Chattanooga Research Team Makes Waves with High Impact National Study on Stroke & AI App

A Chattanooga-based research team made headlines last month at the International Stroke Conference in Dallas, Texas. The largest national study of its kind assessing the impact of artificial intelligence (AI)-based medical technology was conceived by Dr. Thomas Devlin, Medical Director of the Chattanooga-based NeuroScience Innovation Foundation. The research investigation called *VALIDATE* collected data from over 14,000 patients in 17 states and 166 medical centers around the US. Study results were published on international news wires.

The key finding from *VALIDATE* is that that an AI-based cell-phone app called VIZ.ai (https://www.viz.ai/publications , including Devlin video) reduces the time it takes for a patient to be diagnosed with an ischemic stroke by 44% compared to cases where an AI product was not used. That comparative advantage translates into much faster "time to treatment" in a stroke emergency, and this often results in greatly enhanced medical outcomes.

VALIDATE is such a high-impact, breakthrough investigation because it paves the way for AI tools such as VIZ to be designated as required "standard of care" equipment in every hospital in the US that offers some facet of stroke care. While smaller studies have reached the same conclusions, *VALIDATE* was the first comparative study conducted on a scale sufficient to justify a new "standard of care" mandate. Inevitably this leads to similar requirements by health care authorities overseas as well, so the impact of *VALIDATE* will be global in nature.

The investigation was conducted as a collaborative effort among Principal Investigator, Dr. Thomas Devlin; Professors Greg Heath and Lani Gao, data scientists and epidemiologists from the University of Tennessee, Chattanooga; and one of the largest telemedicine companies in the US, TeleSpecialists. Funding for study analysis and processing was underwritten by the Chattanooga-based NeuroScience Innovation Foundation.

"The NeuroScience Innovation Foundation donor base is located in Chattanooga. That includes the Chattanooga Motorcar Festival, and the Fifty Plus Foundation created by developer and entrepreneur Byron DeFoor", says Foundation CEO Peter Catalano.

"*VALIDATE* is a great team effort that draws on research talents and resources located in Chattanooga" adds Catalano. "In a very real sense our donor base provides the glue to couple brilliant research designs with university resources here in town to execute a high-volume research study. The end product is a high impact, high-visibility report that's changing the face of stroke care in the US and globally. *VALIDATE* is definitely a *Chattanooga Way* success story."

Stroke is an extremely time-sensitive, critical care condition in which successful patient outcomes depend on rapid response and decisive medical decisions. There's a long chain of events – a "system of care" -- involved in diagnosis, medical imaging and analysis, and, if indicated, an intravascular procedure to remove obstructive clots that interrupt blood flow to the brain. The procedure is called thrombectomy.

"Thrombectomy doesn't take long", says Devlin. "It's the diagnosis and medical imaging that's become the gating factor. Often in a community hospital setting, medical staff who can read scans are not readily available. That's where extended delays often occur in stroke care."

"Workflow analysis shows the critical bottleneck in the process lies in the interpretation of a CT scan of the head and neck by a radiologist or stroke neurologist, where stroke is suspected", remarks Dr. Devlin. "That delay can be 60 minutes or more at a small community hospital, especially in a rural setting."

"That's where AI tools come in", remarks Devlin. A tool such as VIZ rapidly interprets patient CT scans using specialized "trained" algorithms. The preliminary finding from an AI-app allows neurologists at a Regional Stroke Center such as CHI Memorial, where Dr. Devlin is Medical Director, to rapidly confer on a group chat and review the findings from an AI-imaging product on a secure cell phone. The medical team then decides on the spot whether to order a thrombectomy procedure and to initiate patient transport if that's required.

According to Peter Catalano, "It's a daunting challenge to execute a large comparative study confirming the impact of an AI-based tool on faster treatment decision times. Time stamped documentation of each step in the diagnosis and treatment process is required to quantify the effects when an AI-tool is used, and cases where it's not. Studies such as *VALIDATE* where data records number in the tens of thousands are extremely challenging and quite rare."

"But our Chattanooga-based team threaded the needle on this one", he says. "This was a great community effort."