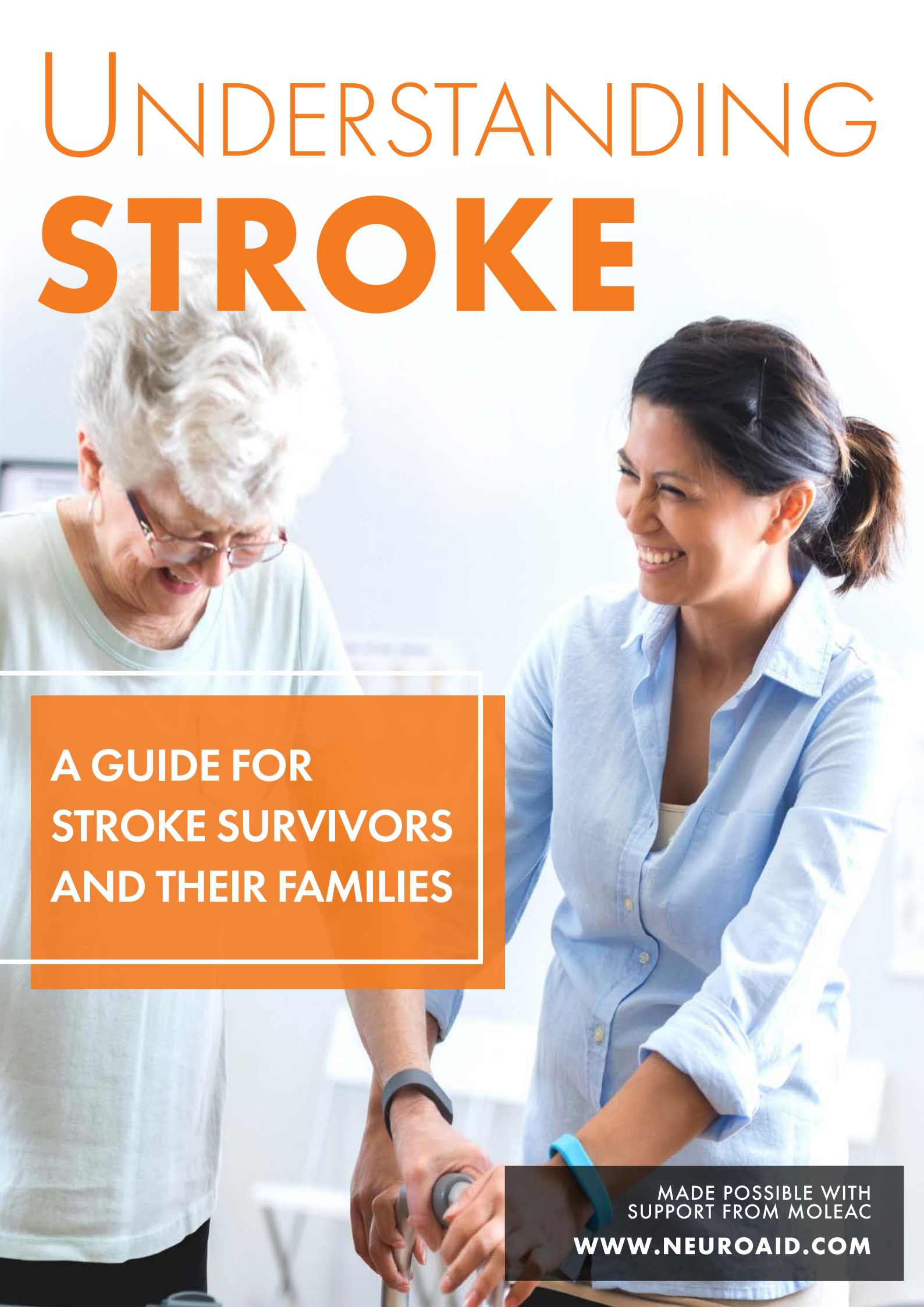
# UNDERSTANDING STROKE



## A GUIDE FOR STROKE SURVIVORS AND THEIR FAMILIES

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# UNDERSTANDING STROKE

## A GUIDE FOR STROKE SURVIVORS AND THEIR FAMILIES


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Stroke Society of the Philippines

National Stroke Association of Malaysia

Neeman Association for Stroke Survivors

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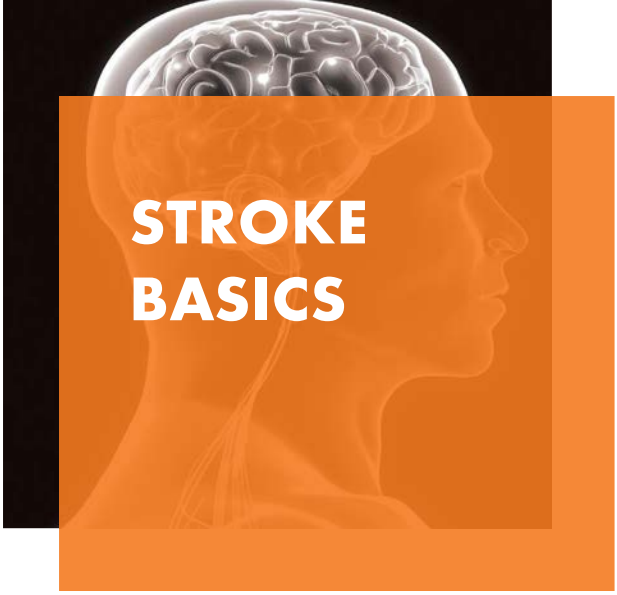
# FOREWARD

Stroke is a devastating condition that affects millions of people around the world each year. If you or a loved one had a stroke, you are probably looking for as much information as possible to help you better understand and cope with the situation. The first few days after a stroke can be confusing, frustrating, and scary.

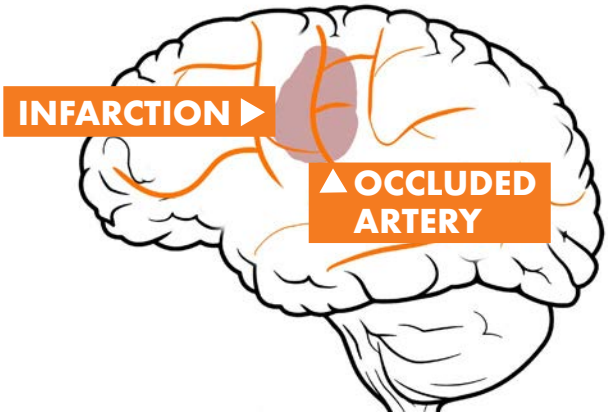
The internet is vast and contains numerous information that can be helpful, but occasionally may be misleading. Unfortunately, for the layperson, sifting through this mass of information can cause more confusion than enlightenment. For this reason, it is helpful to have the data all in one place, filtered so that what is important is highlighted.

This guide does not seek to detail every type, symptom, treatment, or information about strokes. What it does is take the information that is found on the internet and the medical literature, package it in an easy to read format, and presents it in a language that is easy to understand for readers who may or may not have medical training.

Whether the patient is a loved one, or you are trying to get information for yourself, we all want more than passing information about stroke. Armed with knowledge, you can overcome this event and learn how to live once again as a "**Stroke Victor**".



# STROKE BASICS




## WHAT IS A STROKE?

Stroke is a common illness. It can affect the patient and his/her family for many years. For this reason, understanding stroke is an important first step.

A stroke, also called a "**brain attack**", occurs when a portion of the brain is damaged due to a lack of blood supply to that part of the brain. Due to the lack of oxygen and nutrients carried by the blood, brain cells (called "neurons") die and the connections between neurons (called "synapses" or junctions) are lost. That part of the brain rapidly loses functions and starts to die. As a result, the part of the body controlled by that portion of the brain does not function normally. The larger area of the damage, the more deficits the patients will have.

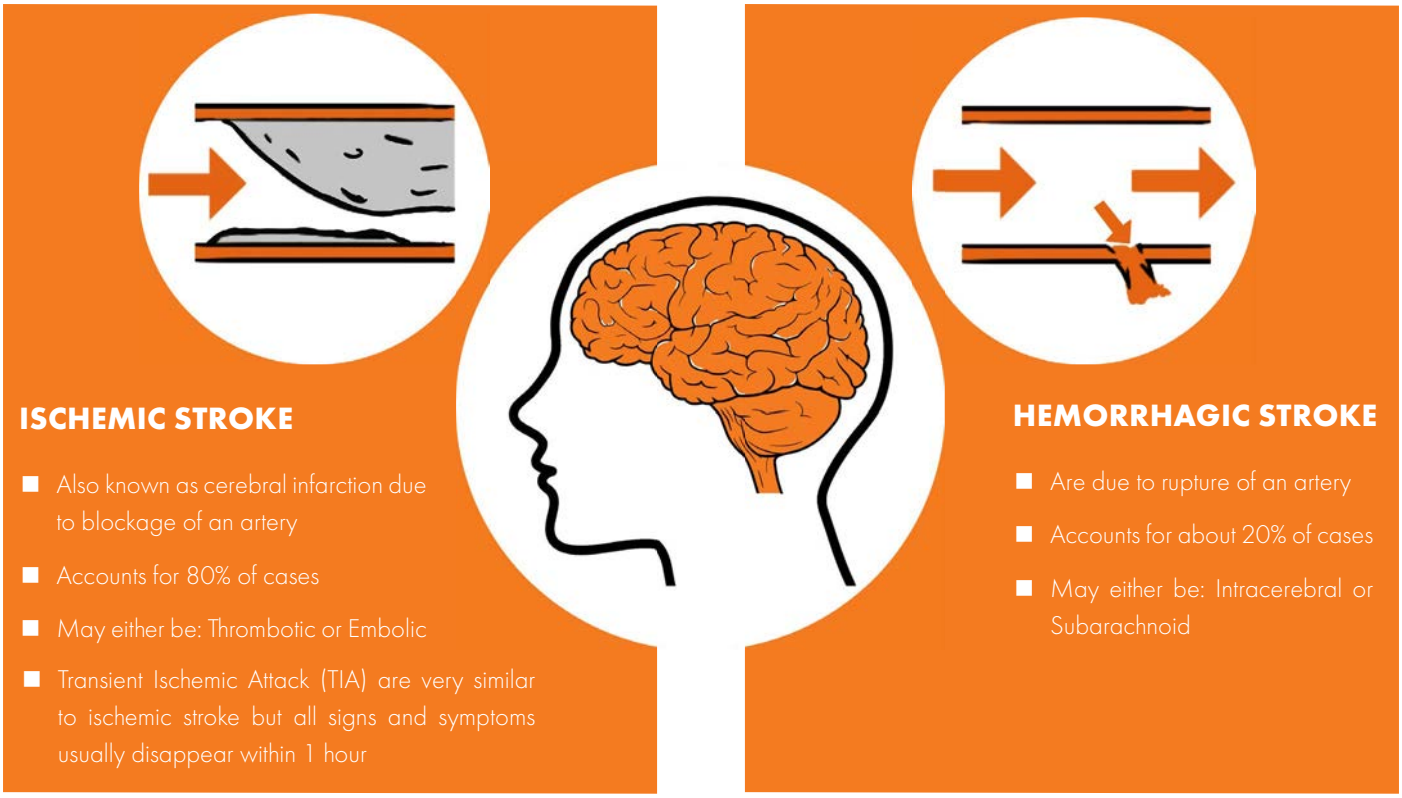
## A STROKE IS:

- **Also called a "brain attack"**
- **Due to a disruption of blood supply to part of the brain**
- **Caused by either a blockage or rupture of the blood vessel in the brain**

### Stroke can be classified in two categories.

About 80 percent of strokes are ischemic, due to interruption of blood supply. It is usually caused by a blockage of a blood vessel (artery) in the brain. If an artery is blocked, the brain cells cannot get oxygen and nutrients and will eventually stop working. If the artery remains blocked for more than a few minutes, the brain cells may die.

## CLICK TO WATCH VIDEO




**Ischemic stroke** can further be divided into two main types: thrombotic and embolic. A thrombotic stroke occurs when an artery becomes blocked by the formation of a blood clot within it. The artery may already be damaged by deposits of cholesterol (atherosclerosis). Total blockage may subsequently occur due to clumping together of blood cells (platelets) or other substances normally found in the blood.

An embolic stroke is also caused by a clot within an artery, but in this case the clot (or embolus) is formed somewhere other than in the brain itself. These materials could be blood clots (e.g. from the heart) or fatty materials (e.g. from another artery in the neck – carotid artery disease). These materials escape from where they were formed and enter the blood circulation and enter the brain. A lacunar stroke occurs when a small artery gets blocked – the symptoms are milder and recovery is better than when a large artery gets blocked.

Less commonly, when a weakened blood vessel in the brain ruptures, a hemorrhage occurs. **Hemorrhagic stroke** can be divided into two categories. Bleeding into the brain is called **intracerebral hemorrhage** (ICH) and is most often due to high blood pressure. The sudden increase in pressure within the brain due to the bleeding can cause damage to the brain cells surrounding the blood.

A **subarachnoid hemorrhage** (SAH) occurs when a blood vessel lying just outside the brain ruptures. The fluid-filled space surrounding the brain (the subarachnoid space) rapidly fills with blood. Subarachnoid hemorrhage is most often caused by abnormalities of the arteries called aneurysms. These are small areas of rounded or irregular swellings in the arteries where the blood vessel wall becomes weak and prone to rupture.

**Transient Ischemic attacks** (TIAs) are also called "mini-strokes." As mentioned earlier, a stroke is caused by irreversible brain injury due to the interruption of blood flow. In contrast, a TIA is a temporary loss of function of a part of the brain caused by a brief interruption of local cerebral blood flow, lasting less than 24 hours. Stroke prevention is crucial for those who have had TIAs - while TIAs do not cause permanent disability, but they are a very serious warning sign of an impending stroke.

A number of studies have shown that TIAs carry a significant short-term risk of stroke, especially in the first few days after the TIA. Do not wait for the symptoms to go away, because one cannot tell whether it is a stroke or a TIA without doing a brain scan. The goal of treatment of a TIA is to prevent a future stroke. The treatment used depends on the cause of the TIA. In addition to lifestyle changes such as diet and exercise, doctors may recommend drugs to treat high blood pressure, high cholesterol or heart disease. Medications that reduce the ability of the blood to form blood clots ('blood thinners') are usually given. These treatments reduce the risk of stroke.

## CAUSES AND RISK FACTORS

Risk factors are characteristics in a person that increase his/her likelihood of developing a certain disease condition. Many know about the most common risk factor for stroke, high blood pressure (hypertension). But it is only one of many factors associated with stroke. High cholesterol, diabetes mellitus, heart disease, irregular heart beat called atrial fibrillation, and clotting disorders are other risk factors for stroke.

## RISK FACTORS FOR STROKE

**Modifiable**

- Blood pressure
- Heart disease
- Blood chrolesterol
- Diabetes
- Clotting problem
- Cigarette smoking
- Heavy alcohol intake
- Obesity

**Not Modifiable**

- Age
- Gender
- Race-ethnicity
- Genetics

**Cholesterol** is probably the easiest to understand among the stroke risk factors. This white, fatty substance is found most commonly in red meats. Fats may also be quite high in certain oils used for cooking. For instance, frying foods in some vegetable oils can still lead to an increase in cholesterol levels. But cholesterol is needed by the body to make hormones and other important substances.

Cholesterol is tested on blood taken after an 8 to 10 hour fast. Total cholesterol levels should not exceed 200 mg/dL. Low-density lipoprotein, or LDL-cholesterol, known to cause plaques on the inside of arteries, should be lower than 100 mg/dL. On the other hand, high-density lipoproteins, or HDL-cholesterol, actually help remove cholesterol from artery walls, and levels should be above 60 mg/dL. Finally, triglycerides are a special type of fat in the blood, and they should not be higher than 150 mg/dL.These treatments reduce the risk of stroke.

Too much cholesterol circulating in the blood can lead to the cholesterol deposits within the walls of arteries (atherosclerosis). The build-up of cholesterol plaques may completely close off an artery in the brain. However, in most cases, blood clots form over the plaque that are then swept off the artery wall into a brain artery. This blocks off the artery and results in stroke symptoms. High blood cholesterol can be reduced by diet and exercise, and if needed medication.

**Diabetes mellitus** is another risk factor for stroke. The body gets its energy from breaking down a type of sugar called glucose which comes from the carbohydrates we eat. Persistently high blood glucose is called diabetes mellitus. Blood glucose is tested after an 8 to 10 hour fast. Fasting levels should not exceed 110 mg/dL. Diabetes mellitus, like high cholesterol levels, leads to atherosclerosis. Diabetes mellitus can be controlled by diet and exercise, and if needed medication.

**Heart disease** is a risk factor for stroke. Heart attacks are usually due to blockage of arteries in the heart from atherosclerosis. Atherosclerosis is a generalized process. If heart arteries are affected, brain arteries may be affected too. Arteries in the legs may also be affected (peripheral arterial disease), causing pain in the calves on walking. Medications for heart disease such as blood thinners can also prevent ischemic stroke but may raise the risk of hemorrhagic stroke.

A cause of stroke that may be overlooked is **atrial fibrillation**, or "a-fib". This condition occurs when the upper chambers of the heart (atria) do not pump effectively. They actually quiver, or 'fibrillate'. Fortunately, the lower chambers can do most of the work of supplying blood to the body, but the quivering atria can lead to blood pooling in it leading to the formation of blood clots within the atria. These clots may be subsequently ejected from the heart, and they can go to the brain, causing an ischemic stroke (embolic). A-fib is more common among those with heart disease, especially those with a heart valve problem. Sometimes it can just occur spontaneously. A-fib may be persistent or intermittent. One may or may not feel the change in heart rhythm. Fast a-fib is a medical emergency and is usually noticeable as palpitations, but slower a-fib can go unnoticed for years. A-fib can be detected by feeling the rhythm of the pulse or by listening to the rhythm of the heart. It is confirmed by an **electrocardiogram** (ECG). Treatment is usually with blood thinners to prevent clots from forming.

Finally, we come to **high blood pressure (hypertension)** as a risk factor for stroke. Too much pressure on the walls of the arteries can lead to the leaking of brain arteries. With a great deal of pressure, the leak can be significant; rupture of the artery results in a hemorrhagic stroke High blood pressure can also lead to ischemic strokes by causing atherosclerosis.

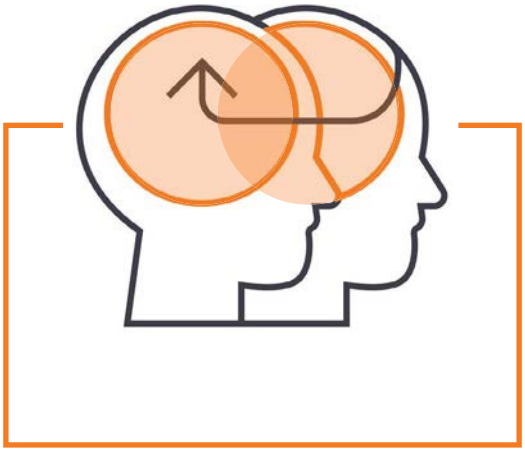
Hypertension is diagnosed by measuring the blood pressure, usually in the arm, after a period of rest. Blood pressure should not exceed 140/90 mmHg. High blood pressure can be reduced by diet and exercise, and if needed medication.

**ONE SHOULD SEE ONE'S FAMILY DOCTOR REGULARLY TO SCREEN FOR STROKE RISK FACTORS. IF ANY ARE FOUND, THEY SHOULD BE ADEQUATELY TREATED AND CLOSELY MONITORED TO LOWER THE RISK OF STROKE.**

Some people form **blood clots** easily. There may be a genetic cause, so it helps to know the family history. Clots may form spontaneously in a limb that is immobilized or after long car or plane rides. This is called deep vein thrombosis, and it generally occurs in the calf. Clots may rarely form in brain arteries or veins causing a stroke. This is more common among those who have stroke at a young age.

Many conditions have been found to have a **hereditary** component to them. However, stroke is generally not considered a hereditary disease. Many have one or more of the risk factors mentioned earlier – hypertension, diabetes mellitus, high blood cholesterol, heart disease, atrial fibrillation.

Still, one runs a higher risk for stroke if a grandparent, parent, or sibling has had a stroke especially at a young age. These are generally known as first-degree relatives, and they comprise those closest genetically. When one of these relatives has a stroke, one should become extra vigilant in stroke prevention measures.



Only a few stroke conditions were found to have underlying clear genetic link. One of them is called "Cerebral Autosomal Dominant Arteriopathy with Sub-cortical Infarcts and Leukoencephalopathy", or CADASIL. Research into genetics, though, is still ongoing, and a genetic link to strokes or stroke risk factors may become apparent in the future.

In the meantime, concentrating on risk factors one control will go a long way toward preventing or minimizing the risk of stroke.

Unfortunately, there are other risk factors for stroke that cannot be controlled or modified. **Age** is the most powerful risk factor for stroke. The risk of having a stroke doubles for each decade of life after the age of 55 years. **Gender** is another factor one cannot control. Men are at a higher risk for strokes than women, but women are more likely to have a poorer outcome after a stroke than men. Those who are of African American descent tend to have a higher risk for stroke than the general population. Although one cannot control these risk factors, one can take steps to control factors in one's life and decrease the impact these factors play in one's health.

Many of the life-style risk factors for stroke can be controlled and thus decrease one's risk.

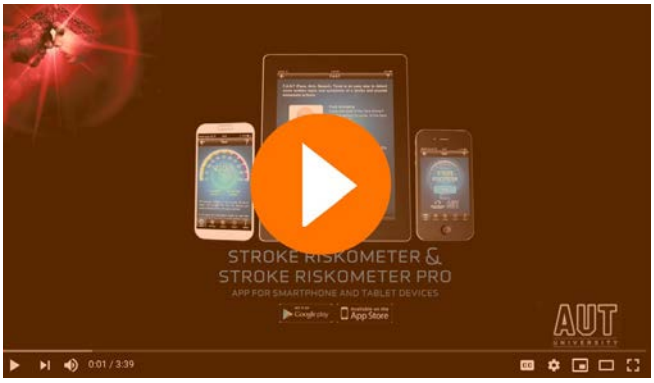
**Smoking, obesity** and a **sedentary lifestyle** with little exercise are other factors that can be controlled, but when they are ignored, they tend to lead to a stroke. One should stop smoking, reduce weight to the desirable range, and exercise regularly while eating healthily.

You can read more about these risk factors and how to prevent stroke by controlling these risk factors in the section on **Stroke Prevention.**

The **Stroke Riskometer™** is a free, unique and easy to use tool for assessing your individual risk of a stroke. The Stroke Riskometer is able to evaluate risk factors such as age, gender, ethnicity, lifestyle and health factors that directly influence your risk of a stroke in the next five or ten years.

- Endorsed by the **World Stroke Organization**
- Able to factor in modern lifestyle and hereditary risk factors.
- Suitable for ages 20 to 90+.
- Suitable for use by those who have already had a stroke or transient ischemic attack to estimate the risk of a recurrence.

## CLICK ON THE THUMBNAIL TO WATCH A SHORT VIDEO



# STROKE SYMPTOMS

## Common Signs and Symptoms of Stroke or TIA

- Weakness and/or numbness of the face, arm and leh of one side of the body
- Speech difficulties
- Trouble seeing in one or both eyes
- Sudden severe dizziness and loss of balance
- Increasing drowsiness, with possible loss of consciousness
- Confusion

With timely recognition and treatment, the risk of death and disability from stroke can be lowered. It is very important to know the symptoms of a stroke and act in time. Know these warning signs of stroke and teach them to others.

## EVERY SECOND COUNTS.

One way to remember stroke symptoms is by using the **mnemonic 'FAST'**. If you or a loved one has any of the symptoms in FAST, you should take them to an emergency room for immediate evaluation. The longer you wait, the more harm the stroke can cause and the fewer treatments are available.

### F refers to face.

Ask the person to smile and notice if one side or the other droops. Also, ask him/her to raise their eyebrows and see if one is lower than the other. In addition, the folds around the mouth can sometimes disappear when that side of the face is paralyzed.

### A is for arm.

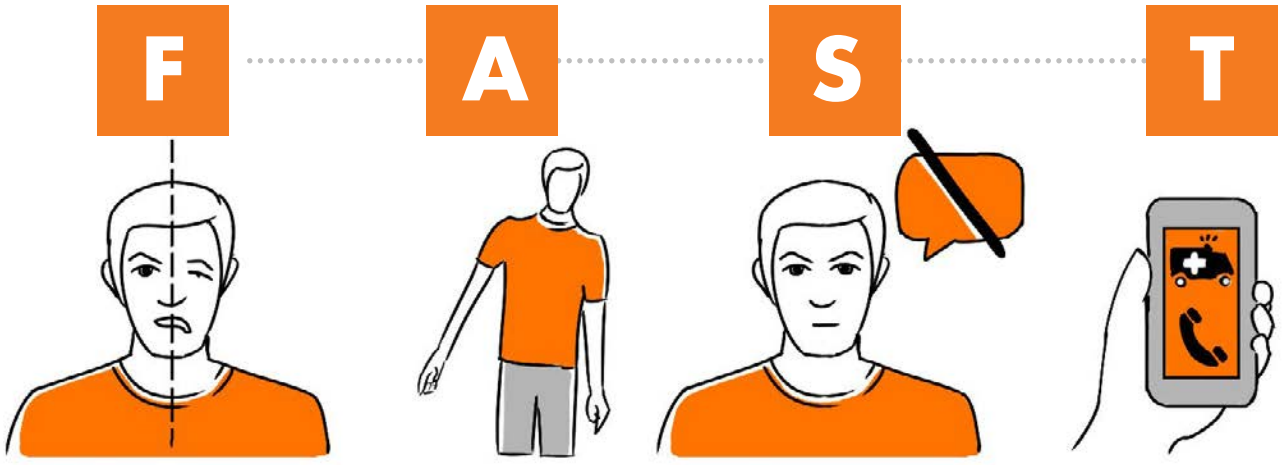
Ask the person to raise both arms. They should be at the same level with no drift. However, if one arm is unable to rise or it drifts sharply during the test, then it may be an indication of paralysis of the arm. Even trembling of one arm can be an indicator.

### S refers to speech.

Ask the person to repeat a simple sentence, such as "The boy went to the store." Listen for slurring and watch the lips for the correct forming of words. If he/she is unable to speak, can't repeat the words, or they are garbled, this is a sign that more definitive assessment is needed.

### T refers to Time.

Record as accurately as possible when the symptoms were first noticed. Some treatments are only effective and safe if given within a certain timeframe after stroke has occurred. Also realize that time is of the essence when any of these signs are noted. The longer one waits to get treatment, the more brain cells die from lack of oxygen and nutrients. If you have any hint that someone may be having a stroke, get them to a hospital straightaway. It is better to over-react than to suffer the severe outcomes of a stroke.




*Compare sides when appropriate*

| Facial Droop | Arm Drift | Speech | Time |
|---|---|---|---|
| *Show teeth or smile* | *Close eyes and hold both arms out* | *Repeat "The boy went to the store."* | |

Doctors will take a detailed history, perform a thorough clinical examination, and likely order blood tests and a brain scan before giving treatment. The sooner one is attended to, the more treatment options there are. Still, it is always better to prevent a stroke by knowing, detecting and controlling risk factors. If stroke occurs, one needs to recognize the symptoms and seek urgent medical attention.

# FURTHER READINGS

**NATIONAL STROKE ASSOCIATION:**
http://www.stroke.org/site/PageNavigator/HOME

**WEBMD: STROKE HEALTH CENTER:**
http://www.webmd.com/stroke/

**CENTERS FOR DISEASE CONTROL AND PREVENTION:**
http://www.cdc.gov/stroke/

**AMERICAN STROKE ASSOCIATION:**
http://www.strokeassociation.org/STROKEORG/

**MAYO CLINIC:**
http://www.mayoclinic.org/diseases-conditions/stroke/basics/definition/con-20042884

**INTERNET STROKE CENTER:**
http://www.strokecenter.org/

**AMERICAN ACADEMY OF NEUROLOGY:**
http://patients.aan.com/disorders/index cfm?event=view&disorder_id=1072

**NATIONAL INSTITUTES OF HEALTH:**
https://www.nhlbi.nih.gov/health-topics/stroke

# WHEN SOMEONE GETS A STROKE

When you or a loved one has a stroke, there is a whirlwind of activity that occurs in the immediate period. The first couple of days after a stroke are so full of tests, procedures and consultations that it is usually overwhelming. It helps to know what to expect and to know exactly what all these activities are about.

Stroke occurs when part of the brain is deprived of their blood supply due to blockage of the supplying blood vessel or there is bleeding in the brain. Someone suffering from stroke will have symptoms due to dysfunction of the area of affected brain. One may experience weakness in an arm or leg, drooping of one side of the face, difficulty speaking, numbness, incoordination or severe headache.

When someone is having symptoms of stroke, they should immediately call an ambulance to take them to an emergency room. The quicker that stroke is diagnosed and treated, the better the outcome. Even if the symptoms are transient, medical attention is imperative. Some stroke treatments can only be used in the first few hours following the onset of stroke treatments.

## STROKE IS AN EMERGENCY!

Patients coming into the emergency room with stroke symptoms are treated as critical with immediate consultation with doctors and healthcare workers and a variety of tests. A brain scan (either a CT scan or a MRI) is performed to look at the type of stroke (blockage or bleeding type as the treatment varies), the location and size and any secondary complications. Various blood tests and a heart ECG tracing will also be carried out.

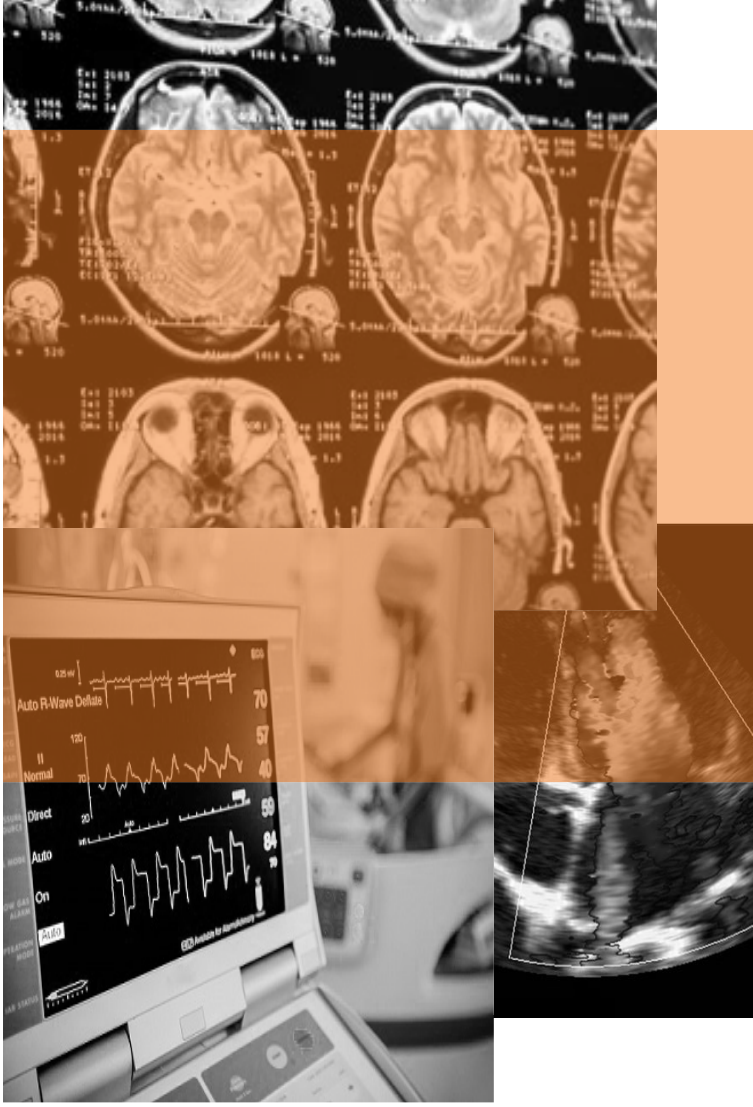
For patients with stroke due to blockage of vessels, as the blockage continues, more and more brain tissue dies as the minutes and hours tick by. There is a "clot-busting" treatment for stroke due to blockage of blood vessels (ischemic) called tissue plasminogen activator, or commonly referred to as tPA. This medication, given through an intravenous line, can dissolve clots, reestablishing the blood supply to the affect brain region. However, it can only be used in the first four and a half hours after the onset of stroke symptoms. After this 4.5-hour window, it is no longer routinely advise because of reduced efficacy and higher risk of complications. Unfortunately most patients come too late to hospital to be considered for clot-busting treatment. For these patients, anti-platelet medications (that make blood less sticky) are given to prevent recurrence of the stroke. Patients with bleeding stroke (hemorrhagic) need to be assessed for the need for emergency surgery to drain the accumulated blood collection.

Stroke patients will be monitored frequently in the acute period with measurements of vital signs (such as pulse and blood pressure) and signs of stroke to detect any deterioration or evidence of complications.

Aside from brain imaging tests like CT scan or MRI, other diagnostic tests will be performed. Many of these tests are directed towards understanding what underlying condition may have led to the stroke and will need to be treated to prevent another stroke from happening. These tests will likely include blood tests to check the cholesterol and sugar levels, an electrocardiogram to assess the heart, and ultrasound to evaluate the major blood vessels supplying the brain.

## TESTS PERFORMED TO DIAGNOSE A STROKE AND ITS UNDERLYING CAUSE

- CT Scan or MRI
- Blood tests
- Electrocardiogram (ECG)
- Frequent neurological examination
- Other tests, like ultrasound of the blood vessels to the brain, echocardiogram (utrasound of the heart), etc.




Supportive treatments will also be instituted. This may include management of blood pressure, blood sugars level, oxygen supplementation, hydration and feeding.

After the acute condition has stabilized, the long road to recovery can begin. Even in the first 48 hours, rehabilitation therapists will begin work with a stroke patient. This is because studies have shown that early therapy, even passive therapy on unconscious patients, can improve recovery and outcomes. Your ability to swallow will also be evaluated, often by a speech therapist. If your swallowing is affected, it may not be safe for you to drink or eat orally as this may go towards the airway tube instead causing choking and chest infections. Alternative methods such as thickening of fluids or a tube may need to be inserted through the nose into the stomach for feeding purposes.

**CLICK TO WATCH VIDEO**

# GUIDE TO MEDICAL SPECIALISTS

When you or a loved one has experienced a stroke, you can expect a host of professionals to attend to you. They will come into your room, greet you and start assessing and attending to you.It can be so bewildering who all these people are.

## MEDICAL SPECIALIST A STROKE PATIENT MAY ENCOUNTER

- Emergency room physician
- Neurologist
- Neurosurgeon
- Radiologist
- Intensivist
- Rehabilitation physician
- Nurse
- Respiratory therapist
- Physical therapist
- Occupational therapist
- Speech therapist
- Psychologist
- Social worker

1

The first medical professionals you will face are likely the **emergency room staff.** You will likely be attended by an emergency medicine doctor who stabilize your condition if needed, perform an initial assessment and arrange for a brain scan.

2

Once the diagnosis becomes evident, **neurologists** and **neurosurgeons** are the next level of medical professionals. Neurologists are doctors who specialize in disease of the brain and treat them with medications. If there is a need for surgery, you may also encounter a neurosurgeon who performs operations on the brain.

Doctors, especially in public and academic institutions, often function in a team. There will always be one consultant (or attending) doctor who is overall in charge. There may be doctors who are undergoing further training, often called residents. There may also be medical students who are on the team. It may help to ask doctors who are attending to you what their role in the team is and to ask who the consultant in charge is.

3

**If you are being cared for in the ICU**, you may also be attended by doctors that specialize in critical care who are called **intensivists.** Another possible doctor you may encounter is the **radiologist.** This is a doctor that is a specialist in reading and analyzing x-rays and scans. However they often work behind the scenes and you may not meet them in person.

4

Besides doctors, you will see a stream of support personnel. Of course, **nurses** will be your front line care providers. Nurses often work in shifts and there will always be nurses physically around to attend to patients' needs. Nurses will attend to your care needs, perform monitoring checks, administer medications, educate you on your condition and help you navigate the medical system. **Social workers** usually are assigned to patients to help address emotional and family issues, arrange for social services and step-down care.

5

You will soon also meet the rehabilitation team including the **rehabilitation physician** and various therapists. Therapy is the primary treatment for post-stroke deficits, and there are several different flavors of professionals with different points of emphasis in the recovering stroke survivor, which will be coordinated by the rehabilitation physician.

6

**Physical therapists** will work on physical movements. This may be through passive and active motions, strength-building, functional movement training such as transfers and walking, massage and deep tissue simulation, and use of assistive equipment for movement.

7

**Occupational therapists** are those who help with activities of function in daily living such as how you will dress or feed, use of hands to handle objects, and transfers. They will also advise on practical adaptations to cope with the consequences of stroke such as special cutlery, home modifications for safety and vehicle modification for driving.

8

**Speech therapists** are trained in managing speech and swallowing issues. They will assess on safety of swallowing and modified feeding if warranted. They will also assess for any speech impairments and work with patients on verbal and non-verbal communication.

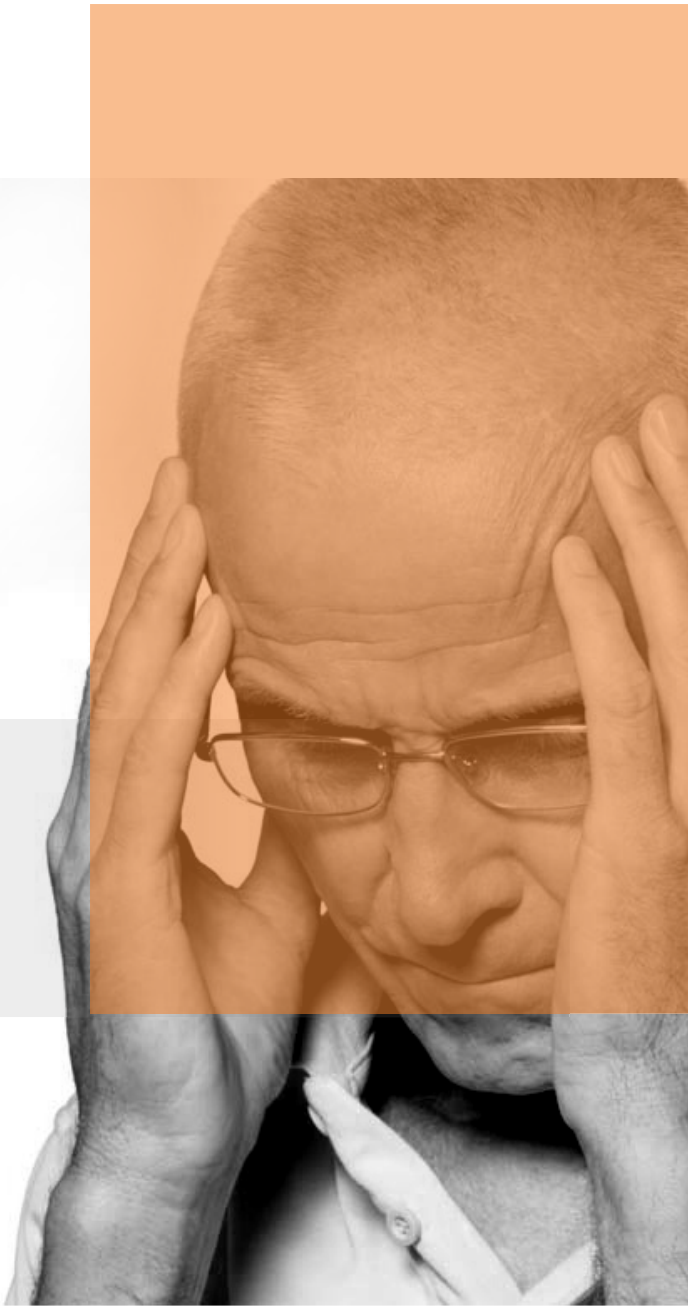
9

There may be other therapists involved in your care. **Respiratory therapists** will care for you if you are on a breathing machine. There are also **Art and Music therapists** to help with post-stroke rehabilitation and reintegration into society.

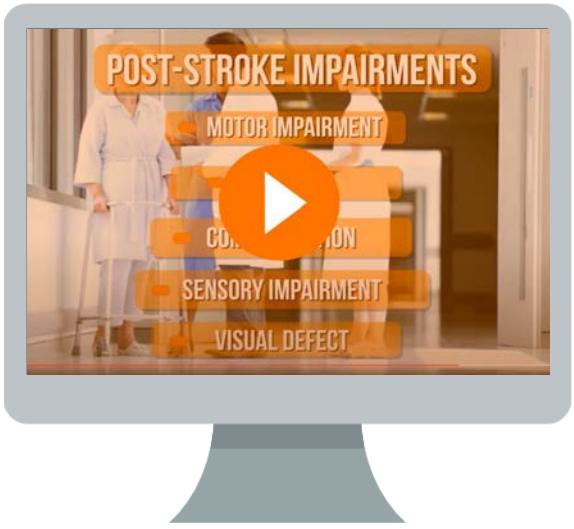
# IMPAIRMENTS FROM STROKE

There are various symptoms and signs of stroke. The type and severity of these impairments, referred to as neurological deficits by healthcare workers, depend on the location and size of the brain damage due to stroke. Although medical treatment and physical rehabilitation help in recovery, a stroke often leaves a lasting mark. Some neurological deficits persist despite rehabilitation and can be permanent. Depending on their extent, they may affect functions resulting in some disability.

The list of neurological deficits of stroke is long. Not every stroke patients will have all of them. The combination of deficits in a stroke patient will help the doctors determine the likely location of the brain region affected.



Depending on the location and extent of the damage, a stroke may cause moderate to severe impairments, like one-sided body weakness and/or numbness, paralysis of one side of the face, slurred speech, visual loss, imbalance, and many others.




**CLICK TO WATCH VIDEO**

# THE NEUROLOGICAL DEFICITS OF STROKE INCLUDE:

- Weakness of one side of the body **(Hemiparesis)**, or both sides of the body
- Numbness on one side or both sides of the body
- Drooping of one or both sides of the face
- Double vision
- Slurring of speech **(Dysarthria)**
- Difficulty swallowing **(Dysphagia)**
- Difficulty expressing language through speech or writing **(Broca's aphasia or expressive aphasia)**
- Difficulty understanding language from speech and writing **(Wernicke's aphasia or reception aphasia)**
- Altered voluntary movements **(Apraxia)**
- Confusion, disorganized thinking
- Altered reasoning and judgment
- Emotional changes
- Inability to sense one side through vision or touch **(Hemineglect)**
- Difficult with naming **(Anomia)**
- Difficulties with reading and writing **(Alexia, Agraphia)**
- Difficulty with arithmetic **(Acalculia)**
- Inability to identify fingers **(Finger agnosia)**
- Inability to distinguish right from left **(Left-right disorientation)**
- Inability to see one part of the visual field
- Blindness in one or both eyes.
- Inability to associate visual stimuli with meaning despite being able to see them **(Visual agnosia)**
- Hearing difficulties
- Memory difficulties
- Incoordination
- Unsteadiness on walking
- Vertigo and disequilibrium
- Sensation that things are seen to be moving
- Changes in breathing pattern, heart rate, and blood pressure

# LONG TERM TREATMENTS

After an acute stoke, you will probably have a handful of medications you have to take every day. You may wonder what they are for and how they are helping you. These may be to treat the underlying cause of the stroke or to control the risk factors of stroke, in order to reduce the likelihood of another stroke. Here is a brief look at the types of drugs you will be taking, and how to best manage them.

When you have an acute ischemic stroke (due to blockage of a blood vessel), you will likely be advised to take a anti-platelet or anti-coagulant drug. **Antiplatelet medications**, such as aspirin, act to make the blood less sticky by deterring platelets (the cells involved in the clotting process) from adhering to each other and forming clots. If your ischemic stroke was due to an underlying heart condition, like the irregular heart beat condition known as atrial fibrillation, you will likely need to be on an **anti-coagulant**. The most commonly used anticoagulant is warfarin, or Coumadin.

However, there are now novel anticoagulants that are available. Anticoagulants are blood thinners that prevent blood from clotting by hindering the clotting cascade in your body. Warfarin requires monitoring with blood tests, which will initially be performed more frequently but once stable can be conducted monthly.

Medications will also be prescribed to control stroke risk factors. Many patients with stroke have high cholesterol. The most commonly used **drugs for lowering cholesterol** belong to the statin group. Side effects on this medication are uncommon, and may include muscle ache and very rarely muscle breakdown and liver dysfunction. Control of blood pressure is key to reducing the risk of further stroke. There are a wide variety of **blood pressure-lowering drugs**, and your doctor will select one or more that are most suitable and appropriate for you.
You may also be put on medications to control blood sugars should you have a diagnosis of diabetes. This may include oral medication or insulin injections.

**Other medications that may be given to patients following a stroke are:**

- medications for any associated heart condition such as controlling your heart rate if too rapid,
- drugs to manage complications of stroke such as stiffness of limbs, pain, seizures or depression, and
- treatments for other medical conditions.

# FURTHER READINGS

**HEALTHLINE – NEUROLOGIST:**
http://www.healthline.com/health/neurologist

**WEBMD – PHYSICAL THERAPY:**
http://www.webmd.com/pain-management/tc/physical-therapy-topic-overview

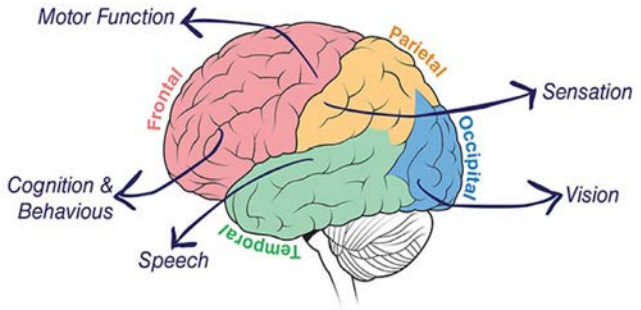
**NATIONAL INSTITUTES OF HEALTH:**
http://www.ninds.nih.gov/disorders/stroke/poststrokerehab.htm

**AMERICAN STROKE ASSOCIATION - EFFECTS OF STROKE:**
http://www.strokeassociation.org/STROKEORG/AboutStroke/EffectsofStroke/Effects-of-Stroke_UCM_308534_SubHomePage.jsp

**NATIONAL CAREGIVER'S LIBRARY:**
http://www.caregiverslibrary.org/caregivers-resources/grp-diseases/hsgrp-stroke/physical-and-mental-effects-of-stroke-article.aspx

# SPECIFIC STROKE DISABILITIES

A stroke leaves a lasting imprint in both stroke survivor and his or her immediate family. The brain is primarily affected by the stroke but the whole body bears the brunt of the damage caused by the incident. The types and degrees of disability that follow a stroke depend upon which area of the brain is damaged.




Depending on the location and extent of the damage, a stroke may cause moderate to severe impairments, like one-sided body weakness and/or numbness, paralysis of one side of the face, slurred speech, visual loss, imbalance, and many others.

Generally, stroke can cause **five types of disabilities** - paralysis or problems controlling movement, sensory disturbances including pain, problems using or understanding language, problems with attention and memory, and emotional disturbances.

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## PARALYSIS OR PROBLEMS CONTROLLING MOVEMENT

Paralysis is one of the most common disabilities resulting from stroke. The paralysis is usually on the side of the body opposite the side of the brain suffering from stroke. It may affect the face, arm, leg, or the entire side of the body. This one-sided complete paralysis is called hemiplegia, and one-sided weakness is termed hemiparesis. Occasionally, stroke can affect both sides of the body. This is usually seen in brainstem stroke. Stroke patients with hemiparesis or hemiplegia may have difficulty with daily activities such as walking or feeding.

Some stroke patients have problems with swallowing, called dysphagia. This is due to damage to the part of the brain that controls the muscles for swallowing and chewing. Some patients have double vision or diplopia which is due to weakness of the muscles that control eye movement. Both dysphagia and diplopia are usually seen in brainstem stroke.

Damage to a lower part of the brain, called the cerebellum, can affect the body's ability to coordinate movement. This disability is called ataxia. Patients with ataxia usually have problems with arm and leg coordination and balance.

Physiotherapy and occupational therapy are helpful in restoring the ability to move and be independent again in some patients.

## SENSORY DISTURBANCES AND PAIN

Stroke patients may lose the sense of touch, pain, temperature, or position. Sensory impairments may also hinder the ability to recognize objects that patients are holding and can even be severe enough to cause loss of recognition of one's own limb.

Some stroke patients experience numbness or sensations of tingling in the affected limbs, a condition known as paresthesia. Stroke survivors frequently have a variety of chronic pain syndromes resulting from damage to the nervous system (neuropathic pain). If severe and disturbing, these symptoms are usually treated with medication.

Patients who have severe weakness of the arm may experience pain at the shoulder. Most often, the pain results from an immobilized joint due to lack of movement. Stroke patients with severe weakness of the arm will usually be given a shoulder support or strapping to prevent subluxation and pain. Physiotherapy may help to relieve stiffness, therefore reduce pain.

Incontinence is fairly common after a stroke and often results from a combination of sensory and motor deficits. Stroke survivors may lose the ability to sense the need to urinate or the ability to control muscles of the bladder. Some may lack mobility to reach a toilet in time. Loss of bowel control or constipation also may occur due to various reasons. Loss of bowel or bladder control can be emotionally difficult for stroke survivors.

## PROBLEMS WITH LANGUAGE OR APHASIA

Many stroke survivors experience language impairments involving the ability to formulate speech, write, or understand spoken language. An injury to any of the language-control centers in the brain can cause impairment in verbal communication. Damage to a language center located on the dominant side of the brain, usually the left, causes inability or difficulty in formulating or understanding speech called aphasia.

People with expressive aphasia have difficulty conveying their thoughts through words or writing. They lose the ability to speak the-words they are thinking and to put words together in a coherent, grammatically correct sentence.

In contrast, people with receptive aphasia have difficulty understanding spoken or written language and often have incoherent speech.

The most severe form of aphasia is global aphasia, usually due to a large stroke of the dominant brain hemisphere. A person with global aphasia has difficulty in both understanding language and formulating speech.

Stroke patients with aphasia are usually referred for speech and language therapy.

## TIPS: HOW TO DEAL WITH APHASIA

- Use a simplified form of language by saying short and uncomplicated sentences
- Repeat or write down key words to clarify meaning
- Sustain a natural conversational manner which is suitable for an adult stroke survivor
- Decrease distractions like loudradios or a loud TV whenever possible
- Encourage the person with aphasia to try any form of communication i.e. speech, gesture, pointing or drawing
- Provide ample time for person to talk or speak his mind
- Aid the stroke patient to become involved outside the home by looking for a support group that suits his need

# PROBLEMS WITH ATTENTION AND MEMORY

Stroke can cause damage to parts of the brain responsible for memory, learning, and awareness. Stroke survivors may have dramatically shortened attention spans or may experience deficits in short-term memory. Individuals also may lose their ability to make plans, comprehend meaning, learn new tasks, or engage in other complex mental activities.

**One common deficit resulting from stroke is neglect.** When a person experiences diminished or total loss of awareness of stimulation on one side of the body despite the ability of perceiving them being intact, he may be suffering from unilateral inattention or neglect. Unilateral neglect is usually in the form of sensory, motor or visual neglect. This is due to stroke affecting the non-dominant brain hemisphere usually the right side.

Memory loss is also common following a stroke or multiple strokes. Working memory is what we call short-term memory. It is a key cognitive function that allows individuals to hold information for short periods of time. Working memory is often affected after stroke resulting in problems with attention and planning. After a stroke, among the main reasons for not being able to return to work are the cognitive problems.

## TIPS: TRAIN YOUR MEMORY

- You can learn or recall something more easily if your associate it with something you already know or remember. To recall a specific date, associate it with another well-known date (Christmas, your birthday, etc.)
- To help remember names, associate the new name with a famous person or someone you already know. Associate a person's name with their physical characteristics (eyes, ears, weight, size); you do not have to tell the person about your little trick.
- Pair chores or tasks you might forget about with things you always remember to do. For example, if you drink tea every morning put your pills by the tea bags so you will not forget them.
- Write it down. Get yourself a comprehensive calendar in which you can write down not only things to do, but also names and contact numbers, medication, and any further information you want to remember.

# EMOTIONAL DISTURBANCES

Many people who survive a stroke develop feeling of fear, anxiety, frustration, anger, low mood, and a sense of grief from their physical and mental disabilities.

Clinical depression, which is a sense of hopelessness that disrupts an individual's ability to function, is an emotional disorder most commonly experienced by stroke survivors. It is recommended that anyone experiencing five or more of the following symptoms for more than two weeks should seek a medical evaluation for depression:

- Persistent sad or "empty" mood
- Feelings of guilt, worthlessness, helplessness
- Loss of interest or pleasure in ordinary activities, including sex
- Decreased energy, fatigue, being "slowed down"
- Sudden difficulty in sleeping well
- Unexplained loss of appetite and weight, or weight gain
- Difficult concentrating, remembering, making decisions
- Irritability
- Excessive crying
- Chronic aches and pains that don't respond to treatment
- Thoughts of death or suicide, suicide planning or attempts

## TIPS: AVOID OR FIGHT DEPRESSION

- Make the most of your rehab: the more you recover, the better you will feel the more motivated you will be.
- Get involved in daily activities with friends or family. Many stroke survivors feel isolated and alone, even if they aren't physically incapacitated from the stroke.
- Set goals and measure accomplishments.
- Plan daily activities to provide structure and sense of purpose.
- Join a stroke support group. Other survivors will understand your issues, and offer support and ideas to to help you manage your emotions.
- Speak openly and gonestly to your caregivers about your emotional changes. Together you can work out a solution.
- Maintain your quality of life by staying active and doing things you enjoy
- Ask your doctor how to relieve any physical discomforts like pain, muscle spasms, and constipation

Post-stroke depression can be treated with antidepressant medications and psychological counselling. Family support is also important in dealing with anxiety and depression in stroke survivors. If you are on medications it is important that all doctors are aware of all of the medications that have been prescribed to avoid unfavorable interactions. This is very important as some medicines commonly used to treat depression are dangerous for stroke survivors and other common post-stroke medicines can deepen depression. Always using the same pharmacy, allowing the pharmacist to alert your doctor of potential problems, could thus be a good idea.

# FURTHER READINGS

**NATIONAL STROKE ASSOCIATION – HEMIPARESIS:**
https://www.stroke.org/en/about-stroke/effects-of-stroke/physical-effects-of-stroke/physical-impact/hemiparesis

**INTERNET STROKE CENTER – ATAXIC HEMIPARESIS:**
http://www.strokecenter.org/professionals/stroke-diagnosis/stroke-syndromes/ataxic-hemiparesis/

**MEDLINE PLUS – APHASIA:**
http://www.nlm.nih.gov/medlineplus/aphasia.html

**AMERICAN SPEECH LANGUAGE HEARING ASSOCIATION – APHASIA:**
http://www.asha.org/public/speech/disorders/aphasia.htm

**NATIONAL APHASIA ASSOCIATION:**
https://www.aphasia.org/

**STROKE ASSOCIATION – MEMORY, THINKING AND UNDERSTANDING AFTER STROKE:**
http://www.stroke.org.uk/factsheet/cognitive-problems-after-stroke

**STROKE-REHAB – COGNITIVE IMPAIRMENT:**
http://www.stroke-rehab.com/cognitive-impairment.html

**NATIONAL INSTITUTE OF MENTAL HEALTH – DEPRESSION AND STROKE:**
http://www.nimh.nih.gov/health/publications/depression-and-stroke/index.shtml

**AMERICAN STROKE ASSOCIATION -- DEPRESSION TRUMPS RECOVERY:**
http://www.strokeassociation.org/STROKEORG/LifeAfterStroke/RegainingIndependence/EmotionalBehavioralChallenges/Depression-Trumps-Recovery_UCM_309731_Article.jsp

# STROKE

Health professionals classify disease prevention into two: the prevention of a first-ever stroke is called "primary prevention," while "secondary prevention" applies to individuals who have had (or survived) a stroke, thus preventing future attacks.

The first step in stroke prevention is to know and understand the risk factors that increase a person's likelihood of developing a stroke, followed by knowing how to manage or possibly avoid them. The causes and risk factors of stroke have been mentioned in the first chapter **[section on Causes and Risk Factors]**. By controlling these risk factors and making healthy lifestyle changes, a person can delay, reduce, or avoid stroke.

The brain and the heart are closely related and risk factors for stroke and heart attack are similar. Controlling risk factors is like 'hitting two birds with one stone', meaning it has benefits for both organs and the whole body as well.

# HIGH BLOOD PRESSURE

High blood pressure (or hypertension) means that the force maintaining blood flow in the arteries is above the normal range. Having a high blood pressure does not mean you should be necessarily symptomatic (e.g. nervous, tense, sweating, uneasy). Even people who do not have symptoms may also have a high blood pressure.

It is an established fact that high blood pressure is among the most important risk factors for stroke, heart diseases (including heart attack), kidney failure, among others. Conversely, there is strong evidence that controlling high blood pressure does not only help prevent stroke and CVD, but it also has large benefits to general health.

## Who is at risk of developing hypertension?

Individuals who are at a higher risk of developing hypertension include the following: people with a family history of hypertension, people whose age is 35 years or older, people who are overweight or obese (see BMI under discussion on obesity), people who eat too much salt and/or fatty foods, or take alcohol excessively, people who have sedentary lifestyles, and women who use birth control pills or are pregnant, among others.

## How can I prevent hypertension?

First, you should know your blood pressure (BP) and have it checked regularly. BP measurement is best done in a relaxed environment and rested condition. The BP is represented by two values (expressed in millimeters mercury, or mmHg): systolic BP (when the heart is beating) over the diastolic BP (when the heart relaxes in between the beats). The BP is read as systolic over diastolic pressures (for example, the average normal adult BP is equal to or less than 120/80 mmHg). A BP reading more than these values is considered elevated.

The American Heart Association (AHA) recommends that systolic BP should be maintained at less than 140 mmHg, and diastolic BP to less than 90 mmHg, because these levels are associated with lower risk of stroke and cardiovascular disease. For hypertensive patients with diabetes and kidney disease, the AHA recommends achieving BP less than 130/80 mmHg.

Preventing and treating hypertension is very important to avoid stroke. You would have to consult your doctor to find out the best strategy to treat hypertension and if needed, the appropriate medicine to use.

Aside from medical therapy, modifications include salt restriction, adherence to a diet plan (e.g. "DASH" diet), consumption of diet rich in fruits, vegetables, and low-fat dairy products, regular aerobic physical activity, and limited alcohol consumption. Details on these modifications are presented in the **succeeding sections** of this chapter.

If you have a high blood pressure, consult your physician regularly and take your medicines as prescribed. Nevertheless, all individuals should maintain healthy lifestyle habits and reduce or avoid hypertension risk factors as possible. Know the target BP for your condition and try to keep it at that level.

Numerous studies have shown a strong relationship between smoking and both types of stroke, as well as cigarette's "potentiating" effects on other stroke risk factors such as increased blood pressure and oral contraceptive use. Likewise, secondhand (passive/environmental) smoking is also an established risk factor. Unexpectedly, secondhand smokers approximate the magnitude of risk of the active smokers. All these being said, the importance of abstinence from smoking (or quitting for current smokers) cannot be over-emphasized.

According to studies, when a person totally stops smoking, the stroke risk will decrease 2 years after cessation, and then by 5 years, the risk may be just at the level of the nonsmokers.

# CIGARETTE SMOKING

### Why should I not smoke (or refrain from smoking)?

You might have heard of this quote from a tobacco advertisement: "Cigarette smoking is dangerous to your health." Indeed, smoking has adverse health effects, sharing some of the world's leading causes of death. To name a few, chronic cigarette smoking can lead to stroke, heart attack, lung diseases, and various forms of cancer. Tobacco use has an effect on generation of free radicals and toxins that damage the blood vessels and contribute to "plug" (thrombus) formation. Studies show that smoking one piece of cigarette increases heart rate and blood pressure, and also makes the arteries less distensible.

### How do I stop smoking?

Treatment for smoking cessation include medications (to help decrease craving), nicotine products (e.g. patches), and counselling. Although electronic cigarettes (E-cigarettes) claim that it may be a "safer" substitute to curb tobacco smoking, it is currently uncertain whether these would be better options than tobacco or just as dangerous. Consult your physician regarding these treatments.

# DIABETES MELLITUS

Diabetes mellitus (DM) is a condition where the body is deficient (or out) of the hormone insulin (DM Type 1) or has become insensitive to it (DM Type 2). It is insulin that keeps the blood sugar at the right levels. When there is a lack of insulin, or when the body cannot make efficient use of the insulin it makes, then there is a build-up of sugar in the bloodstream (hyperglycemia). The excess sugars can damage the blood vessels and lead to atherosclerosis or hypertension. Some can be converted to fat (or vice versa), which then increases formation of cholesterol or is added to fat deposits. Prolonged periods of elevated blood sugars damage the vital organs (like the eyes, kidneys, nerves, and heart) or cause sudden starvation (hypoglycemia) with possible fatal complications.

DM is diagnosed when the fasting blood sugar (FBS) is or above 126 milligrams per deciliter (>126 mg/dL), or when the blood sugar is or above 200 mg/dL by oral glucose tolerance test (OGTT). Impaired fasting glucose (IFG, also known as prediabetes) is another condition - it is implicated when the FBS range is 100-125 mg/dL which is elevated but not high enough to be considered diabetic.

**IF NEGLECTED, PUTS ONE AT A RISK OF PROGRESSING TO DM OR DEVELOPING A HEART DISEASE OR STROKE.**

### Who should be screened for diabetes and how often?

An undiagnosed or untreated DM can cause serious medical problems such as cardiovascular disease and stroke. Statistics show that DM patients are 2-4 times more likely to develop a stroke or heart disease than non-diabetics. It is therefore important to avoid DM risk factors or take appropriate actions to prevent or control DM. The United States Department of Health and Human Services (DHHS) recommend that one should undergo DM work-up if he is:

- Overweight and over age 45, or
- Overweight and under age 45 with one or more additional risk factors, like high blood pressure, high cholesterol, with family history of diabetes, African-American, Asian-American, Latino/Hispanic-American, Native American or Pacific Islander descent, with history of diabetes during pregnancy (gestational diabetes) or have delivered a baby over 9 pounds (>9 lbs.).

**For the above conditions, it is recommended that testing for DM should be done every three years (for individuals with normal blood sugar levels), or every 1-2 years after diagnosis for individuals with impaired fasting glucose.**

# HIGH CHOLESTEROL

Some readers may be surprised to know that humans actually need cholesterol, but just in the right amount, since it is an essential component of cells and that many important hormones are synthesized from it. We produce our own cholesterol; the rest just comes from what we eat. If you have excess fat, you also produce more cholesterol and sugars as well (remember that fat and sugar are inter-convertible).

As a review, cholesterol can be sorted into "good" (high density lipoprotein, HDL) or "bad" (low density lipoprotein, LDL). Too little of the "good" cholesterol, or too much of the "bad" cholesterol, can put a person at risk for cardiovascular disease (i.e. coronary artery disease) and stroke. But how does each form of cholesterol become good or bad for our body? The "good" cholesterol (HDL) keeps the "bad" cholesterol from getting lodged in the arteries, which means that HDL, at healthy levels, is protective. The "bad" cholesterol (LDL), on the other hand, does the reverse (although the whole process is intricate, which is beyond the scope of this book).

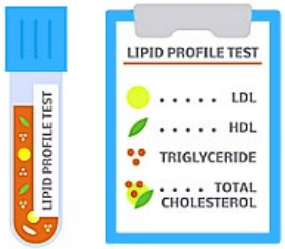
**SO ASIDE FROM TOTAL CHOLESTEROL LEVEL IN THE BLOOD, IT IS IMPORTANT TO KNOW WHAT YOUR HDL AND LDL LEVELS SHOULD BE, BECAUSE HIGH LDL (130 MG/DL AND ABOVE) OR LOW HDL (LESS THAN 40 MG/DL FOR MEN AND LESS THAN 50 MG/DL FOR WOMEN) IS ASSOCIATED WITH THE RISK OF CORONARY ARTERY DISEASE AND STROKE.**

## How would I know if I have high cholesterol?

You need a blood lipid profile, just like the fasting blood sugar for diabetes. This consists of triglycerides and cholesterol panels. Aside from cholesterol, triglycerides (TG) are also determined because high levels of it have been associated with the risk of atherosclerosis. TG can be converted to cholesterol when the levels are excessive. There are conflicting evidences, however, whether the TG is related to the risk of stroke.

## How often should I get my lipid profile?

The AHA recommends that all adults should have their lipid profile checked every 5 years. However, the screening should be done more often if:




- total cholesterol is 200 mg/dL or more
- over 45 years old for men or over age 50 years old for women
- HDL (good) cholesterol is less than 40 mg/dL.
- there are other risk factors for heart disease and stroke

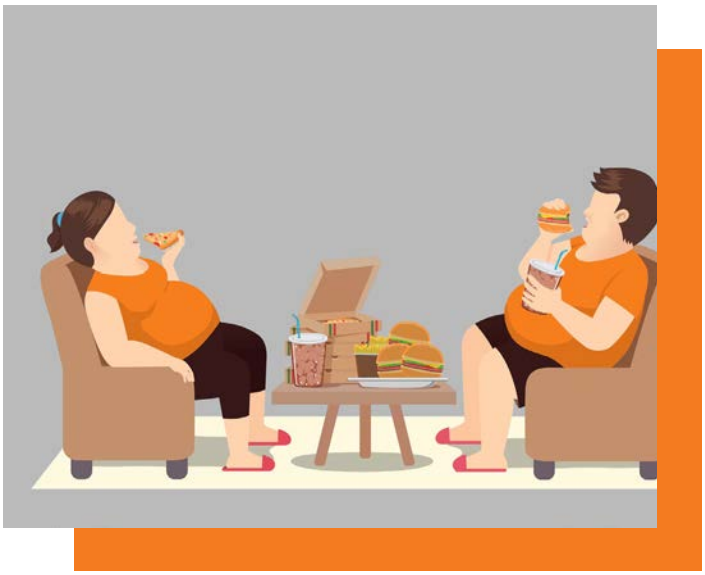
## How do I increase my "good" cholesterol?

To increase your HDL, doing a weekly exercise of at least 150 minutes of moderate-intensity aerobic activity (e.g. brisk walking), or 75 minutes of vigorous activity (e.g. jogging) can help produce more HDLs.

Aerobic activity performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week. Eating balanced a diet (reduced trans-fats) and smoking cessation can also help increase your HDL. If high blood cholesterol is present in the family, lifestyle modification may not be enough, hence a regular medical checkup is recommended.

# OBESITY AND PHYSICAL INACTIVITY

If you are obese and have a sedentary lifestyle, you may be at risk of developing cardiovascular disease, stroke, diabetes, gallbladder or liver disease, certain forms of cancer, etc. The effect of excessive body fats has been mentioned earlier. Physical inactivity has several adverse health effects, including increased rates of disability and deaths from cardiovascular diseases and stroke, and this relation is not even influenced by age or sex.



### How can I know if I am overweight (or obese)?

Obesity does not only result from unhealthy diet or sedentary lifestyle, but genetic, environmental, or other medical factors can also contribute to it. Obesity is not determined by the body weight alone but through the body mass index (BMI).

### BMI Calculation and indication

The normal (or ideal) BMI is 18.5 to 24.9 kg/m2. A person whose BMI is 25 to 29.9 kg/m2 is classified as overweight, while those with a 30 kg/m2 BMI or more are obese. Another important measurement is the abdominal body fat. Some studies show that this parameter tends to be a stronger predictor of stroke. Persons with waist circumference of more than 102 cm (40 inches) for men and more than 88 cm (35 inches) for women have central (or "abdominal") obesity, one of the features of insulin resistance syndrome (or more popularly known as metabolic syndrome or "syndrome X"). The association between excessive weight and stroke risk is intertwined with other risk factors such as high blood pressure, high blood cholesterol and high blood sugar.

## NORMAL BMI (OR IDEAL), IS 18.5 TO 24.9 KG/M2

### *Why should I lose weight?*

Losing weight definitely has meaningful effects to health and reduces the rate of disability and death from cardiovascular diseases and stroke. Even modest weight loss (of at least 3 to 5%) could result in reduction of triglycerides and blood glucose. The effects are even more so with greater weight losses, including reduction in blood pressure (as well as need for medication), blood glucose and lipid levels, and improvement of cholesterol profiles. Behavior modification such as counselling and keeping a diet diary may also be helpful.

Studies have shown that higher levels of physical activity can prevent stroke as well as decrease mortality from cardiovascular diseases. This effect can be attributed through its role in lowering the BP and controlling other risk factors such as diabetes and excess body weight.

For a more effective weight loss, overweight and obese individuals may opt to undergo comprehensive lifestyle programs (for at least 6 months) that will assist them in adhering to diet and exercise regimen.

For severely obese individuals (BMI >40 kg/m2), as well as the moderately obese (BMI >35 kg/m2) with serious medical condition, who has not improved from other therapies, surgical procedures may be considered. Consult with your physician regarding treatment options and other advices for weight management.

# DIET

Millions of people are at risk of having a heart disease and stroke because of poor eating habits. In this fast-paced era where people have been accustomed to fast food chains, ready-to-eat meals, and processed meats, larger amounts of sodium, fats, and other chemicals are taken in, which put them at risk for developing diseases.

### Which aspects of diet are associated with risk of stroke?

These include excess salt intake, low potassium intake, excess weight, and high alcohol consumption.

### How can I adjust my diet to reduce my risk of stroke?

Please see the recommendations for **diet and healthy eating habits** which can be found in the succeeding sections.

# EXCESSIVE ALCOHOL INTAKE

Excessive alcohol consumption can lead to many medical complications including hypertension, atrial fibrillation, and other cardiovascular diseases.

### What level of alcohol drinking is "risky", especially if I drink alcohol habitually?

The daily limit for "moderate" alcohol consumption is up to 1 drink per day for women and up to 2 drinks per day for men. Consumption over this limit will increase blood pressure. There are other deleterious effects as well of too much alcohol in the body. "Heavy" alcoholic drinking is consuming more than 3 drinks on any day or more than 7 drinks per week for women. For men, it is more than 4 drinks on any day or more than 14 drinks per week. "Binge" drinking is the consumption (within 2 hours) of 4 or more drinks for women and 5 or more drinks for men.

**One "drink" is defined as:**

- 12 ounces of regular beer (5% alcohol)
- 5 ounces of wine (12% alcohol)
- 1.5 ounces of 80 proof (40% alcohol) distilled spirits

**One drink contains 0.6 ounces of alcohol.**

# DRUG USE

### Should I stop taking birth control pills (or hormone therapy) to prevent stroke?

Oral contraceptive usage has been associated with risk of stroke especially in women with additional risk factors (e.g. cigarette smoking, heart disease, history of miscarriage, migraine). How these pills cause strokes is not completely understood, although possible explanations include increased tendency to form blood clots as well as increase in blood pressure. Although the risk of stroke is usually low (approximately 1 per 100,000), oral contraceptives (or hormone replacement therapy) should be used with caution. The risk of having a stroke should be weighed against preventing pregnancy when used in women who are at risk. It is recommended that you consult your physician before taking any contraceptive pill. Other women may opt for alternative forms of contraception such as intrauterine devices (IUD), condoms, rhythm methods, etc.

For post-menopausal women who have had a stroke or transient ischemic attack (TIA), hormonal therapy (i.e. estrogen, with or without progestin) is not recommended.

### How do you prevent stroke related to illegal drug use?

Aside from it being against the law, use of illegal drugs was found to increase the risk of both types of stroke and other diseases. Some of these drugs include cocaine, amphetamines, and heroin. The effects of these drugs include abrupt elevations in blood pressure and causing blood disorders.

SO HOW CAN STROKE BE PREVENTED, IN RELATION TO ILLEGAL DRUG USE ?

THE ANSWER IS STRAIGHTFORWARD:

**NEVER TRY TO USE ONE.**

For those people who have become drug-dependent, seek immediate, professional treatment.

# OTHER MEDICAL CONDITIONS

Medical conditions that have been associated with stroke include some diseases of the heart, blood vessels (e.g. arterial dissection), blood cell and clotting disorders, metabolic disorders (inborn and acquired), migraine, habitual snoring (sleep-disordered breathing), elevated lipoprotein (a), some inflammatory conditions (e.g. rheumatoid arthritis, systemic lupus erythematosus), and some infections (e.g. H. pylori, Cytomegalovirus, Chlamydia pneumoniae, urinary tract infections, respiratory infections). For this section, we have selected a few with well-documented risk of stroke.

## Atrial fibrillation

Atrial fibrillation or "a-fib" is a rhythm disorder where the heart's upper chambers "quiver" instead of its normal beating action, causing pooling of the blood inside the chamber and forming clots (thrombi), thus increasing the risk of ischemic stroke. Patients with a-fib are usually given "blood thinners" like anticoagulants or antiplatelets for primary and secondary prevention. Consult your physician regarding these medications.

## Heart Diseases

Other heart diseases that have been associated with stroke include left atrial thrombus, other rhythm disorders (atrial flutter, sick sinus syndrome), valve diseases (e.g. vegetations and prosthetic heart valves), tumors, and patent foramen ovale (abnormal opening between the heart's upper chambers). For patients diagnosed with these conditions, regular follow-up consultation with the cardiologist is recommended.

## Carotid Disease

When the carotid arteries (located in the neck) become narrow (medically called "stenosis"), it may cause a drop in blood flow to the brain. Some patients who had a stroke due to carotid disease are given medical therapy or offered surgical treatment depending on the severity of the narrowing and other individual factors.

## Sickle Cell Disease

Sickle cell disease (SCD) increases stroke risk because the abnormally shaped red blood cells get stuck in the blood vessel walls. SCD patients are usually given transfusion, hydration, or other modes of therapies. Adults with SCD should be evaluated for other known stroke risk factors.

**Treatment of the other conditions listed above, whether or not it has an effect in preventing a stroke are being studied.**

The **Stroke Riskometer™** is a free, unique and easy to use tool for assessing your individual risk of a stroke. The Stroke Riskometer is able to evaluate risk factors such as age, gender, ethnicity, lifestyle and health factors that directly influence your risk of a stroke in the next five or ten years.

- Endorsed by the **World Stroke Organization**
- Able to factor in modern lifestyle and hereditary risk factors.
- Suitable for ages 20 to 90+.
- Suitable for use by those who have already had a stroke or transient ischemic attack to estimate the risk of a recurrence.

**CLICK ON THE THUMBNAIL TO WATCH A SHORT VIDEO**

# REDUCING THE RISK OF STROKE

In general, here are some tips that will help you reduce your risk of stroke and cardiovascular diseases, as well improving your overall health. A healthier lifestyle plays an important role in decreasing risk of developing a stroke or heart attack as well as reducing the disability and death from it. Those who practice a healthy lifestyle have an 80% lower risk of a first stroke than those who do not. The following are ways that comprise the therapeutic lifestyle change (TLC) for a healthier you.

## 1 GET A BALANCED DIET AND IMPROVE YOUR EATING HABITS

Consuming a balanced and healthy meal is proven to help control blood pressure, maintain normal body weight, and minimize the risk of another stroke attack. One must be aware of what kinds of foods are healthy and what should be avoided, as well as the healthier way of preparing our foods.

### *Food Preparation*

The healthier way of preparing food is using little or no fat, or leaving less amount of oil when it is served, which include steaming, baking, broiling, grilling, poaching without added fat, removing skin or trimming visible fats from meats, draining excess oil after cooking, or stir frying with minimal amounts of fat. It is better to use liquid vegetable oils high in unsaturated fats (see examples below) and low- or non-fat ingredients. Avoid putting too much salt because it raises the blood pressure. Herbs or spices can be alternative seasonings.

### *Sodium Intake*

A high level of sodium in the body results in fluid retention and an increase in blood pressure. Reduced intake has been associated with reduced blood pressures as well as reduced stroke rates.

For the average adult, the recommended daily intake of sodium should be no more than 2,300 milligrams (which is about a teaspoon of table salt). But for people above 50 years of age, or with high blood pressure, diabetes, kidney disease, or at risk of cardiovascular diseases, they need to cut down on sodium intake, which should be less than 1,500 mg per day (about 2/3 of a teaspoon of table salt).

## LIMITING SODIUM INTAKE

- Use less salt and more herbs to season meals
- Consuming less amount of processed and canned foods
- Use fresh ingredients and eating foods with no salt, if possible
- Choose snack foods with small amounts of sodium (checking food labels)

### "DASH" diet

The Dietary Approaches to Stop Hypertension ("DASH") eating plan contains low sodium and high in potassium and calcium. This diet has been shown to reduce blood pressure levels. Higher dietary potassium and magnesium intake are also associated with lower rates of stroke, particularly among women with hypertension.

The daily nutrient goals used in the DASH studies (for a 2,100-Calorie Eating Plan) are as follows:

| | |
|---|---|
| **Total fat** | **27% of calories** |
| **Saturated fat** | **6% of calories** |
| **Protein** | **18% of calories** |
| **Carbohydrate** | **55% of calories** |
| **Cholesterol** | **150 mg** |
| **Sodium** | **2,300 mg *** |
| **Potassium** | **4,700 mg** |
| **Calcium** | **1,250 mg** |
| **Magnesium** | **500 mg** |
| **Fiber** | **30 g** |

* 1,500 mg of sodium was a lower goal tested and found to be even better for lowering blood pressure. It worked very well for people who already had high blood pressure, African Americans, and middle-aged and older adults.

## Dietary Fiber

Dietary fiber has been proven to reduce cholesterol and the overall risk for diseases of the heart and blood vessels. Also, it has been proven that dietary fiber helps in controlling blood sugar, promoting regular bowel movement, inhibits diseases of the digestive system, and helps in controlling weight issues. Dietary fiber can be easily obtained from fruits and vegetables, whole-grain products, and legumes.

The recommended daily fiber is **30 grams for men and 21 grams for women aged 50** and above. For men and women under age 50, daily fiber requirements are 38 grams and 25 grams respectively. You may check the food label for fiber content.

## Specific Food Groups

The following are recommendations from the U.S. National Cholesterol Education Program (NCEP) for each specific food or food groups to help individuals adopt to therapeutic lifestyle change (TLC) diet:

### Breads, cereals, rice, pasta, whole grains, dry peas, beans:

6 or more servings per day. These provide high source of energy and fiber, as well as generally low in saturated fat and cholesterol. Increase whole-grain intake by replacing refined grains with whole grains.

### Fruits and vegetables:

5 or more servings per day. These are major sources of vitamins (C, E, and A), beta-carotene, some minerals, and rich source of fiber. Fresh fruits and vegetables are preferable than prepared or served with butter, cheese, or cream. Eat a variety of vegetables, especially dark-green and red and orange vegetables.

### Fish, poultry, and lean meats (beef, pork, and lamb):

up to 5 ounces per day. Before cooking, all visible fats should be trimmed down; after cooking, the excess oil should be drained well. When eating meats, as much as possible, avoid the skin and fats because it is where the cholesterol is high. Fish or seafood is preferred in place of meat and poultry. Fish is generally low in saturated fats and contains heart-protective omega-3 fatty acids.

### Dairy products (fat-free or 1% dairy products):

2–3 servings per day. These are important sources of protein, calcium, vitamin D, and minerals. Use fat-free or low-fat milk or dairy products instead of whole milk.

### Fats and oils:

Avoid or limit fats from lard and meats, because these are high in saturated fat, trans fat, and cholesterol. Some vegetable fats (coconut oil, palm oil) are high in saturated fat, so it is preferable to use canola oil, olive oil, corn oil, sunflower oil, safflower oil, or soybean oil because these contain unsaturated fat which do not raise blood cholesterol. The olive oil for example, is rich in vitamin E and monounsaturated fatty acids, which has been shown to help lower the bad cholesterol (LDL) and increase the good cholesterol (HDL). Soft margarines are preferred than butter, hard margarines, and shortenings.

### Eggs:

No more than two egg yolks per week is recommended, since egg yolks are high in cholesterol (~215 mg cholesterol/egg) which are often contained in cooked and processed foods. The egg whites can be consumed more often because it has no cholesterol.

### Nuts:

Although nuts are high in fat, most of the fats are unsaturated, therefore intake of nuts should suit your target calorie and fat.

### Other supplementary nutrients:

The recommended daily allowance (RDA) for folate in adults is 400 micrograms (mcg) per day; the RDA for supplementary antioxidants are 75 mg of vitamin C per day in women, 90 mg vitamin C per day in men, and 15 mg of vitamin E per day in men and women.

## LIMITING SODIUM INTAKE

- Eat breakfast, not only because it's the most important meal of the day, but skipping breakfast has been associated with excess body weight.
- Check the food or beverage label to track the calorie and nutrient content, as well as the ingredients. Choose lower-calorie options as possible. Additional information about the food ingredients is usually available online.

You may consult a dietician to help guide you in making these significant lifestyle changes toward healthier eating. Readers can also browse the food groups at https://www.choosemyplate.gov/tools-supertracker. This website offers personalized guidance and interactive tools to help stroke patients plan and assess their diet, according to the Dietary Guidelines for Americans.

## YOU MAY ALSO REFER TO AHA RECOMMENDATIONS FOR HEALTHY EATING AND AVOIDING HIGH CHOLESTEROL.

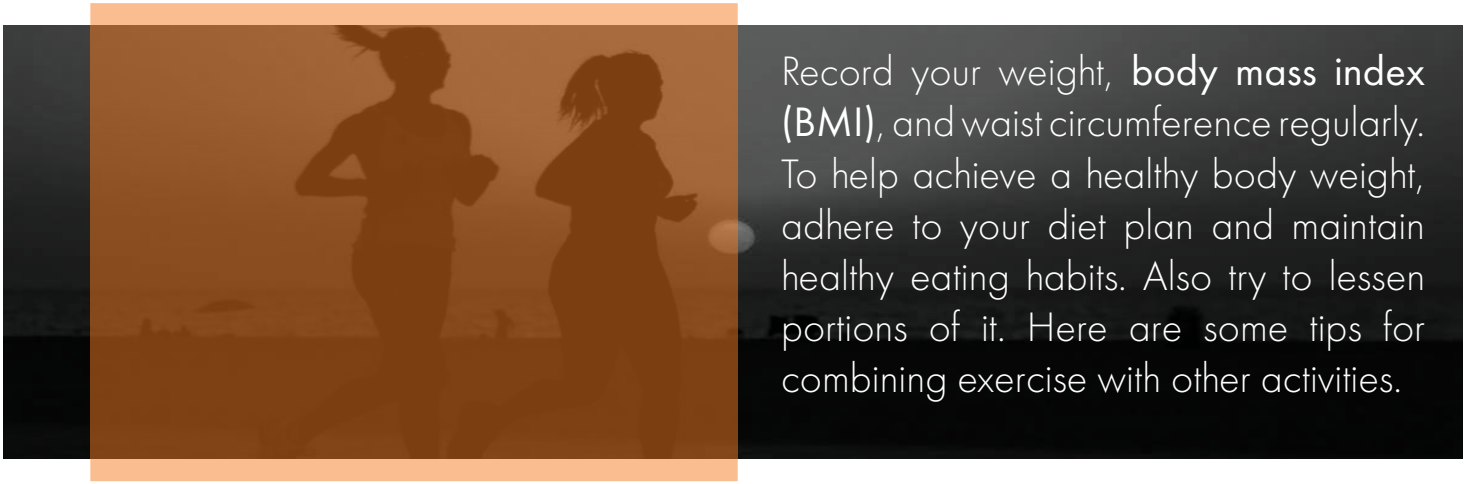
- Fruits and vegetables: At least 4.5 cups a day
- Fish (preferably oily fish): At least two 3.5 ounce servings a week
- Fiber-rich whole grains: At least three 1 ounce equivalent servings a day
- Sodium: Less than 1,500 mg a day
- Sugar-sweetened beverages: No more than 450 calories (36 ounces a week)

## OTHER DIETARY MEASURES:

- Nuts, legumes and seeds: At least 4 servings a week
- Processed meats: No more than 2 servings a week
- Saturated fat: Less than 7% of total energy intake

## 2 EXERCISE REGULARLY AND MAINTAIN A NORMAL BODY MASS INDEX.

Exercising does not only reduce blood pressure, raise "good cholesterol" and help regulate insulin requirement, it also energizes you and makes you feel good. The 2008 American Physical Activity Guidelines recommend that adults should have **at least 150 minutes (2.5 hours) per week of moderate intensity (e.g. brisk walking, swimming, raking, lawn mowing, dancing) or 75 minutes (1 hour and 15 minutes) per week of vigorous-intensity aerobic activity.** Make physical activity as part of your daily routines and recreational activities. If you have a medical condition, it is best to check first with your doctor about your condition before starting an exercise regimen.



Record your weight, **body mass index (BMI)**, and waist circumference regularly. To help achieve a healthy body weight, adhere to your diet plan and maintain healthy eating habits. Also try to lessen portions of it. Here are some tips for combining exercise with other activities.

## TIPS: COMBINE EXERCISE WITH OTHER ACTIVITIES

- Go out for a short walk before breakfast, after dinner or both! Start with 5-10 minutes and work up to 30 minutes.
- Walk or bike to the corner store instead of driving.
- Housework is an exercise too!
- Work in the garden or mow the grass. Do not cheat: Rake leaves, prune, dig and pick up trash.
- When walking, pick up the pace from leisurely to brisk. Chjoose a hilly route.
- When watching TV. sit up instead of lying on the sofa. Better yet, spend a few minutes pedaling on your stationary bicycle while watching TV. Instead of asking someone to bring you a drink, get up off the couch and get it yourself.
- Stand up while talking on the telephone.
- Walk the dog and play with him.
- Activities with family and friends are also a great way for you to exercise without noticing. Enjoy recreational activities and take good care of your health at the same time. Do note hesitate to look for opportunities such as these to be active and have fun at the same time:
- Plan family outings and vacations that include physical activity (strolling, hiking, swimming, etc.)
- See the sights in new cities by walking, jogging or bicycling.
- Make a date with a friend to enjoy your favourite physical activities. Do them regularly.
- Play your favorite music while exercising: it will motivate you.
- Dance with someone or by yourself. Take dancing lessons. Hit the dance floor on fast numbers instead of slow ones.
- Join a recreational club that emphasizes physical activity.
- At a picnic, join in on badminton instead of croquet.

## 3 DO NOT SMOKE (OR QUIT SMOKING).

Clearly, there are health benefits when you do not smoke (or when you stop smoking, regardless of how much cigarettes you have previously consumed or your age when you quit). Smoking cessation will reduce your risk of high blood pressure, peripheral artery disease and stroke.

It is never too late to stop smoking! Ask your healthcare provider for any program or medication that can help you decrease craving for cigarettes and eventually stop smoking. Also avoid exposure to environmental (second-hand) smoke.

## 4 HAVE YOUR BLOOD PRESSURE CHECKED REGULARLY.

If you have a high blood pressure, take your medications as directed and follow your doctor's instructions. Visit your healthcare provider regularly. For instructions regarding blood pressure, please refer to earlier section on **high blood pressure.**

## 5 REDUCE YOUR STRESS LEVEL

Excessive stress can make your blood pressure increase. Stressed people are prone to unhealthy eating and often do not have effective time management, hence they also do not have time for exercise and recreation.

Some individuals may find that stress reduction techniques are too esoteric, but many techniques are simple. Keeping up with schedules and making efficient use of time will definitely reduce your stress. Do not forget to relax or divert your attention especially when the workload is overwhelming. Stress reduction techniques include breathing techniques, meditation, yoga, among others.

## 6 PREVENT OR TREAT YOUR OTHER HEALTH CONDITIONS IF ANY, ESPECIALLY HIGH BLOOD PRESSURE, HIGH CHOLESTEROL, AND DIABETES.

# PREVENTING A SECOND STROKE

Stroke is a life-changing event for everyone - it leaves some degree of physical impairment or permanent disability in survivors, as well as some difficulties for their caregivers and family members. Some stroke patients may suffer only minor deficits that are easily surmounted with physical therapy and medications. These individuals are all at risk for a second stroke, which is likely more severe and debilitating than the first. Compared to the general population, patients who have had one stroke are 20 percent more likely to have another attack. For this reason, it is important to focus on the stroke risk factors and mitigate or eliminate them to prevent recurrence.

Although the road to recovery is unique for every stroke survivor, there are three common steps: having a balanced diet and exercise, regular medical check-up, and compliance with prescribed medications. Healthy diet, smoking cessation, and regular exercise are the primary lifestyle modifications that impact the risks of another stroke, diabetes, and cardiovascular diseases. The recommendations for these lifestyle modifications have been discussed previously. Medications are an important part of prevention measures to lessen the risk of a second stroke, although some patients may tend to rely on medications exclusively to cut their risks. Still, the best way to prevent a secondary stroke is to use these medications in conjunction with lifestyle changes.

In conclusion, combinations of healthy lifestyle factors are associated with the risk and mortality from stroke and cardiovascular diseases, and perhaps most diseases. Reducing even one risk can greatly lower your chances of having a first or subsequent stroke or cardiovascular disease, as well as prolonging life and improving your wellbeing.

# FURTHER READINGS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**NATIONAL CHOLESTEROL EDUCATION PROGRAM. THIRD REPORT OF THE EXPERT PANEL ON DETECTION, EVALUATION, AND TREATMENT OF HIGH BLOOD CHOLESTEROL IN ADULTS. NIH PUBLICATION NO. 02-5215, SEPTEMBER 2002. BETHESDA, MD: NATIONAL HEART, LUNG, AND BLOOD INSTITUTE.**

**NATIONAL HEART LUNG AND BLOOD INSTITUTE – WHAT IS THE DASH EATING PLAN?:**
https://www.nhlbi.nih.gov/health/health-topics/topics/dash/

http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/new_dash.pdf.

# FURTHER READINGS

**MAYO CLINIC – DASH DIET:**
http://www.mayoclinic.org/healthy-living/nutrition-and-healthy-eating/in-depth/dash-diet/art-20048456

**STROKE FOUNDATION -- TIPS TO CHANGE YOUR LIFESTYLE:**
http://strokefoundation.com.au/prevent-stroke/risk-factors/high-blood-pressure-and-stroke/tips-to-change-your-lifestyle/

**WEBMD – YOUR STROKE RISK CAN DROP WITH 7 LIFESTYLE CHANGES:**
http://www.webmd.com/stroke/news/20130606/your-stroke-risk-can-shrink-with-7-lifestyle-changes

**NATIONAL STROKE ASSOCIATION – EXERCISE:**
http://www.stroke.org/site/DocServer/hope4.pdf?docID=524

**AMERICAN STROKE ASSOCIATION – PHYSICAL ACTIVITY:**
http://www.strokeassociation.org/STROKEORG/LifeAfterStroke/HealthyLivingAfterStroke/PhysicalActivity/Physical-Activity_UCM_310896_Article.jsp

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http://strokefoundation.com.au/prevent-stroke/preventing-second-stroke/

**STROKE ENGINE – SECONDARY STROKE PREVENTION:**
http://strokengine.ca/intervention/index.php?page=topic&subpage=patient&id=35

# CONTINUING THERAPIES AND RECOVERY

The first few days after a stroke may be confusing. From the initial worry about surviving the incident to learning how to deal with new limitations, it is completely understandable to be overwhelmed in the first few weeks following such a life-changing event. Once you or a loved one is out of the hospital, you will face a bewildering array of therapies for stroke. For someone who has no background in medicine, the different types of therapies may not readily indicate what exactly they are supposed to do for the stroke survivor.

Most of these therapies can be conducted in a hospital setting, and for most stroke survivors, the treatment starts even before they leave the acute care hospital. Depending on the severity of the stroke, many survivors need to spend some time in a rehabilitation hospital to get intensive versions of each of these therapies. However, visiting home care in which therapists can come to your home to provide care has become more popular lately. Of course, regular outpatient therapy in the hospital may sometimes be needed especially when the therapy involves equipment that are not portable. The following are the intricacies of post-stroke therapy and what each discipline focuses on.

**Physical therapy** is the foundation of stroke recovery, and it is the discipline most people think about when they hear the word rehabilitation. Exercises comprise the greater part of physical therapy. In fact, you will work with three different types of exercises: flexibility, strength, and cardiovascular.

For most stroke survivors, flexibility is important in regaining the use of spastic muscles. These are the typical stretches that help to warm up muscles, lengthen the tissues, and facilitate as much usage from a limb as possible.

Strength training works to build up the relative power of the target muscle. This is important for stroke survivors in that it helps to build up the abilities of muscles that have not been affected by the stroke. For instance, if you have mild paralysis to your arm, the affected muscles of the limb may not be able to allow for effective motion. With strength training, the accessory muscles of the arm will be activated and allow for greater movement.

Cardiovascular exercise is important to stroke survivors because it can prevent a second stroke as well as build endurance. Although most people think of running or walking when they think of "cardio", many modifications, such as a hand bike, can be used to improve physical health.

Many stroke survivors are unsure of what **occupational therapy** is. Going by the name alone, it sounds like therapy that is designed to get you back to work. For this reason, patients think that this type of therapy isn't for them if they don't intend to work. Actually, occupational therapy is one of the more vital parts of learning how to function in the world with a deficit. While physical therapy works - on gross strength and flexibility, occupational therapy applies new functional abilities to the activities of daily living. They are often problem solvers, working out how you can be as independent as possible and teaching you how to live with the after effects of the stroke.

Occupational therapists examine what your abilities are and what you need to accomplish in your daily life. For instance, take dressing. To get you as independent as possible, the therapist will teach you how to first put your paralyzed arm through the armhole first and then pull your shirt over your head with your good hand. Finally, you will put your good arm through the sleeve and pull the shirt down. Similarly, with eating, you may be taught how to use bowls and utensils that are adapted to help you eat as independently as possible. These therapists work on negotiating beds, chairs, and couches, as well, and they are the ones who will teach you the skills you need to cope in the world outside of the rehabilitation center.

**Speech therapy** isn't just for talking. If you suffer from aphasia or slurred speech, then a speech therapist can help you learn how to articulate words again. You will learn how to compensate for your deficits, and many stroke survivors find that they can make themselves understood after using the techniques that speech therapists recommend.

For instance, they can help you modify the way you form words so that your speech can be better understood. In addition, they can help you with the frustrating problem of searching for words. With the use of memory techniques, word boards, and other adaptive devices, most stroke survivors can learn to communicate again.

One particular domain of speech therapy is the evaluation of swallowing. Since the speech therapists are experts in the workings of the mouth and tongue, it is usually their recommendation that determines the consistency of your food and drink. They may recommend a radiographic swallow test, if needed, to evaluate the stroke survivor's ability to protect their airway while swallowing food and liquids. Most stroke survivors, regardless of communication ability, have to use this type of therapy to ensure they can safely eat normal food. When the swallow mechanism is compromised, these therapists prescribe thickened liquids and pureed food to ensure nothing is aspirated into the lungs. Speech therapy is, therefore, a primary therapy for most stroke survivors.

Rehabilitation is a dynamic but also progressive process; it enables someone with impairments like you to reach your optimal level, both mentally and physically. It helps you to restore the maximal independence and to improve the quality of life.

# PHYSICAL THERAPY

Several important factors underscore the potential value of physical activity for stroke survivors. Studies have documented beneficial physiological, psychological, sensorimotor, strength, endurance and functional effects of various types of exercises. Unfortunately, stroke remains a leading cause of long-term disability. Consequently, stroke survivors are often deconditioned and predisposed to a sedentary lifestyle that limits the possibility of performing their activities of daily living independently.

It is important to have a highly personalized program. Usually, two types of stroke program are practiced, depending on the severity of the stroke and age. Disabilities and impairments are evaluated by several kinds of scores, from which doctors can judge the severity of the stroke and therefore put patients into three categories: mild, moderate and severe.

The regular stream program is geared towards patients who have moderate strokes and relatively younger. Typically, they are able to tolerate a minimum of 60 minutes of therapy per session and their overall expected length of stay is approximately 30 to 60 days. However, older stroke survivors may also be suitable for regular stream if they are able to meet these tolerance benchmarks. Regular stream is also able to accommodate survivors with severe strokes if they are younger, able to sit supported for a duration, and can tolerate at least 30 minutes of therapy per session.

"Low Tolerance, Low Duration" (LTLD) stroke rehabilitation is generally geared towards patients with severe strokes. This program may also be appropriate for those who may only have a moderate or mild stroke but are much older. They often require more complex care needs, higher resource needs, longer lengths of hospital stay, and demonstrate slower gains in recovery. Depending on the age and severity of stroke, survivors are able to tolerate between 20 to 30 minutes of therapy per session, and the average length of stay in LTLD stroke rehab generally ranges between 60 to 180 days.

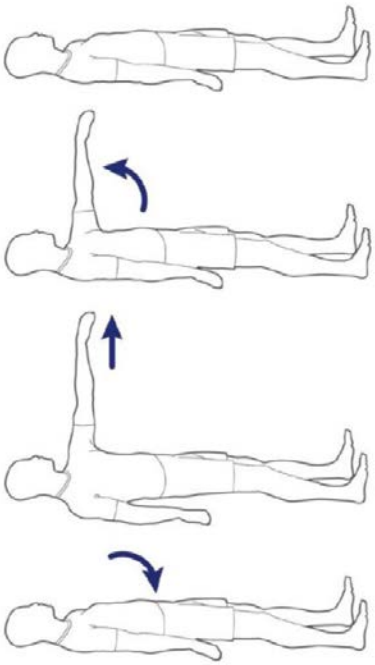
Apart from age and severity of stroke, cognitive impairments and additional disorders or diseases that affect the ability to tolerate the intensity of a regular stroke program may make LTLD a better option. LTLD program are often recommended to stroke survivors who have suffered other previous strokes, have multiple unfavorable disease conditions, lack sufficient family support, have a sitting tolerance of less than 5 or 10 minutes, disoriented with reduced judgment and insight, and incontinent. After all, the stroke survivor must be medically stable and able to demonstrate a potential to learn and improve function to perform in a higher level program.

Appropriate exercise does not only help a stroke survivor recover from his disabilities, but can also cut stroke risk. Researchers found that as exercise levels increases, the risk of suffering a stroke decreases. Those who exercised the most have half the risk of those who are least active. Walking, bending and stretching are forms of exercise that can help strengthen the body and keep it flexible. A simple activity like sweeping the floor can be undertaken every day.

Here are some exercises for someone whose **physical abilities have been mildly affected by the stroke**. These exercises may be performed alone only if you are able to do so safely. However, for many stroke survivors, it is advisable to have someone standing beside while performing an exercise.

## Exercise to strength the muscles of the shoulder and arm

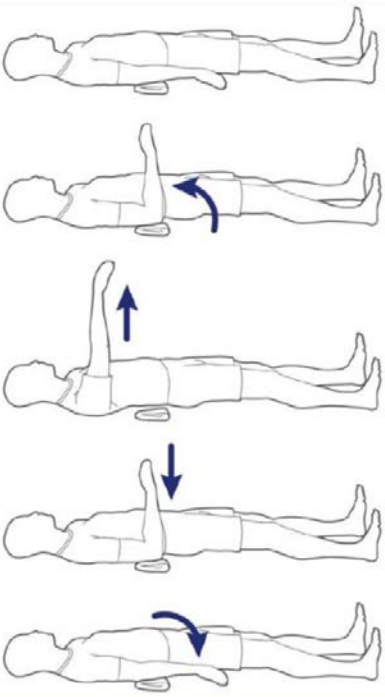
- Lie on your back with your arms resting at your sides.
- Keeping your elbow straight, lift your affected arm to shoulder level with you hand pointing to the ceiling, then raise your hand toward the ceiling, lifting your shoulder blade from the floor.
- Slowly repeat the reaching motion several times, remember to lower your arm to rest by your side



There is a variation to strengthening the elbow muscles - stay in the same position and put a rolled towel under the affected elbow.

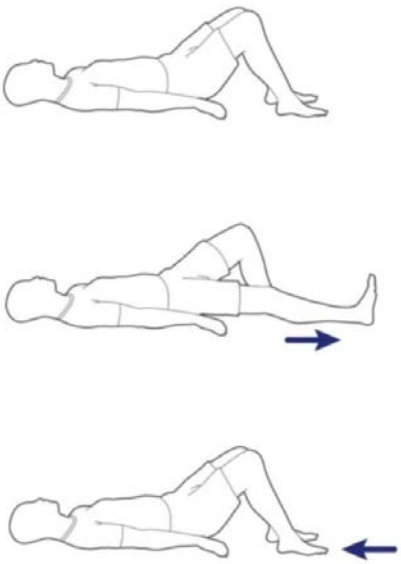
## Elbow Exercise

- Lie on your back with your arms resting at your sides.
- Bend the elbow and move your hand up toward your shoulder while always keeping your elbow resting on the towel.
- Hold for a few seconds, and then straighten your elbow and hold.
- Slow repeat the reaching motion sveral times, remember to lower your arm to rest by your side.



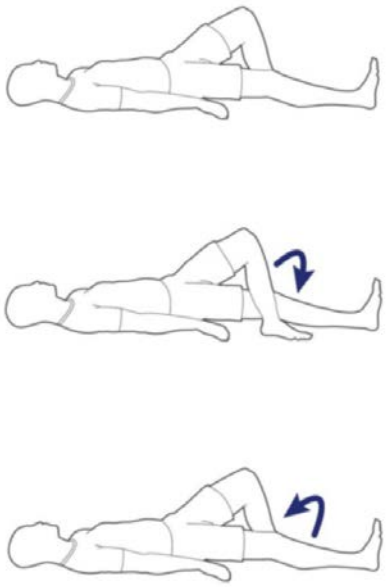
## Exercise to help with knee problems

- Start with your knees bent, feet resting on the floor.
- Slowly slide the hell of your affected leg down so that the leh straightens.
- Slowly bring the heel of your affected leg along the floor, returning to the starting position.
- Keep your heel in contact with the floor throughout the exercise.
- Recommended to take off shoes during this exercise as your foot will slide more smoothly.



## Exercise to improve the strength and flexibility of the hips

- Lie on your back.
- Start with your unaffected leg flat on the floor and your affected leg bent.
- Lift your affected foot and cross your affected leg over the other leg, lift the affected foot and uncross, then resume the cross motion.
- Repeat the crossing and uncrossing motion several times.

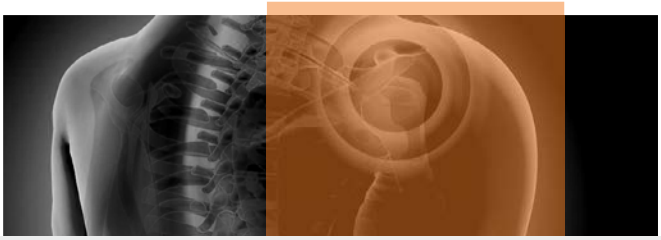


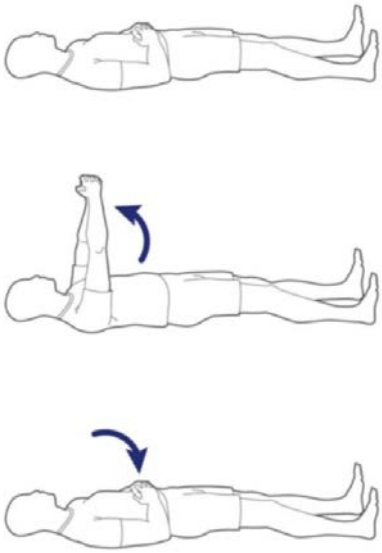
Fatigue while exercising may be expected. Certain days may be better than others and these exercises can be modified to accommodate for fatigue or other conditions. However, it may sometimes be necessary to tolerate some discomfort to make progress.

Moderately affected stroke survivors may use a wheelchair to move or they might be able to walk with the aid of another person or using a walking aid. However, patients often "lead" with their unaffected side, leaving the other side behind. Therefore, balance problems are likely to appear along with difficulty shifting weight toward the affected side.

The following exercises are for **patients only moderately affected by their stroke**. These exercises may promote flexibility and relaxation of muscles, help return to more normal movement, improve balance and coordination, reduce pain and stiffness, and maintain range of motion in the affected arm and leg.

Before beginning with these exercises, please ensure that your clothing will not restrict movements. Leisure clothing such as sweat suits or jogging suits is appropriate.

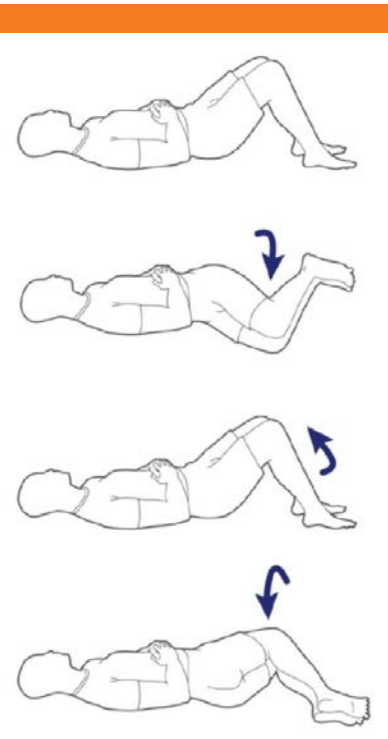




### Exercise to improve the strength and flexibility of the hips

- Lie on your back on a firm bed, and interlace your fingers with your hands resting on your stomach.
- Slowly raise your arms to shoulder level, keeping your elbows straight.
- At last, return your hands to resting position on your stomach.

A similar exercise to help maintain shoulder motion, especially for someone who has difficulty rolling over in bed, is to raise the hands then slowly move them to one side and then the other side with the elbows straightened.

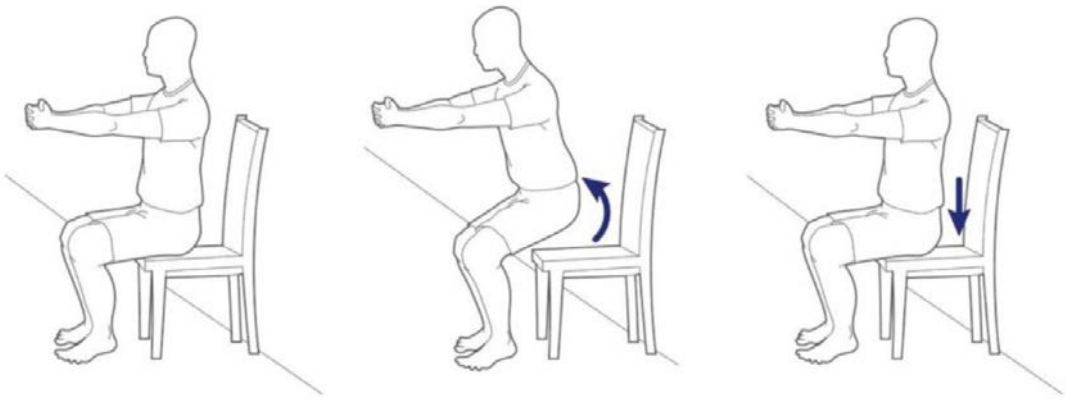


### Exercise to promote motion in the pelvis, hip and knee

- Lie on your back on a firm bed and keep your interlaced fingers resting on your stomach.
- Bend your knees and put your feet flat on the bed.
- Holding your knees tightly together and slowly move them as far to the right as possible, return to the center and repeat it by moving them to the left

**Exercise to help rise from a seated position**

- Sit on a firm chair that has been placed against the wall to prevent slipping.
- Interlace your fingers; reach forward with your hands.
- With your feet slightly apart and your hips at the edge of the seat, lean forward, lifting you hips up slightly from the seat, then slowly return to sitting.



**An important thing to remember is to take time when performing an exercise.**

**Do not rush the movements or strain to complete them.**

**If pain occurs, move only to the point where it begins to hurt. If the pain continues, stop doing the exercise.**

# OCCUPATIONAL THERAPHY

Aside from loss of gross motor function, fine motor skills are often affected after a stroke. While recovery of gross motor functions helps patients regain mobility and function to a certain extent, recovery of fine motor skills may spell the difference between complete independence and need for assistance in performing activities of daily living. It is, thus essential to include therapies for fine movements in the overall rehabilitation program of stroke victims.

Spasticity is another potential problem. After an initial stage of flaccidity, the paralyzed limb often develops muscle stiffness or tightness, termed as spasticity, which may also interfere with fine motor movements. Spasticity needs to be treated to prevent muscle or joint contractures.

Physical therapy, in general, helps a stroke patient improve his overall musculoskeletal functions. Occupational therapy, on the other hand, emphasizes improving fine motor skills involved in the performance of specific tasks, especially those required for common daily activities. Fine motor movements are produced by the body's small muscle groups and require precision of action, fine coordination, and accurate control by the brain. Examples of these are tasks such as writing, drawing, using scissors, and tying shoelaces.

After a stroke, simple tasks like grasping a block, holding a glass, picking up a small ball, or simply opening the hand may become difficult. Indeed, impaired hand function is one of the most frequently persistent consequences of stroke. The loss of hand function results from the combination of two factors: a loss of brain activity due to the stroke and the physical changes in muscle and tendons, like shortening and spasticity, which occur as a consequence. Both problems need to be addressed as part of rehabilitation. Usual interventions include muscle vibration and electrical nerve stimulation in the affected limbs.

Other interventions to improve the fine motor skills of a stroke survivor may be used, for example, tapping on a keyboard with the index finger, picking up pegs one at a time and placing them into holes on a pegboard, or stacking and unstacking plastic cups. The program may be individualized according to the problems of the stroke survivor and adjusted based on progress and recovery dynamics.

One technique recently used in rehabilitation of stroke patients is called constraint-induced movement therapy. In this technique, the unaffected limb is restrained, forcing the use of the affected limb in executing tasks. Another technique is the use of functional tone management device to assist in enabling 'grasp and release' movements of the hand, holding the hand in its resting state. Often techniques are used in combination with one another.

## EXERCISES TO IMPROVE FINE MOTOR SKILLS AFTER A STROKE MAY ALSO BE CARRIED OUT AT HOME, KEEPING IN MIND THE MAGNITUDE OF THE DEFICIT FROM THE STROKE.

### Examples of exercises that can be carried out at home

- A cardboard box is placed at the corner of a room and the patient tries to shoot in marbles.
- Use of weightless resistance inducing rubber (elastic) bands to smoothly stretch muscles.
- Squeezing a crazy ball or a rubber ball to stimulate strength in fingers.
- Repeatedly putting in and removing pegs from a peg board.
- Performing finger movements and forcing affected fingers and hands against mattress or a pillow to stretch tighty muscles.
- Simple routine movement of throwing and picking up coin from the floor.

Fine motor skills in a stroke survivor are often affected together with the overall paralysis and may take longer to recover. They are, however, very important in the overall quality of life and functional independence of the stroke survivor. Rehabilitation of fine motor skills after a stroke could be carried out using some techniques with the aid of professional therapists. Nevertheless, a few simple techniques at home may help augment the exercises performed in the rehabilitation centers.

# SPEECH THERAPY

For stroke survivors whose ability to communicate has been affected, it can feel like being trapped in a box. Speech problems may range from making garbled sounds, trouble finding the words, problems reading or writing, to total inability to comprehend or express thoughts. They may feel that because of this, people may not take the time to understand what they are trying to say or may get annoyed waiting for them to speak.

There are two main reasons for speech problems after a stroke. For some, the difficulty may be in articulating or pronouncing the words (called "dysarthria") which is often due to loss of coordinated movements of the muscles used to vocalize words. For others, the trouble may be in expressing or understanding words (called "aphasia") often due to damage to the speech centers in the brain. **(You can read more about aphasia by clicking here.)**

It may take a great deal of time to regain the ability to communicate effectively after an acute stroke. Some stroke survivors never recover all of their abilities to communicate, while some require adaptive tools such as a word board. With patience and over time, a speech therapist can help stroke survivors improve or cope with this impediment. Since speech deficits after a stroke can mean many different problems, the treatment can be complicated. Only through dedicated work with a speech therapist can survivors recover the ability to express themselves again. Even if a stroke survivor with speech problems does not achieve the same fluency he once had, with hard work and determination, he can make himself understood better.

The best source of exercises for a particular stroke survivor is the speech therapist who can advise on the exercises that would be most helpful for the type of speech problem. Although learning exercises on the internet is a fun way to gain knowledge and discover exercises not previously tried, it cannot replace the focused attention from a speech therapist in recovering communication abilities.

Just like physical exercise, though, performing additional speech exercises at home can also help speed the recovery process. A stroke survivor can practice saying the sounds that certain letters make. For instance, for the letter "t", he can practice the sound "tuh" and if this is done for the whole alphabet, he can sound out the words by combining the letters, just like starting to learn how to read. Pair pictures with words may also be helpful. Seeing the word in print may also aid in recognizing it. Search the internet for such pictures with words beside them or turn on the closed captioning on the television to assist in associating words with pictures.

Some games may be played at home to augment regular speech therapy sessions. One very simple game is to point to objects and have the stroke survivor name them. Despite the simplicity, it can be very difficult for a survivor with aphasia. It is, therefore, important to remain calm, patient, understanding and supportive. Another word game is the "opposite" game. Essentially, the caregiver can come up with a list of ten words and then asks the stroke survivor to say their opposites. Words that are too difficult should be avoided but a little challenge is acceptable. Work through the same list until the stroke survivor can answer most of the items correctly before moving on to another set.

Early on after a stroke, some home techniques may take advantage of the stroke survivors' long-term memories and automatic responses. For instance, reciting the months of the year or say the alphabet can exercise the oral muscles as well as provide early psychological encouragements. They can then progress to singing well-known songs, such as Happy Birthday, or their past favorite songs. Often, they will need someone to start the first couple of lines after which they may then sing along. They may also practice reciting nursery rhymes or favorite poems. Asking stroke survivors to finishing popular phrases, such as "Better late..." may also be a way of engaging their old memory and automatic responses. Phrases must be well-known to the stroke survivor.

Again, frustration can become apparent when the survivor could not find words that they are certain they should know, in which case gently move on to the next task, preferably one they can easily complete, and come back to the previous prompt at a later time.

Subsequently, these exercises should move over to a bit more difficult tasks that would strengthen the ability to use words correctly. For instance, they may be asked to name three items of clothing worn in the winter, fruits or types of transportation. They may also be asked to describe how a particular object is used.

## The possibilities are endless.

## TIPS: HOW TO DEAL WITH APHASIA

- Use a simplified form of language by saying short and uncomplicated sentences
- Repeated or write down key words to clarify meaning
- Sustain a natural conversational manner which is suitable for an adult stroke survivor
- Decrease distractions like loud radios or a loud TV whenever possible
- Encourage the person with aphasia to try any form of communication i.e. Speech, gesture, pointing or drawing
- Provide ample time for person to talk or speak his mind
- Aid the stroke patient to become involved outside the home by looking for a support group that suits his need

For stroke survivors, there are a few tips they can do themselves. Telling the companion that they have aphasia and may need their understanding is the first step. Conduct conversations in a calm, quiet, distraction-free environment. They should allow themselves all the time needed to communicate and try not to get frustrated. Being angry and annoyed at one's inability to communicate will only make it that much more difficult to speak. Slow down and relax.

Picturing the item in their heads can use the visual skills to prompt the communication skills. Persist in saying the word even when only the first letter can be remembered. Use gestures to get the message across. Word or picture boards may be useful in certain situations. There are special programs in the computer and even on mobile phones now that can speak out the words on the screen. For survivors who liked reading books but could no longer do so due to the stroke, listening to books on tape can be an alternative.

With all these options, it is important to have the guidance of the speech therapist in determining the best exercises can be tailored for a stroke survivor's particular deficit.

## REHABILITATION AND NEUROPLASTICITY

The recovery process can be a long journey many stroke survivors may be familiar with. Medical science is always trying to find new and innovative ways to solve long standing problems. Stroke and its resulting disabilities have frustrated medical researchers and patients alike. Once a stroke affects a person and takes away his ability to think, move, and care for himself, bringing those abilities back can be very difficult.

One word that has gained a lot of attention is the word "neuroplasticity." It refers to the brain's ability to act and react in an ever-changing way. The brain works through neurons and the interconnection among them, which creates an information circuit. Our brain never stops its development – when you learn a new skill in your daily life, new circuits are formed. When you practice the skill, these circuits are strengthened.

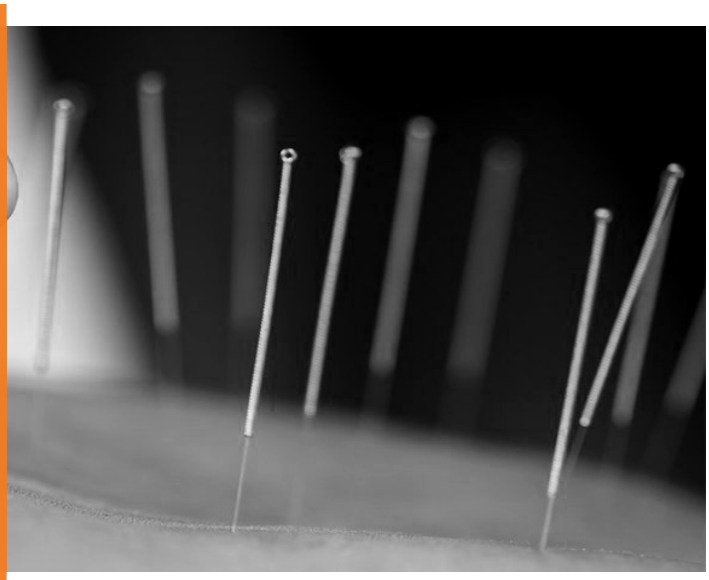
**The brain is able to act and react in an everchanging way.**

Neuroplasticity is a concept that has developed in the recent years, in contract to the harsh old dogma that the human adult brain is unable to repair itself. This is also the foundation upon which rehabilitation is built and the basis for saying "the more you practice, the better is your recovery." There are currently many ongoing research on other ways of enhancing such ability of the brain to repair itself and making them available in the clinical setting.

# COMPLEMENTARY AND TRADITIONAL THERAPIES

As the name implies, complementary therapies are combined with standard treatments to enhance the outcome of each other for the benefit of the patient. They may be modalities that are outside of main stream western medicine, but are recently gaining much interest particularly in the field of stroke treatment.

In the Eastern tradition, the practice of acupuncture has been used for centuries to help with all types of disability. Many acupuncturists make wild claims about the use of the therapy for stroke patients. From reversing dementia to regaining the feeling in a limb, some of these claims can sound pretty outlandish. It should be investigated, though, because if acupuncture can do half of what it claims, then it is well worth the effort to scientifically test it.



Acupuncture is based on the theory that your body is filled with a life force called 'chi'. When the body experiences a disease or discomfort, the theory states that the chi may have been blocked from flowing correctly. By placing needles in specific spots where the chi flows, the practitioner can direct the energy, open up the blockage, and restore health to the patient. It takes experience and training to know where to place the needles and how to restore the chi to proper balance.

In the case of stroke treatments, there are two different types of acupuncture. The first type is plain acupuncture that merely involves using plain needles directed into the acupuncture sites located throughout the body. The more recent and some say more effective type of acupuncture involves attaching electrodes to the needles and passing a small current into the acupuncture point. This is said to increase the flow of chi and helps open up the blockages more quickly.

## ACUPUNCTURE

- By placing needles in specific spots where the *chi* flows, the practitioners are purportedly able to direct the energy, open up the blockage, and restore health to the patient.
- If you are on blood-thinning medication, ask your doctor whether acupuncture is safe for you.

Science has studied acupuncture for years for pain management and infertility. In some cases, it has shown benefit. However, acupuncture remains hotly contested and rigorous studies are still ongoing to determine its place in modern science.

An analysis of several studies on acupuncture in stroke published in the medical journal Stroke in 2002 showed that it does not help motor recovery, but it does show some improvement in disability. However, since many studies do not meet the rigorous guidelines for scientific testing, it is difficult to get a large enough sample size to determine the efficacy of the treatment. The benefits that do seem to come from acupuncture may easily be related to a placebo effect. More studies need to be conducted to determine if there is any validity to the claims of acupuncturists.

A more recent study published in 2011 in the Canadian Medical Association Journal also looked at a wide variety of studies into the use of acupuncture after stroke. This study showed more definitively that there were no functional improvements in those who received acupuncture after a stroke and those who received "sham" acupuncture (needles were put in the wrong place and were not inserted deep enough). The researchers do state that this method of testing cannot be fully trusted because the sham treatment may have some physical effect. While acupuncture offers hope as an alternative or complementary treatment for stroke, more scientific research is needed before anyone can definitively claim acupuncture as a viable treatment for disability after a stroke.

# HERBAL REMEDIES

Many herbal remedies are used in traditional Chinese medicine to treat disabilities resulting from stroke. Most herbal supplements attempt to increase blood flow to the regions of the brain that were harmed during the stroke. A few supplements are known for their neuroprotective effects, which mean that they protect the brain cells from any further injuries. Herbal remedies have been used for centuries. In fact, many drugs that are currently in use were derived from plants. Chemicals derived from the digitalis plant are used to make a prescription drug, called digoxin, used to treat heart ailment. Quinine, a drug used to treat malaria, occurs naturally in the bark of the cinchona tree. Even aspirin, a common treatment for pain and fever and used to prevent heart disease and stroke, has its origin from the willow bark. It is, therefore, not surprising to see a renewed interest in herbal remedies for stroke.

A common herb used in ischemic stroke is danshen, and it helps to improve circulation. In stroke recovery, it may help restore function. However, much of the research into this herb is inconclusive. Another herb used is Siberian ginseng. This herb is used to protect brain cells, and it does have some action on improving the blood vessels in the body, not just the brain.

### Some effects seen in herbal supplements

- Antioxidant
- Anti-inflammatory
- Dilation of blood vessels
- Suppression of platelet stickiness
- Enhancement of tissue tolerance to ischemia

One of the natural products of interest lately is NeuroAiD which has been shown to have neuroprotective and neurorestorative properties in experiments.

NeuroAiD has been and continues to be tested clinically for its safety and efficacy on recovery in a variety of conditions including stroke. The results are published in peer-reviewed medical journals.

# MUSIC THERAPY

Music therapy uses music and all its components – physical, emotional, mental, social, aesthetic, and spiritual – through different methods, such as singing, listening to and discussing music, moving to music, and song writing to improve level of functioning and quality of life. It has been applied in different fields like developmental programs for children with special needs, reminiscence/orientation work for the elderlies, and as processing and relaxation technique for stroke survivors.

According to the American Stroke Association, music therapy can be a valuable tool in rehabilitation after a stroke in areas of movement and muscle control, speech and communication, cognition, mood and motivation.

Movement and muscle control improvement can be achieved by a steady beat, musical timing, and rhythmic patterns. Suggested activities include playing a drum to boost range of motion in the upper extremities, exercising to an upbeat music, and timing music to complement the usual walking pattern.

To improve speech and communication in a stroke survivor, a music therapist uses rhythm, melody, and singing. Suggested activities include exercising mouth muscle, rhyming, chanting and rapping and singing the words and converting them to speech.

Cognition (like memory, organization, attention and problem-solving) can be enhanced by music and music structure. Suggested activities that may help in this aspect include creating a song with important information in its lyrics, performing in a band and rhythm repetition games.

Lastly, to enhance mood and motivation and help in pain management, music therapy takes advantage of the emotional and aesthetic qualities of music. Suggested activities in this area include listening to music, recording and song writing, improvisation and musical performance like playing an instrument.

Music has been shown to have an effect on specific areas of the brain and improve social and environmental interactions, emotions, and quality of life. Music therapy can help reduce anxiety and depression, while improving in mood, motivation and outlook among stroke survivors. In combination with adjunct therapies, it can significantly increase the rate success from rehabilitation.

Research at the University of Helsinki and the Helsinki Brain Institute showed that listening to music for a few hours daily can significantly improve a stroke patient's early recovery. A study on 54 patients with right or left hemisphere middle cerebral stroke showed valuable improvement in verbal memory and focused attention after two months of music therapy. Patients who listened to music daily also had a more positive attitude compared to those who listened to audio books.

# YOGA

Believe it or not, researchers have been looking into the benefits of yoga for stroke patients. From "downward facing dog" to "salute to the sun", yoga may help in mentally coping with disabilities, regain range of motion in frozen limbs, and aid in restoring balance. With proper guidance, attention to safety, and patience, it may be an option as an adjunct to physical therapy routines.

Yoga is about so much more than twisting the body a certain way. In fact, it is very concerned with control of breathing, building up awareness of limb positioning, enhancing concentration, and using body poses to improve flexibility. This can help improve joint range of motion, deal with depression, and increase the ability to move the limbs.

Yoga focuses on meditation and allows better awareness of limbs and how they are used. For stroke survivors, modified yoga poses and routines have been developed. For example, instead of bending over at the waist and holding your ankles, a stroke survivor can easily bend over a chair and hold the pose, breathing in and out as he feels the stretch. Many yoga poses can actually be modified according to different abilities and disabilities.

However, not much research has been done on the effect of yoga among stroke survivors. The few studies done were disappointingly small and results may not be broadly applicable. They are, however, promising. In a study published published in the journal Physical Therapy in 2004, four stroke survivors who attended one and half hours of yoga training twice weekly showed improvement in balance and a timed movement testing of the limbs. More recently, a study published in Stroke in 2012 followed 47 subjects who were at least 6 months post-stroke. They also had twice weekly sessions with a qualified yoga therapist and relaxation sessions. At the end of the study, the participants showed improved balance which is vital in preventing falls. Again, the study was small, but it does show some promise for stroke victims.

The important issue about working yoga into your physical therapy routine is to do so safely. It is very important that a stroke victim works within the confines of what a qualified yoga therapist recommends, because performing yoga incorrectly can result in injury.

- SAFETY IS MOST IMPORTANT WHEN INCORPORATING YOGA INTO YOUR ROUTINE.
- DO NOT DO YOGA WITHOUT SUPERVISION.
- SPEAK WITH YOUR THERAPIST ABOUT IT

You should speak with your physical therapist about incorporating yoga poses into your routine. Perhaps they will know of someone in your area that specializes in helping disabled people perform yoga routines. If not, it is not safe to merely get a book or watch a video. You can end up falling while trying poses that are not modified for your ability. Although yoga is a great way to build up strength and flexibility for stroke victims, it should be approached with caution and only used under the guidance of qualified professionals.

# EMERGING THERAPIES

## MIRROR THERAPHY

The mind is a highly changeable, plastic organ. This means that the brain can adapt to the damage caused by a stroke. It accomplishes this task by recruiting other areas of the brain to compensate for those functions lost in the damaged area. Building on the research using this treatment for amputees to control phantom limb pain, stroke survivors were able to significantly improve control of their affected limb with mirror therapy over controls.

**THE THINKING BEHIND MIRROR THERAPY IS THAT BY TRICKING THE BRAIN INTO PERCEIVING MOVEMENTS IN THE PARALYZED LIMB.**

One can take advantage of its plastic nature and spur reorganization or new circuits in the damaged part of the brain. The brain sees the correct movements reflected in the mirror, and as the patient tries to replicate them with the affected arm, the neural pathways of the brain morph to allow it. Mirror therapy doesn't work for everyone, but when it does, it can create pathways that other therapies cannot.

The equipment and techniques of mirror therapy are quite simple, making it attractive to many rehabilitation centers. For the upper limbs, the affected arm is placed behind the mirror with the reflective side facing the good arm. It is important that the stroke survivor sees the reflection of the good arm in the mirror but not the actual affected arm. For the lower limbs, the same technique is applied with the mirror strategically placed to make the stroke survivor believe they have two "working" legs. It is very important that line of sight to the affected limb should be completely blocked off.

The rest of the process is just as simple. The stroke survivor uses his good hand to go through the motions of an exercise, like opening and closing the fist. As the person performs the action, he watches the motion in the mirror. Then with the affected hand that is hidden, he tries to match the movements of the good hand.

It can take a great deal of time and patience to see results. Thirty minutes per day, five days per week are generally required to reap any of the benefits of this relatively new therapy. In a study of 40 stroke survivors in 2007, researchers found that mirror therapy produced statistically significant improvements on many lower extremity tests and most had better movement in their ankle joint when they participated in the mirror therapy as compared to sham therapy. Another study in 2008 found that those with upper limb weakness who participated in mirror therapy had better functioning hand after four weeks and six months than those who had sham therapy. However, spasticity did not improve.

# VIDEO GAMES

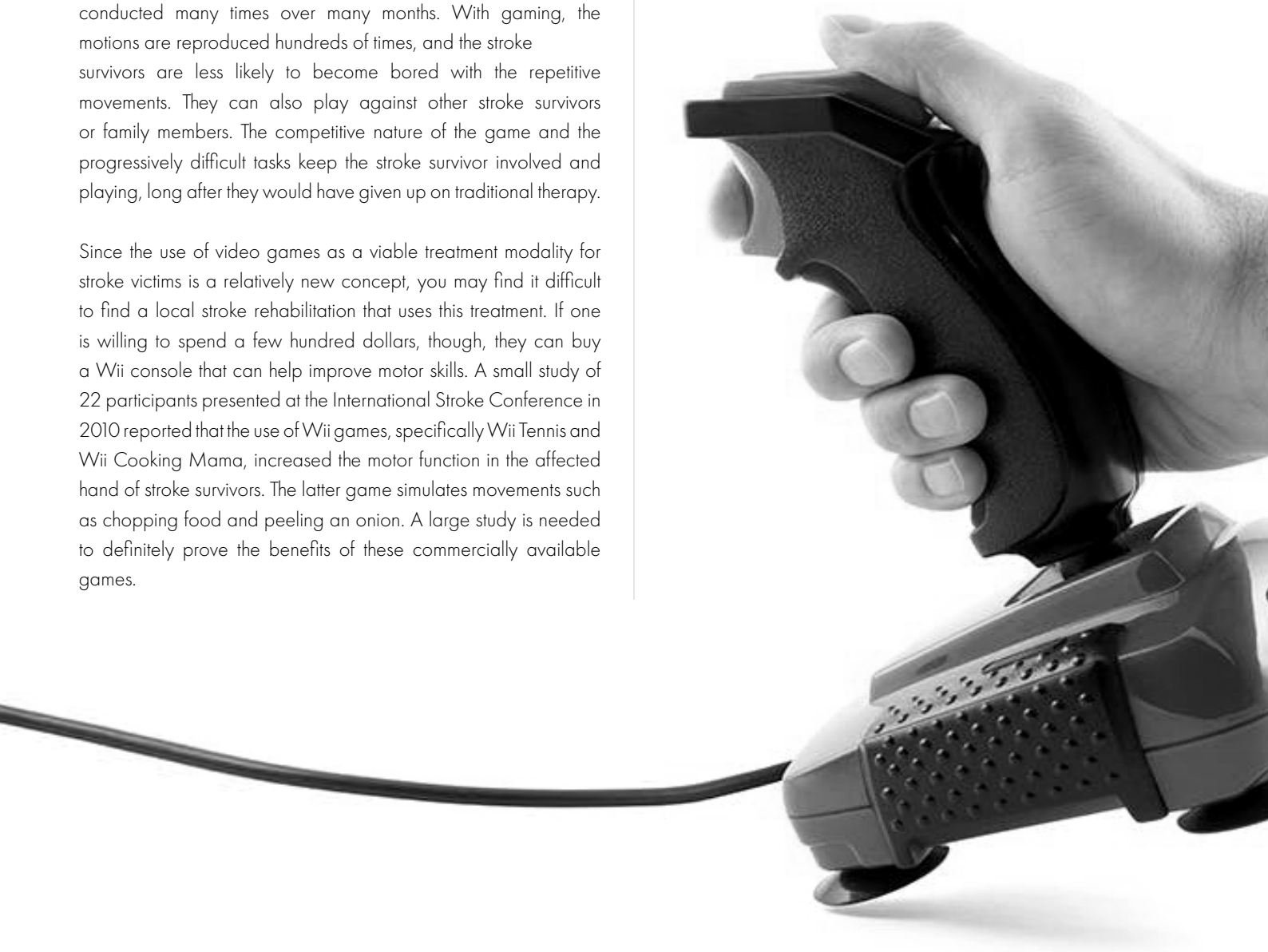
It can be frustrating for stroke survivors to engage in an activity that relies on hand-eye coordination when they cannot even control their hands very well. Surprisingly, it has been shown in recent studies that video games are actually beneficial for stroke victims. It may seem counterintuitive, but the act of controlling a figure on the screen with the affected hand helps to reconnect pathways in the brain and increase dexterity.

Some of the games are specifically designed to aid stroke victims in overcoming deficits in their hands, but a recent study has shown that certain commercially available games can improve motor function, as well. This modality may not be useful for those who have had a severe stroke that has completely paralyzed one side, but may be helpful in those with residual movement in the affected limb. Being more entertaining than standard therapy procedures also means that the patient will be more involved in the therapy because of the fun factor.

One difficulty with traditional therapies is that motions must be conducted many times over many months. With gaming, the motions are reproduced hundreds of times, and the stroke survivors are less likely to become bored with the repetitive movements. They can also play against other stroke survivors or family members. The competitive nature of the game and the progressively difficult tasks keep the stroke survivor involved and playing, long after they would have given up on traditional therapy.

Since the use of video games as a viable treatment modality for stroke victims is a relatively new concept, you may find it difficult to find a local stroke rehabilitation that uses this treatment. If one is willing to spend a few hundred dollars, though, they can buy a Wii console that can help improve motor skills. A small study of 22 participants presented at the International Stroke Conference in 2010 reported that the use of Wii games, specifically Wii Tennis and Wii Cooking Mama, increased the motor function in the affected hand of stroke survivors. The latter game simulates movements such as chopping food and peeling an onion. A large study is needed to definitely prove the benefits of these commercially available games.

Although there are many advantages to gaming for stroke survivors, there are some hurdles as well. The cost of bringing games into stroke rehabilitation centers often prohibits their universal usage. In addition, not many large scale, double-blind, scientifically rigorous studies have been conducted on the benefits of this treatment. This is not to say that the use of games is ineffective, but rather that large studies are still lacking. One critic has pointed out that the use of the controllers may adversely affect the shoulders of stroke victims and cause problems with the ligaments. For those with complete paralysis of the arm, playing video games is usually not helpful. Meanwhile, playing a game or two on the Wii for high functioning stroke victims may prove beneficial.



## CORTICAL AND TRANSCRANIAL STIMULATION

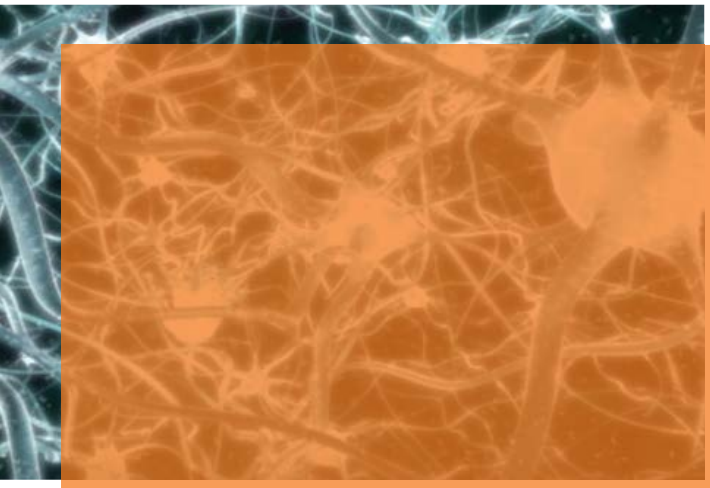
Trans Magnetic Stimulation (TMS) is a method based on a non-invasive technique of electromagnetic induction in which the magnetic field hyperpolarizes or depolarizes the brain cells. The frequency of field changes is responsible for the inhibition or irritation of the damaged and unaffected pathways of nerves in the brain and is used in various deficits in stroke having motor and speech disorders and cognitive impairment.

Transcranial Direct Current Stimulation (tDCS), on the other hand, is a method of non-invasive direct neurostimulation by small positively or negatively charged electrodes with effects being dependent upon the size of electrodes and type. It has been used in stroke and other disorders of speech and cognition.

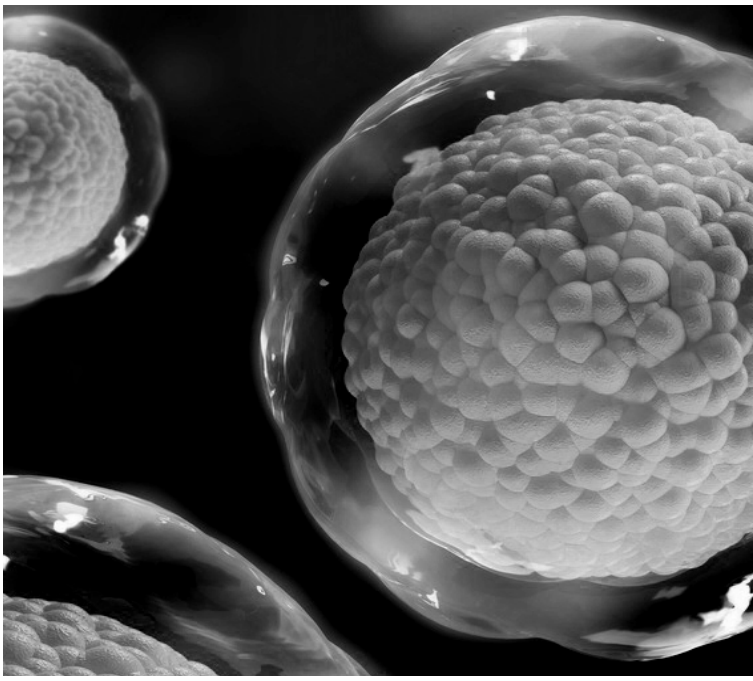
There are some physical and electric methods in practice today, although their efficacy is still controversial, even though there has been promising results.

Several years ago, trials were conducted on combining invasive cortical stimulation and rehabilitation. The procedure involved surgically implanting a small electrode under the skull and over the part of the brain responsible for motor function. A small battery-powered stimulator, inserted under the skin just below the collarbone, triggers an electrode to emit low-level stimulation to the brain. It is activated only during therapy when the therapist waves a hand-held device over the stimulator.

Compared to stroke survivors who received only traditional therapy, those who also receive cortical stimulation appear to have better immediate and long-term motor improvements, particularly among those who have moderate motor deficits after a stroke. The theory underlying this trial appears to be promising. It shows that an adult's brain can continue to develop in response to a stimulus in trying to fix the damage (directed adaptive plasticity).



## STEM CELLS



In the past decade, numerous attempts focusing on neuroprotective strategies have been made to rescue neurons in the ischemic brain. However, within a few hours of an ischemic stroke event, acute injuries are often irreversible. Thus, more recent studies are now focusing on how the brain can be repaired and transplantation of embryonic and adult stem cells is being explored.

Stem cells are characterized by the ability to renew themselves through cell division and differentiate into a diverse range of specialized cell types. Stem cells can now be grown and transformed into specialized cells with characteristics consistent with cells of various tissues such as muscles or nerves through cell culture.

A few years ago, scientists started investigating the potential of stem cells in treating strokes by tracking the body's own stem cells during brain repair. Recently, a study at Stanford University on ten stroke-crippled rats transplanted with neural stem cells grown from human embryonic stem cells was conducted and observed that the new neurons gathered in the damaged brain regions, connecting to healthy cells and to each other. Within weeks the rats could again control their weakened limbs.

Though the results are preliminary, it offers a glimmer of hope to millions of people left brain-damaged or crippled by strokes. However, before that can happen, scientists need to refine the techniques of encouraging stem cells to reliably form neurons that don't turn cancerous. Only then can this be tested in humans in clinical trials and this may still take many years.

# FURTHER READINGS

**NATIONAL STROKE ASSOCIATION – REHABILITATION THERAPY:**
https://www.stroke.org/en/life-after-stroke/stroke-rehab/post-stroke-rehabilitation

**EVERYDAY HEALTH – PHYSICAL THERAPY AFTER A STROKE:**
http://www.everydayhealth.com/stroke/physical-therapy-after-stroke.aspx

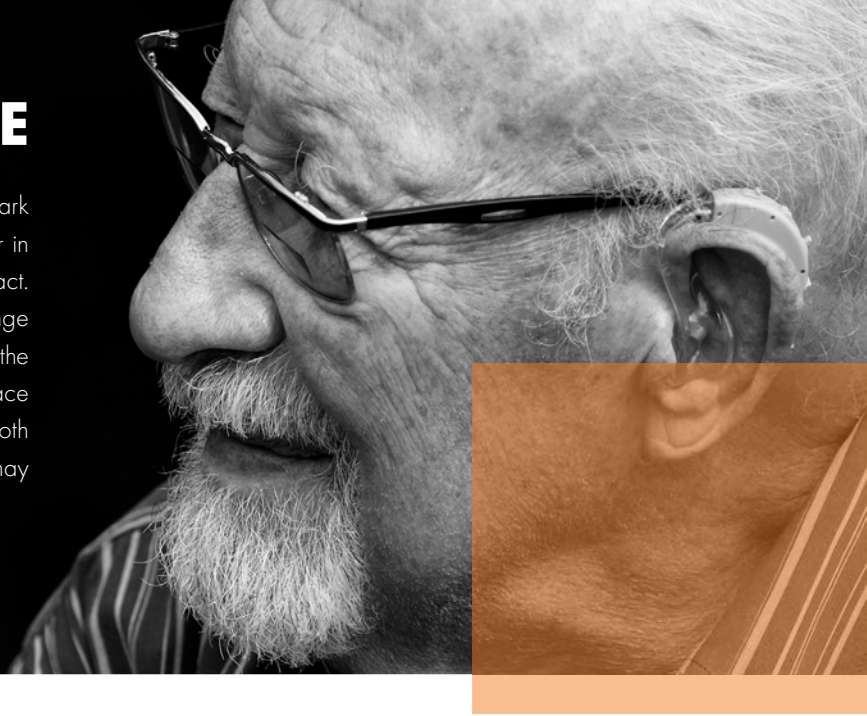
**AMERICAN OCCUPATIONAL THERAPY ASSOCIATION – RECOVERING FROM A STROKE:**
http://www.aota.org/About-Occupational-Therapy/Patients-Clients/Adults/Stroke/RecoveringFromStroke.aspx
http://www.aota.org/en/About-Occupational-Therapy/Professionals/RDP/Articles/Stroke.aspx

**WEBMD – INTENSE THERAPY IMPROVES SPEECH AFTER A STROKE:**
http://www.webmd.com/stroke/news/20050609/intense-therapy-improves-speech-after-stroke

**AMERICAN STROKE ASSOCIATION – COMPLEMENTARY AND ALTERNATIVE THERAPIES:**
http://www.strokeassociation.org/STROKEORG/LifeAfterStroke/RegainingIndependence/PhysicalChallenges/Complementary-Alternative-Therapies_UCM_310465_Article.jsp

# COPING WITH STROKE

The occurrence of a stroke, be it minor or major, is a landmark event in a person's life, whether it be the person his/herself or in a loved one. The more severe the stroke, the greater the impact. Coping with a stroke, especially a major stroke can be a challenge for all concerned. The physical, financial and social aspects of the illness may be difficult enough, but the emotional impact can place tremendous stress on everyone. These emotions may occur in both the stroke survivor and loved ones. An understanding of what may happen, and some tips on how to cope may be helpful.



## GRIEVE, BUT FINALLY ACCEPT

Grieving is a situation almost everyone would go through after a major loss. The Swiss-American Psychiatrist Elisabeth Kübler-Ross in her 1969 book, "On Death and Dying," described 5 stages of emotions when a devastating event occurs. Not everyone has all of them, or even go through the same sequence. Having such emotions is normal.

### 1 - DENTAL

This is usually the first reaction. One tries to ignore the situation by saying it was not true or that is was not happening, or tries to downplay its magnitude by saying what happened is minor when it is actual major. Be supportive; do not ridicule; gently show them there are deficits and how they have impacted.

### 2 - ANGER

One gets very upset, blames others even God, and sometimes oneself. There may be outbursts of rage, which may be directed at a particular person (for example, the spouse), or to no one or even everyone. An angry person is difficult to care for. Stay calm and detached, avoid being angry yourself.

### 3 - BARGAINING

One negotiates for a better situation or recovery by offering something in return. The offers are usually unrealistic. Be non-committal; do not counter-offer, avoid arguments on the offers.

### 4 - DEPRESSION

One may become silent, withdrawn, and asks if life was worth living. One may also cry and be non-communicative. Suicidal thoughts may be expressed. This shows a kind of acceptance but with a negative emotional response. Be encouraging and positive. Encourage participation in activities as a distraction. Anti-depressant medication may be needed for major depression. But monitor for suicidal thoughts – consult a psychiatrist immediately.

### 5 - ACCEPTANCE

One calmly comes to terms with the situation, and leads to a stability of the situation. One may become more positive, and may even joke about the illness. Do continue to encourage and try to lead as normal a life as is possible.

## DO GO THROUGH THE PHASES AS THEY APPEAR.

Try to get through them as quickly as possible to reach the stage of acceptance. Then one can focus the energies on the other aspects of the illness. Even if one is not grieving, do allow the others to grieve as they need time and emotional support while they take their own paths to acceptance.

## Don't argue - work to a common overall goal

There is much to be done after a stroke. There are many things to achieve. Time is never enough. Conflicts can occur, despite the best of intentions. But setting a common overall goal would help everyone to focus. In a minor stroke, that goal may be for the stroke survivor to attain full recovery. For those with a moderate stroke, the goal may be to achieve independence – physical, social, financial, emotional etc. In severe stroke, it may be to have comfort and dignity and to be without pain, be it physical or emotional. For the caregiver, the goal may be to be able to help and comfort, and feel appreciated. Before any action, or decision not to act, do see if it will help to reach the goal. And everyone needs to give love, and to receive love.

## Develop a manageable routine but enjoy/spring pleasant surprises

Life can become chaotic, with pulls in many directions. Some may be directly conflicting, leading to further confusion. Establishing a routine will allow everyone to know what will happen next. If the care provider is unable to perform that day, others will be able to pick up and carry on.

### Examples include

**6.00AM**

wake-up, then shower, change and breakfast for the caregiver

**6.30AM**

wake-up, then shower for the survivor, breakfast

**7.30AM**

walk/wheelchair ride to the garden or park for an hour

**9.00AM**

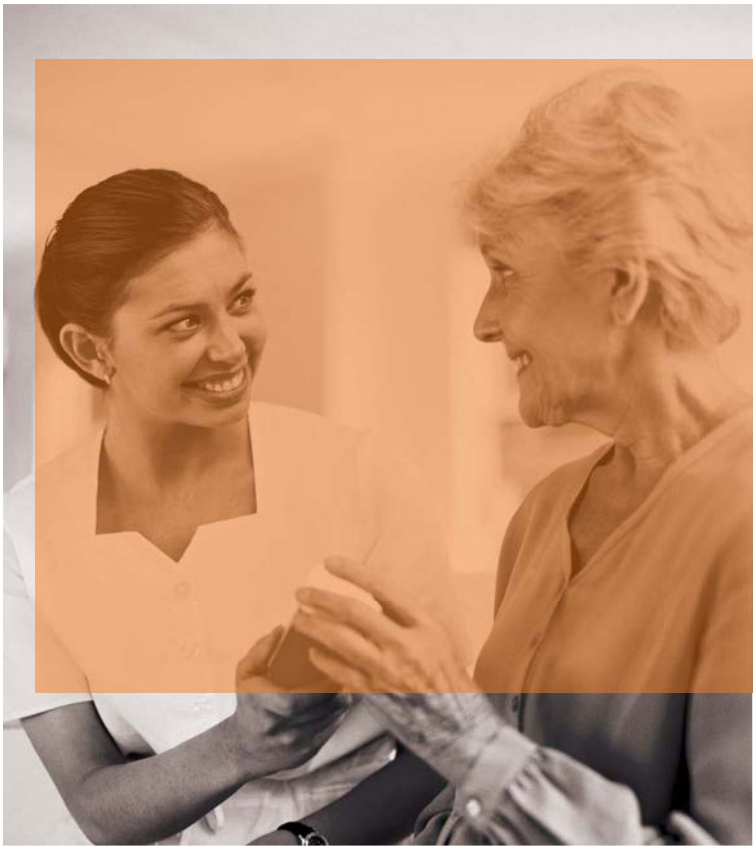
reading or being read to from the newspaper

**10.00AM**

meet neighbours for a chat

**etc.**

While this may be boring, this will provide order to one's life, survivor or caregiver. But occasional pleasant surprises are always welcome to break the boredom - a trip to the mall, a visit by relative from far away, a movie, a manicure and pedicure, new dress/shirt, a birthday party!



## Increase knowledge – knowledge is power

While a lot is already known about stroke, there are new discoveries every day. These may be about how to prevent a first stroke, new symptoms, and new tests. But most important at this stage may be knowledge about newer, safer and more effective treatments – clot busters, blood thinners, surgeries, stents, etc. And also rehabilitation techniques, robotics, complementary therapies, etc. And caring for patients with newer aids, skin care products, etc. New skills may be needed, for example, how to walk without an aid, caring for a newly formed pressure sore.

The current state of these concerns is well-covered in this book. But do look out for more and newer information. Sources of information include the newspapers, magazines, television, radio, internet, talks, exhibitions, and stroke clubs. And even friends and relatives. But do remember that one should not immediately believe all that one sees or hears. Get more opinions from trusted sources; seek medical advice especially if these are expensive or potentially harmful. Remember, if it is too good to be true, there may be more than meets the eye. But the search should never stop.

## Be nice - show appreciation and respect

The days, weeks and even months or years following a stroke can be stressful. Tempers may fray; physical violence may occur, from small pinches to hard hits. Emotional trauma may be caused by harsh words or even wilful neglect. Everyone needs to play their part to make this difficult situation better. The stroke survivor should be pleasant, appreciative, and help oneself as much as possible; behave with dignity. Caregivers should also be pleasant and show respect. Inject thoughtful humor or a light joke as this often lightens tense situations. Say nothing and count to ten before responding during heated arguments – hurtful words once spoken are difficult to retract.

## Resume social activities – hello world!

Many stroke survivors feel ashamed that they no longer look or function like they did before. They may need a walking aid or wheel chair, or have a tube though the nose. They may not be able to talk as clearly or help themselves. Even caregivers may feel that way, or may try to protect the survivor from potentially negative looks or comments. Thus they hide at home away from the eyes of others. This action only makes the survivor even more isolated. A mature society is able to accept and care for its less able and fortunate members; a less mature one needs to learn to do so. Chat on-line. Go out of the house, hold your head up high. Go with a group if one feels self-conscious. Smile and wave, and you will receive the same. Ignore stares and rude remarks – it reflects the immaturity of the other person. Go to parks and zoos and malls. Attend functions, weddings, etc. Party!

## Accept challenges – they will make you strong

One principal goal is independence, in all spheres, be they physical or emotional. Some actions or activities may seem impossible at first, and even thinking of them may seem depressing. But as one gets stronger and more confident, what was once thought difficult may now seem more do-able. Such activities give one something to work towards. Set reasonable targets and work towards them. Progressively increase the difficulty. Work with others if needed.

Activities may include making a speech, baking a cake, going on a holiday. Success will build confidence, while apparent failures should be seen as reasons to try and try again. Do not play the 'sick role'. As a caregiver, assist where needed, but encourage independence. Do not pamper too much as over-protection can be counter-productive.

## *Salute the silent hero – the caregiver*

Caregiving can be a very demanding job physically, depending on how disabled the survivor is. It can also be emotionally draining, especially when the survivor is going through the stages of anger, or of not seen to be cooperative, or even stubborn and negative. Caregivers often do their duties uncomplainingly, some even continuing to provide care through the night after a long day. All this can be physically and mentally exhausting.

Caregiver burnout is well-recognized. Some caregivers resent having to do these duties. So do show your appreciation to caregivers. As another family member, offer help, take over their role when they are tired. Caregivers should be given breaks. Ideally, there should be two caregivers so that they can take turns to work and rest. Take a break, go on holiday. See the caregiver as a member of the family. In that way, things should run better, and the common set goal can be worked towards.

## Be positive

Having a stroke is a set-back. One may have been working when the stroke occurred, or may have retired and had plans to do many things, or nothing but to have a quiet peaceful retirement. But these dreams may have been shattered by the stroke. Denial and anger are common reactions. Sometimes, one's worst enemy is oneself. One may retard one's progress out of the situation.

One of the most effective ways of coping in the long term is to have a positive attitude, even as things look down. See the cup as half full. Seek the silver lining around the dark clouds. Put a smile on your lips, a song in your heart, a spring in your step. In some ways, you are the captain of your own ship – you need to steer yourself out of the rough waters. A positive attitude will go a long way in helping things along.

# JOINING A STROKE SUPPORT GROUP

It has been said many times, "No man is an island." It is a saying that reflects real life where a person would eventually need the company of others to survive the daily grind of life.

As humans are social beings, they feel the need to be loved and accepted. Abraham Maslow had illustrated this need in his Hierarchy of Needs. It falls under the third category which is love and belongingness.

All humans aspire to be a part of a family, a group, a clique, etc. The group that the individual aims to be a part of eventually helps mold that individual's personality, which then makes the person whole. An individual can experience his true worth if he or she is a part of a larger group.

Members of a group usually have one thing in common. A common bloodline, a shared history, a common goal, the same aspirations - these are just some of the things which make people to band together.

If an able-bodied person needs this kind of 'attention' then it follows that people with physical disabilities would also require such need. Stroke survivors are not exempted from such need.

Sometimes stroke survivors feel that their caregivers do not understand what they are truly feeling. And because of his disability, a stroke survivor may even have difficulty expressing what he or she truly desires. This would eventually lead to frustrating moments to both stroke survivor and the caregiver. This is a strain in the relationship that may persist unless such things are ironed out.

To be accepted for what he is, to be heard what his heart desires and to be understood in dire times are just some of the wishes that a stroke survivor may have after stroke.

But stroke survivors and their families need not despair. People in similar situations have banded together to form stroke support groups to meet the needs of both stroke survivors and their families.

Using a group environment, they help both the stroke survivor and family recover from the devastating and ill effects of the stroke. They help in the rehabilitation process. Family members and others around the stroke survivor may otherwise be suffering and be confused by what is happening.

Stroke support groups function in such a way that both needs of the stroke survivors and their immediate family members are resolved using interactions with other stroke survivors and other caregivers.

Stroke support groups encourage all their members to go to their regular meeting. They encourage their members to share their different life experiences with one another and they also reassure members who feel afraid and unfamiliar with daily life. They may even hand out assignments at home to both the stroke survivor and his caregivers that they can do at home to pleasantly break their daily routine.

Benefits abound to stroke patients who decide to become a member of a stroke support organization. Aside from the gains that one makes during the regular meetings of the stroke support group, the rehabilitation process is made faster and more enjoyable because stroke survivors share the 'ride' with people they know and who have the same challenges as them.

## STROKE SUPPORT GROUPS ARE DESIGNED TO HELP BOTH STROKE VICTIMS AND THEIR FAMILY MEMBERS

One major benefit that a stroke survivor or their immediate family members from joining a stroke support group is the comforting factor. A stroke survivor may feel incredibly isolated after suffering from this harrowing experience. The stroke survivor may feel like no one truly understands what he or she is painfully going through. There problems are allayed once they sign up as members of a stroke support group. By meeting other people who have the same issues gives a feeling of hope and encouragement to the stroke patient. Such feelings provide reassurance that they are not alone and that stroke survivors actually do recover from the ordeal.

Another benefit to be gained from joining a stroke support group is that stroke survivors get to socialize and share their life experiences outside of a medical setting. Stroke survivors who reveal part of themselves during these socializations get to hear realistic feedback from other members of the stroke support group. They may also learn new things that they did not know before.

Also, stroke support groups can give stroke survivors and their family, who are already members of the group, satisfaction by helping other stroke survivors with their recovery.

A very important part of the stroke rehabilitation process is finding and participating in a stroke support group. There are numerous stroke support groups all over the world. It will all depend on the preference of the stroke survivor and their immediate family which stroke organization they wish to enroll in. There are a number of stroke centers and volunteer stroke support groups that can provide their many services post-stroke.

The volunteer stroke organizations usually offer their services free of charge. They can do this because of the donations that they get from the community. Almost all of the stroke support organizations are free of charge and are run by volunteers. Stroke recovery centers may charge a fee.

To find the most suitable stroke organization, the stroke survivor and his or her family should consult with their physician, rehabilitation therapist or any member of their healthcare team. They can advise the stroke survivor and the family members as to what stroke support groups are available within their community. A stroke survivor could also either choose one on their own or with the help of family.

Aside from the stroke support groups in the community that provide opportunities to interact face-to-face, there are also numerous support groups listed on the internet.

Stroke survivors and their families may prefer this online relationship rather than the traditional regular meetings. Because the encounters are done online, the stroke survivor is within the comfort of their own home. They can also connect with other stroke survivors all around the globe and not those within their community. This interaction with a broader audience can be more fulfilling.

Choosing the best stroke support group online usually takes only two steps. First is by searching using key words (for example, 'stroke support group' and the area/country one is living in) using one's favorite search engine. The next step is choosing which stroke support group appeals the most from the list that the search engine has found. Read the webpages carefully. Email the group to seek clarifications and additional information on aim, services, funding sources, etc. Ask others what they know about the group. At times, a limited membership may provide valuable insights. If favorable, do take full annual or even lifetime membership.

# TIPS FOR CAREGIVERS

When a person suffers a stroke, the brain is damaged. The person can suffer from paralysis, speech defects, and vision problems. Strokes can also impair the person's cognitive ability as well as affect one's moods and emotions. It can cause several changes in the personality. Some of the changes a person who suffered from a stroke include the following:

- After a stroke, a significant change in the behavioral personality of a stroke victim is depression. This may be related to biochemical changes that happen in the brain cause by the stroke. A depressed person often feels hopeless, fatigued, sleeps poorly and does not eat well.
- A person after having a stroke can be apathetic. Apathy is when a person is indifferent and unmindful of the surroundings and is content with not doing anything.
- Another personality change a stroke survivor may experience is impulsiveness. This is when the person does not think ahead and often does something too quickly, on impulse. The normal brain pattern of deciding whether to do or not to do something is impaired and the resulting behavior is impulsiveness.

These behavioral changes in personality are not always permanent. A psychologist or psychiatrist can help in recovering from these changes. With proper care and guidance, these personality changes may lessen.

Caring for someone who suffered a stroke can be difficult. After having a stroke, the person is physically impaired, may suffer mood and behavioral swings, and may be generally difficult to deal with. Family and loved ones have a significant role in the recovery after a stroke. A simple guideline for family and loved ones of a stroke victim is to do and be mindful of the following:

- **Be Sympathetic –** People around the patient must understand that the stroke survivor is the focus. It is not about them, it is about him or her. People should exhibit emotional control when dealing with a stroke survivor who is temperamental and moody.
- **Be Firm, Supportive, and Positive –** It is best to show understanding of the person's behavior and rephrase questions or statements to reflect the positive side rather than the negative.
- **Be relaxed –** It is easier to talk to a stroke survivor when that person is relaxed. One way to relax a stroke survivor is to use distraction methods such as calm music or watching the television.
- **Reinforce Positive Behavior –** A family or loved one can significantly help in positively altering a stroke survivor's mood and personality by positive reinforcement. Rewarding a stroke survivor when he or she exhibits positive behavior with something significant helps a lot in stroke behavioral recovery. Making this a practice can then be a significant tool in hastening the stroke recovery process.
- **Minimize Distraction and Stimulation –** A family or loved one should be aware that a stroke survivor is physically impaired when it comes to simple activities such as getting dressed. Minimizing distractions during these moments such as turning off the television may help.
- **Encourage Social Interaction –** Finding a support group for stroke victims is helpful. A support group can help the stroke survivor be more open to his condition and encourage more stable positive behavior from them. It also allows family members and loved ones to interact and share experiences with other people that can also be mutually beneficial.
- **Exercise Caution –** Some stroke survivors can be physically abusive and violent during a personality episode. Frustration can lead to temper tantrums. It is best to protect both the stroke survivor and the people around from injury. Medication may be needed.

## CARING FOR SOMEONE WHO SUFFERED A STROKE

- Be sympathetic
- Be firm, Supportive, and Positive
- Be relaxed
- Reinforce Positive Behavior
- Minimize Distraction and Stimulation
- Encourage Social Interaction

Caring for a recovering stroke survivor is not easy. It may be as difficult as what the stroke survivor is experiencing. But having the right mindset and being informed about what to do after a stroke and what to expect after a stroke can be very beneficial to a stroke survivor.

## Caring for a Stroke Survivor with Dementia

One important challenge after a stroke is the onset of dementia. In essence, dementia is a mental decline that affects the memory, cognitive and social skills, and sometimes emotional stability.

Dementia can come in various forms and severity. For some, they merely become forgetful or repetitive, but for others, they may become unable to care for themselves. Most stroke rehabilitation focuses on the physical deficits that arise from the stroke, but it takes just as much compassion and patience to help your loved one with dementia.

The best way to speak with someone with dementia is with patience. If you feel yourself becoming impatient and want to lash out at your loved one, you should remove yourself from the situation until you calm down. It is important to remember that your loved one is not doing this on purpose. You may think that they know what you are talking about, but the reality is that they do not understand what you are trying to say. Try speaking slowly, carefully, and softly to get through to your loved one. Use short words and sentences, and try to direct them with purposeful, simple commands.

Give gentle cues and reminders to help them through their memory difficulty. Do not get frustrated that they ask repetitive questions, but realize that they don't know they are repeating themselves. It is helpful to ask targeted questions when speaking to someone with dementia. For instance, do not ask, "What would you like for lunch?" Ask instead, "Would you like a sandwich or soup for lunch?" This is an example of a simple, directed question. Open-ended questions are often not processed well by the cognitively impaired.

People with dementia tend to do things more slowly, but they are very capable of completing small tasks. Give praise when they are able to zip their own pants, pull on their own shirt, or tie their own shoes. Your job is to be a totally biased cheerleader. Even when they do not do something that well, it helps to be encouraging anyway.

The key to helping someone with dementia navigate the physical environment is to keep it simple. Have a bed and a dresser in a bedroom. There is no need for a chair, nightstand, light fixture, and so on. A simple layout will help your loved one navigate the room and keep them from tripping over something. Do not put down throw rugs anywhere in the house as they may slip.

You may want to use large labels on different important items at home. For instance, labeling the refrigerator, stove, and pantry will help your loved one remember what things are and what to do with them. This also comes in handy in the bedroom, because you can label drawers with their contents to aide memory.

Stroke survivors with dementia may experience anxiety as the night comes on. This is a common symptom known as "sundowning." It is more common in an unfamiliar environment. Gently reorient your loved one to the place and time and attempt to help them understand their surroundings. They may ask for your help, but not know what to tell you to do. Ask them short, direct questions aimed at primary needs. For instance, ask if they are in pain, hungry, thirsty, or need the toilet. Any of these needs may be unmet, and they don't know how to ask for the help they need.

For your own emotional struggles, it is important to take frequent breaks. It is quite difficult to deal with someone with dementia around the clock, and you should not expect yourself to. If your loved one is at home, get other family members to come in and stay with your loved one for a few hours. If that is not an option, get a hired professional to come. Respite care is often the name that social services assign to this type of care. If your loved one is already in a nursing home and they frustrate you during visits, take a break from them. You can visit less frequently or keep your visits short.

**In the end, calm, patient care is necessary for someone with post-stroke dementia.** If you can calmly redirect your loved one, provide simple reminders, and ask directed questions, you will go a long way towards making life with your loved one as enjoyable as possible.

# CONSIDERING LONG-TERM CARE OPTIONS FOR STROKE SURVIVORS

You stare in at your mother who is lying in the hospital bed. She had her stroke two months before, and she's making slow but steady recovery in the rehabilitation hospital. Or she had stabilized and is making little progress. But the hospital or insurance companies are pushing for her to go home. The problem is that you are not comfortable providing medical care at home to a disabled person. You have a husband, children, a full-time job, and a small but crowded home. You very much want your mother home with you, but feel it would be difficult to manage that. Having a live-in home help is not an option. Thus the medical team suggests a nursing home, but that thought makes butterflies flutter in your stomach. You promised your mother to take her home. You can't go back on your promise, but what are you supposed to do? You do not want to be seen unfilial; you feel guilty. Different nursing home provide different levels of service; some have good while others not-to-good reputations. Nursing homes stays are an expense you may not be able to afford.

Many adults are facing this situation, and it isn't an easy choice. Before making up your mind, do consider a few things that may help you come to the best decision for all involved.

The first person to be considered is your loved one. They may prefer a family around them to give them support and the comfort of living in a place they recognize, but you have to ask yourself if this is the safest course for all involved. Your house may not be accessible for someone who can't negotiate stairs, can't safely get into a bathtub, and needs constant supervision. For as much as you may want to bring your family member home, your house may be fraught with unrecognized dangers that can cause harm. You also have to consider what they need medically. Some stroke survivors need regular undergarment changes, redirection to more appropriate activities, and specialized feeding routines. If you have a job or family, it may be very difficult to provide these services, and in some cases, it is impossible. Short of becoming a nurse yourself, some stroke care is beyond the ken of average folk. Your loved one may need the nursing home environment because the skills to care for them are simply beyond your ability.

It may sound selfish to consider your own needs in this decision, but you have to address them because they will affect the quality of care you are able to provide. If you work and need to work to survive financially, you cannot commit yourself to caring for your loved one around the clock. Even caring for them outside of working hours will take a toll on you, and you may come to resent your loved one, possibly not caring for them as well as you would like to. If you have a family, you need to consider their needs, too. Young children require attention and supervision, and you would be adding to your load if your loved one comes home

It isn't fair to your children to lack a parent, and it isn't fair to your loved one who may often come second to your kids. Older kids may help, but this is putting responsibility on them that they may not be able to handle. They would get far better treatment and attention in a skilled facility. You also need to consider how much stress you can take. Everyone has stresses in their lives and adding caring for a stroke survivor to that list may be too much to take. You are not less of a daughter or son, wife or husband because you need time to take care of yourself. If you do not consider your feelings, you may grow to resent your loved one and exist in a constant state of stress. This can lead to health and emotional problems as you continually ignore your needs.

Many people promise their loved one and themselves not to consider a nursing home, no matter what. Sometimes, it just isn't possible in all cases. You may feel a stark sense of your own betrayal if you decide to put your loved one in a nursing home, but you may feel worse when you are unable to adequately care for them and you are emotionally running on empty. In the end, this is a decision that has to be made with safety and sanity in mind. If you look at your loved one and look at the situation with true honesty, you will decide what is best for them and for you. Don't ignore the idea of a nursing home because you feel it is a betrayal. Instead, think of it as finding the place where everyone can be safe and happy.

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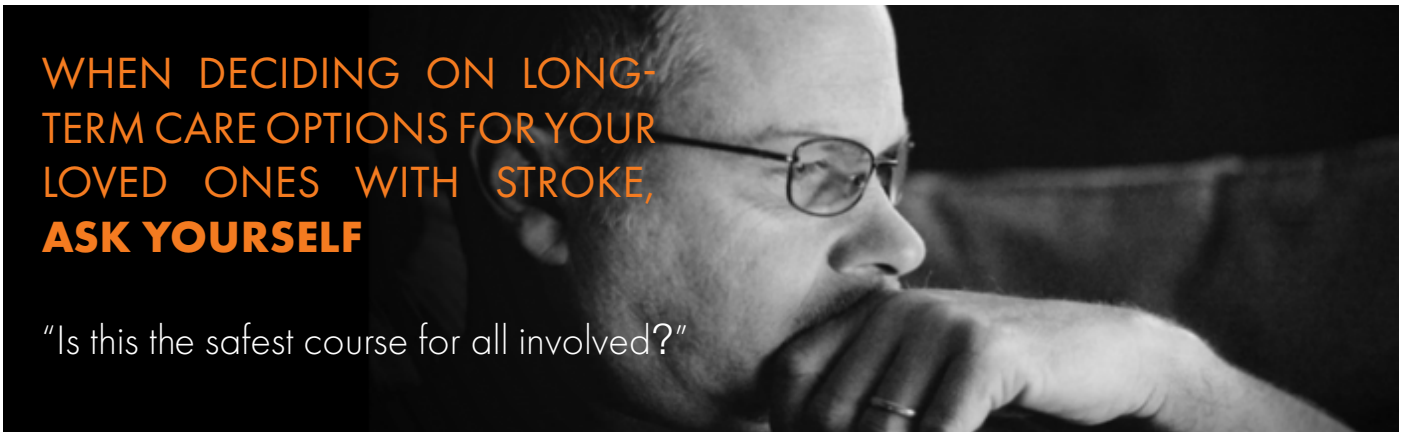

You would want to pick out a place that is appropriate for your loved one. Not all nursing homes are created equal. Many are staffed by dedicated, loving professionals who would go out of their way to make a resident comfortable. Some places are understaffed and ill-kept, but they are more the exception than the rule. To choose a nursing home, you need to consider your loved one's needs, their personality, and the reputation of the facility in general.

Nursing home types are separated into a few categories. The first type of nursing home is a respite care home or a temporary care facility. These are generally skilled nursing facilities that provide temporary care of stroke survivors. For instance, if you are the primary caregiver for your loved one and need time away to attend an event (like a wedding), you can take your loved one to this type of facility for a few days. Or if you need rest from the stress of care, these facilities can step in and provide care temporarily. An offshoot of this type of nursing home is adult daycare. This is a facility that will care for your loved one during the day while you work, and the stroke survivor will come home to you at night.

The second type of nursing home offers assisted living. This is for stroke survivors who are mostly functional but are unable to live alone. For instance, if they can ambulate, feed themselves, and dress themselves, an assisted living facility may be a good fit for them. Some stroke survivors are at risk for falls or cannot manage their medications properly, and assisted living provides a safe, non-skilled environment for them.

Long-term skilled nursing care is what most people think about when they think about nursing homes. In this type of facility, your loved one will be provided total care, as needed, on a 24 hour basis. For instance, they will be able to feed, clothe, bathe, and ambulate your loved one. Many of the residents of skilled nursing facilities are unable to care for themselves and need focused, constant care. Skilled nursing facilities usually enlist the services of a doctor and have physical and speech therapy units on site.

The most important item to consider when looking into facilities is the ability of the facility to meet the medical, physical, and emotional needs of the stroke survivor. You may want to consider assisted living, but make sure that your loved one would be safe in this environment. They need to be evaluated for their ability to maintain the activities of daily living and how well they operate independently.

You should also ensure that the facility has a physician present or on call at all times. If your loved one falls sick, the nurses need to have a doctor to turn to for orders. In the same vein, they should have a working relationship with a nearby hospital to handle emergencies and illnesses that cannot be adequately dealt with in the facility. Examples of this would be pneumonia, infection, and heart attacks.

A registered nurse should be present in the facility at all times, on all shifts. Although licensed medical professionals may perform the bulk of the duties, a registered nurse will supervise the care of all the residents. All workers in the facility should be CPR (cardio-pulmonary resuscitation) certified, and physical, occupational, and speech therapy should preferably be present in the facility. Ideally, your loved one could visit the therapists every day to improve or maintain abilities.

Of course, those are just the bare minimums that are necessary in a nursing facility. You should consider other points as well. First, look at the cleanliness of the building. Do you notice an unpleasant smell when you enter? Are the floors clean? Paint on the walls peeling? Is the dining room neat and orderly? Any of these can tip you off to a nursing home that is not quite up to par.

Second, look at the residents themselves. Are they happy? Are they in pain? How are they interacting with staff and visitors? Do they seem to be well taken care of, such as bathed and dressed in clean clothing? Often the residents will give you valuable clues as to how they are treated at that facility. If possible, see if you can interview one of the higher functioning residents to get their opinion.

Finally, examine the staff. Most staff will be on their best behavior for potential admissions, but you can pop in for a surprise visit to see how they really operate. Although it is important to discern if they are friendly, you should be looking for tell-tale signs of stress. Do they seem calm and relaxed? Do they seem to like what they are doing? How do they interact with the residents? Knowing how the staff treats their charges will help you feel more secure in admitting your loved one there.

## WHAT TO LOOK OUT FOR IN A NURSING CARE FACILITY

- Respite care vs. Assisted-living vs. Skilled nursing care
- Access to medical staff or facility
- Sanitary condition
- Mood of the residents
- Behavior of the staff

In the end, the decision to use a nursing home isn't an easy one, and some of these questions may not be easy to answer. It is important to trust your gut instincts. If the place just doesn't feel right to you, it probably isn't. However, you may find that it isn't as bad as you thought, and it could be a pleasant experience for the stroke survivor.

# FURTHER READINGS

**STROKE LINKS GUIDE:**
https://www.stroke.org/en

**WEB MD – TIPS FOR STROKE CAREGIVERS:**
http://www.webmd.com/palliative-care/features/stroke-recovery-tips-for-the-caregiver

**EVERYDAY HEALTH – COPING WITH LOVED ONE AFTER A STROKE:**
http://www.everydayhealth.com/stroke/0726/how-to-cope-after-a-loved-ones-stroke.aspx

**AMERICAN STROKE ASSOCIATION - CAREGIVERS:**
http://www.strokeassociation.org/STROKEORG/LifeAfterStroke/ForFamilyCaregivers/For-Stroke-Family-Caregivers_UCM_308560_SubHomePage.jsp

**INTERNET STROKE CENTER – DECIDING ON LONG-TERM CARE:**

http://www.strokecenter.org/patients/caregiver-and-patient-resources/caregiving-guide-for-african-americans/deciding-on-long-term-care/