
- **Stroke Overview** [<https://www.ninds.nih.gov/health-information/stroke/stroke-overview>]  (National Institute of Neurological Disorders and Stroke)
- **Types of Stroke and Treatment** [<https://www.stroke.org/en/about-stroke/types-of-stroke>] (American Stroke Association)
Also in Spanish [<https://www.stroke.org/es/about-stroke/types-of-stroke>]
- **What Is a Stroke?** [<https://www.nhlbi.nih.gov/health/stroke>]   (National Heart, Lung, and Blood Institute)
Also in Spanish [<https://www.nhlbi.nih.gov/es/salud/accidente-cerebrovascular>]

Symptoms

- **Heart Attack, Stroke and Cardiac Arrest Symptoms** [<https://www.heart.org/en/about-us/heart-attack-and-stroke-symptoms>] (American Heart Association)
- **Stroke Signs and Symptoms** [<https://www.ninds.nih.gov/health-information/stroke/signs-and-symptoms>]  (National Institute of Neurological Disorders and Stroke)

Stroke Symptoms and Warning Signs [<https://www.stroke.org/en/about-stroke/stroke-symptoms>]



(American Stroke Association)

Also in Spanish [<https://www.stroke.org/es/about-stroke/stroke-symptoms>]

Diagnosis and Tests

- Carotid Ultrasound Imaging [<https://www.radiologyinfo.org/en/info/us-carotid>]



(American College of Radiology; Radiological Society of North America)

Also in Spanish [<https://www.radiologyinfo.org/es/info/us-carotid>]

- Catheter Angiography [<https://www.radiologyinfo.org/en/info/angiocath>]



(American College of Radiology; Radiological Society of North America)

Also in Spanish [<https://www.radiologyinfo.org/es/info/angiocath>]

- Cranial Ultrasound [<https://www.radiologyinfo.org/en/info/ultrasound-cranial>]



(American College of Radiology; Radiological Society of North America)

Also in Spanish [<https://www.radiologyinfo.org/es/info/ultrasound-cranial>]

- CT Perfusion Imaging of the Head [<https://www.radiologyinfo.org/en/info/perfusionheadct>]

(American College of Radiology; Radiological Society of North America)

Also in Spanish [<https://www.radiologyinfo.org/es/info/perfusionheadct>]

- Functional MRI (fMRI) [<https://www.radiologyinfo.org/en/info/fmribrain>]

(American College of Radiology; Radiological Society of North America)

Also in Spanish [<https://www.radiologyinfo.org/es/info/fmribrain>]

- How Is Stroke Diagnosed? [<https://womenshealth.gov/heart-disease-and-stroke/stroke/stroke-treatment-and-recovery/how-stroke-diagnosed>] (Department of Health and Human Services, Office on Women's Health)

- Lipoprotein (a) Blood Test [<https://medlineplus.gov/lab-tests/lipoprotein-a-blood-test/>]  (National Library of Medicine)

Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/analisis-de-sangre-de-lipoproteina-a/>]

Prevention and Risk Factors

- Brain Basics: Preventing Stroke [<https://www.ninds.nih.gov/health-information/public-education/brain-basics/brain-basics-preventing-stroke>]  (National Institute of Neurological Disorders and Stroke)

- Halting Heart Attack and Stroke [<https://newsinhealth.nih.gov/2024/12/halting-heart-attack-stroke>]



(National Institutes of Health)

Also in Spanish [<https://salud.nih.gov/recursos-de-salud/nih-noticias-de-salud/detener-un-ataque-al-corazon-y-un-accidente-cerebrovascular>]

- Let's Talk about Carotid Endarterectomy [<https://www.stroke.org/en/help-and-support/resource-library/lets-talk-about-stroke/carotid-endarterectomy>] (American Stroke Association)

- Let's Talk about Lifestyle Changes to Prevent Stroke [<https://www.stroke.org/en/help-and-support/resource-library/lets-talk-about-stroke/lifestyle-changes>] (American Stroke Association)

Also in Spanish [<https://www.stroke.org/es/help-and-support/resource-library/lets-talk-about-stroke/lifestyle-changes>]

- Mind Your Risks [<https://www.ninds.nih.gov/health-information/public-education/mind-your-risks>]



(National Institute of Neurological Disorders and Stroke)

- Preventing Stroke [<https://www.cdc.gov/stroke/prevention/>] (Centers for Disease Control and Prevention)

Also in Spanish [<https://www.cdc.gov/stroke/es/prevention/prevencion-de-los-accidentes-cerebrovasculares.html>]

- Safe Use of Aspirin [<https://www.fda.gov/drugs/understanding-over-counter-medicines/safe-use-aspirin>]

(Food and Drug Administration)

- What New Guidelines Say to Do to Prevent a Stroke [<https://www.heart.org/en/news/2024/10/21/what-new-guidelines-say-to-do-to-prevent-a-stroke>] (American Heart Association)

Treatments and Therapies

- Stroke: First Aid [<https://www.mayoclinic.org/first-aid/first-aid-stroke/basics/ART-20056602?p=1>]

(Mayo Foundation for Medical Education and Research)

Also in Spanish [<https://www.mayoclinic.org/es/first-aid/first-aid-stroke/basics/art-20056602?p=1>]


Treatment and Intervention for Stroke [<https://www.cdc.gov/stroke/treatment/>] (Centers for Disease Control and Prevention)
Also in Spanish [<https://www.cdc.gov/stroke/es/treatment/tratamiento-e-intervencion-para-accidentes-cerebrovasculares.html>]

- What Are Some Common Outcomes of Stroke and Some Common Treatments for These Outcomes? [<https://www.nichd.nih.gov/health/topics/stroke/conditioninfo/treatment>]


 (Eunice Kennedy Shriver National Institute of Child Health and Human Development)

Also in Spanish [<https://espanol.nichd.nih.gov/salud/temas/stroke/informacion/tratamientos>]





Living With

- 15 Things Caregivers Should Know After a Loved One Has Had a Stroke [<https://www.stroke.org/en/help-and-support/family-caregivers/15-things-caregivers-should-know-after-a-loved-one-has-had-a-stroke>] (American Stroke Association)
- Life after Stroke [<https://www.stroke.org/en/life-after-stroke>] (American Stroke Association)
Also in Spanish [<https://www.stroke.org/es/life-after-stroke>]
- Stroke Recovery Timeline [<https://www.hopkinsmedicine.org/health/conditions-and-diseases/stroke/stroke-recovery-timeline>]  (Johns Hopkins Medicine)



Related Issues

- Atherosclerosis and Stroke [<https://www.stroke.org/en/about-stroke/stroke-risk-factors/atherosclerosis-and-stroke>]
(American Stroke Association)
Also in Spanish [<https://www.stroke.org/es/about-stroke/stroke-risk-factors/atherosclerosis-and-stroke>]
- Controlling Post-Stroke Seizures [<https://www.stroke.org/en/about-stroke/effects-of-stroke/physical-effects/post-stroke-seizures>] (American Stroke Association)
Also in Spanish [<https://www.stroke.org/es/about-stroke/effects-of-stroke/physical-effects/post-stroke-seizures>]
- Diabetes, Heart Disease, and Stroke [<https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/heart-disease-stroke>]  (National Institute of Diabetes and Digestive and Kidney Diseases)
Also in Spanish [<https://www.niddk.nih.gov/health-information/informacion-de-la-salud/diabetes/informacion-general/prevenir-problemas/diabetes-enfermedades-cardiacas-accidentes-cerebrovasculares>]
- High Blood Pressure, Atrial Fibrillation, and Your Risk of Stroke [<https://www.heart.org/en/health-topics/atrial-fibrillation/why-atrial-fibrillation-af-or-afib-matters/high-blood-pressure-afib-and-your-risk-of-stroke>]  (American Heart Association)

Specifics

- Hemorrhagic Stroke: MedlinePlus Health Topic [<https://medlineplus.gov/hemorrhagicstroke.html>]
 (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/hemorrhagicstroke.html>]
- Ischemic Stroke: MedlinePlus Health Topic [<https://medlineplus.gov/ischemicstroke.html>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/ischemicstroke.html>]
- Lateral Medullary Syndrome [<https://www.ninds.nih.gov/health-information/disorders/lateral-medullary-syndrome>]
 (National Institute of Neurological Disorders and Stroke)
- Spinal Cord Infarction [<https://www.ninds.nih.gov/health-information/disorders/spinal-cord-infarction>]
 (National Institute of Neurological Disorders and Stroke)

Genetics

- Cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/cerebral-autosomal-dominant-arteriopathy-with-subcortical-infarcts-and-leukoencephalopathy/>]  (National Library of Medicine)
- Mitochondrial encephalomyopathy, lactic acidosis, and stroke-like episodes: MedlinePlus Genetics [<https://medlineplus.gov/genetics/condition/mitochondrial-encephalomyopathy-lactic-acidosis-and-stroke-like-episodes/>]
 (National Library of Medicine)

Images

- Craniotomy - series [https://medlineplus.gov/ency/presentations/100048_1.htm] (Medical Encyclopedia)
Also in Spanish [https://medlineplus.gov/spanish/ency/esp_presentations/100048_1.htm]



Videos and Tutorials

- Survived a Stroke? How to Heal in the First 90 Days [<https://www.heart.org/en/health-topics/house-calls/recovering-from-a-stroke-what-to-do-in-the-first-90-days>]  (American Heart Association)

Statistics and Research

- About the Atlas of Heart Disease and Stroke [<https://www.cdc.gov/heart-disease-stroke-atlas/about/>]
(Centers for Disease Control and Prevention)
- FastStats: Cerebrovascular Disease or Stroke [<https://www.cdc.gov/nchs/fastats/stroke.htm>]
(National Center for Health Statistics)
- Heart and Stroke Statistics [<https://www.heart.org/en/about-us/heart-and-stroke-association-statistics>]
(American Heart Association)
- New Research from Emory University May Revolutionize How Stroke, Heart Attack, Related Blood-Clotting Conditions Are Treated [https://news.emory.edu/stories/2025/04/hs_blood_clot_conditions_04-04-2025/story.html] (Emory University)
- Stroke Facts [<https://www.cdc.gov/stroke/data-research/facts-stats/>] (Centers for Disease Control and Prevention)

Clinical Trials


- ClinicalTrials.gov: Carotid Stenosis [<https://clinicaltrials.gov/search?cond=%22Carotid+Stenosis%22&aggFilters=status:not%20rec>]  (National Institutes of Health)
- ClinicalTrials.gov: Endarterectomy, Carotid [<https://clinicaltrials.gov/search?intr=carotid+endarterectomy&aggFilters=status:not%20rec>]  (National Institutes of Health)

Journal Articles


References and abstracts from MEDLINE/PubMed (National Library of Medicine)

- Article: Functional neuroplasticity in chronic post-stroke aphasia following a singing intervention in... [<https://www.ncbi.nlm.nih.gov/pubmed/40738917>]
- Article: Aerobic minutes and step number remain low in inpatient stroke rehabilitation. [<https://www.ncbi.nlm.nih.gov/pubmed/40720450>]
- Article: Effects and neural mechanisms of a brain-computer interface-controlled soft robotic glove... [<https://www.ncbi.nlm.nih.gov/pubmed/40707971>]
- Stroke -- see more articles [<https://pubmed.ncbi.nlm.nih.gov/?term=%22Stroke%22%5Bmajr%3Anoexp%5D+AND+humans%5Bmh%5D+AND+english%5Bla%5D+AND+%22last+1+Year%22+%5Bedat%5D+AND+%28patient+education+handout%5Bpt%5D+OR+guideline%5Bpt%5D+OR+clinical+trial%5Bpt%5D%29++NOT+%28letter%5Bpt%5D+OR+case+reports%5Bpt%5D+OR+editorial%5Bpt%5D+OR+comment%5Bpt%5D%29+AND+free+full+text%5Bsb%5D+>]

Reference Desk

- Agnosia [<https://www.ninds.nih.gov/health-information/disorders/glossary-neurological-terms#agnosia>]  (National Institute of Neurological Disorders and Stroke)
- Stroke Connection e-news [<https://www.stroke.org/en/stroke-connection>] (American Stroke Association)
Also in Spanish [<https://www.stroke.org/es/stroke-connection>]

Find an Expert

- American Heart Association [<https://www.heart.org/en/>]
- American Stroke Association [<https://www.stroke.org/>]
- Find a Physical Medicine & Rehabilitation Physician [https://members.aapmr.org/AAPMR/AAPMR_FINDER.aspx] (American Academy of Physical Medicine and Rehabilitation)
- National Institute of Neurological Disorders and Stroke [<https://www.ninds.nih.gov/>] 

Children

- Pediatric Stroke [<https://chasa.org/medical/pediatric-stroke/>] (Children's Hemiplegia and Stroke Association)

Women

- Stroke [<https://womenshealth.gov/heart-disease-and-stroke/stroke>] (Department of Health and Human Services, Office on Women's Health)
Also in Spanish [<https://espanol.womenshealth.gov/heart-disease-and-stroke/stroke>]
- Women and Stroke [<https://www.stroke.org/en/about-stroke/stroke-risk-factors/women-have-a-higher-risk-of-stroke>] (American Stroke Association)
Also in Spanish [<https://www.stroke.org/es/about-stroke/stroke-risk-factors/women-have-a-higher-risk-of-stroke>]

Older Adults

- Stroke [<https://www.healthinaging.org/a-z-topic/stroke>] (AGS Health in Aging Foundation)

Patient Handouts

- EEG [<https://medlineplus.gov/ency/article/003931.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/003931.htm>]
- Preventing stroke [<https://medlineplus.gov/ency/patientinstructions/000678.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/patientinstructions/000678.htm>]
- Stroke [<https://medlineplus.gov/ency/article/000726.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/000726.htm>]
- Stroke - discharge [<https://medlineplus.gov/ency/patientinstructions/000132.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/patientinstructions/000132.htm>]



MEDICAL ENCYCLOPEDIA

BAER - brainstem auditory evoked response [<https://medlineplus.gov/ency/article/003926.htm>]

Brain herniation [<https://medlineplus.gov/ency/article/001421.htm>]

Brain surgery [<https://medlineplus.gov/ency/article/003018.htm>]

Brain surgery - discharge [<https://medlineplus.gov/ency/patientinstructions/000124.htm>]

Craniotomy - series [https://medlineplus.gov/ency/presentations/100048_1.htm]

EEG [<https://medlineplus.gov/ency/article/003931.htm>]

Head MRI [<https://medlineplus.gov/ency/article/003791.htm>]

Lactate dehydrogenase test [<https://medlineplus.gov/ency/article/003471.htm>]

LDH isoenzyme blood test [<https://medlineplus.gov/ency/article/003499.htm>]

Lipoprotein-a [<https://medlineplus.gov/ency/article/007262.htm>]

Magnetic resonance angiography [<https://medlineplus.gov/ency/article/007269.htm>]

Preventing stroke [<https://medlineplus.gov/ency/patientinstructions/000678.htm>]

Stroke [<https://medlineplus.gov/ency/article/000726.htm>]

Stroke - discharge [<https://medlineplus.gov/ency/patientinstructions/000132.htm>]

Swallowing problems [<https://medlineplus.gov/ency/patientinstructions/000065.htm>]

Transcranial Doppler ultrasound [<https://medlineplus.gov/ency/article/007759.htm>]

Vertebrobasilar circulatory disorders [<https://medlineplus.gov/ency/article/001423.htm>]

Related Health Topics

Aphasia [<https://medlineplus.gov/aphasia.html>]

Atherosclerosis [<https://medlineplus.gov/atherosclerosis.html>]

Hemorrhagic Stroke [<https://medlineplus.gov/hemorrhagicstroke.html>]

Ischemic Stroke [<https://medlineplus.gov/ischemicstroke.html>]

Stroke Rehabilitation [<https://medlineplus.gov/strokerehabilitation.html>]

Transient Ischemic Attack [<https://medlineplus.gov/transientischemicattack.html>]

National Institutes of Health

The primary NIH organization for research on *Stroke* is the National Institute of Neurological Disorders and Stroke [<http://www.ninds.nih.gov/>]

Other Languages

Find health information in languages other than English [<https://medlineplus.gov/languages/stroke.html>] on *Stroke*

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