

AFTER STROKE STRIKES

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One out of every six persons in Singapore will suffer a stroke in his or her lifetime. In people with diabetes, the risk of suffering a stroke is at least two times more than in non-diabetics. People with diabetes are also more likely to suffer stroke at a younger age.

The effects of a stroke can be devastating. Improved awareness and prevention, as well as active participation in activities aimed at recovery after a stroke could help to limit the extent of these effects.

Stroke occurs when blood supply to part of the brain is cut off, resulting in the death of brain cells. This causes impairment of function controlled by that part of the brain, such as weakness on one side of the body. Ischaemic strokes result from blockage of arteries in the brain by blood clots. Haemorrhagic strokes occur when blood vessels in the brain leaks or ruptures. About one in every 2.5 first-time stroke patients in Singapore suffers from diabetes, with a higher incidence among ischaemic stroke patients, compared to about one in nine Singaporeans.

Other than diabetes, the other major risk factors of stroke include smoking, high cholesterol, hypertension, atrial fibrillation (a condition with heart beat irregularity) and coronary artery disease.

What are the warning signs of a stroke? What should I do if I am having symptoms of a stroke?

FAST is a simple acronym to remember the early warning signs of a stroke. It stands for sudden onset Face drooping, Arm weakness, Speech difficulties. If these signs are present, it is Time to call 995. Do not wait and see if it will get better on its own, do not wait to see your family doctor or polyclinic. There is an adage that 'time is brain'. There are some very effective treatments that can only be given in the first few hours of stroke to limit the extent of brain damage, such as thrombolysis—a 'clot-busting' medication given intravenously; or endovascular clot retrieval—where the clot in the artery is extracted using a mechanical device. These treatments can drastically improve outcomes and could mean the difference between being bed-bound, requiring the help of a full-time caregiver versus returning to independent function and back to work. So, get to the nearest hospital with the facilities to deliver these sorts of treatment as fast as possible. You can be sure the emergency ambulance will get you there.




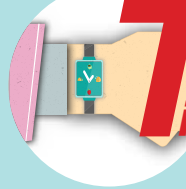

SIGNS OF STROKE

F **ACE**
Ask the person to smile. Is the face drooping on one side?

A **ARMS**
Ask the person to raise both arms. Does one arm drift downwards?

S **SPEECH**
Ask the person to repeat a simple phrase. Does it sound slurred or strange?

T **TIME**
If the person shows any of these symptoms, call 995 and get him or her to hospital immediately.

After all the emergency treatment is over, now what?

Much of the recovery of function following stroke relies on neuroplasticity. This refers to the potential of the brain to reorganise itself to adapt to new situations such as a stroke. Stroke rehabilitation is based on concepts of activity-dependent neuroplasticity, where motor learning is enhanced by repeated practice of activities. Motor learning is task-specific, such that if a stroke patient intends to improve walking ability, he/she needs to practise walking.

The effectiveness of rehabilitation is also dose-dependent to a significant extent. The more opportunities the stroke survivor has to practise in a directed manner, the greater the benefit.

However, many stroke survivors have difficulty performing the exercises they were taught to continue outside of therapy time, particularly those with moderate to severe disabilities. The lack of activities and exercise can lead to muscle wasting and weakness, development of contractures and decline in function. Stroke survivors should be supported and assisted to continue exercises to prevent this.



Is robotic therapy useful in stroke rehabilitation?

Based on these principles, robots have been increasingly employed to enhance the intensity of practice, primarily in acute rehabilitation facilities. Virtual reality has also been used to provide enhanced feedback to improve performance.

Research has shown that robots are able to deliver higher intensities of motor practice compared to conventional therapy, with better results in motor recovery. However, if a similar intensity of practice is delivered by conventional methods, the effectiveness compared

to robotic therapy is the same. But because it is practically very difficult to achieve such intensity with conventional therapy, robots are used.

Robotic therapy is not suitable for all stroke patients. For some, robotic therapy may provide excessive assistance, resulting in less improvement compared to conventional therapy. Such therapy should be supervised by trained clinicians.

What other new developments are on the horizon?

Newer techniques that have been explored to enhance neuroplasticity in stroke rehabilitation include the use of medications and non-invasive brain stimulation.

There is evidence to show that the class of anti-depressants called selective serotonin-reuptake inhibitors (SSRI) is likely to improve motor recovery in stroke patients if given in the initial months post-stroke, over and above its effect on mood.

Techniques of non-invasive brain stimulation such as transcranial direct current stimulation (tDCS) and repetitive transcranial magnetic stimulation (rTMS) are still in clinical trials but have shown great promise in enhancing recovery of motor function, language and other cognitive function post-stroke. In tDCS, a small electrical current is passed through the scalp to the brain to transiently change the excitability of brain tissue. In rTMS, changing magnetic fields in a coil held over the scalp induces electrical pulses in the underlying brain tissue and this also alters the excitability of the brain tissue transiently. When coupled with task-specific training (e.g., of the hand or language), such techniques have been shown to enhance efficacy of training. Specifics regarding the protocol, dose and duration of stimulation have yet to be ascertained.

Life after a stroke

Beyond addressing the impairments and activity limitations following stroke, it is important to consider reintegration and returning the stroke survivor and their caregivers back to a fulfilling life in the community.

Owning one's health and learning to manage one's health problems and disabilities including lifestyle changes, is an important first step to ensuring best functional outcomes and prevention of further complications after a stroke.

Those seeking to return to work with residual disabilities may speak to their rehabilitation doctors or therapists to access vocational rehabilitation and job matching services if needed.

Volunteer organisations such as the Singapore National Stroke Association (SNSA) (www.snsa.org.sg) and the Stroke Support Station (S3) (www.s3.org.sg) run regular activities to support stroke survivors and their caregivers, equip them with the skills for self-management and facilitate social reintegration.