

# Stroke patients who reach hospitals within 'golden hour' twice as likely to get clot-busting drug

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Patients who arrived at specific hospitals within one hour of experiencing stroke symptoms received a powerful clot-busting drug twice as often as those who arrived later in the approved time window for treatment, according to a new study presented today at the American Stroke Association's International Stroke Conference 2009.

Among more than 100,000 patients treated at hospitals participating in the American Heart Association's Get With The Guidelines-Stroke (GWTG-Stroke) quality improvement program, 27.1 percent who arrived within the "golden hour" (one hour of symptom onset) were treated with the clot-busting drug tissue plasminogen activator (tPA). Of those who arrived between one and three hours of symptom onset 12.9 percent received the drug.

"The treatment rate among under-one-hour-arriving patients is good news for Get With The Guidelines hospitals," said Jeffrey L. Saver, M.D., lead author of the study and professor of neurology and director of the Stroke Center at the University of California, Los Angeles. "Prior studies have suggested that 25 percent to 30 percent of early arriving patients are fully eligible for clot-busting drug treatment, and Get With The Guidelines-Stroke hospitals are delivering the therapy to virtually all these individuals."

The drug is the only approved acute stroke treatment for clot-related (ischemic) stroke and has been shown to reduce stroke-related disability. However, it's only approved for use within three hours of symptom onset.

Recently, the European Cooperative Acute Stroke Study (ECASS 3) study suggested that tPA was safe and effective up to 4.5 hours symptom onset

for some patients, but the current research reinforces the importance of quick action among patients and physicians.

"These findings support public education efforts to increase the proportion of patients arriving within the first 30 to 60 minutes after stroke onset," he said.

Little has been known about how frequently patients arrive at a hospital within the "golden hour," or how often hospitals meet the guidelines for beginning tPA infusion within 60 minutes after hospital arrival, Saver said. Researchers reviewed records of 106,924 ischemic stroke patients treated in a four-plus year period at 905 GWTG-Stroke hospitals.

The analysis found that:

- 28.3 percent of the patients arrived within 60 minutes;
- 31.7 percent arrived one to three hours after symptoms started; and
- 40.1 percent arrived more than three hours after symptoms started.

"That more than one quarter of ischemic stroke patients presenting to Get With The Guidelines-Stroke emergency departments arrived within the 'golden hour' is a very encouraging finding because in stroke, time lost is brain lost," Saver said. "However, more than 70 percent arrived beyond the 'golden hour,' when larger amounts of brain damage have occurred and our chance to reverse damage is much reduced.

"We have a great deal of additional work to do in educating the public and stroke center staffs. For every minute in which blood flow is not restored, nearly two million additional nerve cells die."

Researchers said "golden hour" patients showed significantly more stroke deficits than later arrivals, suggesting that more intense symptoms propelled them to seek medical attention early.

But early and late arrivals were about the same age and were split almost evenly among men and women in each category. Blacks were less often early arrivals, of which only 11.8 percent arrived within one hour and 11.9 percent arrived within three hours.

Once at the hospital however, the time-to-treatment for the "golden hour" patients averaged almost 15 minutes longer than for patients who arrived one to three hours after symptom onset. Hospital performance improvement activities are needed to shorten the arrival-to-treatment initiation time for patients who arrive within the "golden hour," researchers said.

Before stroke treatment can begin, patients must undergo numerous tests, including a brain scan to ensure the stroke's cause is a blocked artery and not a hemorrhaging blood vessel.

"There are a huge number of reasons for waiting, but they are all trumped by the fact that the longer you wait, the more brain dies," Saver said. "We need to overcome the natural tendency to relax in the early-arriving patient and to think there is some extra time."

In addition, researchers cite the value of GWTG-Stroke in facilitating important stroke research.

"We are extremely excited that Get With The Guidelines-Stroke is now in a position to facilitate this type of stroke research. With more than 800,000 patients entered from more than 1,400 hospitals, this data registry can contribute significantly to our understanding of acute stroke care and outcomes," said co-author Lee Schwamm, M.D., associate professor of neurology, Harvard Medical School in Boston.

Source: American Heart Association

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