

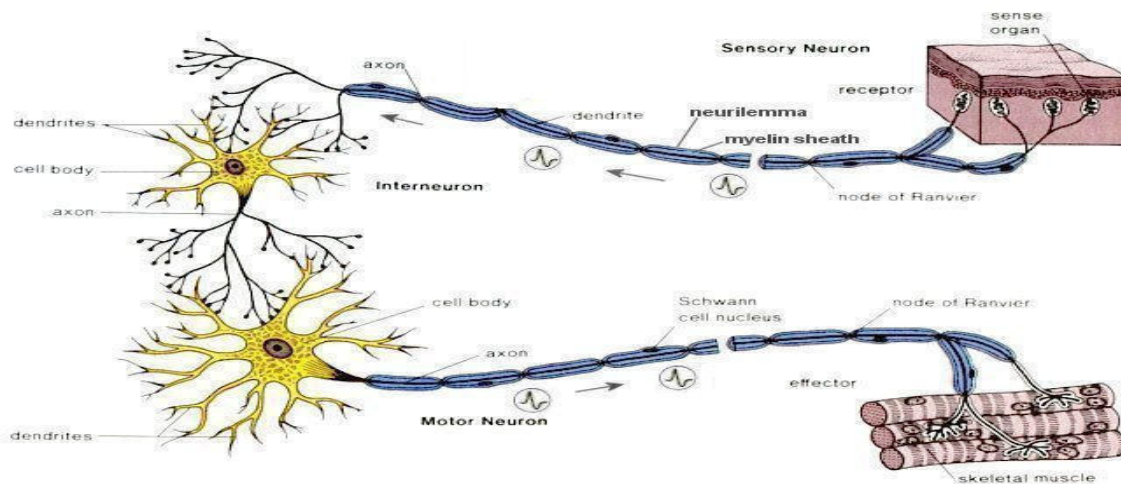
NERVOUS SYSTEM GUIDE

The Nervous System:

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- Coordinates all of the many activities of the body
-

Neuron:

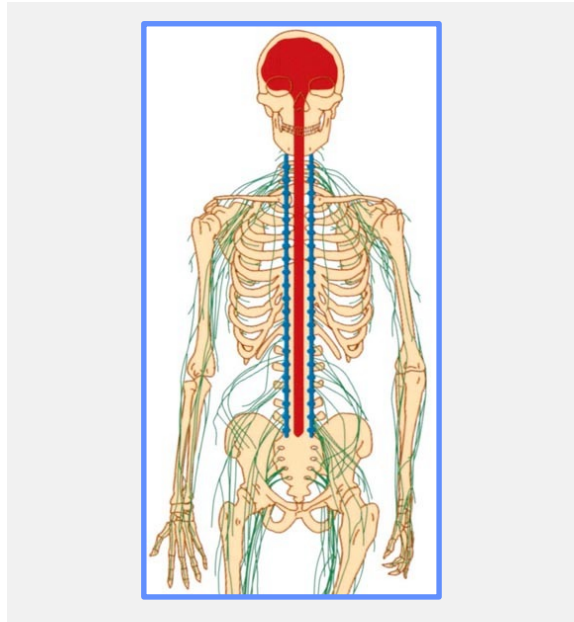
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- Basic structural unit of the nervous system
- Parts of neuron
 - Cell body
 -
 - Nerve fibers (dendrites, axon)



Nerves:

- Combination of nerve fibers
-
- Afferent—
- Efferent—
- Associative—

Nervous System:



Consists of two main divisions:

Central nervous system (CNS)

Brain and spinal cord

Peripheral nervous system:

Somatic nervous system

Autonomic nervous system

Central Nervous System

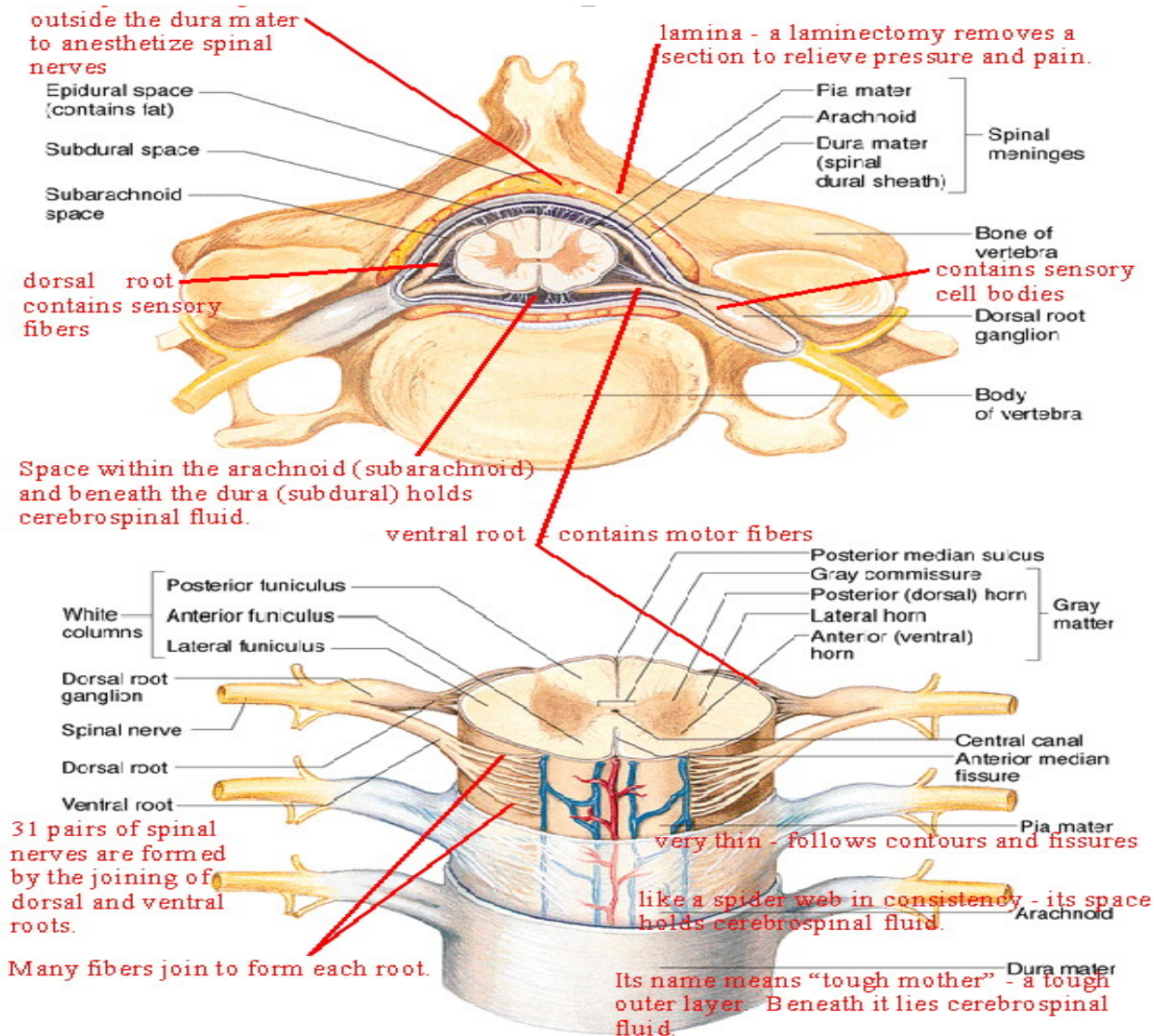
The Brain:

- Cerebrum
-
- Diencephalon
-
- Pons
-

Central Nervous System

The Spinal Cord:

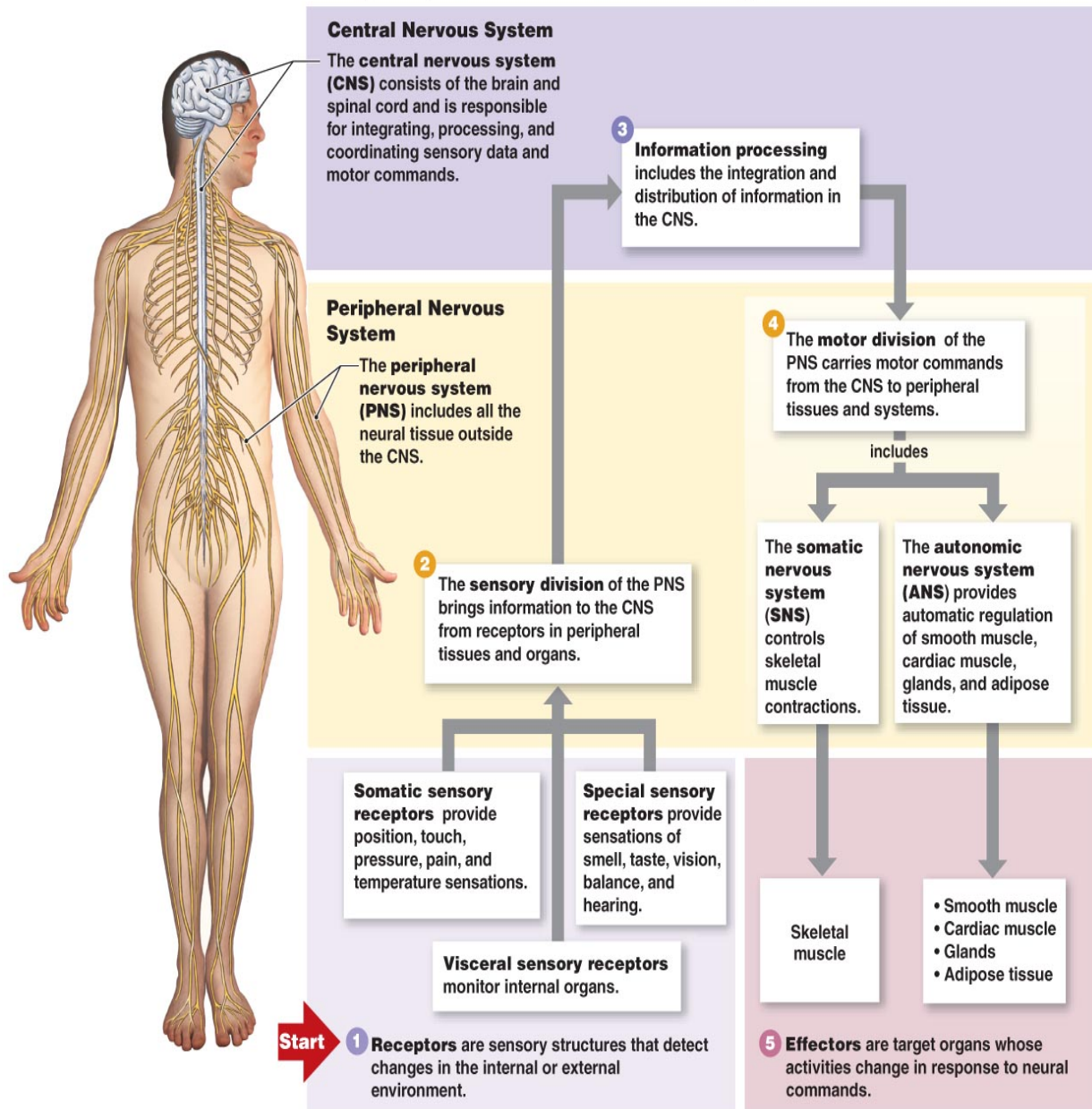
- Continues down from medulla oblongata
-
- Responsible for many reflex actions
-
- Carries motor (efferent) message from the brain

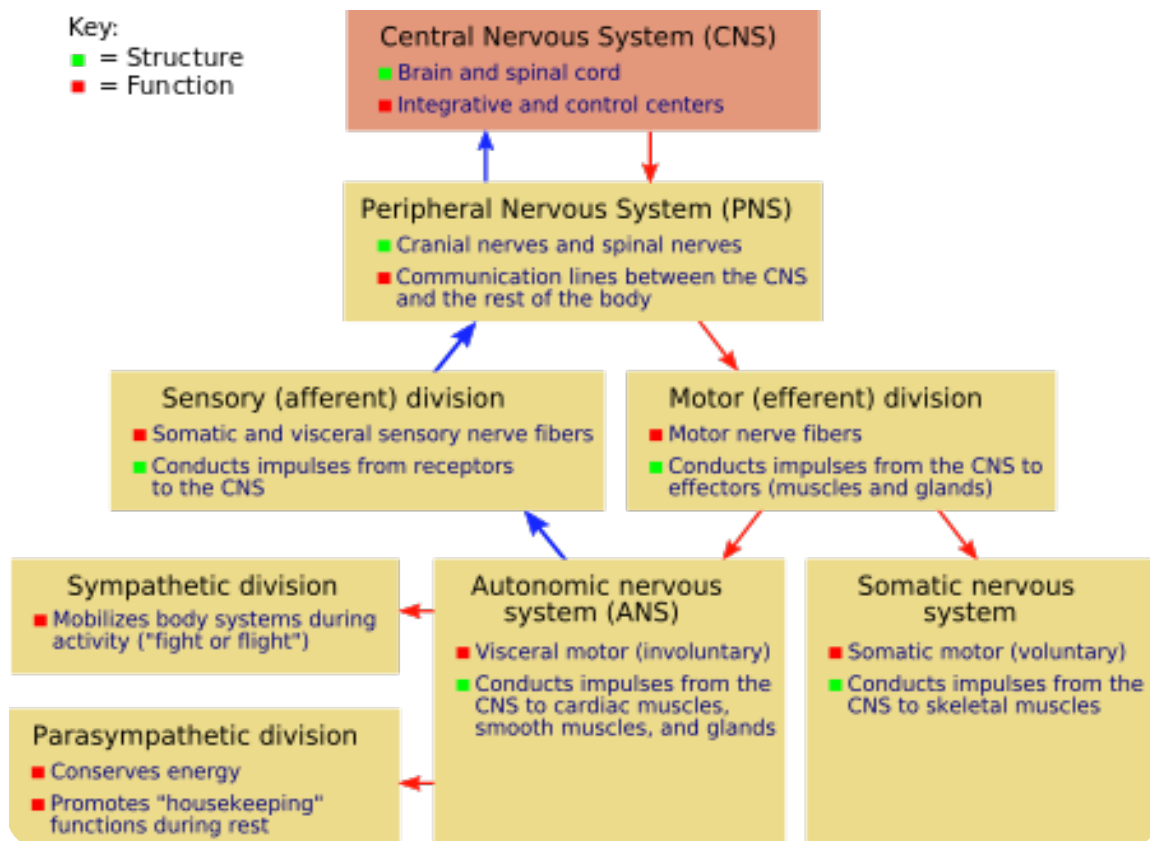


Peripheral Nervous System:

- Cranial nerves
-
- Autonomic nervous system
-
- Parasympathetic

The major components and functions of the nervous system





Nervous System Disorders: When wiring short circuits!

Amyotrophic lateral sclerosis (ALS):

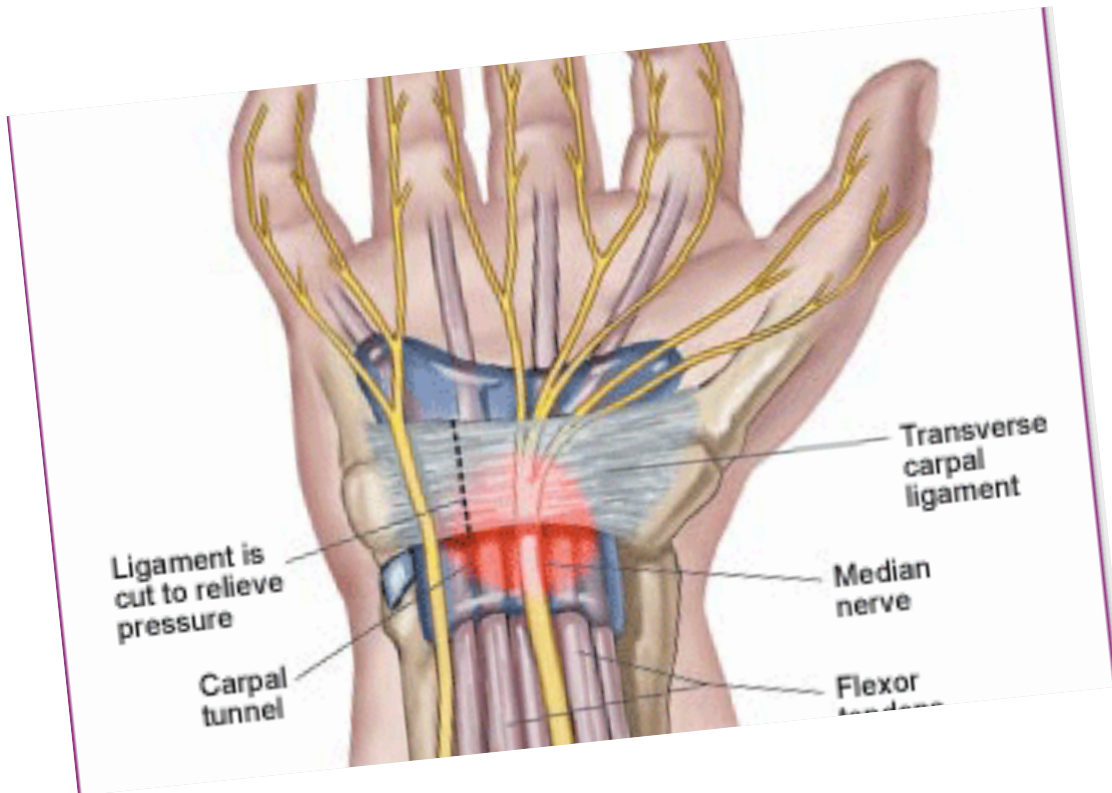
- Also known as Lou Gherig's Disease
-
- Cause is unknown:
 -
 - Or- viral immune factors are suspected

Nerves cells in the CNS that control voluntary movement, degenerate, resulting in weakening (atrophy) or wasting away of the muscles they control

- Initial symptoms include:
 -
 - Abnormal reflexes
 -
 - Impaired hand and arm movement
 -
 - As the disease progresses, more muscles are affected, resulting in total body paralysis

- Later stages:
 - Patient loses all ability to communicate, eat, breathe, and move
 -
 - There is no treatment however, there are drugs to slow progress
 -

Carpal Tunnel Syndrome:



- Repetitive movement of wrist causes swelling around this tunnel, which puts pressure on nerves and tendons
- Symptoms include:
 - Pain
 -
 -
 - Classic chief complaint of pt: Pain and numbness and tingling in the thumb, ring finger, and middle finger
- Treatment:
 - Anti-inflammatory drugs
 -
 -
 - Severe cases require surgery to enlarge the tunnel to allow more space for the tendons and nerve

Cerebral Palsy:

- Disturbance in voluntary muscle action
- Caused by brain damage:
 -
 -
 - Infections
- Three forms:
- Spastic is the most common
- Symptoms:
 -
 - Tense muscles and development of contracture
 -
 - Spasms and tremors
 -
- Treatment: No cure
-
- Muscle relaxants and anticonvulsive drugs
-
- Orthopedic surgery for severe contracture

Cerebrovascular Accident CVA:

-
- Blood flow to the brain is impaired resulting in a lack of oxygen and destruction of brain tissue

Causes:

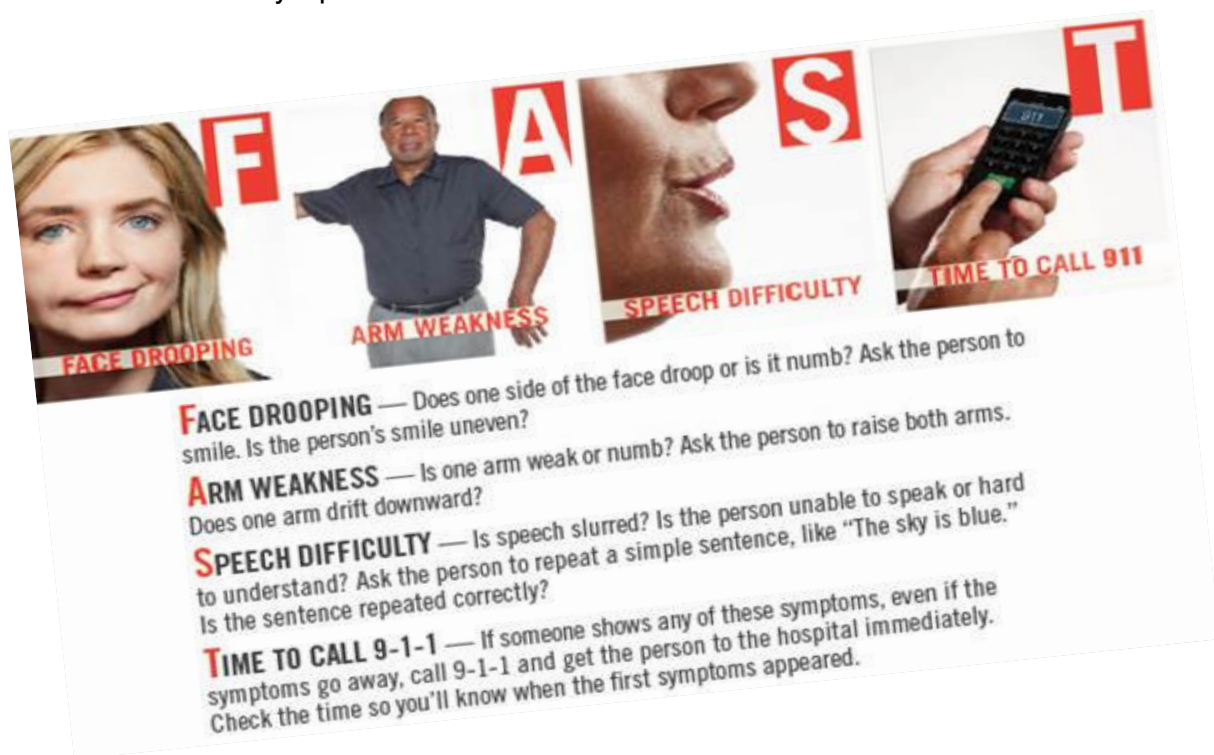
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- Occlusion or blockage caused by atherosclerosis or a blood clot

CVA: Factors that cause strokes:

- Smoking
-
- Obesity
-

CVA: Symptoms:

- Symptoms vary depending on the area of the brain affected and brain tissue damaged
 -
 - Weakness or vertigo
 -
 - Dysphagia or difficulty swallowing
 -
 - Mental confusion
 -
 - Incontinence
- Quick Guide to Symptoms:



Treatment:

- Care during the first 3 hours can prevent brain damage
-
- Angioplasty of cerebral arteries
-
- Dependant on damage:
 - Physical, occupational, and speech therapy
 -

Encephalitis:

OR

Complications from chicken pox, measles, or mumps

- Virus is commonly contacted from mosquito bite
- Symptoms vary but may include:
 - Fever
 -
 - Visual disturbances
 -
 -
 - Stiff neck
 -
 - Seizures
 - Coma

Treatment:

- Antiviral Drugs
-
-
- Monitoring respiratory and kidney function

Epilepsy or Seizure Syndrome:

-
- Causes can include:
 - Birth trauma
 -
 -
 - Infections
 - Many cases are idiopathic
- Two Types:
- Absence or Petit Mal Seizure
 -
 - Characterized by a loss of consciousness lasting only a few seconds
 -
- Generalized tonic-clonic or Grand Mal Seizure
 - Most Severe
 -
 - Convulsions are violent shaking and thrashing movements
 -
 - Loss of body functions
- Some people experience an aura

- Examples include:
 -
 -
 - Visual disturbances
 - Tingling in fingers or toes
 -
 - Treatment includes anticonvulsant drugs

Hydrocephalus:

- Excessive accumulation of cerebrospinal fluid in the ventricles and, in some cases, the subarchnoid space
-
- Symptoms:
 - Abnormally enlarged head, prominent forehead, with bulging eyes
 -
 - Distended scalp veins
 -

Hydroencephalus Treatment:

Meningitis:

- Inflammation of the meninges of the brain and/or spinal cord
- Causes:
 -
 - Virus or Fungus
 -



Symptoms may also include:

- Delirium
- Convulsions
-

Meningitis: treatment

- Antibiotics
-
-
- Medications for Pain and Cerebral edema

Multiple Sclerosis: MS

- Chronic, progressive disabling condition resulting form degeneration of myelin sheath in the CNS
-

- Cause is unknown, but can be:
-

MS: progression

- Progresses at different rates and has periods of remission
- Early symptoms include visual disturbances such as diplopia (double vision)
-
- Tingling and Numbness
- Fatigue
-
- Later Symptoms include:
-
-
- Paralysis
-
- Emotional swings
- Incontinence

Main symptoms of Multiple sclerosis

Central:

- Fatigue
- Cognitive impairment
- Depression
- Unstable mood

Visual:

- Nystagmus
- Optic neuritis
- Diplopia

Speech:

- Dysarthria

Throat:

- Dysphagia

Musculoskeletal:

- Weakness
- Spasms
- Ataxia

Sensation:

- Pain
- Hypoesthesias
- Paraesthesias

Bowel:

- Incontinence
- Diarrhea or constipation

Urinary:

- Incontinence
- Frequency or retention

MS: Treatment:

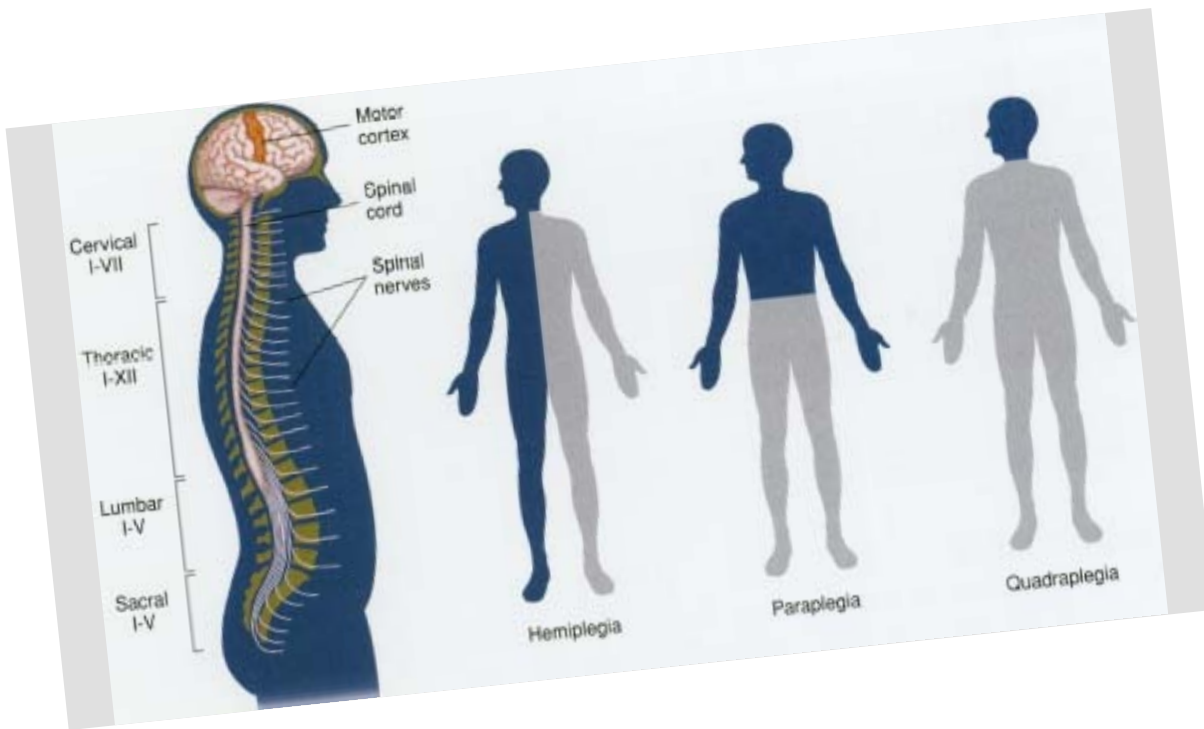
- Treatments include:
 -
 - Muscle relaxants
 -
 - Psychological counseling

Neuralgia:

- Nerve pain
-
- Treatment is directed towards eliminating the cause

Paralysis:

-
- There is no cure, but there is much research directed towards repairing the spinal cord



Types of Paralysis:

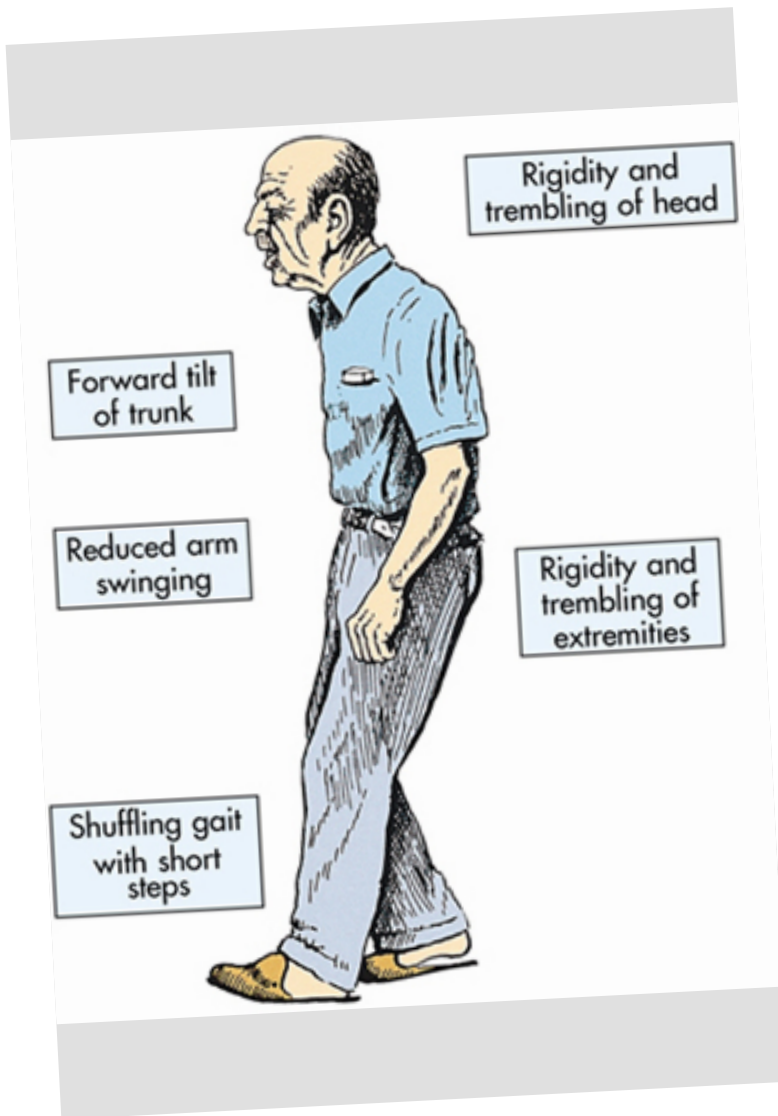
- Hemiplegia:
- Paraplegia:
- Quadriplegia:

Parkinson's Disease:

Chronic progressive condition involving degeneration of brain cells, usually in people over 50 yoa

Parkinson's Disease: Symptoms

- Difficulty of stopping while walking
-
- Mood swings and frequent depressions
-



Parkinson's Disease: Treatment

- There is no cure but a few treatments
- Levodopa is used to relieve the symptoms
-
- PT

Shingles or Herpes Zoster:

-
- Usually occurs in the thoracic area on one side of body and follows the pathway of the affected nerve
-

Shingles: Symptoms:

- Fluid filled vesicles
 - Severe pain
 - Redness
- Fever

Shingles: Treatment:

- Aimed at relieving pain and itching
- Also inflammation
-