

New study finds patients treated at advanced stroke centers had better outcomes

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Micrograph showing cortical pseudolaminar necrosis, a finding seen in strokes on medical imaging and at autopsy. H&E-LFB stain. Credit: Nephron/Wikipedia

When comparing outcomes for acute ischemic stroke patients treated at various levels of stroke centers, patients who received care at Comprehensive Stroke Centers (CSC) or Thrombectomy-capable Stroke Centers (TSC) were more likely to receive rapid treatment with clot-busting medication and/or mechanical clot removal and be discharged

home or to rehabilitation centers than patients treated at Primary Stroke Centers, according to preliminary research to be presented today at the American Stroke Association's International Stroke Conference 2022.

Stroke occurs when a blood vessel to or in the brain either becomes blocked or bursts, preventing blood and oxygen from reaching the brain. Treatment to quickly restore blood flow to the brain is essential to improve outcomes and survival.

"Certification status of the center where a stroke patient receives care matters, and it's important to know that the specific requirements to become a CSC or TSC are validated by these data. The quality of care is higher in these centers, as also confirmed by our findings," said Radoslav Raychev, M.D., F.A.H.A., lead author of the study and a vascular and interventional neurologist and assistant professor of neurology at University of California, Los Angeles.

Primary Stroke Centers (PSC) are hospitals with the necessary resources to manage patients with acute ischemic stroke, the most common type of stroke that is caused by a clot blocking an artery supplying blood to areas of the brain. CSCs are hospitals that meet specific standards for managing more severe ischemic and hemorrhagic (bleeding) strokes that require advanced endovascular and surgical interventions including endovascular thrombectomy (EVT), which is a highly effective procedure for mechanically removing a clot that is blocking an artery. TSCs meet all the rigorous standards for performing EVT and are essentially the same as CSCs in treating acute ischemic strokes. However, unlike CSCs, TSCs may not have the necessary resources to treat the less common and more complex hemorrhagic strokes.

"TSC is a relatively new designation, introduced in 2018 by the accreditation agencies in cooperation with the American Heart

Association/American Stroke Association," Raychev said. "This is the first study to include the new thrombectomy-capable designation when comparing outcomes in the treatment of ischemic stroke at the different levels of stroke centers."

Researchers compared outcomes and quality of care indicators for 84,903 patients (median age 70, 49.2% female) with ischemic stroke treated between 2018 and 2020 at stroke centers participating in the Get With The Guidelines (GWTG) - Stroke Registry. The study analyzed 185 CSCs, 29 TSCs and 169 PSCs in the registry. As part of their treatment, each patient had received either intravenous clot-busting medication or EVT to restore blood flow in a blocked artery.

Among their findings on quality-of-care measures, the study found more patients treated at a CSC or TSC had:

- intravenous clot-busting treatment started within the target time period set by GWTG than those treated at a PSC; and
- the EVT procedure started within the target time period set by GWTG compared to patients treated at a PSC (however, the difference between TSC and PSC timing was not statistically significant).

"Our data indicates that nearly one-quarter of all EVTs in the United States are being performed in Primary Stroke Centers. This is unfortunate because PSCs are not required to have close oversight and implementation of EVT-specific American Stroke Association standards. We hope that clinicians recognize the importance of the certification status and its impact on the quality of acute stroke care, and we hope they advocate for appropriate changes within their institutions," Raychev said.

Patients also had better outcomes if they were treated at a CSC or TSC,

with the analysis finding:

- CSC and TSC patients were more likely to have their blood flow successfully restored after EVT than PSC patients.
- Fewer patients treated at CSC and TSC died or were discharged to hospice than PSC patients.
- More CSC and TSC patients were discharged to their homes or to rehabilitation facilities than PSC patients (however, the difference between TSC and PSC rates was not statistically significant).
- Overall, there was no significant difference in outcomes between CSC and TSC patients.

The data noted differences in the baseline characteristics of the stroke patients at each center status. The patients treated at TSCs and CSCs tended to have more severe strokes. They were also more likely to have been transferred from another hospital because they required a higher level of care, and they arrived at the centers after a longer time since the onset of their stroke symptoms.

"Our findings demonstrate that patients with acute ischemic stroke receive a better [quality of care](#) and have a higher chance of improved outcome when treated at a Comprehensive or Thrombectomy-capable Stroke Center. Patients should keep this in mind when researching the level of stroke care available in their area. The good news is that, in most parts of the country, the emergency medical systems of acute stroke care are designed to triage and expedite patients to appropriate centers based on the severity of their stroke symptoms. Patients and their loved ones should always remember to call 911 when there is a suspected stroke," Raychev said.

The study's results underscore the value of participating in the certification process to improve stroke care. "Everyone involved in the

acute stroke chain of survival should be aware of the importance of certification status. One of the biggest challenges in achieving TSC-level status is that a PSC must perform 15 or more EVT's a year. In our study, the median volume at PSCs was 32, therefore, most PSCs far exceed the minimum EVT volume requirements. Advancing certification for PSCs that meet the volume requirement is very feasible, yet it does require coordinated efforts and additional resources. Our data should serve as strong evidence for initiating such important changes and ultimately elevate the standard of [acute ischemic stroke](#) care nationwide," Raychev said.

The analysis is limited by the relatively small number of TSCs included in the registry. Another limitation was that the sample only included centers certified by 2 accreditation agencies, The Joint Commission and DNV (Det Norske Veritas) Healthcare. Centers that have received state-specific designations or were certified by other national accreditation agencies were not part of the study.

Data in the research was collected from the American Heart Association/American Stroke Association's [Get With The Guidelines-Stroke](#) registry. GWTG is the American Heart Association/American Stroke Association's hospital-based, quality improvement program that provides hospitals with the latest research-based guidelines to make it easier to provide consistent quality care. Developed with the goal of saving lives and hastening recovery, Get With The Guidelines has touched the lives of more than 10 million patients since 2001.

According to the [American Heart Association's Heart Disease and Stroke Statistics—2022 Update](#), when considered separately from other cardiovascular disease, [stroke](#) ranks No. 5 among all causes of death in the U.S., causing 150,005 deaths in 2019.

Provided by American Heart Association

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