POSITION STATEMENT:

STROKE CARE

The American Academy of Neurology (AAN)—an association of more than 36,000 neurologists and neuroscience professionals dedicated to providing the best possible care for patients with neurologic disorders—is an advocate for policy measures that promote high quality, safe, and cost-effective stroke care.

Stroke is the nation's fifth leading cause of death and a leading cause of adult long-term disability. According to the American Stroke Association, about 795,000 people suffer a new or recurrent stroke each year, with 142,000 not surviving. Acute stroke care is complex, multilayered, and involves many parts of the health care system. Stroke prevention, care, and outcomes can be improved through a comprehensive stroke system of care. Policymakers have great responsibility and impact on such systems, and they need to take an active role in improving stroke care. This includes supporting the implementation of primary stroke centers in both urban and rural communities, access to advanced stroke centers with endovascular and surgical capabilities, endorsement of telestroke as a proven way to deliver acute stroke consultation, proper reimbursement for on-call consultations, and use of advanced technological services.

Stroke Center Designation

The Academy supports the development and expansion of community, statewide, and regional networks of stroke centers, as these will improve the availability and quality of stroke care to those who live in all areas. Hospitals that lack neurologic or radiologic personnel should establish relationships with primary or advanced stroke centers for rapid assessment and transfer as needed.

The Academy encourages policymakers to consider the following when determining qualifications for a primary stroke center (PSC):

- At least one neurologist should play a key role in the development and/or designation of primary stroke centers. This should include mandating that a neurologist be appointed to any primary stroke center task force, panel, or committee which policymakers might develop.
- A single Stroke Medical Director, preferably a neurologist, ideally with vascular neurology fellowship training, should be appointed, with authority and accountability for the operation of the hospital-based stroke program. This Stroke Medical Director is charged with ensuring the quality of stroke care delivery and earning and maintaining certification as indicated. The Stroke Medical Director should be adequately reimbursed for their time and substantial efforts in carrying out those responsibilities.
- All hospitals should be required to have a plan for the management of acute stroke patients that is written, easily accessible, and updated regularly. Plans should include rapid imaging and identification of patients with large vessel occlusion who may benefit from rapid transfer to a comprehensive stroke center (CSC) or thrombectomy-capable stroke center (TSC).
- When considering requirements for transporting patients to a primary stroke center, prerequisites for emergency personnel decision-making should include knowledge of which hospitals can provide intravenous thrombolytic therapy within 4.5 hours of ischemic stroke onset and the capacity to care for these patients post-thrombolysis. These capabilities should be available on a 24/7 basis.
- Reciprocal transfer commitments are a feasible mechanism to ensure patient access to stroke care and subsequent return to their communities.

The Academy encourages policymakers to consider the following when determining qualifications for a CSC or TSC:

- Care for stroke patients with acute ischemic stroke due to large vessel occlusion should be considered for endovascular thrombectomy and cared for at a CSC or TSC.
- Care for the most complex stroke patients, including patients with severe ischemic stroke or hemorrhagic stroke that will require higher level of care, should occur at CSC hospitals with adequate capabilities and experience. The Academy supports the development of CSCs to improve the timeliness and quality of therapies that these complicated patients will require, including access to expedited imaging, neuro-interventional and neurosurgical specialists, and care in an intensive care unit, including active care by neurologic specialists and evaluation by specialists in neurorehabilitation.
- When considering requirements for transporting patients to a CSC or TSC, prerequisites for emergency personnel decision-making should include knowledge of which hospitals can provide intravenous thrombolytic therapy within 4.5 hours of ischemic stroke onset, in addition to access to properly trained and experienced neurointerventionists who can provide timely endovascular stroke therapies. The Academy supports the use of validated pre-hospital stroke severity assessment tools when personnel are determining the best stroke center to provide care.
- CSCs and TSCs should have the personnel and infrastructure in place to perform endovascular stroke care 24 hours per day, seven days a week, and CSCs should also have the same capacity for neurosurgical stroke care.
- CSCs and TSCs should utilize multimodal imaging and selection criteria to perform endovascular stroke care for wake-up strokes and those presenting more than six hours from last known well, when clinically indicated.

Access to emergency and basic stroke services is limited in many rural areas. The acute stroke ready hospital (ASRH) designation is focused on ensuring emergent access to initial diagnostic and treatment modalities, especially in a rural or under-served setting. It is unlikely that most ASRHs will have continuous staffing with an on-site neurologist. However, input from neurologists in terms of development of protocols, measurements of performance and outcomes, and improvement of care paradigms, are all key factors for monitoring and improving care in such settings.

Emergency Medical Services (EMS)

EMS and their related personnel and infrastructure play a key role in the identification, triage, initial treatment, and transportation of patients with a known or suspected stroke. It is important that EMS work with neurologists and other appropriate personnel to establish prehospital care, triage, and destination protocols. Prehospital stroke triage should incorporate a stroke severity scale to improve identification of patients with large vessel occlusion and direct transfer to a CSC or TSC, via ground or air transportation services.

Mobile stroke units and remote telemedicine-enabled examination of possible stroke patients, before and during transport, are promising strategies with the potential to reduce treatment times, as well as streamline patient triage and transportation to an appropriate stroke center destination.

Rural Stroke Care

Practice of stroke care in rural areas has multiple challenges. These include geographic isolation, scarce hospital resources, and limited access to experienced medical staff who can promptly and correctly diagnose and treat an acute stroke in a timely fashion. The Academy encourages policymakers to consider the following when addressing rural stroke care:

- Stroke centers with more experience should act in partnership with local, smaller hospitals to facilitate the triage and transfer of stroke patients with minimal delays. Models based on partnerships in rural areas, utilizing a hub and spoke model of education and outreach, may be necessary.
- Telestroke should be considered as an important option for hospitals in rural areas without adequate access to stroke expertise.
- Systems of care should be developed that allow access to neurointerventional and neurosurgical therapies for patients living in rural areas. These systems should include establishment of new CSCs, TSCs, and PSCs to reach underserved populations.
- Care paradigms should be based on resource allocation, distances, and access rather than on artificial aspects such as state or county lines.

Telestroke

Telemedicine uses high-quality, bi-directional, real-time audiovisual communication to assist in the care of patients remotely. Optimal treatment of acute stroke has a critical time component, which makes the acute stroke patient uniquely situated to benefit from telemedicine technology. The national shortage of stroke-trained physicians affects both urban and rural populations. Telestroke has rapidly changed the field of acute stroke treatment by allowing both urban and rural facilities to have timely access to stroke expertise to assist in acute stroke management, specifically the safe and rapid delivery of intravenous tissue plasminogen activator (IV tPA). In addition, telestroke enables stroke experts to collaborate with local providers to evaluate and manage stroke patients with emergent large vessel occlusion who may benefit from endovascular therapies. Ideally, agreements between local and remote sites should define respective roles and responsibilities prior to initiating patient care. The Academy supports the use of telestroke services as an acceptable alternative for hospitals lacking expertise in neurology, vascular neurology, or neuroradiological services in order to address delays due to lack of access to skilled stroke treatment capabilities. Installation of telestroke services has the ability to:

- Allow the evaluation of an acute ischemic stroke patient for IV tPA administration in a timely fashion by a provider with expertise in stroke.
- Allow triage of complicated stroke patients. For those PSCs with the capability to perform advanced brain and vessel imaging in a timely fashion, telestroke consultation allows the identification of patients that require urgent transfer to the CSC or TSC. There is also the benefit of optimizing resource utilization, as patients who can safely stay in the community PSC may avoid costly or unnecessary transfer.
- Compensate for a lack of local services by connecting smaller spoke hospitals lacking critical elements of stroke care to the hub hospital that can provide stroke expertise. This may allow some patients with a low likelihood of requiring advanced diagnostic testing or interventions to remain at local hospitals. Telestroke partnerships can improve the spoke hospital stroke care on a programmatic level by providing access to shared protocols and quality improvement processes, and by facilitating stroke education and training to staff at the remote hospitals.
- Result in cost savings. Facility transfers for stroke and other neurologic conditions are common and can add significant health care costs.
- Enable access to acute stroke consultation through both physician-to-physician and physician-to-patient interactions tailored to the needs and capabilities of the patient and the hospital.

Long-term changes in the regulatory and reimbursement environment, which build upon rapid changes implemented with the coronavirus disease of 2019 (COVID-19) pandemic, are needed to sustain essential telestroke services.

Stroke Systems of Care

The Academy encourages hospitals to participate in networks as a practical means of improving stroke care nationally, especially within urban or rural neurologically underserved communities, as this may allow a substantial number of stroke patients to be treated locally. The network model of stroke care is also critically important due to the current and expected shortage of neurologists. Using the established telestroke model, along with collaboration among hospitals to form stroke care networks, will be critical in providing the ability to care for patients with stroke particularly in rural areas.

Ideally, such stroke systems include hospitals that can provide different levels of stroke care (i.e., ASRH, PSC, TSC, CSC) within a geographic area. These systems would be formed and managed by a multidisciplinary team of providers, including neurologists. Their exact composition in terms of numbers and types of hospitals would be largely determined by local and regional factors, such as population density, distances, distribution of hospitals and providers, traffic, and related factors.

Collaborative management between primary care physicians, neurologists, physiatrists, cardiologists, and surgical and other subspecialists is essential for optimization of stroke prevention and transition of stroke care from the inpatient to the outpatient setting. Limited access to health care post-hospitalization can result in hospital readmissions and poor clinical outcomes, disproportionately impacting vulnerable populations who tend to have more severe disability and higher morbidity.

Through collaboration and the appropriate use of resources and personnel, particularly stroke specialists, adequate stroke systems can be established despite projected physician shortages.

Reimbursement

- The Academy believes there should be equitable reimbursement for care provided via telemedicine and for on-call availability to respond to stroke emergencies. As stroke is a mostly unpredictable emergency that has a time-sensitive treatment profile, adequate staffing to ensure 24/7 availability of resources is key. Neurologists play a central role in such staffing considerations. Stroke centers are currently not receiving equitable payment for patients who received initial treatment at another hospital. This discourages development of stroke centers and telestroke participation, resulting in a negative impact on patient care.
- Currently, reimbursement varies for being on-call or for being available for telemedicine consultation and care. Unless the neurologist is compensated for stroke call at an institution, the unplanned emergency room evaluation for acute stroke patients may result in a loss of income for the neurologist due to interruption of prescheduled outpatient care at the office. Also, neurologists are not customarily compensated for loss of personal time and well-being resulting from on-call time at night and on weekends while at home.
- The lack of equitable reimbursement for acute stroke management and telestroke contributes to the shortage of appropriately trained neurologists to provide acute stroke care.

Quality Improvement

The use of quality metrics is a key element in tracking care and improving outcomes. Various types of metrics are typically recommended, such as process metrics (door-to-needle time), treatment metrics (percent of patients receiving IV tPA), and Quality of Life outcome metrics (using various scales). Neurologists should play a key role in the selection and application of these various metrics. These metrics should be used for feedback to improve efficiency, process, and clinical outcomes.

Rehabilitation

Access to rehabilitation services is an important element in the care and recovery of patients with a stroke and can significantly contribute to improved outcomes. Neurologists play a key role (in collaboration with physiatrists and other rehabilitation specialists) in selecting patients for post-stroke rehabilitation and defining treatments and protocols for such patients. Telemedicine, when available, may help patients with their rehabilitation goals.

Many stroke patients have post-stroke neurologic complications (depression, seizures, pseudobulbar affect, speech and swallowing difficulties, central pain syndromes, contractures, recurrent stroke, etc.) that are best recognized and managed by a neurologist.

Position Statement History

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