Study offers lessons on cost drivers for acute stroke care

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A six-year, federally funded study comparing treatments for stroke-causing blood clots offers important lessons on cost drivers during initial hospitalization for acute ischemic stroke patients, researchers at the University of Cincinnati (UC) say.

The study, the Interventional Management of Stroke III trial, compared the use of devices or medication within the arteries to treat the clots at the site of blockage in the brain with the current standard treatment of intravenous (IV) clot-busting medication alone. UC was the clinical coordinating center for the trial.

Joseph Broderick, MD, Distinguished Research Professor in the department of neurology and rehabilitation medicine and director of the UC Neuroscience Institute, presented findings today (Friday, Feb. 14) at the American Heart Association/American Stroke Association's annual International Stroke Conference 2014 in San Diego.

"The annual costs of stroke in the United States have been estimated to be over $38 billion by the Centers for Disease Control and Prevention, with nearly $22 billion attributed to direct medical costs," Broderick says. "With information from the IMS III study, we sought to understand some of the cost drivers behind those figures."

While a number of factors contributed to costs, Broderick emphasizes that earlier treatment, typically with intravenous delivery of the clot-busting drug tissue plasminogen activator (tPA), translates to lower costs.

"Time is brain," he says, referring to the well-known saying within the medical profession, "but time is also money."

The IMS III trial was begun in 2006 and funded by the National Institute of Neurological Disorders and Stroke (NINDS), part of the National Institutes of Health (NIH). Participants were randomized to receive either the standard Food and Drug Administration (FDA)-approved treatment of IV tPA alone or a combination approach that provided both IV tPA and an endovascular therapy using either tPA delivered into the artery directly at the site of the clot or an FDA-approved device to remove the clot. (Enrollment was stopped in 2012 when it became clear that the combination approach was unlikely to demonstrate the desired minimum benefit.)

The cost of a hospital admission for acute ischemic stroke in the study was $35,130 for subjects treated with the combination approach and $25,630 for subjects treated with IV tPA alone. The higher cost for the combination therapy was largely explained by the costs of the devices, Broderick says.

Other significant factors for costs in addition to devices and time to treatment included:

- Stroke severity (higher costs with higher severity).
- Stroke location (higher costs with right hemispheric location).
- Co-morbid diabetes (higher costs with diabetes).
- Use of general anesthesia (rather than conscious sedation) as part of endovascular therapy.

"Changing the processes of acute stroke care, such as minimizing the time to start IV tPA and decreasing the use of routine general anesthesia, may improve the cost-effectiveness of medical and endovascular therapy for acute ischemic stroke," Broderick says.