



# *X-Plain™*

## *Stroke Rehabilitation*

### **Reference Summary**

#### **Introduction**

Strokes are very serious and can result in death or disability. Rehabilitation, physical therapy, speech therapy and occupational therapy are necessary to improve the functions of the body after a stroke.

Rehabilitation retrains the brain to think, understand, speak, move, and feel.

This reference summary will help you better understand the rehabilitation options available for patients who have had strokes.



#### **What is a Stroke?**

The brain controls most functions of the body. It allows us to think, understand, speak, move, and feel. To function properly, the brain needs a continuous supply of oxygen. The oxygen is carried in the blood to the brain.

A stroke occurs when blood is not able to reach the brain. When the brain does not receive its needed blood supply, brain cells begin to die, and the brain is no longer able to function properly.

Because the brain controls most functions of the body, a stroke can affect the entire body. The effects of a stroke range from mild to severe and can include paralysis, problems with thinking, problems with speaking, and emotional problems.

There are 3 basic types of stroke:

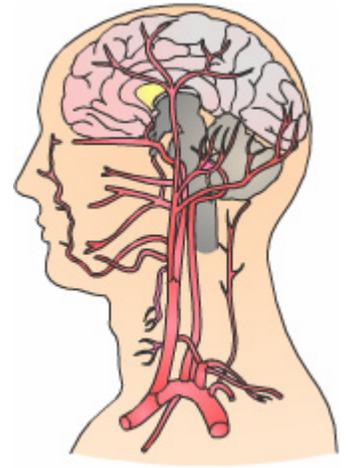
The first type of stroke is the Transient Ischemic Attack, which is also known as TIA. A TIA is a “little stroke” or a “mini stroke”. It occurs when an artery supplying the brain is temporarily blocked. This produces stroke-like symptoms that last from a few seconds to a few hours.

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The second type of stroke is the Ischemic stroke: an ischemic stroke occurs when a blood vessel is blocked or narrowed by fatty deposits called plaque. Blood cells may build up around the plaque and form a blood clot, interrupting the flow of blood to the brain.

The third type of stroke is called a Hemorrhagic stroke. A hemorrhagic stroke occurs when a blood vessel in the brain breaks, causing blood to leak into the brain, killing cells and preventing other cells from receiving blood that is needed to keep them alive.



## Causes

Strokes may be caused by any of the following health conditions:

- Heart problems
- Cholesterol build-up in the arteries of the neck or brain
- Carotid or vertebral arteries clogged with plaque
- High blood pressure, which damages blood vessels in the brain
- Conditions that cause blood to clot more easily than usually, a condition known as hypercoagulable state

Cholesterol can build up and clog the carotid and the vertebral arteries with fatty deposits, or plaque. This can lead to decreased blood flow to the brain and cause strokes.

Parts of the plaque can also get dislodged and move through the arteries to the brain. This clogs smaller arteries, which also leads to strokes. This is known as an “embolus.”

The blockage of blood vessels in the brain or neck by a blood clot is also called “thrombosis.”

Heart problems can cause blood clots to form inside the heart. Some of these clots can get dislodged and move to the brain, blocking blood vessels in the brain and causing strokes. This is also known as an embolism.

Long-standing high blood pressure, also known as hypertension, can also damage the blood vessels in the brain. Hypertension can cause the blood vessels to narrow. This could lead to strokes. The narrowing of the arteries is called “stenosis.”

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High blood pressure can also lead to the weakening of the blood vessels that can result in bleeding inside the brain.

Smoking and drug abuse also increase the chances of blood vessel problems and strokes.

To reduce your risk of death or disability from stroke you should:

1. Recognize the warning signs of a stroke so you can seek immediate treatment.
2. Change certain lifestyle habits that damage the blood vessels of the body.

## **Rehabilitation**

Rehabilitation helps improve the chances of a successful recovery from a stroke.

The first few days after a stroke are very critical. During this time, the brain could swell, causing even more damage to the brain. In rare cases, this could lead to death!

About a week after a stroke, the patient's condition stops changing and the deficits seen at first may tend to improve on their own.

Problems that remain after deficits have improved, such as weakness and speech problems, can be very disabling. Rehabilitation can help to restore some losses that the stroke caused.

There are 2 main goals of rehabilitation:

1. To strengthen and re-educate the patient to help him or her improve.
2. To teach the patient how to manage as normal a life as possible, within the limits of his or her deficits.

Rehabilitation is a combination of 3 kinds of therapy.

1. Physical therapy: Strengthens muscles and improves the patient's walking skills.
2. Speech therapy: Re-educates the patient on everything that has to do with speech. This includes how to speak, understand, read, write, solve problems, etc.
3. Occupational therapy: Teaches patients different "tricks" that will help them lead as normal a life as possible.

Rehabilitation is started as soon as the patient is medically stable; this is usually a few days after the stroke.

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For rehabilitation to be successful, it is important for the patient and his or her family to cooperate and show enthusiasm.

Even though the therapies are only scheduled a few times a week, the patient and his or her family should do therapeutic exercises on a daily basis.

Even though rehabilitation has gotten much better in the last 20-30 years, stroke victims are still sometimes not able to get back to the way they were before the stroke. It is important to keep working on skills and not get discouraged.

## Physical Therapy

The goal of physical therapy is to strengthen muscles and improve “gait,” which is walking skills. Physical therapy also helps loosen muscles and joints that may have become stiff in the arm or leg that was involved with the stroke.

Exercises are given to the patient and his or her family to strengthen weak muscle groups. They should be done many times each day.



The therapist helps the patient to walk at first. Initially, the patient uses parallel bars for assistance.

As walking skills develop, the patient can use a walker or cane to get around more efficiently. The hope is that, in time, the stroke victim will be able to walk without help.

It is important to do walking exercises only while the therapist or a family member is around. Without extra people around to help, the patient could fall and break a hip or a vertebra.

Physical therapist may suggest the use of braces for the arms or legs to improve a patient's ability to move around and work. Such braces may be used to prevent a foot from dragging or a knee from buckling.

## Speech Therapy

A speech therapist teaches and re-educates patients about all functions that involve speech.

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These functions include but are not limited to:

- speaking
- understanding
- reading
- writing
- improving memory
- solving problems
- dealing with numbers



Speech therapy is done with the help of exercises that help reinforce these activities in the healing brain. Just like with physical therapy, it is very important to do the exercises over and over!

Until patients have fully improved, they should be supervised when balancing a checkbook or when making major decisions.

### **Occupational Therapy**

Occupational therapists help patients perform daily activities with the help of “tricks” and specially designed gadgets and devices.

Occupational therapists teach patients how to dress themselves, take baths or showers, eat, shave, cook, etc.

For example, occupational therapists can teach patients how to use a reacher. A reacher works like an extension of the patient’s arm; it is very helpful for picking objects up without bending. Reachers also help patients put pants on.



Occupational therapists can recommend special silverware with oversized handles to help patients eat if their hands are weak.

Occupational therapists can suggest ways to change a stroke patient’s home to make it more accessible and safe.

Occupational therapists help stroke patients get fitted for braces that will improve their function. Braces also decrease the chances of severe joint stiffness. Braces can be used on the elbows, wrists, knees, or ankles.

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## Summary

Even though strokes can be very disabling, new rehabilitation techniques give stroke survivors more of a chance to stay independent.

The success of stroke rehabilitation depends mostly on the patient and his or her immediate family.

Exercises should be continued even after initial deficits have improved. This gives patients the best chance to get back to a normal life

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