ASK THE EXPERTS

What Are Three Keys to Improving Barriers to Access for Stroke Intervention?

Closing the gaps in access to thrombectomy requires public awareness initiatives, broader availability of services, and improved systems of care.

With Thabele (Bay) Leslie-Mazwi, MD; Pankajavalli Ramakrishnan, MD, PhD; and Nabeel A. Herial, MD, MPH, FAHA, FAAN

Thabele (Bay) Leslie-Mazwi, MD
Professor and Chair, Department of Neurology
Warren and Jermaine Magnuson Endowed Chair in Medicine for Neurosciences
Co-Director, Neurosciences Institute
UW Medicine
University of Washington
Seattle, Washington
tml01@uw.edu
Disclosures: None.

Thrombectomy for large vessel occlusion (LVO) stroke is one of the most powerful therapies in the history of medicine. Improving access to this life- and function-saving treatment requires several important steps.

1. Increased public awareness. Public awareness of stroke as a disease entity is poor. We need better general awareness of available treatments and the importance of activating 911. Long-standing campaigns such as the FAST campaign (face drooping, arm weakness, speech difficulty, time to call 911) by the American Stroke Association have helped. We will increasingly see campaigns targeting high-risk groups (eg, cardiac patients with atrial fibrillation and their families) and expanding accessibility to the information (eg, stroke awareness algorithms in different languages).

2. Broader selection criteria. Selectivity in who is offered treatment is an important driver for treatment access. A recent major development has been the impact of reperfusion in the setting of a large pretreatment established core infarct. The concern for pursuing thrombectomy in these patients has been twofold: harm in the form of hemorrhagic transformation or lack of benefit for a patient already neurologically devastated. Recent randomized controlled trial results from three trials (RESCUE-Japan, SELECT2, ANGEL-ASPECT) showed that thrombectomy is in fact extraordinarily powerful in this population too. Patients undergoing thrombectomy with large pretreatment infarcts were twice as likely to achieve functional independence and had substantial reduction in the negative outcome of full dependency (modified Rankin Scale 5).

These data raise questions at a societal level about the cost of care but unambiguously indicate the benefit of thrombectomy. With this, how lean (and therefore inclusive) can imaging selection get? In the appropriate patient with clinical deficit, a CT of the head excluding hemorrhage and CTA demonstrating the presence of an LVO within 24 hours of onset is likely all that is needed. This might increase the number of patients who can be treated by ≥ 30%.

3. Improved systems of care. The concept of the stroke chain of survival highlights the critical dependence of any one part of the stroke system of care on others. Our analysis of stroke delivery needs to be at a system and regional level. Innovations such as the definition and

use of hospital referral regions will increasingly be featured in studies and provide new targets for system comparisons and improvements. Implementation science is also gaining increasing prominence. Understanding how best to operationalize new developments in a field as dynamic as stroke will provide more nimble uptake and better treatment access for more patients.

The challenges of stroke care delivery represent an adaptive problem. These issues are multidimensional and complex, and their solutions will need to be multifaceted. This should be a health care priority. Our society stands to gain immensely by improved care of these severely affected stroke patients.

Pankajavalli Ramakrishnan, MD, PhD
Neurointerventional Specialist
Riverside Health System
Newport News, Virginia
pankajavalli.ramakrishnan@rivhs.com
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There are now many powerful treatments for patients presenting with acute ischemic stroke. However, the challenge is getting the patient to the appropriate treatment as quickly as possible without delay after recognition of stroke symptoms. Strategies that can be employed to improve barriers to access for stroke intervention include:

1. Improve stroke awareness. Lack of awareness of stroke symptoms and the need for timely treatment is one of the most significant barriers in access to stroke treatment. Raising awareness of stroke symptoms and the need for timeliness in seeking treatment is one of the most important steps in improving access to acute stroke treatment. Educational campaigns emphasizing stroke symptom recognition and activation of emergency medical services (EMS) to seek immediate medical attention can help raise awareness and reduce delays in seeking care and, ultimately, patient outcome.

2. Available expertise. Disparities in access to stroke specialists and centers can impact patient outcomes. With the widespread availability of telemedicine, providers can remotely evaluate and treat stroke patients—and many times closer to home and without significant delays.

3. Process improvement. Implementation of treatment pathways and protocols in the prehospital and intrahospital setting to quickly identify stroke patients is paramount to the delivery of timely treatment. Quality initiatives arising from the periodic review of data can further result in improving efficiencies and delivery of care.

Nabeel A. Herial, MD, MPH, FAHA, FAAN
Director, Stroke and
NeuroInterventional Surgery
Jefferson-Einstein Medical Center
Montgomery
Assistant Professor of Neurology &
Neurological Surgery
Sidney Kimmel Medical College
Thomas Jefferson University
Philadelphia, Pennsylvania
nabeel.herial@jefferson.edu
Disclosures: None.

Ischemic stroke intervention with mechanical thrombectomy is proven to reduce the risk of death and disability in patients. It is now considered a standard of care; however, the thrombectomy procedure is not readily available or accessible to all eligible patients. Several barriers limit access to this emergent procedure, and strategies for improving access should focus on barriers such as awareness, availability of thrombectomy services, and well-organized systems of care.

1. Lack of awareness remains a significant barrier to access. Recognition of stroke symptoms and importance of immediate treatment with "clot-busting" medication and/or a "clot removal" procedure to restore blood flow to the brain is critical. Strategies for improving access should therefore include widespread public awareness efforts focusing on stroke symptoms as well as interventions such as thrombectomy. Efforts should be directed particularly to regions with higher disease burden and/or reported poor access to stroke care. Additionally, factors such as health literacy, language barriers, and cultural distinctions should be taken into consideration. Tailoring strategies by leveraging public health initiatives that also consider social determinants of health can help more effectively overcome the awareness barrier.

Additionally, awareness of thrombectomy as a potentially lifesaving and disability-preventing procedure is needed at all levels: patients, caregivers, health care

providers, and policymakers. Education of primary care, urgent care, and emergency service professionals will be needed for facilitation and optimal utilization of thrombectomy services in the region. To that end, mandatory continuing medical education on basic emergent stroke treatment protocols through respective state professional licensing agencies can be beneficial.

2. Improving access to stroke interventions requires availability of the infrastructure: both equipment and personnel delivering the neurointerventional services. Hospitals delivering these specialized services are often concentrated in urban locations. Strategic expansions and resource allocations will therefore be needed, not only to address the rural-urban disparity but also for equitable distribution of services based on disease burden and density of high-risk populations. There is currently a growing interest in health equity research. At Thomas Jefferson University, in collaboration with its College of Population Health, we are evaluating access to stroke treatment centers using GIS (geographic information system) technology.

3. Thrombectomy access is dependent on timely transport to the appropriate hospital. A well-organized system of care with efficient EMS transport models and improved regional connectivity between existing stroke centers is also very much needed. Investing in the education and training of EMS personnel, eliminating the administrative burden and transfer policy barriers, and streamlining the evaluation process in hospitals can all improve access to thrombectomy. By limiting the geographic distance barrier, mobile stroke units and telemedicine technology have also helped in improving access and timely delivery of treatment.

Although barriers to access are largely the same globally, a unique set of challenges exists in different parts of the world. In a first-of-its-kind survey conducted by the Mission Thrombectomy: Global Access for Stroke Treatment Committee of the Society of Vascular and Interventional Neurology, access to thrombectomy in 67 countries was quantified.[1] A country's per-capita gross national income, lack of optimal infrastructure, and prehospital triage policy were identified as significant determinants of access. Particularly in resource-limited countries, the high cost associated with delivery of thrombectomy services frequently limits access. Increasing reimbursement either from insurance providers or through government-funded policies will incentivize hospitals to deliver thrombectomy services more readily. The device industry should also focus on subsidizing the cost, particularly for low- and middle-income countries, and public-private partnership initiatives are already underway to design and develop devices to overcome the cost barrier.

Overall, to close the gaps and improve local, national, or global access to stroke interventions, a multifaceted strategic approach will be needed, with remedies designed and prioritized specifically to address the distinct challenges of a region. ■

1. Asif KS, Otite FO, Desai SM, et al; Global Executive Committee of the MT-GLASS Study. Mechanical thrombectomy global access for stroke (MT-GLASS): a mission thrombectomy (MT-2020 Plus) Study. Circulation. 2023;147:1208-1220. Published correction appears in Circulation. 2023;147:e716. doi: 10.1161/CIRCULATIONAHA.122.063366