

Chattanooga researchers find AI cellphone app expedites stroke care

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by [Elizabeth Fite](#)



Staff File Photo / Dr. Thomas Devlin, a neurologist at CHI Memorial and medical director of the Chattanooga-based NeuroScience Innovation Foundation, co-led a large national study that found a phone app using artificial intelligence reduced the diagnosis time for stroke.

A Chattanooga-based research team has found a cellphone app — also launched in Chattanooga — that uses artificial intelligence reduced the diagnosis time for the deadliest type of stroke by 44% compared to cases in which the app wasn't used.

Strokes occur when either a blood clot or hemorrhage interrupts the brain's blood supply, and timely treatment is essential to restore blood flow and prevent death or lifelong disability. But treatment for strokes often comes too late due to delays in diagnosis.

Clots cause more than 80% of strokes, which result in about 1.9 million brain cells lost every minute the clot isn't removed. Smaller blood clots can be removed using clot-busting drugs, but the most dangerous strokes caused by large blood clots in the head or neck require a special procedure -- called a thrombectomy -- to mechanically remove the clot.

That's why the software company Viz.ai developed an app that automatically reviews CT scans of suspected stroke patients and alerts the medical team whenever it detects a blood clot, allowing them to review images right there and make an immediate clinical decision.

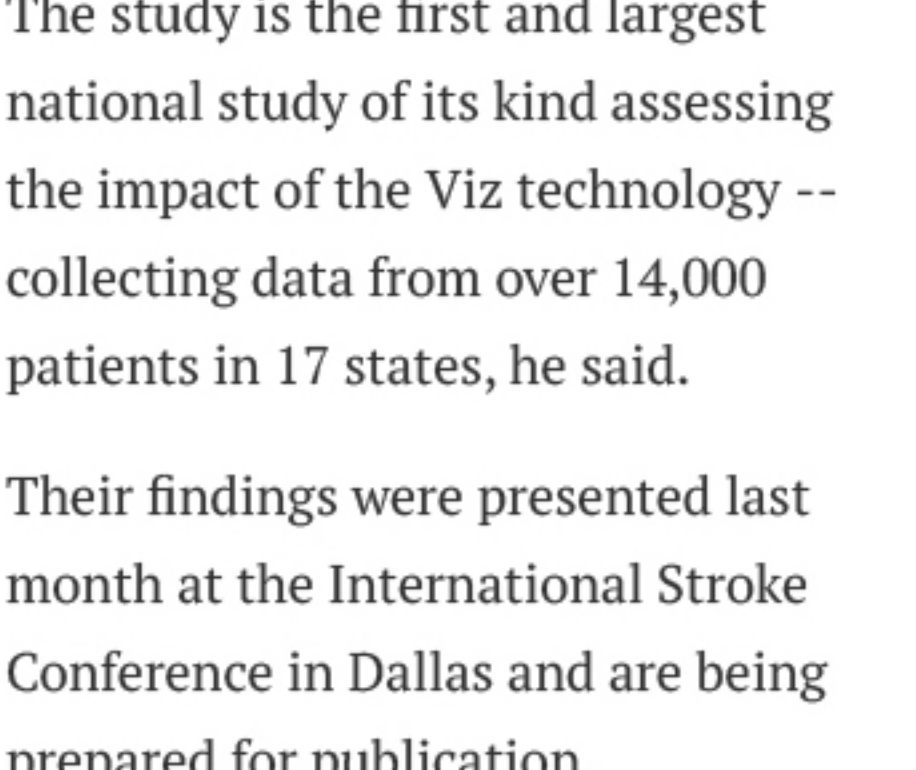
Dr. Tom Devlin, a neurologist at [CHI Memorial](#) and medical director of the Chattanooga-based NeuroScience Innovation Foundation who co-led the research, [helped launch Viz.ai in 2018](#) and has been using the technology ever since. More than 1,300 hospitals around the world have since made the app part of their stroke care workflow, according to the company's website.

While some individual centers had collected data about how the platform expedited treatment, Devlin said those findings were limited in that they were single-center studies conducted over different time periods using different methodologies.

"We wanted to have a much larger study that really scientifically, in a much more rigorous way, studied the effect of Viz," Devlin said in a phone interview.

In order to do that, researchers turned to one of the largest telemedicine companies in the U.S., TeleSpecialists, which provides telemedicine services to over 300 hospitals -- including ones that use Viz and ones that don't. Researchers were then able to use TeleSpecialists' large dataset to compare diagnosis times between 166 participating medical centers.

Devlin said they found that in the hospitals with the app, doctors were able to review the scans on their phone, diagnose a stroke and call the specialist to remove a clot 39.5 minutes faster than in the hospitals without the technology.



Staff Photo / Dr. Tom Devlin speaks in 2019 during a news conference at the Westin Chattanooga announcing the launch of the Chattanooga MotorCar Festival, which benefits brain research.

The study is the first and largest national study of its kind assessing the impact of the Viz technology -- collecting data from over 14,000 patients in 17 states, he said.

Their findings were presented last month at the International Stroke Conference in Dallas and are being prepared for publication.

Devlin, who has equity in Viz, said the technology has the potential to revolutionize stroke care workflow in part because hospitals without dedicated stroke teams also benefit because their images can be reviewed by physicians at an outside hospital capable of treating high-level stroke patients.

"If you come to a very specialized center, you may get your stroke diagnosed fairly quickly," Devlin said. "But in the majority of smaller to mid-size hospitals, you may come in and it's an hour or two before the radiologist reads your scan, and there may be significant delays in getting your large vessel stroke identified."

Using Viz, smaller hospitals can be linked with larger ones to identify if and when patients need to be transferred for a thrombectomy, he said.

Gregory Heath, a professor of public health at the University of Tennessee at Chattanooga who helped analyze the data, said via text message that the data show "strong evidence" AI has value in quickly identified patients who are or are not candidates for thrombectomy.

Peter Catalano, CEO of the NeuroScience Innovation Foundation, said that not only was Viz launched and the study conceived in Chattanooga, the data analysis was conducted by UTC researchers and funded by the local foundation supported by local donors.

In most cases, similar studies are conducted by companies that make the technology, rather than underwritten by a private foundation, Devlin said.

Proceeds from the [Chattanooga Motorcar Festival](#) is one source of the [NeuroScience foundation's funding](#). The foundation funds a number of projects, such as the latest AI study and Alzheimer's research.

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