Stroke in North Carolina

FACT SHEET

Community & Clinical Connections for Prevention & Health Branch | North Carolina DHHS | Division of Public Health

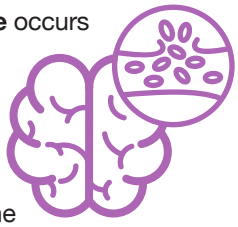
What is stroke?

A stroke occurs when the blood supply to the brain is blocked or when a blood vessel in or around the brain ruptures, causing some brain tissue to die.

- The main types of stroke include:

Ischemic stroke accounts for 87% of all strokes and occurs when the vessels that carry oxygen-rich blood to the brain become blocked, resulting in damage to the area of the brain supplied by these blood vessels.[1]

Hemorrhagic stroke occurs when the vessels that carry oxygen-rich blood to the brain break open or rupture releasing blood in or around the brain and damaging brain cells.



- **Transient Ischemic Attack** (TIA) or "mini-stroke" is a warning sign of a future ischemic stroke. A TIA occurs when the blockage of blood supply to the brain lasts only for a very short time and does not cause permanent brain damage. Patients with TIAs have typical stroke symptoms, but the symptoms are temporary, generally lasting only minutes or a few hours.
- When stroke symptoms first occur, there is no way to know whether they are from a TIA or from a stroke.
- **All strokes and TIAs are medical emergencies.**

How many people are affected by stroke ?

Stroke is the 5th leading cause of death in the US and the 3rd in NC.[2,3]

6,189 **Deaths caused by stroke in NC in 2022** = **2** stroke deaths **every 3 hours** & **5.5%** of all deaths in the state[3]

An estimated **300,000** NC adults **(3.4%)** reported that they **have had a stroke in their lifetime**.[4] This rate does not include people living in long-term care facilities and is likely an **underestimate** of all those who have suffered a stroke.

In 2022, stroke led to **30,662** hospital discharges & **$2.1 billion** in hospital charges in NC[5]

1 every 17 minutes **about $5.8 million each day**

In 2023, the NC Medicaid program spent over **$528 million** on **33,983** beneficiaries who had a stroke.[6] That's about **$15,537** per beneficiary.

What are the risk factors for stroke?

- Smoking, high blood pressure, obesity, unhealthy diet and physical inactivity account for about 82 to 90% of all strokes.[7] NC ranks higher than the national average on adult smoking, lack of exercise and high blood pressure.[8]
- Other risk factors for stroke include age, gender, race/ethnicity, genetics and family history, high blood pressure, diabetes, excessive alcohol consumption, high cholesterol, abnormal heart rhythm (e.g., atrial fibrillation), other heart conditions, sleep apnea, and history of a previous stroke. See Figure 1 for the prevalence of key modifiable risk factors for stroke in NC.
- TIA or a "mini-stroke" is a warning sign of future stroke.
  - Over one third of people who have TIAs have a major stroke within one year if they do not receive treatment.
  - The highest risk of stroke is during the first few days following a TIA. Thus, it is important to know the symptoms of stroke and to immediately call 9-1-1 if you think you or someone else may be having a stroke or TIA.
- Stroke is the leading cause of death for women in the US. Risk factors specific to women include:
  - Depression
  - Use of combined estrogen and progestin as well as estrogen-only pills
  - The first six weeks after having a baby
  - Moderate to severely elevated blood pressure during pregnancy, or pre-eclampsia.

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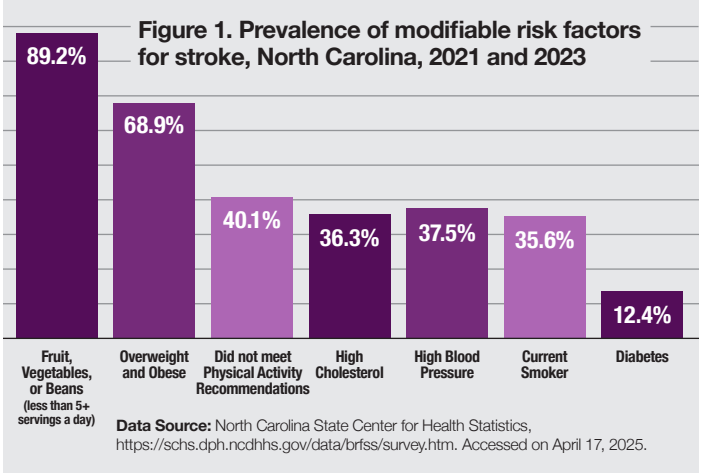


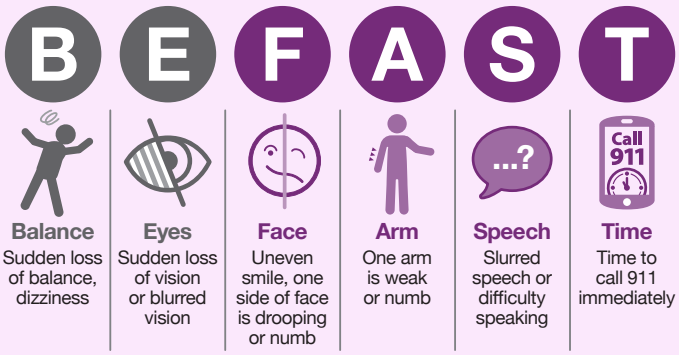
What are the symptoms of a stroke or TIA?

Any combination of the following may occur with a stroke or TIA.

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

Although 89.9% of NC adults say the first thing they would do if they thought someone was having a stroke is to call 9-1-1, nationally only 38% of people knew all major stroke symptoms and to call 9-1-1.[9,1] It is important to know the symptoms of stroke and to immediately call 9-1-1 if you think you or someone else may be having a stroke. "Time is Brain."

When it comes to stroke, BE FAST. Call 911.
Any one of these sudden symptoms could mean a stroke.



How is stroke diagnosed?

Stroke is diagnosed by a combination of clinical history, findings on physical examination, and imaging tests of brain tissue.

What are the complications of stroke?

Stroke is a leading cause of long-term disability. Examples of the types of disability caused by stroke include:

- Muscle weakness on one side of the body (hemiparesis)
- Unable to walk without help
- Trouble with thinking, attention, memory, perception
- Depression
- Speech difficulties including complete inability to speak (aphasia)
- Difficulty swallowing.[10]

What are the treatment options for stroke?

Stroke and TIAs are medical emergencies. Treatment for stroke depends on multiple factors including the type of stroke, the patient's overall clinical condition and medical history, and the time that has elapsed since the onset of stroke symptoms.

- The chance of survival, recovery, and degree of lasting disability are affected by the time between the onset of stroke symptoms and the start of treatment.
- Tissue Plasminogen Activator (tPA) is a type of thrombolytic approved by the Food and Drug Administration (FDA) to treat ischemic stroke. If clinical conditions are met, tPA can be started within three hours of onset of symptoms. The National Clinical Guideline for Stroke recommends its use in certain circumstances for up to 4.5 hours after symptoms first occur. Widely used tPA thrombolytics include alteplase and tenecteplase (brand name TNKase). There are also several specialized surgical procedures that are beneficial in the treatment of strokes and may be used up to 24 hours in certain patients with clots in large vessels or hemorrhagic stroke.
- Rehabilitation therapy after stroke is an essential component of treatment that can reduce disability and improve quality of life.
- Primary Stroke Centers and Comprehensive Stroke Centers are hospitals certified for the delivery of high-quality care (including tPA and other procedures) for stroke. Figure 2 shows county-specific death rates and the location of stroke certified hospitals in North Carolina. For a listing of designated stroke centers in North Carolina visit **info.ncdhhs.gov/dhsr/ahc/listings.html**.

How can strokes be prevented?

- First-time strokes can be prevented by adopting a healthy lifestyle and managing other medical conditions that increase the risk of stroke.
- Healthy lifestyle practices that help reduce the risk of stroke include:

Maintaining a healthy weight or losing weight (for those who are overweight or obese) through physical activity and healthy eating (including reducing sodium intake). For information on physical activity and healthy eating please visit **esmmweighless.com**.

Avoiding tobacco products and secondhand smoke for non-smokers and quitting for current smokers. For information about smoking and how to get help quitting please visit **quitlinenc.com** or call 1-800-QUIT-NOW.

Limiting alcohol consumption. Men should have no more than two drinks per day, and women should have no more than one. For more information, please visit Centers for Disease Control and Prevention's Alcohol and Public Health website **cdc.gov/alcohol**.

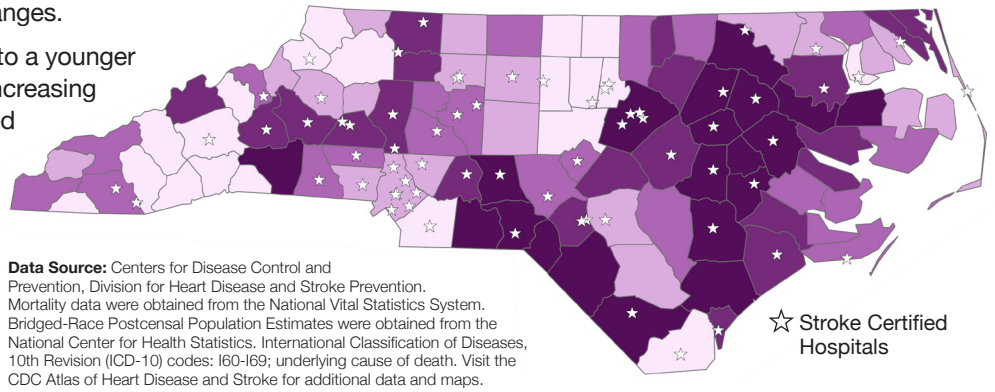
- A combination of lifestyle measures and medications may be necessary to control medical conditions that increase the risk of stroke. For fact sheets about diabetes and high blood pressure in NC visit **communityclinicalconnections.com**.
- People who have had a previous stroke or TIA should work with their health care provider to develop a treatment plan that will help prevent a future stroke, this may include medications, surgery, and/or lifestyle changes.
- Prevention efforts need to be expanded to a younger population. CDC findings demonstrate increasing prevalence in stroke among persons aged 45 to 64.[11]

Disparities, inequality and inequity in the burden of stroke

- In 2022, North Carolina had the 5th highest age-adjusted stroke death rate among the 50 states and the District of Columbia.12 After decades of decline, stroke deaths have stopped decreasing. Between 2013-2021, stroke death rates reversed and began increasing in adults 35-64 years in NC.[13]
- Non-Hispanic Black North Carolinians have higher stroke death rate compared to all other racial/ethnic subgroups.
- Non-Hispanic Black North Carolinians are also more likely to die from stroke and at a younger age compared to non-Hispanic White North Carolinians. In 2022, the proportion of stroke deaths occurring before age 65 by race/ethnicity and gender were as follows:

30%	20%	13%	7%
among non-Hispanic Black men	among non-Hispanic Black women	among non-Hispanic White men	among non-Hispanic White women[14]

Figure 2. Stroke Death Rate 2020–2022 by County and Stroke Certified Hospitals (Joint Commission and DNV Certifications)



Data Source: Centers for Disease Control and Prevention, Division for Heart Disease and Stroke Prevention. Mortality data were obtained from the National Vital Statistics System. Bridged-Race Postcensal Population Estimates were obtained from the National Center for Health Statistics. International Classification of Diseases, 10th Revision (ICD-10) codes: I60-I69; underlying cause of death. Visit the CDC Atlas of Heart Disease and Stroke for additional data and maps.

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This fact sheet was produced by the Community and Clinical Connections for Prevention and Health Branch, Chronic Disease and Injury Section, Division of Public Health, N.C. Department of Health and Human Services. If you have any questions about data used in this fact sheet or about heart and blood vessel disease prevention and management efforts in North Carolina, please email contact@communityclinicalconnections.com.

For more information on the Community and Clinical Connections for Prevention and Health Branch, please visit communityclinicalconnections.com.