

Stroke Rehabilitation

Summary

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What is a Stroke?

The brain is made up of a complicated system of blood vessels. A stroke is caused when there is an interruption or disturbance in the normal blood flow within one of these vessels leading to certain areas of the brain being affected. The certain blood vessel that is affected leads to different types of symptoms depending on where this occurred in the brain. Discuss with your doctor the area of your brain that was affected and symptoms that are most likely associated with this area. Your therapist can also help based on this information to aid in your plan of care and treatment and help you know what to expect.

Even though not all symptoms are the same, depending on the area of the stroke but common symptoms that can occur include:

- Trouble speaking or understanding what others are saying
- Numbness, weakness, or paralysis of upper or lower extremities or facial numbness/weakness
- Visual problems
- Balance and coordination problems
- Headaches
- Cognitive problems (attention, memory, orientation, problem solving)
- Emotional changes

Risk Factors

- Age (risk for stroke doubles after age 55)
- Heredity (family history)
- Race (African Americans have higher risk)
- Gender: Females > Males
- Prior stroke, TIA, or heart attack
- Cigarette Smoking: Increases by 50%
- High blood pressure, high cholesterol
- Diabetes mellitus
- Arterial disease, atrial fibrillation, other heart disease
- Sickle cell disease

- Poor diet, inactivity, obesity
- Alcohol or drug abuse

Types of Stroke

i. Ischemic Stroke

Occurs when there is a blood clot or narrowing of an artery leading to the brain. Ischemic strokes demonstrate more localized impairments based on the specific blood vessel and area of the brain that it supplies. This will affect symptoms as well as if the upper or lower extremity, or the facial area is more affected. This type of stroke, as well as others, can happen on the right or left side of the brain. If you have a right sided stroke the left side would be affected, and vice versa. Common areas of the brain that can be affected are the middle cerebral artery, anterior cerebral artery, posterior cerebral artery, cerebellar artery, basilar artery, spinal cord. This type of stroke can also happen at the cortical levels or the subcortical level.

- Middle Cerebral Artery: more upper extremity affected, trunk, neck, and face also can be affected
 - Expressive aphasia (left side)
 - Visuospatial dysfunction, neglect of contralateral side (right side)
- Anterior Cerebral Artery: Motor and sensory changes foot/leg on contralateral side, urinary incontinence, motor planning deficits
- Posterior Cerebral Artery: visual changes/deficits, memory loss, hallucinations, involuntary movements, inability to recognize things, memory changes, deafness
- Cerebellar Artery: difficulty with swallowing, vertigo, ataxia, nystagmus (twitching of eyes); depending on area trunk, lower extremity, or upper extremity can be affected
- Basilar Artery: more pronounced symptoms on both sides
- Spinal Cord: would be treated as spinal cord injury

ii. Hemorrhagic Stroke

An artery in the brain leaks or ruptures and floods the brain tissue with blood. Due to leaking of blood into the brain there can be more dispersed symptoms since it is not localized to 1 blood vessel and area of the brain.

- Intracerebral
 - Bleeding within the brain tissue
- Subarachnoid
 - Occurs between brain tissue and skull. Warning signs include thunderclap headache due to increased intracranial pressure
- Subdural and epidural
 - Space occupying lesion causing herniation of brain tissue outside of skull cavity

iii. Transient Ischemic Attack (TIA)

Also known as a mini stroke, in this type of stroke blood flow is blocked only for a short period of time and symptoms are normally resolved in 24 hours. Since blood is blocked only for a short period of time this limits the amount of damage that is done to the brain, limiting the long term effects.

iv. Brain Stem Stroke

A brainstem stroke happens when blood supply to the base of the brain is stopped. This can affect many functions in the body, such as heart rate, breathing, and blood pressure.

Treatment

Treatment will depend on the type of stroke that had occurred, the area of the brain where the stroke occurred and your functional limitations. Patients will make the most gains if the stroke was within 3 months (acute care). After the 3-month mark therapy can still help however results may vary and recovery will take longer! Based on limitations that are seen during your evaluation a physical therapist will design a plan to:

- improve motion with passive and active motion of the involved areas
- Stretching to decrease tightness that can be associated with spasticity
- Sitting and standing balance and core stability
- Safety with walking and dynamic balance
- Improving strength of involved extremity
- A pelvic floor therapist can help with incontinence issues

Although therapy can help in return to function, stroke recovery is a long process and certain deficits will take a long time to improve such as visual problems, numbness, weakness.