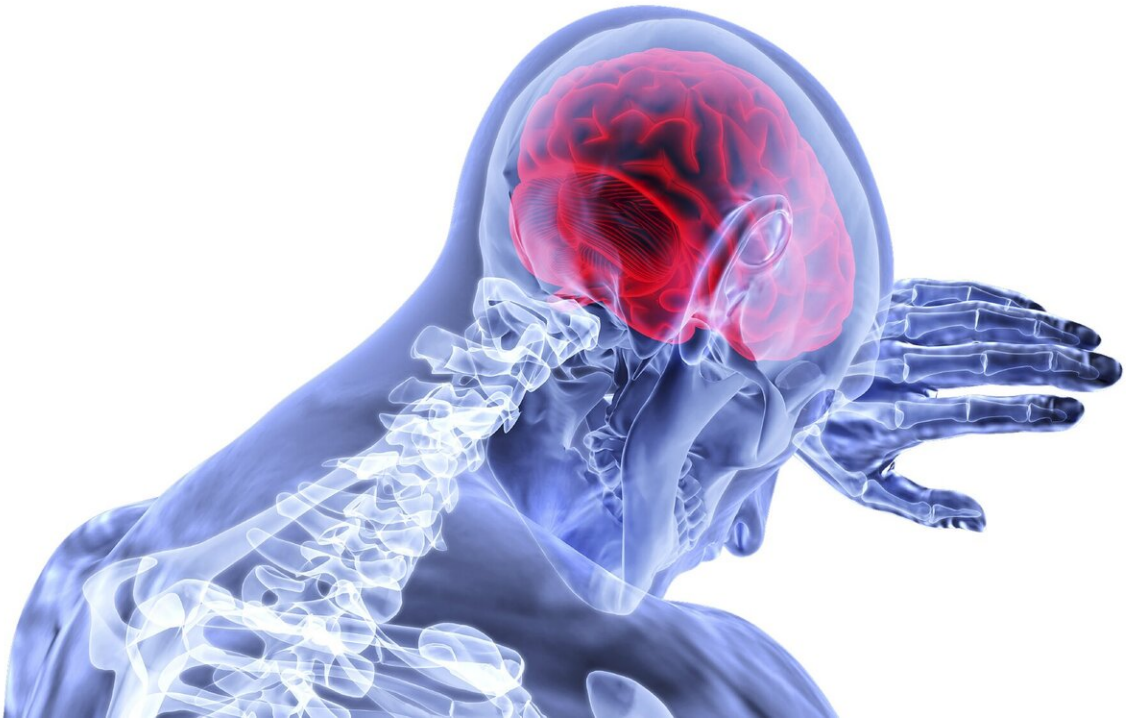
Less than 20% of Americans have rapid access to endovascular thrombectomy for stroke

March 3 2020, by Amy Laukka



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Timely treatment is critical for stroke victims, yet only 19.8% of the U.S. population can access a stroke center capable of endovascular thrombectomy to remove a large clot in 15 minutes or less by

ambulance, according to researchers from The University of Texas Health Science Center at Houston (UTHealth). Only 30% of Americans can access a thrombectomy-equipped center in 30 minutes.

The study, published in *Stroke*, assessed the current state of access to endovascular thrombectomy treatment in the U.S. and evaluated two different strategies to optimize it.

Stroke is the leading cause of long-term disability and fourth-leading cause of death in the world. An ischemic stroke, caused by a blockage of an artery, is the most common form. Endovascular thrombectomy can be performed to remove a clot lodged in a blood vessel with a mechanical device threaded through an artery. Research shows it is an effective treatment for improving clinical outcomes in stroke up to 24 hours from onset, but currently not everyone can have it done.

"This is a significant unmet need in stroke care, as the majority of stroke patients may not have a timely access to thrombectomy, a highly effective treatment," said Amrou Sarraj, MD, lead author and associate professor of neurology at McGovern Medical School at UTHealth. Sarraj is also a member of the UTHealth Institute for Stroke and Cerebrovascular Disease.

One strategy, the flipping model, would convert a percentage of hospitals within geographic areas to be endovascular thrombectomy-capable. The second method, the bypassing model, would transport patients directly to hospitals capable of thrombectomy, bypassing facilities that aren't when the reroute would take less than 15 minutes.

The 15-minute bypassing model improved access by 16.7%, meaning about 51.7 million more people would be able to have an endovascular thrombectomy procedure in a timely manner. This model is also easier and more cost-effective to implement, according to the authors.

"The bypassing model would alter current stroke treatment paradigms, which still emphasize taking patients to the closest hospital with the ability to administer clot-busting tissue plasminogen activator (tPA) intravenously, regardless of their thrombectomy capability. It would be an optimal solution for resource-strapped areas, because it leverages the existing infrastructure by triaging patients with large strokes in the field to take them directly to a hospital capable of thrombectomy," Sarraj said.

The flipping model, which equips 10% of the most impactful hospitals to do thrombectomies, improved 15-minute access by 7.5%, and would work best in areas with more plentiful stroke care resources.

"The flipping approach emphasizes infrastructure development. When ample resources are available, this may result in providing access in areas that are currently devoid of thrombectomy services. While each approach has pros and cons, both strategies represent a tremendous opportunity to improve the current access to thrombectomy, which would result in significant stroke care improvement," Sarraj said.

The research is the first comprehensive assessment of the status of patient access to thrombectomy in the contemporary era, and it is necessary to know how to effectively improve access in the future, Sarraj said.

"While randomized trials are ongoing for better triage of stroke patients, a few states have already implemented legislation for bypassing hospitals without thrombectomy capability. Having more neuro-interventionalists trained and hospitals with the capability to perform thrombectomy would also help increase access. We hope to see more happening on both fronts in the near future to improve stroke care," Sarraj said.

More information: Amrou Sarraj et al, Endovascular Thrombectomy

for Acute Ischemic Strokes, *Stroke* (2020). DOI: 10.1161/STROKEAHA.120.028850