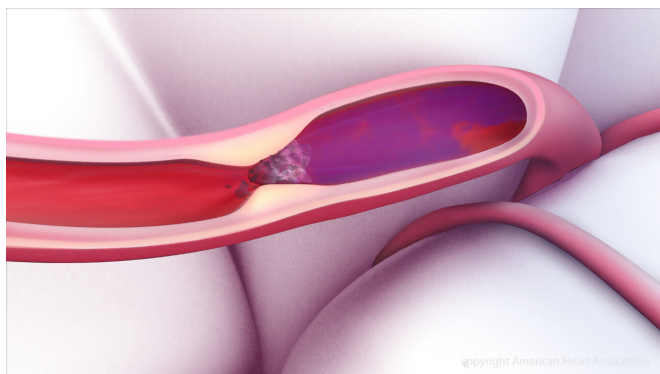


Even short delays in the ER may reduce the lifespan of stroke survivors

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Clot busting tPA administered illustration Tissue plasminogen activator working to dissolving brain clot and improving blood flow to the part of the brain being deprived. Credit: American Heart Association

For every 10-minute delay between arrival at the emergency room (ER) and starting stroke treatment, patients with severe strokes may lose eight weeks of healthy life, according to preliminary research to be presented at the American Stroke Association's International Stroke Conference 2021.

Delays between the onset of [stroke](#) symptoms and arrival at the [hospital](#) have long been known to cost lives and brain cells.

"Our study showed that delays in treatment at the hospital may have even more severe consequences on stroke recovery than pre-hospital arrival delays," said lead study author Mohammed A. Almekhlafi, M.D., M.Sc., assistant professor of clinical neurosciences, radiology and community health sciences in the Cumming School of Medicine at the University of Calgary in Canada.

To examine the timeliness of in-hospital stroke care, researchers examined the time between ER arrival to the start of mechanical clot-removal

treatment among 406 patients who participated in seven international stroke trials (Highly Effective Reperfusion evaluated in Multiple Endovascular Stroke trials—HERMES) comparing mechanical clot retrieval (endovascular thrombectomy) with or without clot-busting medication to clot-busting medication alone. The seven studies were published between 2010 and 2015 with different start and end dates.

The patients had their stroke-causing clots removed at comprehensive stroke centers as participants in one of the seven international clinical trials. All the patients in this sub-analysis had experienced a severe stroke with blockage of one of the large brain arteries, and all were treated within four hours of the time they were last known to be well. Outcomes were calculated in terms of healthy life-years lost, an indicator of quality-of-life after stroke that considers a patients' life expectancy and the extent of their post-stroke disability.

The researchers found:

- The median time between symptom onset and arrival at the ER was just over three hours at 188 minutes.
- The median time between ER arrival and an artery being punctured to start the clot-removal procedure was more than an hour-and-a-half at 105 minutes.
- Every one-hour delay in the hospital resulted in 11 months of healthy life lost.
- Every 10-minute [delay](#) in the hospital resulted in eight weeks of healthy life lost.

"I was surprised with the degree to which delays in the hospital impacted stroke outcome even in those who arrived at the hospital early following stroke symptoms," Almekhlafi said.

After a likely stroke patient arrives at the emergency room of a comprehensive stroke center,

they should be evaluated by members of the stroke team and rushed into brain imaging to confirm the stroke diagnosis and identify the site of the blockage in the brain vessels. If eligible, clot-busting medications are administered as quickly as possible. Patients are then rushed to a special operating room for the emergency endovascular therapy.

"Delays could occur if brain scanners or angiography suites are occupied by another patient when the stroke patient arrives, or if there are delays in the notification or arrival of the endovascular team to the hospital (such as during overnight hours or weekends)," Almekhlafi said.

Many national and international professional organizations including the American Stroke Association have suggested benchmarks to monitor the time from [emergency room](#) arrival until blood flow is restored to the blocked brain artery in order to reduce the risk of severe disability and death.

"Our findings emphasize the importance of continuously monitoring these time metrics to ensure that the speed of care is optimized," Almekhlafi said.

A limitation of the study is that all patients were taken directly to a comprehensive stroke center capable of delivering endovascular therapy. There may be different consequences of delays for those who are assessed in the ER at a community hospital and then transferred to another hospital or comprehensive stroke center to receive endovascular therapy.

"Fast, urgent delivery of stroke care is crucial for all stroke [patients](#) in order to reduce the risk of death and serious disability," Almekhlafi said.

Provided by American Heart Association

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