

Stroke and rehabilitation

Toronto Rehab's Stroke Service, part of the Neuro Rehabilitation Program, provides specialized inpatient and outpatient rehabilitation services for adults who have cognitive and physical impairment as a result of stroke. It is Toronto's largest stroke inpatient rehabilitation unit.

What is stroke?

- Strokes occur when the flow of blood to the brain is interrupted or when the blood vessels in the brain burst. This change causes brain cells to die and a loss of brain function.
- The long-term effects of stroke depend on many factors, including how much and what part of the brain was damaged, the state of a person's overall health before the stroke, how quickly treatment is administered and the extent of rehabilitation.
- Stroke can affect movement, balance and coordination, memory and reasoning, speech and language, perceptual skills and emotional well-being. The impact on stroke survivors and their families, and on the health system and society in general, is enormous.

Facts about stroke

- More than 500,000 Canadians have Alzheimer's disease or a related dementia. This includes more than 420,000 people over the age of 65, and more than 70,000 under 65.
- One in three Canadians knows someone with Alzheimer's disease. Almost one in five Canadians has Alzheimer's disease in their immediate family. Alzheimer's disease accounts for about 64% of all dementias in Canada.
- In just five years, as many as 50% more Canadians and their families could be facing Alzheimer's disease or a related dementia.
- By 2031, more than 750,000 Canadians will have Alzheimer's disease or a related dementia.
- The biggest risk factor for Alzheimer's disease is family history.
- Women make up almost 75% of Canadians with Alzheimer's disease.
- Canadians currently spend an estimated \$5.5 billion per year to care for people with Alzheimer's disease and related dementias.
- As the population ages, the number of Canadians diagnosed with dementias will increase dramatically. Rehabilitation is a vital part of Canada's solution to this challenge.

Toronto Rehab's expert stroke rehabilitation

- At Toronto Rehab, rehabilitation is the interprofessional process of helping people who experience disabling injury, illness and conditions associated with aging to regain the skills, abilities, confidence and independence they need to live their lives to the fullest.

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- Rehabilitation can improve quality of life for people who have had a stroke by helping them relearn how to use their body to reduce disability and improve functional independence.
- Rehabilitation for stroke involves an individualized combination of physical, occupational and speech therapy, and diet, exercise and lifestyle modification, as well as emotional support and counselling.
- In order to ensure our patients and others around the world can benefit from the newest therapies, methods and equipment, leading-edge research is at the centre of all care Toronto Rehab provides. Through close collaboration between Toronto Rehab researchers and clinicians, innovations in research are rapidly translated to the clinical setting.

Pushing the frontiers of stroke rehabilitation research

Toronto Rehab conducts high-impact research that leads to advances in knowledge, treatment and technology and has a valuable impact on people affected by disability and/or their caregivers. Our rehabilitation research program is one of the largest and most diverse in North America. Current stroke-related research projects include:

Benefits of early, sustained aerobic exercise – Toronto Rehab research has shown the benefits for stroke patients of starting aerobic exercise earlier and sustaining it longer. A study by Drs. William McIlroy and Dina Brooks revealed that patients who began exercising as soon as two weeks post-stroke improved their fitness and strengthened their heart.

Restoring grasping ability – Dr. Milos R. Popovic and colleagues are using functional electrical stimulation (FES) to improve voluntary grasping ability. The technology has effectively “retrained” some people’s nervous systems to function even when the device is removed. The team is investigating whether FES can help stroke patients stand and walk.

Improving swallowing – Difficulty swallowing is common for stroke survivors. Twenty % of stroke patients die in the first year from pneumonia caused by food or liquid entering the airway. Senior scientist Dr. Catriona Steele has pioneered new ways to treat tongue weakness to help people regain the muscle strength and function needed for swallowing.

Robotic strength rebuilding – A robotic device to help stroke patients rebuild upper-body strength is being developed by Dr. Alex Mihailidis and others at Toronto Rehab and beyond. The new device will enable patients to do these exercises unsupervised at any time, with individual adaptation thanks to artificial intelligence.

Linking stroke and sleep apnea – Senior investigator Dr. Douglas Bradley has uncovered a link between stroke and sleep apnea, a condition in which people stop breathing for short periods during sleep. Unfortunately, only 10% of sleep apnea cases are diagnosed. Dr. Bradley is devising a screening device to catch the condition in more people earlier.

For more information

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