

Nurses in Stroke Treatment

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Strokes are currently the fifth leading cause of death within the United States but remains the second leading cause of death internationally (Herpich & Rincon, 2020). New technology and enhanced care of stroke patients has greatly improved outcomes. Nurses play a great role in the care of these patients and can help improve the outcome. There are two classes of strokes, ischemic and hemorrhagic. Ischemic strokes occur if blood flow to the brain is hindered (Harding et al., 2020). For example, a clot forms in a blood vessel to the brain; therefore, impairing perfusion to the brain (Ashcraft et al., 2021). Hemorrhagic strokes are the result of bleeding in the brain such as when a blood vessel ruptures (Harding et al., 2020). Without immediate intervention, the risk of disability, severe brain damage, or death, are great. Some risk factors for strokes include a family history of strokes, smoking, hypertension, diabetes, heart disease, alcohol use, 65+ years of age, and a sedentary lifestyle (Harding et al., 2020). Key symptoms include facial drooping, unequal arm strength, and dysarthria (Harding et al., 2020). A nurse can have a variety of roles with strokes and caring for stroke patients. For example, when the patient comes into the emergency room, a nurse performs assessments and initiates interventions. The nurse also helps the patient prepare for procedures and cares for them after the procedures.

Recently, the American Heart Association (AHA) has updated their resources and statements pertaining to stroke care and the nurse's invaluable role in that care. Ashcraft et al. (2021), the AHA council on cardiovascular and stroke nursing, suggest the nurse's responsibilities with strokes begin before a stroke even occurs by providing education to the community and other health care providers while promoting and participating in the D's of

Stroke Care. Certified stroke programs are required to host public awareness campaigns to increase the community knowledge about signs and symptoms of strokes (Ashcraft et al., 2021). Often, nurses are part of the campaign committee and involved in presentations of the information. These campaigns fulfill the first “D”, detection, and play a part in the improved outcome of strokes due to the public’s ability to recognize stroke symptoms and seek medical attention quickly (Ashcraft et al., 2021). Time is brain is a key principle in stroke care that will continue to be evident throughout this discussion.

The AHA continues to discuss the role of the nurse in the other D’s of Stroke Care in their statement. The second and third D’s are dispatch and delivery which apply to the first responders. If nurses are part of the emergency medical services (EMS) that respond to a stroke, they have an important role in timely assessments and initiating proper treatment for the stroke (Ashcraft et al., 2021). One of the most important pieces of information the nurse can collect is the last known normal of the patient. This knowledge will be crucial in deciding and implementing a treatment plan. Once on the scene, the initial assessment of the patient with the stroke should include airway, breathing, circulation, vital signs, blood glucose, cardiac monitoring, and a baseline neurological assessment (Ashcraft et al., 2021). Blood glucose is assessed because hypoglycemia can look like a stroke but is resolved with glucose administration (Ashcraft et al., 2021). The nurse needs to ensure patient oxygen saturation stays above 94%, document medical history and medication information, collect family or friend phone numbers, start two large bore IVs, and avoid excessive IV fluids and avoid all oral administrations (Ashcraft et al., 2021). There are several different scales that a nurse can use to perform the baseline neurological assessment, such as the Los Angeles Pre-Hospital Stroke Scale or the

National Institutes of Health Stroke Scale (NIHSS) (Ashcraft et al., 2021; Harding et al., 2020). It is also important to note that antihypertensive medications should no longer be administered on the scene with a suspected stroke because of the risk of further inhibiting perfusion (Ashcraft et al., 2021).

At the door, the fourth “D”, is when the role of the nurse becomes even more specific. The nurse is the thread of communication from EMS to the emergency room (ER) providers and is responsible for alerting the stroke team. They get everything prepared so when the patient comes through the doors, they are ready (Ashcraft et al., 2021). Mobile stroke units (MSU) are a new resource that is being implemented because of an improved ability to perform early and thorough treatment. Every MSU has a portable lab and CT scanner with a trained stroke team on board (Ashcraft et al., 2021). Ideally, these tools on the MSU allow the patient to bypass the emergency room and go directly to the interventional suite upon arrival because of the increased speed of diagnosis and treatment (Ashcraft et al., 2021). Outcomes have improved and the length of stay has decreased for stroke patients when the MSU is used (Ashcraft et al., 2021). A nurse on a MSU can be trained to perform any of the duties aboard and facilitates communication with the neurologist at the hospital wirelessly, to further ensure correct diagnosis and assessments of symptoms (Ashcraft et al., 2021; Cheney, 2020).

In line with the fifth “D”, data, nurses triaging suspected stroke patients need to have a comprehensive understanding of screening tools and stroke code activation (Ashcraft et al., 2021). These nurses need to quickly recognize signs and symptoms of strokes, especially for walk-in patients, and mobilize the stroke team to initiate effective care as soon as possible (Ashcraft et al., 2021). Occasionally, there may be atypical stroke symptoms that the nurse needs

to record and incorporate into the triage documentation as well (Ashcraft et al., 2021). When triaging, it is recommended the nurse notifies the doctor immediately if the patient's blood pressure is above 185/110 (Ashcraft et al., 2021). Other data the nurse is responsible for are thorough documentation of therapy, including the specific times of interventions, and continuous reevaluations of patient condition (Ashcraft et al., 2021). Along with data, nurses certified in the NIHSS are now responsible for collecting the baseline assessment and monitoring for changes before and after interventions (Ashcraft et al., 2021).

Decision is the sixth "D", and it entails deciding the course of treatment and acting on it within 30 minutes of arrival at the hospital (Ashcraft et al., 2021). If thrombolytic medications are chosen for therapy, the nurse must check the blood sugar level before administration (Ashcraft et al., 2021). For revascularization medications, it is the nurse's responsibility to ensure the patient receives a noncontrast CT scan beforehand (Ashcraft et al., 2021). The nurse should also be aware that a chest x-ray and a 12-lead ECG can be withheld until the neurological imaging and other interventions are completed (Ashcraft et al., 2021).

For the sixth "D", drug/device, it is now recommended the nurse administers alteplase, a plasminogen activator, to patients within four and a half hours of their last known normal, according to provider orders (Ashcraft et al., 2021). Nurses will teach the patient and/or family about the medication and provide materials and consent before administration (Ashcraft et al., 2021). The dose to be infused is 0.9mg/kg to a maximum of 90mg over 60 minutes and requires a cosigner verification (Ashcraft et al., 2021). The nurse should also flush the line with normal saline at the same rate once the alteplase has been completed (Ashcraft et al., 2021). When the alteplase infusion is started, the nurse should start measuring the patient's blood pressure and

perform a neurological assessment every 15 minutes during and after the infusion for two hours (Ashcraft et al., 2021). After that time frame, these assessments should be repeated every 30 minutes for six hours, then hourly until 24 hours after the alteplase infusion has been completed (Ashcraft et al., 2021). Complications can arise within hours after alteplase treatment, and the nurse should be watching for the signs and symptoms. These complications could include symptomatic intracranial bleeding or orolingual angioedema (Ashcraft et al., 2021). For angioedema, assessing and maintaining airway is the priority management followed by administering counter medications (Ashcraft et al., 2021). In the case of an intracranial bleed, stop the alteplase, draw coagulation and CBC labs, get an emergency CT and then administer medications to slow the bleeding (Ashcraft et al., 2021). The nurse will also perform the Bedside Dysphagia Screen after the alteplase to assess patient's ability to swallow and readiness to take oral medications and eat (Ashcraft et al., 2021).

Telestroke is fairly new method of providing all stroke patients with access to experienced neurologists through technology (Ashcraft et al., 2021). The responsibility of a nurse in the ER with telestroke is to alert the teleneurologist of an incoming potential stroke patient as soon as EMS or triage has performed an initial assessment and recognize the symptoms (Ashcraft et al., 2021). Furthermore, the nurse takes point in facilitating communication between the patient and the physician. The nurse needs to implement clinical experience, neurological assessments, patient history, education, and support as they utilize telehealth (Ashcraft et al., 2021).

The final "D" is disposition, which refers to the transfer of the patient to a stroke unit or intensive care unit (Ashcraft et al., 2021). This transfer time can be very vulnerable and requires

the nurse to be vigilant and thorough. During this transfer period, the patient's outcome improves if the nurse utilizes effective communication with the patient as well as with the nurses in the ICU regarding report (American Heart Association [ASA], 2021). The nurses receiving the stroke patient in the ICU needs to be ready to assist the patient with anxiety, pain, education, and potential procedure or medication complications (ASA, 2021). Their frequent assessments need to watch for decreased level of consciousness, perfusion, blood sugar, fluctuations in blood pressure and body temperature, and signs of cerebral edema or bleeding (Herpich & Rincon, 2020). As the nurse consistently monitors these factors, declines in the patient condition will be caught quickly so effective intervention can take place.

As nurses fulfill their role as patient advocates and participate fully within their scope of practice, they can have a profound and positive effect on the patients who experience strokes and their outcomes. They can anticipate the needs of the patient, recognize potential complications, and maintain patient safety (ASA, 2021). As mentioned before, stroke mortality has been on the decline for years because of the advancements in treatment (Herpich & Rincon, 2020). Nurses are instrumental in these improvements due to their constant presence during treatment, early recognition of symptoms, encouraging timely revascularization, and continued revision of stroke protocols.

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