Stroke Prevention: Improving Patient Outcomes

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Time is Tissue. "Every 40 seconds, someone in the United States has a stroke. Every 3 minutes and 11 seconds, someone dies of stroke in this country." (CDC, 2024). Stroke, the fifth leading cause of death in the United States. Strokes can also be called cerebrovascular accidents which lead to cell death of brain tissue. Strokes can cause neurological deficits affecting movements, sensations, thinking, talking and emotions. It is important to be knowledgeable about simple life adjustments, both modifiable and nonmodifiable risk factors, as these factors can help decrease the likelihood of having a stroke. Education and awareness is crucial as the effects can be debilitating and often fatal. Being able to identify signs and symptoms such as using the BE FAST acronym could be potentially life saving. Having a deeper understanding of stroke prevention through routine doctor visits, modifiable lifestyle changes, along with early recognition of symptoms can reduce the severity of outcomes after a stroke.

Statement of the problem

Strokes are broken up into 2 main types, ischemic and hemorrhagic. Ischemic, the more common of the two, is best described as a blockage or narrowing of blood vessels stopping the flow of blood in the brain due to a blood clot. (Mullally et al., 2021,). Hemorrhagic is spontaneous bleeding from ruptured blood vessels, further classified as intracerebral hemorrhage. Decreased blood flow to tissues in the brain or subarachnoid hemorrhage causes bleeding within the layer of tissue containing the brain tissue, creating pressure in the skull. With the lack of blood flow and the time sensitivity to get treatment there can be cell death within the brain tissue. Populations at an increased risk include the geriatric population, men, and people of African descent; these are nonmodifiable risk factors. "Risk of having a first stroke is nearly twice as high for non-Hispanic Black adults as for White adults." (CDC, 2024). Conditions such as

hypertension, diabetes, high cholesterol, lack of exercise, obesity, poor diet and use of tobacco or illicit drugs and alcohol use are modifiable risk factors. With the right knowledge and consciousness of one's choices, you can help decrease the risk of having a stroke. Examples of this include changing small daily habits, like having a healthier diet, and regular exercise. Signs and symptoms of stroke present similarly with motor deficits such as numbness and weakness, communication and speech deficits, aphasia; the inability to comprehend or produce language and emotional and behavioral changes causing irritability, depression, and impulsiveness.

Symptoms like motor deficits will present on the opposite side of the cerebral accident. To diagnose, healthcare professionals will start with a detailed history and examination. The healthcare professionals will want to know when the onset of symptoms began. There is an assessment called BE FAST that assesses the symptoms of a stroke. This assessment is quick. It looks for stroke specific motor, cognitive, and communication deficits. This assessment starts with B- balance, when the patient suddenly loses the ability to stand, losing their balance. E- eye, is there vision impairment in one or both eyes. F- face, is the face symmetrical, looking for drooping or unevenness. A- arms, can the patient lift both arms shoulder level and hold them there. With some CVA patient's arms will start to drift and fall back to their side uncontrollably. S- speech, is the patient speaking appropriate for age, is the speech clear, is the patient confused when being spoken to or when trying to formulate a response. Lastly, T- time, determine when the time symptoms began. If any of these signs are present it is a medical emergency and treatment needs to begin. Once in medical care there will be an order to get a computed tomography (CT) scan, a quick image of the head to determine the area of the brain and determine the type of stroke. (Chaudhary, et al. 2022) Once the type of stroke is determined, then treatment will begin. A patient experiencing an ischemic stroke will receive a "clot buster"

known as tissue plasminogen activator (tPA). tPA is a medication used to break up the blood clot and help restore blood flow to the brain. This medication has a sensitive time window of within four and half hours from the time of stroke on set. This medication also puts patients at an increased risk for bleeding. Prompt awareness of signs and symptoms and treatment, save brain tissue and decrease lifelong deficits. In severe cases surgical intervention are needed. Some include a carotid endarterectomy, a stent to open the narrowing of the blood vessels allowing an increased blood flow. Hemorrhagic strokes are treated by monitoring blood pressure. Due to the free-flowing blood in the cranial cavity the blood pressure is kept in a steady, consistent, and elevated state to regulate the body for more positive outcomes.

If strokes are left untreated, outcomes are unpredictable. There is a possibility of major deficits of motor function. These include weakness and stiffness of joints. These can lead to immobility of the extremities, cognitive functions, and loss of memory. In severe cases death. Brain tissue becomes necrotic leading to body dysfunction. Patients who require medical attention because they've suffered from an untreated stroke will require the nurse to manage complex complications. Nurses are not dealing with just the current illness presented in the hospital but have to address current illness and stroke deficits as a secondary condition leading to multidisciplinary care.

Risk reduction/ treatment of the problem

The number one way to prevent the severity of stroke outcomes is early recognition using the BE FAST assessment to get prompt treatment. The best and easiest way to reduce the risk of developing a stroke would be to eat a balanced diet and proper exercise. Decreasing the high fat and sugary foods will decrease chances of developing diabetes and hyperlipidemia. High cholesterol is plaque buildup in the arteries. Choosing fresh vegetables and proper protein will

promote a healthier lifestyle. There is a mediterranean diet which has been shown to help reduce the risk of developing a stroke (Bushnell, et al, 2024) Along with a balanced diet, exercising 30 minutes 4-5 times a week or activity as tolerated strengthens muscles. Strengthening the cardiovascular system to prevent hypertension. Smoking cessations are highly encouraged as smoking causes vasoconstriction. Narrowing of the vessels increases the likelihood of an ischemic stroke. In addition to personal changes in lifestyle, routine doctor's visits and lab work is an important preventive measure. Treating abnormal changes in blood pressure, cholesterol, blood sugar will decrease the patient's risk.

Treatment starts with prevention measures. Monitoring abnormal blood pressures and high cholesterol are good prevention methods. Once a stroke has occurred, specifically an ischemic stroke anticoagulation therapy will be prescribed for a lifetime. Anticoagulants such as Warfarin, or new aged medications such as Xarelto and Eliquis are used to prevent the further formation of current clots and prevention of new clots. "The mainstay of oral anticoagulation was for many years warfarin. In severe cases of ischemic strokes, the surgical team will develop a plan to place a stent to further open the narrowing of the arteries. "Surgical hematoma evacuation through craniotomy, minimally invasive approaches, or ventriculostomy is aimed at both preventing further pressure-related injury and protecting against secondary physiological and cellular injury" (Bushnell et al., 2024) Post surgery or in more mild cases of stroke physical therapy, occupational therapy and speech language pathology. Physical therapy will be consulted to evaluate and treat according to findings. PT is there to help build strength and balance. Occupational therapy is consulted to develop a plan to adapt activities of daily living to the patient's current deficits. Speech language pathology is consulted to assess and train the patient in speech and swallowing food and drinks to prepare patients to go home to resume their new

life. The impact of research should emphasize the severity of life changing affects strokes can have on a person but, they are preventable. Early intervention is going to save cell tissue from damage causing severe deficits. Teaching the community about modifiable risk factors can reduce the overall statistics, "In 2021, stroke accounted for approximately 1 of every 21 deaths in the United States" (AHA, 2024).

Teaching

During the community health event I plan to teach the community about early recognition using the BE FAST assessment, and modifiable changes to reduce the risk for each individual. In order to inform the public, I will prepare a pamphlet of written material containing an example of BE FAST and proper nutrition, use of images of the pathway of the heart to the brain. I hope to play a game of Jeopardy and display tools like goggles to imitate vision impairment or tape extremities to display paralysis or weak dexterity. I hope that those patrons can then go back into the community and be able to teach others and inform them on preventative measures and factors that put them at risk for stroke.

Conclusion

Early recognition and treatment is a vital role in reducing aftereffects of a stroke. Being cautious and in charge of your own modifiable risk factors is the easiest way to protect yourself. Being a prominent illness in the United States, with possible debilitating outcomes, there has been strong research in medication management and interventions within a timely manner. My hope is that after consuming this information, readers have a better understanding of the major role they play in their own health and wellness.

Resources

Bushnell. C, Kernan. W, Cole. J, et al. ((2024) 2024 Guidelines for the Primary Prevention of Stroke: A

    Guideline from the American Heart Association/American Stroke Association *AHA/ASA*

    https://www.ahajournals.org/doi/10.1161/STR.0000000000000475

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    screening tools for store in the emergency room and prehospital setting. *Elsevier*

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    %20of%20screening%20tools%20for%20stroke%20in%20the.pdf

Chaudhary, R., Singh, A., Bashline, M., et al. (2022) Evaluation of Direct Oral Anticoagulant Reversal

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2024 Heart Disease and Stroke Statistics Updated Fact Sheet (2024) *American Heart Association 2024-*

    Statistics-At-A-Glance-final_2024.pdf

Stroke Facts (n.d.) *Centers for Disease Control* Stroke Facts | Stroke | CDC