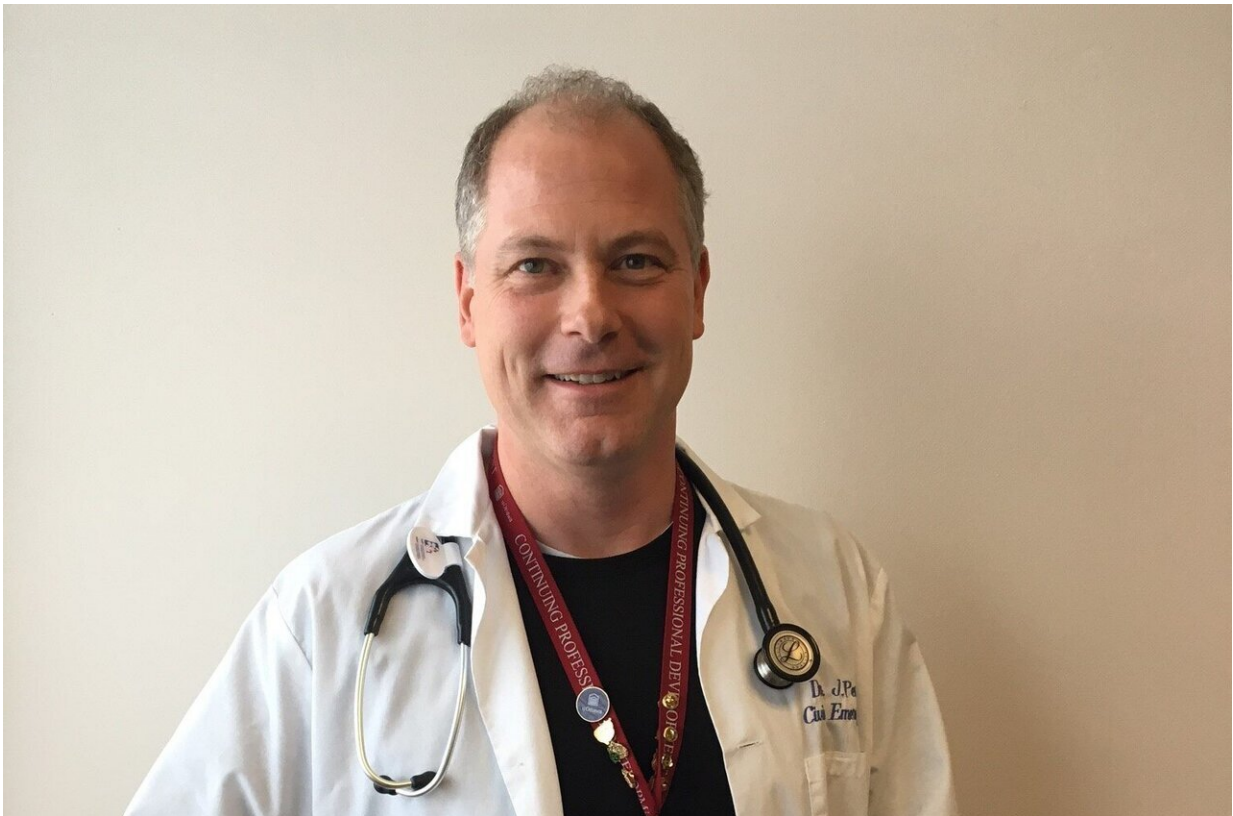


Tool predicts which mini-strokes could lead to major strokes

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A tool can help emergency physicians predict which patients with mini-strokes are at greatest risk of having a major stroke within the week, according to a validation study led by Dr. Jeffrey Perry, emergency physician and senior scientist at The Ottawa Hospital and professor at the University of Ottawa. Credit: The Ottawa Hospital

A made-in-Ottawa tool can help emergency physicians predict which patients with mini-strokes are at greatest risk of having a major stroke within the week, according to a study published in *The BMJ*.

"Mini-strokes can be a warning that a larger stroke is coming," said, emergency physician and senior scientist at The Ottawa Hospital and professor at the University of Ottawa. "Thankfully, we're very good at preventing subsequent strokes if [patients](#) come to the emergency department promptly."

A mini-stroke, or transient ischemic attack (TIA), is a temporary blockage of the brain's [blood supply](#). The symptoms are similar to stroke—drooping face, weakness in the arm or leg, loss of vision, and slurred or jumbled speech. Unlike a stroke, symptoms usually last minutes to hours, and do not cause permanent damage.

If a TIA is not treated, there is up to a 1 in 10 chance of having a subsequent stroke. The risk is greatest in the first week.

"TIA or mini-strokes are quite common—we see one to two patients a day at The Ottawa Hospital emergency departments," said Dr. Perry. "We developed the Canadian TIA Score to help us better identify who is at greatest risk of stroke and needs care most urgently. On the flip side, it also helps us gives patients at low risk some peace of mind."

The Canadian TIA Score uses thirteen pieces of information collected in the emergency department to categorize patients as being at low (less than 0.5 percent), medium (2.3 percent), or high (6 percent) risk of having a stroke within the week.

"For [high-risk patients](#) we do absolutely everything we can while they are in the ED, including diagnostic imaging, starting treatment and bringing in a neurologist," said Dr. Perry. "For medium-risk patients, we

do similar things but refer them to a stroke prevention clinic, where they can see a neurologist in a day or two. Low-risk patients can safely start their treatment as a neurology outpatient or with their family doctor."

The tool was validated in 13 Canadian emergency departments over five years. Of the 7,607 patients enrolled who had TIA or a minor stroke, 17 percent (1,293) were categorized as low risk, 71 percent (5,400) were categorized as medium risk and 13 percent (989) were categorized as high risk.

Overall, 108 patients (1.4 percent) in the study had a subsequent stroke within the week, while 83 (1.1 percent) had surgery to improve blood flow in their neck to prevent a stroke. This low rate of stroke is testament to the preventative care provided in the ED.

The study showed the Canadian TIA Score accurately categorized patients into the three risk groups, and performed significantly better than the existing ABCD2 score. That score only categorizes TIA patients as being at low or high risk of a stroke, which is not always helpful to physicians.

"The Canadian TIA Score can now be safely used in emergency departments, where it can help physicians make the best care decisions for patients with mini-strokes," said Dr. Perry.

The Canadian TIA Score can help ensure that patients like Peter Nephin are prioritized for urgent care. In 2020, the avid cyclist felt a persistent tingling in his right arm while reading at the cottage. When his wife noticed he had a new speech impediment, they rushed to the local emergency department. They were sent to The Ottawa Hospital Civic Campus, the regional stroke centre, where imaging showed a 55 percent blockage and a blood clot in one of Peter's neck arteries. He stayed in hospital for a few days, where he received blood thinners to get rid of

the clot and surgery to remove the blockage.

"It was a scary time, but the staff at the hospital help calm you down. I felt like I was being well looked after -they had my life in their hands," said Peter, who is now in good health with no lingering effects from the TIA.

TIA is a medical emergency. Anyone who experiences symptoms should call 911 or have someone drive them to an [emergency department](#) if their symptoms have fully resolved.

"Three quarters of the patients in our study said this was their first mini-stroke, and over a third arrived by ambulance" said Dr. Perry. "It's a reminder that you should always take [stroke](#) symptoms seriously, even if they seem to pass quickly."

The Canadian TIA Score is available online and through The Ottawa Rules app.

More information: Prospective validation of Canadian TIA Score and comparison with ABCD2 and ABCD2i for subsequent stroke risk after transient ischaemic attack: multicentre prospective cohort study. Jeffrey J Perry, Marco L A Sivilotti, Marcel Émond, Ian G Stiell, Grant Stotts, Jacques Lee, Andrew Worster, Judy Morris, Ka Wai Cheung, Albert Y Jin, Wieslaw J Oczkowski, Demetrios J Sahlas, Heather E Murray, Ariane Mackey, Steve Verreault, Marie-Christine Camden, Samuel Yip, Philip Teal, David J Gladstone, Mark I Boulos, Nicolas Chagnon, Elizabeth Shouldice, Clare Atzema, Tarik Slaoui, Jeanne Teitlebaum, Kasim Abdulaziz, Marie-Joe Nemnom, George A Wells, Mukul Sharma. The *BMJ*. Feb 3, 2021.

Provided by The Ottawa Hospital

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