

## **Stroke**

Destiny M. Klinger

Margaret H. Rollin School of Nursing

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Dr. V. Baich

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If there are ways that you or someone you love can lower their risk of experiencing a stroke and add to the statistics, would you take steps to change your fate? Stroke is classified when there is an interruption in the blood flow and therefore oxygen supply to the brain. Due to the lack of oxygen for a certain amount of time, it can begin affecting an individual's neurologic function. It can fall into two categories, either ischemic or hemorrhagic. Out of the two categories, an ischemic stroke accounts for about 87% of strokes people experience (Lippincott Advisor,2023). This research will highlight the pathology, etiology, risk factors, manifestations, and ways to prevent an initial stroke or a stroke from recurring.

### **Statement of the Problem**

A stroke can occur at any age, at any time of the day. The risk of having one increases as an individual ages. So, it becomes more important to take even more precautions to prevent a stroke from occurring the older you get. In the United States as of 2021, stroke was the fifth leading cause of death, with approximately 800,000 individuals experiencing one every year (Mendelson & Prabhakaran, 2021). In an ischemic stroke, the cerebral blood flow is cut off by a thrombus. That causes the affected area to begin to experience hypoxia and changes in the cell's permeability. As blood flow begins to decrease more "focal areas of ischemia occur," and after that occurs that is when infarction of the vascular system starts (Lippincott Advisor,2023). As cellular changes start to happen it allows the cell to take in a large amount of "sodium, calcium ions and water leading to edema" (Lippincott Advisor,2023). At the end of the cycle the neurons, the nerve cells that send messages to the rest of our body, begin to die off.

The second type of stroke is a hemorrhagic stroke. This type occurs when there is a leak from a blood vessel that moves into the tissue of the brain. This causes edema, resulting in an

increase in intracranial pressure that compresses brain tissue and causes spasms of surrounding blood vessels (Lippincott Advisor,2023). Once there is enough pressure built up it causes an impairment in the cerebral perfusion which causes infarction of brain tissue to occur. Once enough healthy tissue is lost that is when people are more likely to see neurological changes. About 50% of stroke survivors are left with permanent neurological disability (Lippincott Advisor,2023). Those changes include visual and sensorial impairment and a degree in an individual's cognitive function.

Some factors increase individuals' chances of experiencing either one of the above stroke types. People who are at increased risk include older adults, African Americans, and their immediate family who had a stroke. On top of that if they have high cholesterol, hypertension, or diabetes and if they smoke or have a sedentary lifestyle, they are at an increased risk of experiencing a stroke (Lippincott Advisor, 2023). The good thing is there are ways to lower a person's chances of having a stroke.

If they do have some risk factors, there are signs to look out for. We are going to use the acronym BE FAST. The B stands for balance, is the person unable to walk straight or leaning to one side. Eyes are the E, what that means is the person is starting to have blurred vision. Next is F for face, which is the person's face drooping, usually affecting one side of the face. You can ask them to smile. Then the A is for whether they are experiencing arm weakness. S assesses if their speech is slurred or if are they having trouble speaking. The last letter means that if they have all the above signs, it is Time to call 911 (Toral, 2021). If this condition is left untreated for a prolonged period it can increase the number of patients hospitalized and increase the length of their stay. It will also cause the patient-to-nurse ratio to increase due to many facilities being short-staffed. If the nurse has more patients, then he or she will not be able to provide the

adequate amount of care the patients deserve.

### **Risk Reduction/ Treatment of the Problem**

As mentioned above there are preventative measures that a person can take to decrease their chances of having a stroke. The first line of treatment for an ischemic stroke includes making lifestyle changes. Some of these changes include healthy eating which can reduce cholesterol and, in turn, prevent the risk of a thrombus formation which could travel to the brain and cause a stroke. Other modifications include weight loss/regular exercise and termination of smoking (Diener & Hankey, 2020). It is recommended to take antihypertensives to reduce hypertension which increases the risk of having a hemorrhagic stroke. Having lower blood pressure “leads to lower recurrence of stroke” (Diener & Hankey, 2020). If at high risk, there is screening that can be done to diagnose or predict an individual's risk of stroke. The first one is an ultrasound of the carotid artery to look at the amount of plaque buildup in the arteries. A neurologic test that is performed when someone presents with signs of a stroke is a CT. However, diffusion weight imaging MRI can identify ischemia in the brain (Mendelson & Prabhakaran, 2021). These three tests are the main types that are done to identify and predict a stroke. Once identified there are few treatment options available.

Two treatment options are early antiplatelet therapy using aspirin and clopidogrel and a mechanical thrombectomy. Antiplatelet therapy is used to decrease the blood viscosity to avoid platelets migrating together and creating an obstruction of blood flow. Scott and Shyam stated that people who took the aspirin, in a study, were shown to have a lower rate of strokes. The second treatment that can be done is more invasive, it is a mechanical thrombectomy. This means they go in with either a stent to grasp or an aspiration catheter through the femoral or radial artery to pull out the clot. Participating in these treatments individuals can reduce the

chance of the clot traveling through the vascular system into the vessels of the brain.

### **Planning of Teaching Content**

To educate the community members there will be a trifold poster that has the key points of stroke, signs, symptoms, and ways to prevent it from occurring. On the poster, my group will utilize bold, bright tests to highlight what we think is the most important information for the community to take away. To evaluate the effectiveness of our teaching there will be a color wheel with questions that they can spin and answer. The questions will be on topics that we talked about and are present on the poster. Once the individual answers correctly they can pick from a prize bowl. The goal is that no one walks away empty-handed because they will be able to spin until they answer a question correctly. Before they leave, we will supply them with a small pamphlet that has the major points from our presentation. The goal is that they will be able to explain what each letter of BE FAST means and stands for. The community will also be able to list at least three risk factors for stroke.

### **Conclusion**

A Stroke can either be ischemic or hemorrhagic, this is the fifth leading cause of death in the US. There is a possibility that the damage from a stroke can cause permanent neurologic function loss. That means it is essential to identify and treat a stroke immediately. To identify a stroke at home, look out for an individual's change in balance, vision blurriness, unilateral facial drooping, arm weakness, slurred or difficulty with speech, and lastly if any of those are noted it is time to call 911. The treatment could be a removal of the clot or antiplatelets to avoid clot formation. Ultrasound of the carotid artery can be done to look at the amount of plaque build-up, and then they can also do an MRI to look for ischemia of the brain better than a CT scan. In the end, a stroke can take effect anywhere at any time.

### References

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