

Study: Stroke victims not receiving timely diagnosis, care

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The mantra in stroke care is "time is brain." With each passing minute more brain cells are irretrievably lost and, because of this, timely diagnosis and treatment is essential to increase the chances for recovery. While significant strides have been made to improve the response time of caregivers, a new study shows that a critical step in the process – imaging of the brain to determine the nature of the stroke – is still occurring too slowly at too many hospitals.

A study out this month in the journal *Stroke* shows that only 41.7 percent of stroke patients underwent [brain](#) imaging within the recommended 25 minutes of their arrival at a hospital. It also found that certain individuals, including people with diabetes, those over 75 years of age, women, those that did not arrive by ambulance, non-whites, and those with certain cardiac conditions were less likely to receive a timely brain scan. These delays potentially mean that treatment will come either too late or not at all.

"We were struck by the fact that less than half of patients with acute stroke symptoms did not receive a brain scan within recommended guidelines," said University of Rochester Medical Center neurologist Adam Kelly, M.D., lead author of the study. "This was the performance of hospitals who are actively participating in a national quality improvement program, so rates in non-participating hospitals may be even worse."

Imaging the brain is an essential tool in the diagnosis of a stroke and

determines which treatment option physicians will pursue. Strokes caused by a blockage in one of the arteries that serve the brain – called ischemic strokes – are candidates for the clot-busting drug tissue plasminogen activator (tPA), which can restore blood flow and improve clinical outcomes. However, this drug cannot be used when the symptoms are instead caused by a ruptured blood vessel in the brain. Furthermore, in order for tPA to be most effective it must be administered as soon as possible and within three hours of the onset of symptoms. It is therefore essential that physicians are able to "see" what is occurring in the brain, and quickly.

Several national organizations, including the American Heart Association (AHA), have created guidelines for emergency stroke care. An AHA quality improvement program, called Get with the Guidelines, is used to evaluate and recognize hospitals for their quality of stroke care. The program collects data and quality measures – such as the amount of time to complete an MRI or CT scan of a suspected stroke patient's brain – from each enrolled hospital. At the time of the study, 1,199 hospitals across the nation were participating in the Get with the Guidelines program.

The study's authors used the AHA data collected by the program to analyze the imaging times for 40,777 stroke patients who were candidates for tPA – had an ischemic stroke, arrived at the hospital within the three hour window, and did not have other conditions that precluded the use of tPA. In addition to low overall compliance with the brain imaging guidelines, the authors also found that individuals were less likely to receive timely brain scans if:

- They did not arrive at the hospital by ambulance (47 percent less likely);
- Were of non-white race, even though blacks and certain other

- ethnic/racial groups have a higher incidence of stroke; and
- Had certain known risk factors for stroke such as diabetes, a prior history of stroke, over 75 years old, and peripheral vascular disease.

In terms of clinical outcomes, the study showed that delays in diagnostic imaging can translate into missed or delayed treatment as well. Patients who received brain imaging within the recommended 25 minute period were much more likely to receive tPA (63 percent) compared to those not meeting this recommendation (38 percent). Furthermore, when tPA was administered, it was given earlier in patients who were imaged quickly. Earlier treatment with tPA is associated with improved functional outcomes in patients with ischemic stroke.

"Despite the strides that have been made in stroke care, it is clear that there is significant room for improvement in the evaluation of patients suspected of [stroke](#)," said Kelly. "Time is too precious and hospitals cannot be the reason for delay."

Provided by University of Rochester Medical Center

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