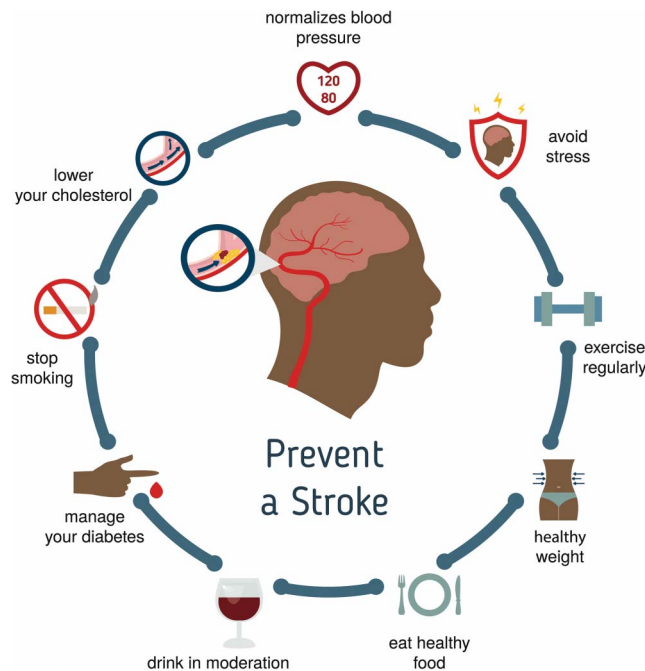


# The Risk of a Second Stroke

## Does Race Play a Role?

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## Related Article

### Racial Disparities in Stroke Recurrence: A Population-Based Study

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In the United States, it is estimated that 800,000 people will have a stroke *each year*. Of these, approximately 600,000 are first-time strokes, which means that approximately one-fourth or 200,000 will have a repeated stroke. This means that every 40 seconds, someone in the United States has a stroke. Once in every 3.5 minutes, someone dies of stroke (CDC website). The yearly cost of stroke in the United States is estimated at \$45 billion<sup>1</sup> to \$53 billion.<sup>2</sup> Because stroke mostly affects older individuals (two-thirds of stroke occurs in individuals older than 65 years), as our population grows older, the rates of stroke, and its cost, will increase.

It has long been observed that there is a link between stroke and race. The risk factors of stroke are the same for all of us: high blood pressure, high cholesterol, smoking, obesity, and diabetes are a few of them (also called the *traditional* risk factors of stroke). The rates of these risk factors vary with race. However, even when this is taken into account, Black individuals have *twice* the risk of a *first-time* stroke than White individuals.<sup>2</sup> Some studies have suggested that this difference may be higher, up to *3 times the risk*.<sup>3</sup>

Why would this difference persist if we account for the racial differences in risk factors? More recent studies have tried to understand this. They have looked at social and cultural factors and how things such as privilege/disadvantage and access to the healthcare system can affect how we stay healthy through our lives.<sup>4</sup> For instance, if a person grows up in a community where stroke prevention is rarely discussed or taught, they may not understand the importance of things such as having their blood pressure or cholesterol checked regularly. If that person then develops a condition such as high blood pressure or high cholesterol that is left unmonitored and untreated, this could lead to a higher risk of stroke when that person gets older.

Although the rates of *first-time stroke* are higher in Black individuals than in White individuals, very little is known about racial differences regarding the 1 in 4 people who have a

repeat stroke. Is the rate of repeat stroke higher for Black individuals than for individuals of other races? If so, how much higher? If there are differences among diverse groups, can we understand why repeated stroke is more common for some groups than others? It was in hopes of answering these questions that Dr. Robinson et al. initiated the study, "Racial Disparities In Stroke Recurrence: A Population-Based Study."<sup>5</sup>

## How Was the Study Performed?

The study occurred over a 1.5-year period between 2014 and 2015. The participating patients were part of the Greater Cincinnati Northern Kentucky region, which consists of 5 adjacent counties. Approximately 1.3 million people live in this region of the United States.<sup>5</sup> Patients who had a first-time stroke in 2014 or 2015 were then followed up over a 3-year period, and the researchers looked for occurrences of repeat or recurrent stroke. The authors evaluated the participants' past illnesses and risk factors of stroke. They also carefully looked at each participant's age, education, and income. They then divided the stroke by the type of stroke: ischemic, hemorrhagic, transient ischemic attack (TIA), or subarachnoid hemorrhage.

## What Were the Results?

Over the course of the study, there were 3,816 participants who had a first-time stroke. Of them, two-thirds (66%)

of cases were due to ischemia, 22% due to a TIA, 10% due to bleeding in the brain (intracranial hemorrhage), and 2% due to a subarachnoid hemorrhage. Of the people who had a first-time stroke, 476 had a repeat stroke less than 3 years after the first stroke. After the study was complete, the overall numbers suggested that Black individuals were more likely to have repeated stroke than White individuals. However, when the authors took into account the traditional risk factors of stroke, they found that there was no difference in risk between the 2 groups. This being said, there were a few differences regarding other aspects of the stroke cases. For instance, White participants were more likely to have had a stroke due to a heart rhythm abnormality or heart disease. Black participants were more likely to have had a stroke due to traditional risk factors of stroke.

## Why Is This Important?

Past studies on this topic have not highlighted the differences in health outcomes among different race groups. Research such as what was completed in this study helps doctors understand the *reasons* why stroke occurs, and how race and, more specifically, issues of social inequality can lead to differences in health. Although this study did not tell us why Black people have recurrent strokes more than White people, it is a beginning. With additional studies, we may understand this problem more fully. With this information, we can then develop much better strategies to improve the care of all people who are at risk of stroke.

# About Stroke

## How Does the Brain Work?

For many years, I have tried to explain how the brain works. To me, the brain works similar to an orchestra. There are many parts to an orchestra: percussion, wind instruments, string instruments, etc. Each instrument has a part to play in the overall, more complex, musical story. When playing together, which requires that the musicians listen to one another, the orchestra can perform complex beautiful music. The brain is just like this. It is divided into sections such as language, movement, and sensation. The brain cells, similar to the musicians, *must* listen to each other. The difference between the brain and an orchestra is complexity. A philharmonic orchestra may have 150 members. The brain contains *billions* of neurons.

Suppose that while the musicians are playing, someone suddenly turned out the lights on one section of the brain's "orchestra"? These players would not be able to see the music they were playing and would have to stop. The rest of the orchestra would continue to play without them. This is what happens during a stroke. If the section that was no longer playing was "language," for example, the person might suddenly be unable to speak or might be unable to understand spoken and written words. However, in a stroke, the "musician"—brain cells—dies.

Because we do not yet have a way to restore or regrow brain cells after a stroke, most treatments have been aimed at either stroke prevention or returning blood flow to the area in the brain where a stroke took place. There are 2 types of treatment that restore blood flow. The first is called tPA therapy and is an IV medicine. The second type, which is more invasive, requires treatment from within the blood vessel itself. This is called endovascular therapy. In this type, a small catheter is placed into the blood vessel at the place where it is blocked. Both tPA and endovascular therapies are designed to break up a clot or remove the blockage in an artery. Often, they are referred to as "clot-breaking" treatments. Other therapies try to accelerate or improve how the brain recovers function after a stroke. The outcome of this type of treatment is similar to what would happen if some of the remaining orchestra members in our example were trained to take over the parts that had been played by the lost musicians.<sup>6</sup>

## What Is Stroke?

Stroke is a sudden neurologic event.<sup>1</sup> There are several symptoms common to most strokes. In fact, the American Stroke Association uses a very simple strategy for recognizing stroke called "F.A.S.T.": F = face drooping, A = arm

weakness, S = speech difficulty, and T = time to call 911. There are other possible signs of stroke such as sudden numbness, sudden confusion, difficulty seeing, or trouble walking. Any of these could be a sign of stroke, but regardless of the symptom, stroke is *always* sudden.

There are 2 main types of stroke: *ischemic* or *hemorrhagic*. Ischemic strokes account for approximately 87% of stroke cases. Ischemic strokes are usually caused by clots that block an artery in the brain. Because blood cannot get past the blockage, neither can oxygen. The brain cells that rely on this oxygen then begin dying. Time is critical when it comes to stroke: the longer the cells lack oxygen, the greater the number of cells that die. Nowadays, there are many treatments that are designed to break up a blockage that is causing a stroke. One of them is called tPA, which stands for tissue plasminogen activator. When given intravenously within a short time after the ischemic stroke, tPA can reopen the affected blood vessel, restoring blood flow and oxygen to that part of the brain. Another treatment, called mechanical thrombectomy, involves surgery. In this type of treatment, a medical device is inserted into the affected artery and is sent to the clot. It removes the clot, restoring blood flow to the affected part of the brain. The effects of both treatments are rapid and can prevent and even reverse neurologic damage. In hemorrhagic stroke, bleeding occurs in the brain. This could be due to a weak blood vessel or possibly an aneurysm that has ruptured. One of the most common causes of hemorrhagic stroke is poorly managed high blood pressure. The constant high blood pressure puts too much strain on the blood vessels, causing them to burst.

Most treatments of stroke are designed to prevent the problem from occurring in the first place—that is, *prevention*. Common causes of stroke include high blood pressure, cigarette smoking, diabetes, obesity, and eating a high-fat diet. Preventing stroke for some people may be a matter of improving their diet: specifically, eating healthier foods overall and avoiding foods that contain high fat or high cholesterol. For others, preventing stroke may include good, consistent control of blood pressure or diabetes. Cigarette smoking should stop or be avoided altogether. Physical inactivity is also a risk factor (although vigorous activity immediately after stroke can lead to recurrent stroke and should be avoided). Studies have shown repeatedly the long-term benefits of exercise. The bottom line: the more we move and exercise, the healthier we are. But this is only part of the answer for preventing more strokes for more people: we *also* need to make sure that this good information gets to the people who need it the most.

Note: Portions of this section were adapted from "Treating Stroke From Inside the Blood Vessel: Time Matters."<sup>6</sup>

## For More Information:

**Brain & Life**  
brainandlife.org

**American Stroke Association**  
stroke.org

**American Stroke Foundation**  
americanstroke.org

**Brain Attack Coalition**  
brainattackcoalition.org

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