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Large Canadian study could help prevent strokes

POSTED ON 01 22 2012 **BY** Jane Langille
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It was Canada Day when Dr. David Gladstone helped save Mo-Ching Hwu-Chan's life. The 71-year-old woman was rushed to Sunnybrook Health Sciences Centre in Toronto because her left face, arm, hand, leg and foot suddenly became completely paralyzed, and her left field of vision went blind. Gladstone, the director of the Regional Stroke Prevention Clinic at the hospital, treated her in the emergency department where the hospital's Code Stroke Team kicked into high gear. They assessed the woman with brain imaging and determined that she was suffering a large stroke from a blood clot that was blocking one of the main brain arteries. It was blocking blood flow to the right side of her brain.

Given the type and severity of her stroke and her poor prognosis for recovery without treatment, Gladstone rapidly administered treatment with the clot-busting drug, tPA. She started regaining feeling and movement in her limbs during the infusion and amazingly, by the next day, she had fully recovered. Repeat brain imaging showed complete restoration of blood flow in her brain.

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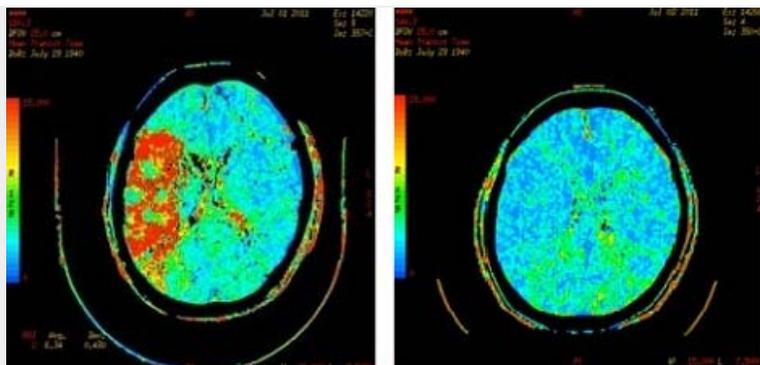**Videos**
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Mo-Ching's brain scan before tPA treatment (left) shows a large area of reduced blood flow in the brain, which corresponds to a major stroke. Following successful treatment with tPA, a repeat brain scan (right) shows that the brain blood flow has been restored to normal.

"She was very lucky; it was really a miraculous save," says Gladstone, who is also an assistant professor of neurology in the Department of Medicine at the University of Toronto.

Mo-Ching was fortunate indeed because in Canada, someone dies or is disabled by stroke every 10 minutes. But there was still more work to be done. Gladstone's next challenge was to figure out why this previously healthy woman had suffered a stroke in the first place. The usual diagnostic tests did not uncover any obvious cause for her stroke, nor did a 24-hour Holter monitor (a small recording device that collects heart rhythm information) find irregularities in her heart rhythm. Determined to find the underlying cause, Gladstone enrolled Mo-Ching in his EMBRACE study, currently underway to test an advanced cardiac monitoring system that aims to improve detection of atrial fibrillation, a major risk factor for stroke.

Atrial fibrillation is an irregular beating of the upper chambers of the heart, which can lead to blood clot formation and severe strokes. While some people may have symptoms like heart palpitations, dizziness or chest pains, many do not have any symptoms of atrial fibrillation. Risk for developing the condition increases with age – it affects one in 10 people over the age of 80.

Gladstone's research is funded in part by a Clinician-Scientist Award from the Heart and Stroke Foundation of Ontario and the EMBRACE trial is being funded by a grant from the Canadian Stroke Network. This groundbreaking study aims to be the first randomized trial to test a newly developed cardiac monitoring belt for stroke patients. A dry-electrode chest strap monitors heart rhythm for 30 days. Nearly 500 patients in 18 hospitals across Canada have enrolled in the study to date. Early results are anticipated in late 2012.

This study proved to be important for Mo-Ching - the additional cardiac monitoring as part of this study discovered that she did in fact have undiagnosed intermittent atrial fibrillation. She is now being prescribed anticoagulant drug therapy to significantly lower her risk of subsequent strokes.

Improving the early detection of atrial fibrillation is an important step in preventing strokes. "If we find that prolonged heart monitoring results in improved diagnosis and treatment, this approach could become a new standard of care across hospitals worldwide," says Gladstone.

Help the Foundation contribute to life-saving research like the EMRACE study by making a donation today.

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