St. Mary's Medical Center
A Dignity Health Member

RECOVERY AND REHABILITATION AFTER A STROKE

Rehabilitation starts in the hospital **as soon as possible** after a stroke. Rehabilitation may begin as soon as the patient is medically stable and should be continued as necessary after release from the hospital. The neurological rehabilitation team at St. Mary's consists of physical, occupational and speech therapists who will work with you and your family members one on one.

The goal of neuro rehab is to improve function and mobility so that the stroke survivor can become as independent as possible. It also includes educating and training family members or caregivers to safely assist, prevent injury and continue exercise programs that will further progress or maintain function.

General Guidelines Show:

10% of stroke survivors recover almost completely
25% recover with minor impairments
40% percent experience moderate to severe impairments requiring special care
10% percent require care in a nursing home or other long-term care facility
15% percent die shortly after the stroke

Exercise for Stroke Prevention:

High blood pressure is the most important risk factor for stroke

A few factors that can lead to high blood pressure include excess weight, diabetes, lack of exercise and a high-salt diet.

In most people, high blood pressure can be controlled through diet, exercise, medication or a combination of all three.

A program of regular exercise -- appropriate to a person's age and fitness level, and approved by a doctor -- may not only aid in weight loss, but also help to lower blood pressure.

Physical activity
Physical activity can help reduce stroke risk. Following are tips for increasing daily physical activity:

Include exercise in daily activities.
A brisk walk for as little as 30 minutes a day can improve daily health in many ways, including weight.
Try walking with a friend; this will make it easier to commit to.
If walking isn't ideal, find another exercise or activity, such as biking, swimming, golf, tennis, dance, or aerobics.
Make time each day to exercise. Some people enjoy walking in the morning instead of at night. Figure out what works for you.

Depending on the severity of the stroke, rehabilitation options include:

Acute rehabilitation unit in the hospital
Subacute care unit
Home therapy
Outpatient therapy
A long-term care facility that provides therapy and skilled nursing care

The Neurological Rehabilitation Team:

Physical Therapy- learn to maximize your physical function by improving range of motion, strength, and balance. This may include learning to move in bed, sitting and standing balance, moving from a bed to a chair, walking, coordination, strengthening and stretching.

Speech Therapy- addresses a broad range of disorders including difficulty swallowing, voice, speech, language and cognitive deficits. This may include exercise, diet modifications and cognitive skill retraining.

Occupational Therapy- patients retrain their skills for activities of daily living (ADLs). This may include activities of home-making, self-care and community integration. An occupational therapist may also help improve the use of your weaker hand or arm, assist in helping you obtain or replacing a wheelchair, and provide a pre-driving assessment to determine if safe driving can once again be possible.

Key Terms:

Aphasia: a language disorder resulting from damage to the language centers of the brain. May impact the ability to speak, understand spoken language, read and/or write.

Dysarthria: a condition that results in distorted speech. The cause is difficulty controlling or coordinating the muscles you use when you speak, or weakness of those muscles. It is often described as “slurred” or slow speech that can be difficult to understand.

Hemiparesis: weakness affecting one side of the body. About 80% of people who have had a stroke experience weakness or difficulty moving one side of their body.

Paralysis: the inability of a muscle or group of muscles to move voluntarily. When messages from the brain to the muscles don't work properly due to a stroke, a limb becomes paralyzed or develops a condition called spasticity.

Spasticity: tight, stiff muscles that make movement, especially of the arms or legs, difficult or uncontrollable. Characteristics of the condition can include a tight fist, bent elbow, arm pressed against the chest, stiff knee and/or pointed foot that can interfere with walking. These long periods of forceful contractions in major muscle groups can cause painful muscle spasms.

Ataxia: a lack of muscle coordination during voluntary movements, such as walking or picking up objects. Ataxia can affect your movements, your speech, your eye movements and your ability to swallow.

How does the brain work and how does injury to the brain cause these symptoms?

The brain controls many vital functions, receives sensory signals and sends out motor signals to different parts of the body. The symptoms produced by a stroke will depend on which parts of the brain are affected.

The main parts of the brain are the **cerebrum**, the **cerebellum**, and the **brain stem**.

The **cerebrum** is the largest and most advanced part of the human brain and is responsible for higher intellectual function, speech, analysis of sensation (including sight), initiation of movement and fine control of movement. These functions are carried out by specialized cells in the most outer layer of the cerebrum called the **cerebral cortex**. Different areas of the cortex specialize to perform special functions such as speech, voluntary control of movement in different parts of the body, vision and so on. The cerebrum has a right and left hemisphere and is divided into **frontal, parietal, temporal**, and **occipital lobes.**

The **left side** of the brain controls the functions on the **right side** of the body and vice versa because nerve fibers from the brain cross over in the **brainstem**. Thus, injury to the left cerebral hemisphere produces paralysis of the right arm and leg. The left hemisphere is usually more developed than the right and specialized for speech and language in all right handed and most left handed people. *Strokes affecting the left side therefore cause problems with spoken and written language and often right sided weakness.*

Cerebellum- a structure at the back of the brain responsible for *coordination of movement and balance.* A stroke involving the cerebellum may result in a *lack of coordination, clumsiness, shaking, or other muscular difficulties.*

Brainstem- connects the brain to the spinal cord. It has several important structures including centers controlling the *face, eye movements and tongue.* It allows the passage of signals from the brain to the rest of the body and vice -versa. It is concerned with *wakefulness, breathing, heartbeat and swallowing.* Strokes in the brainstem can lead to severe strokes with paralysis of both sides of the body and involvement of the face and eye movements.

Frontal lobe - voluntary movement, production of speech, judgment, planning

Parietal lobe - appreciation of sensation, understanding language

Temporal lobe - understanding language, hearing, intellectual and emotional function

Occipital lobe - appreciation of vision