

Elements of Successful Stroke Recovery

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Ischemic stroke results from an obstruction of a blood vessel supplying blood to the brain. The brain is an organ extremely sensitive to the reduction of oxygen and energy, and brain damage is caused even after short periods of blocked blood flow. The effects of a stroke depend on the location of the obstruction and the extent of the brain tissue that's affected.

Stroke is a devastating disease and a leading cause of disability worldwide. Significant changes to a person's life happen after a stroke event. Changes in brain function can impair speech, movement, and motor function for patients. Stroke symptom severity is dependent on the location of the stroke in the brain – the parts of the brain that have experienced the loss of blood supply. The following are the most common symptoms of a stroke.

Stroke Symptoms

Weakness of One Side of Body

The brain controls the arm and leg opposite to the hemisphere of the brain affected (contralateral). A stroke on the right hemisphere of the brain impacts the left parts of the body. When the brain loses blood supply as a result of stroke, it causes weakness on the opposite side. Weakness is the most prevalent impairment of stroke survivors and can lead to very high degrees of disability. Many patients are rendered dependent as a result of this weakness.

Speech Difficulty

The main area for speech function is the left frontal and temporal lobe, dominant parts of the brain. If the left side of the brain is where the dysfunction resulting from stroke is located, the patient will have impaired speech. This most likely includes an inability to talk, and an inability to understand words. The loss of communication skills makes it difficult for the patient to make connections with other people leading to further isolation and its debilitating effects.

Memory Loss and Cognitive Dysfunction

Memory is stored in the temporal lobe area in the brain, and several parts of the brain support cognitive function. Stroke that occurs at the temporal lobe causes memory loss. The patient can not remember recent memories. In severe cases, damage from the stroke also impairs face recognition, the naming of objects, and even loss of their entire memory.

Balance Problems

While the cerebrum, a large structure of the brain, controls cognitive function, and speech and motor functions, the cerebellum, a small brain structure behind the occiput, controls balance. When a stroke occurs at the site of the cerebellum, it causes a condition where the patient can not walk, even when other aspects of the motor function are fine.

What Happens After a Stroke?

After a stroke, the brain begins a healing process and attempts to reorganize itself by forming new neural connections. It is a natural physiological response that occurs after cell injury as in all areas of the body. However, the recovery of neural injury is slow and incomplete if left to recover by itself. Additionally normal neurons outside the stroke site experience inflammation which produces scar tissue.. It is very important to facilitate the brain regeneration process before the scar begins to limit cell growth. That's the key reason why an early and intensive rehabilitation process is very important.

Most medication for stroke patients aims to prevent stroke recurrence from atherosclerosis, preventing clot formations from affecting the heart, and lowering blood pressure. With this in mind, it's easy to understand why, during stroke recovery, neuroprotection plays a supporting role, together with rehabilitation in order to fully regain neuron function.

Elements of Rehabilitation

After a stroke attack, the brain's function is impaired and neuron cell death occurs. Rehabilitation is not just about training motor function or the gait for walk. Rehabilitation also offers numerous benefits towards a full recovery.

The most important elements for stroke recovery are rehabilitation (occupational and physical therapy), adjusting environment factors, attention to nutrition, compounds for neuroprotection, a focus on motivation and engagement with social activity.

Physical Therapy/Occupational Therapy

Training the muscles for speech, or for other parts of the body that have become impaired, stimulates brain parts that correspond with these functions. One could say that training the body is really training the brain. If we consider that when children learn to walk or when we think repeatedly about something, the function of the body and brain develops together in significant ways. Rehabilitation follows the same pattern. Brain functions are stimulated by rehabilitation. When the neurons fire, the nerve impulses, enhance the neuronal improvements. This is the underlying activity occurring in neuroplasticity, which is the process of neuronal adaptation.

The important part of physical and occupational therapy is individual assessment and planning. This "one size fits all" model is grossly insufficient. Rather we could say that effective rehabilitation programs are by their nature "tailor-made" such that injured parts of the brain are stimulated for recovery.

While physical therapy involves mainly training muscle strength and balance, occupation therapy aims to manipulate and exercise the functions that are involved with all daily life and activities including fine motor, memory, cognitive function, driving a vehicle, etc.

The therapists need to have well-developed skills and special training for stroke. The rehabilitation center where treatment happens needs to have both physical and occupational therapists working together to achieve the greatest benefit for the stroke patient. It's also clear from this perspective, that early rehabilitation training is key to the best recovery and achieves optimal brain function. Along these lines, research conclusively demonstrates that the first three months after a stroke event is the golden period for recovery.

Neuroprotection, Medicine Enriched with Nutrients

To support effective neuron growth, the composition and concentration of nutrients supplied to the neurons is important. Neuroprotection or Neurorestoration refers to treatments that are given after a stroke, the goal of these treatments is to regenerate and restore the tissue that was impaired or lost by ischemia.

In earlier models of recovery, medical research traditionally considered brain tissues as an area of the body that doesn't regenerate itself. But in fact, extensive research demonstrates that brain cells may be stimulated towards recovery in response to certain agents, treatments, and therapies after injury. That's why neuroprotective agents play an important role in stroke recovery.

A number of medicines have been developed to supply the factors (growth and nerve development) that boost neuronal connections and provide support for nerve growth during rehabilitation. When we contemplate the growth process of children, we can understand quickly why good nutrition and supplements are required for building cells and structures throughout the body. This is a valuable model for understanding the importance of the composition of nutrient supply during stroke recovery.

Apart from medicine, procedures involving non-invasive neurostimulation are also used to heighten neuroplasticity. This treatment modality can be used together with mainstream therapy, and rehabilitation. Non-invasive neurostimulation addresses impairments in chronic stroke by a dynamic influence of sensory inputs on synaptic plasticity.

Environmental Factors and Social Activity

As people move through the world, our brains process perceptual inputs. These continuous sensory inputs constitute a flow of information to the brain. Our brains are reflexively responding to a wide range of environmental stimuli. It is in this way that our brain activity is stimulated. This once again finds a close parallel as we understand why a sensory-rich environment is a necessary precondition for children's development.

In medicine, environmental enrichment has been widely used as a means of enhancing the brain's plasticity mechanisms (e.g. increased dendritic branching, synaptogenesis, etc.) and improve behavioral function in both normal physiology and in the case of brain-damage.

The important factor here is that connection with people, engaging in social events and joining conversations, happens in the home and other environmental contexts. This creates ongoing

adaptation in a good environment. These same factors are clearly also helpful for stroke patients, helping them adapt to the real world as they begin to return to normal daily activity. In the best treatment approaches, an occupational therapist helps the stroke patient modify their home in order to adjust the environment towards stimulating brain cell growth.

Motivation

Motivation is driven by subjective phenomena and is experienced inside our minds. When we lose motivation, we have limited power to actively engage in activities. In stroke cases, motivation is a vitally important initial step for commencing rehabilitation and those caring for stroke patients need to continuously monitor this constituent of recovery. Rehabilitation during the recovery of functional loss is hard, and motivation to achieve recovery goals is key for intensive training. Many studies demonstrate that lack of motivation is a primary cause of failure in rehabilitation.

In order to keep motivation for stroke recovery high, there are useful tools and practices to follow such as setting relevant and achievable goals, adhering to regular routines, sharing information and recovery progression with the therapists, and addressing emotional challenges. No one motivation technique works for everyone. Occupation and physical therapists can explore and determine what motivates each individual. This approach to stroke rehabilitation provides the best chance of enjoying a successful recovery.

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ChivaCare provides one-stop intermediate care / medical rehabilitation services in Chiang Mai for visitors. We also provide health and medical services for pain management, rehabilitation, and prevention of different diseases and injuries. Chiang Mai, January 2020

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