

# Global research identifies causes of stroke

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Dr Michelle Canavan, Consultant Stroke Physician at Galway University Hospitals and Professor Andrew Smyth, Professor of Clinical Epidemiology at NUI Galway, Director of the HRB-Clinical Research Facility Galway and a Consultant Nephrologist at Galway University Hospitals at the HRB- Clinical Research Facility Galway. Credit: Aengus McMahon

A global study into causes of stroke has found that one in 11 survivors

experienced a period of anger or upset in the hour leading up to it. One in 20 patients had engaged in heavy physical exertion.

The suspected triggers have been identified as part of the global INTERSTROKE study—the largest research project of its kind, co-led by National University of Ireland Galway, which analyzed 13,462 cases of acute [stroke](#), involving patients with a range of ethnic backgrounds in 32 countries. The research has been published in the *European Heart Journal*.

Stroke is a leading global cause of death or disability. Each year, approximately 7,500 Irish people have a stroke and around 2,000 of these people die. An estimated 30,000 people are living in Ireland with disabilities as a result of a stroke.

There are more than 100,000 strokes in the UK each year causing 38,000 deaths. About 1.3 million people in the UK are survivors of stroke.

Professor Andrew Smyth, Professor of Clinical Epidemiology at National University of Ireland, Galway, Director of the HRB-Clinical Research Facility Galway and a Consultant Nephrologist at Galway University Hospitals, was one of the lead researchers. He said: "Stroke prevention is a priority for physicians, and despite advances it remains difficult to predict when a stroke will occur. Many studies have focused on medium to long-term exposures, such as hypertension, obesity or smoking. Our study aimed to look at acute exposures that may act as triggers."

The research analyzed patterns in patients who suffered ischemic stroke—the most common type of stroke, which occurs when a blood clot blocks or narrows an artery leading to the brain, and also intracerebral hemorrhage—which is less common and involves bleeding

within the brain tissue itself.

Professor Smyth added: "We looked at two separate triggers. Our research found that anger or emotional upset was linked to an approximately 30% increase in risk of stroke during one hour after an episode—with a greater increase if the patient did not have a history of depression. The odds were also greater for those with a lower level of education.

"We also found that heavy physical exertion was linked to an approximately 60% increase in risk of intracerebral hemorrhage during the one hour after the episode of heavy exertion. There was a greater increase for women and less risk for those with a normal BMI. The study also concluded that there was no increase with exposure to both triggers of anger and heavy physical exertion."

Co-author Dr. Michelle Canavan, consultant stroke physician at Galway University Hospitals, said, "Our message is for people to practice mental and physical wellness at all ages. But it is also important for some people to avoid heavy physical exertion, particularly if they are high-risk of cardiovascular, while also adopting a healthy lifestyle of regular exercise."

The global INTERSTROKE study was co-led by Professor Martin O'Donnell, Professor of Neurovascular Medicine at National University of Ireland, Galway, and Consultant Stroke Physician at Galway University Hospitals, in collaboration with Prof Salim Yusuf of the Population Health Research Institute of McMaster University and Hamilton Health Sciences, Canada.

"Some of the best ways to prevent stroke are to maintain a healthy lifestyle, treat high blood pressure and not to smoke, but our research also shows other events such as an episode of anger or upset or a period

of heavy physical exertion independently increase the short-term risk." Prof O'Donnell said.

"We would emphasize that a brief episode of heavy physical exertion is different to getting regular physical activity, which reduces the long-term risk of stroke."

INTERSTROKE is a large, international case-control study carried out in 142 centers in 32 countries. Countries were grouped into seven geographical regions—Western Europe, North America, Australia (Canada, Australia, Germany, Denmark, Sweden, UK, and Ireland); Eastern Europe, Central Europe, Middle East (Croatia, Poland, Turkey, Iran, United Arab Emirates, Russia, and Saudi Arabia; China; South America (Argentina, Brazil, Chile, Colombia, Ecuador, and Peru); Southeast Asia (Thailand, Philippines, and Malaysia); South Asia (India and Pakistan); Africa (South Africa, Mozambique, Uganda, Sudan, and Nigeria).

The average age of patients in the study was 62.

Stroke figures for the UK are courtesy of National Institute for Healthcare and Excellence.

**More information:** Andrew Smyth et al, Anger or emotional upset and heavy physical exertion as triggers of stroke: the INTERSTROKE study, *European Heart Journal* (2021). [DOI: 10.1093/eurheartj/ehab738](https://doi.org/10.1093/eurheartj/ehab738)

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