Acute and Chronic Neurological Diseases: Quick Notes

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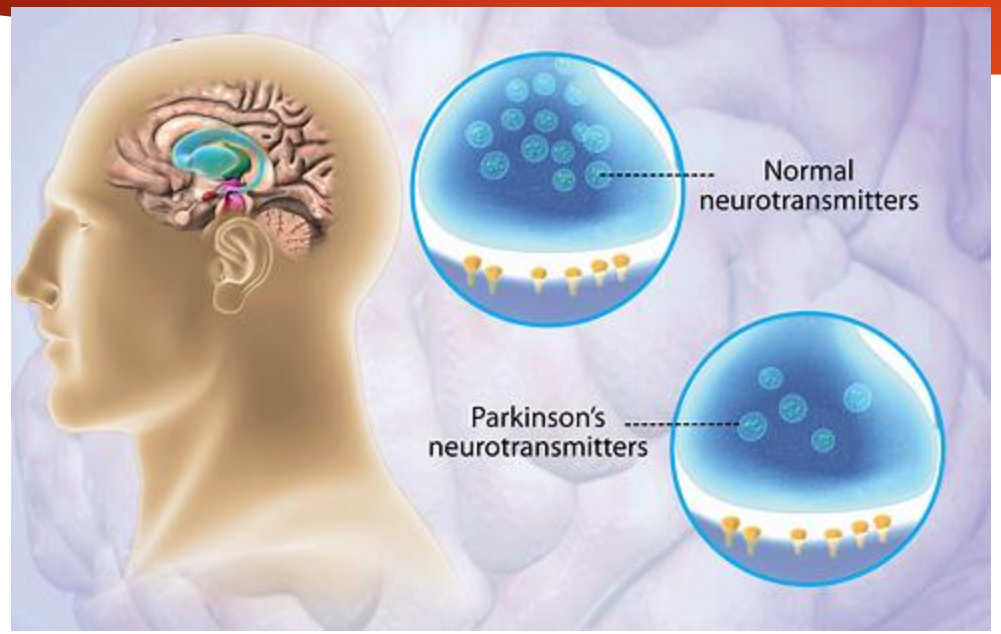
Objectives

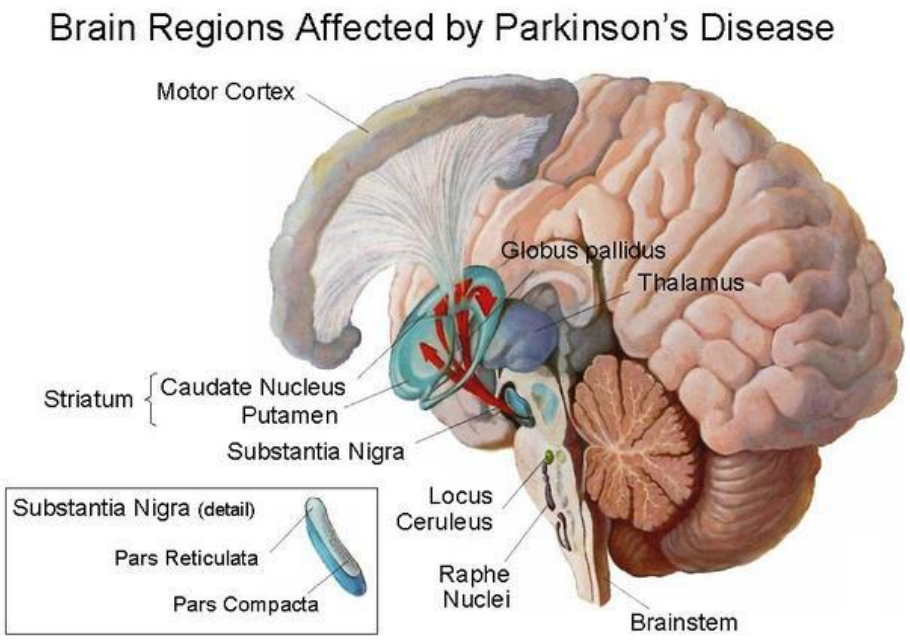
Participants will be able to:

- **Describe scope of each neurological disease/condition**
- **State Symptoms of each neurological disease/condition**
- **Identify the Goals of the Rehabilitation Nurse related the specific neurological disease/condition**
- **Describe the Nursing Interventions for each neurological condition**

Parkinson's Disease



[Parkinson's Disease: Causes, Symptoms, and Treatments | National Institute on Aging (nih.gov)]



Parkinson's disease

Parkinson's Disease

- Slowly progressive neurodegenerative disease of the brain
- Manifestations that occur when there is significant damage to or destruction of dopamine-producing neurons in the substantia nigra within the basal ganglia of the brain
- Begins insidiously has a prolonged course of illness
- Loss of dopamine causes neurons to fire out of control, leading to marked disability with the initiation and execution of smooth coordinated voluntary movements and balance.
- Loss of the nerve endings that produce norepinephrine, the main chemical messenger of the sympathetic nervous system, which controls many functions of the body, such as heart rate and blood pressure. The loss of norepinephrine might help explain some of the non-movement features of Parkinson's, such as fatigue, irregular blood pressure, decreased movement of food through the digestive tract, and sudden drop in blood pressure when a person stands up from a sitting or lying position.
- There is no known way to stop or cure PD

Parkinson's Disease

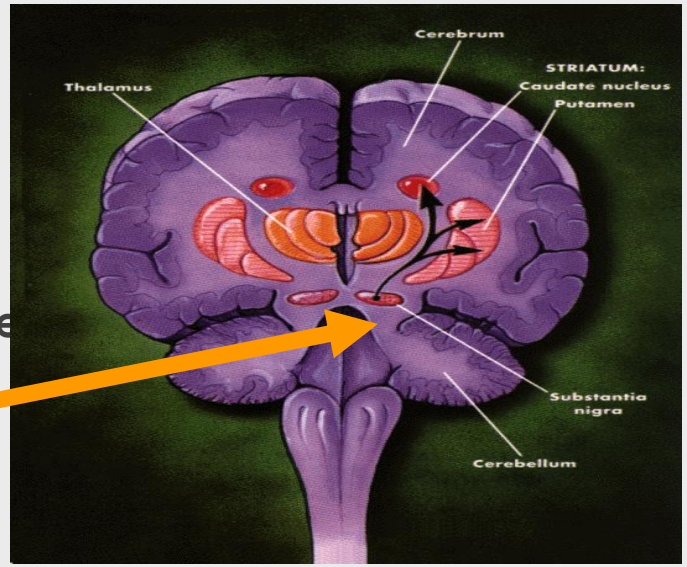
- **Primary Parkinson's Disease**

  Chronic debilitating deficiency caused by an idiopathic dopamine deficiency in the basal ganglia of the brain

- **Clinical syndrome with 3 cardinal features**
  - Tremor at rest
  - Rigidity
  - Akinesia/bradykinesia
  - Postural instability

- **Secondary Parkinsonism**

  Group of symptoms where there is a known cause
  producing cells



Epi

- Nearly one million people in the U.S. are living with Parkinson's disease (PD), which is the second-most common neurodegenerative disease after Alzheimer's disease.
- This number is expected to rise to 1.2 million by 20301
- . Nearly 90,000 people in the U.S. are diagnosed with PD each year
- Approximately 4 million people world wide are living with PD
- Men slightly more often then women
- Most commonly after 55, likely to increase in an aging population
- Approximately 5%-10% of people with Parkinson's Disease are younger than 50 years of age, incidence in younger persons is growing

Etiology

- **Primary Parkinson's Disease**

  idiopathic

- **Secondary Parkinsonism**

  Response to antipsychotic, antihypertensive or neuroleptic agents

  - Illicit drug use
  - Response to brain trauma
  - Tumors
  - Ischemia
  - Encephalitis infections
  - Arteriosclerosis

- Neurotoxins
  Cyanide
  Manganese
  Carbon monoxide
  Pesticides

Pathophysiology

- Braak hypothesis proposes that the earliest evidence of PD is found in the medulla and olfactory bulb and then progresses to the substantia nigra and cortex.
- Degenerative changes in several areas in the basal ganglia deplete the inhibitory neurotransmitter dopamine, normally provided to the basal ganglia by the neurons in the substantia nigra
- Dopamine is a neurotransmitter essential for the functioning of the extrapyramidal system, which includes control of upright posture, support and voluntary motion.

Pathophysiology

- Normal function is due to a balance between the neurotransmitters dopamine and acetylcholine, responsible for controlling and refining motor movements and have opposing effects
- An increase in the excitatory effects of Acetylcholine , caused by the depletion of dopamine causes the symptoms of PD
- As the disease progresses, dopamine receptors in the basal ganglia are reduced

Diagnosis: Parkinson's Disease

- First sign usually a resting tremor
  - Patient history and symptoms
- No lab test
- PET scan can detect low levels of dopamine but not usually done
- If Sinemet has a positive response + Parkinson's Disease
- Typical onset Men age 50-60
- Early Onset Parkinson's Disease
  - When someone who is 21-50 years old receives a diagnosis of Parkinson's disease, it is referred to as early onset Parkinson's disease, or young onset Parkinson's disease (YOPD).

10 Early Signs of Parkinson's Disease

1. Tremor
2. Small Handwriting (micrographia)
3. Loss of Smell
4. Trouble Sleeping (Sudden Movements in sleep)
5. Trouble Moving or Walking (Stiffness/ Stuck to the Floor)
6. Constipation
7. Soft or Low Voice
8. Masked Face (Serious/Angry/Depressed look on face)
9. Dizziness or Fainting (low B/P can be linked to PD)
10. Stooping or Hunching over when standing.

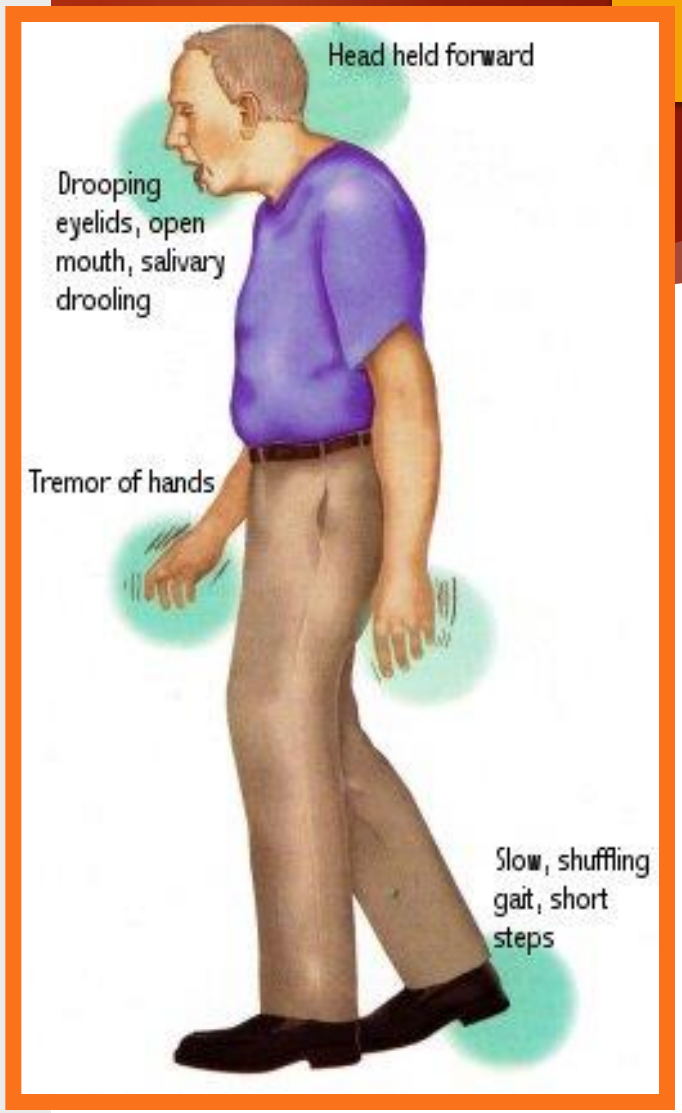
- Tremor
  - Due to instability of central feedback circuit
  - Resting Tremor- goes away with active movement
- Rigidity
  - Due to increased resting muscle activity
- Akinesia
  - Failure of system that plans complex movement
- Postural Instability
  - Impaired Balance

"TRAP"

*Dementia
  - Cognitive difficulties part of general slowness
  - Apathy most common cognitive change
  - Parkinson's dementia, a type of Lewy body dementia. People with Parkinson's dementia may have severe memory and thinking problems that affect daily living.

The stages of Parkinson's

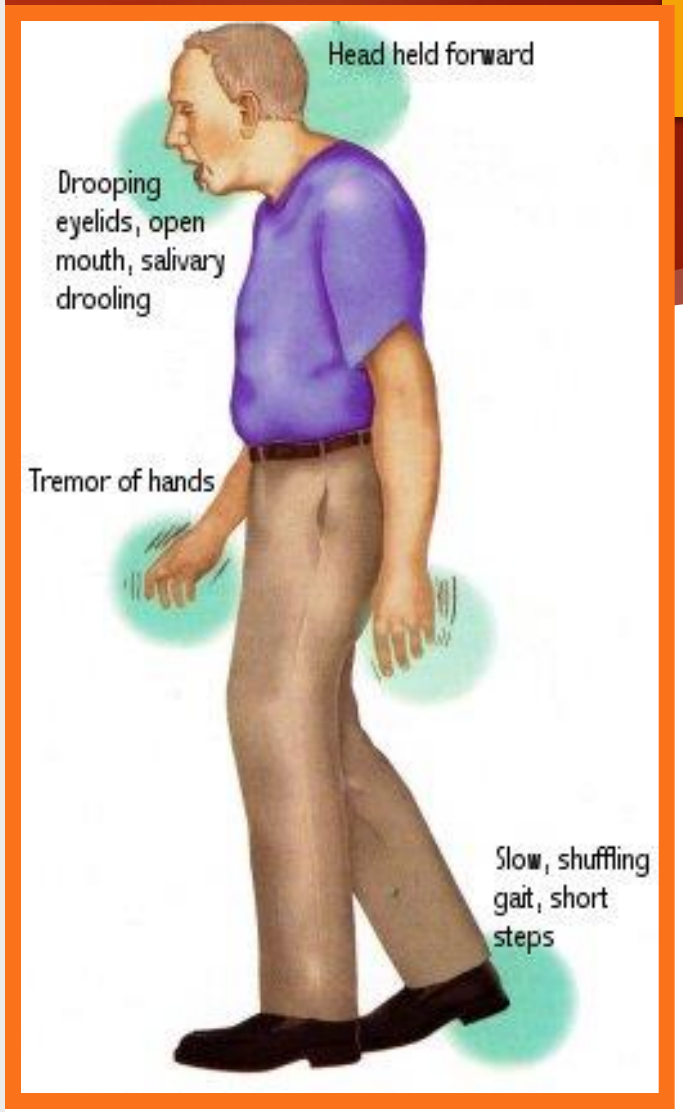
- **Stage One**
  1. Mild signs and symptoms on one side
  2. Symptoms inconvenient but not disabling
  3. Usually presents with tremor of one limb
  4. Friends have noticed changes in posture, locomotion, and facial expression



The stages of Parkinson's

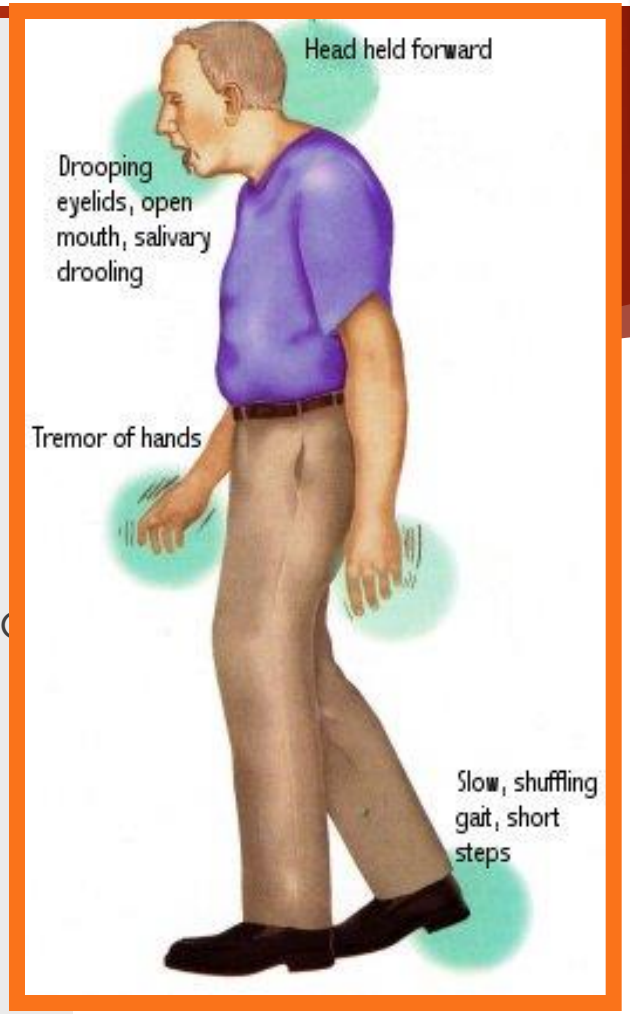
Stage Two

1. Symptoms are on both sides (bilateral)
2. Minimal disability
3. Posture and gait affected
4. Responds well to medication



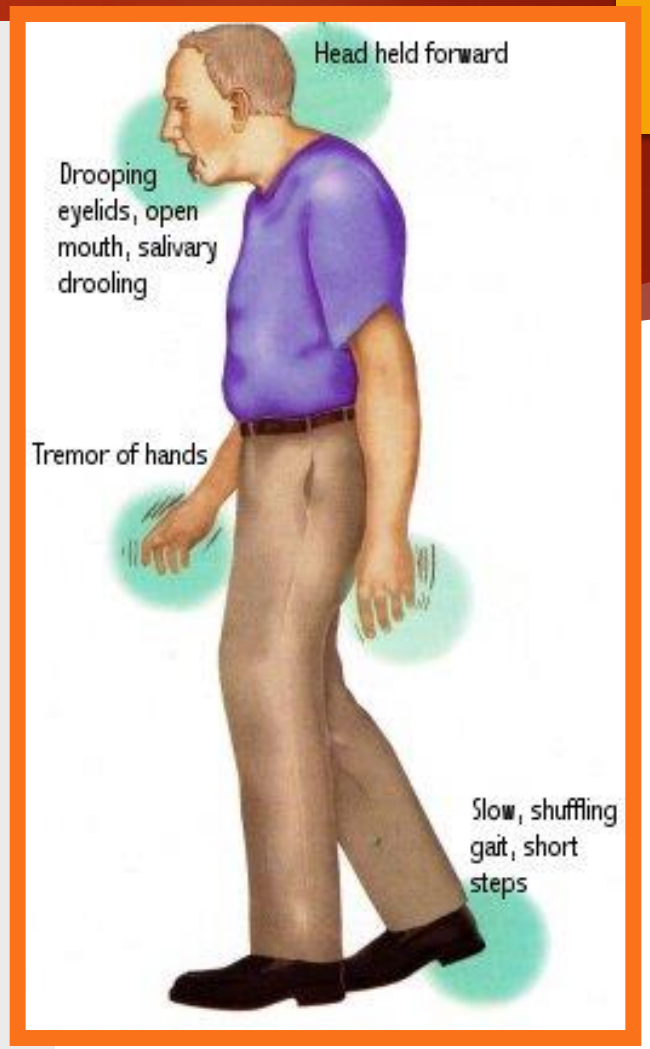
The stages of Parkinson's

- **Stage Three**
  1. Significant slowing of body movements
  2. Early impairment of balance on walking or standing
  3. Generalized disability; moderately severe
  4. Predictable "wearing off" effects of medication, on-off fluctuations, and dyskinesi



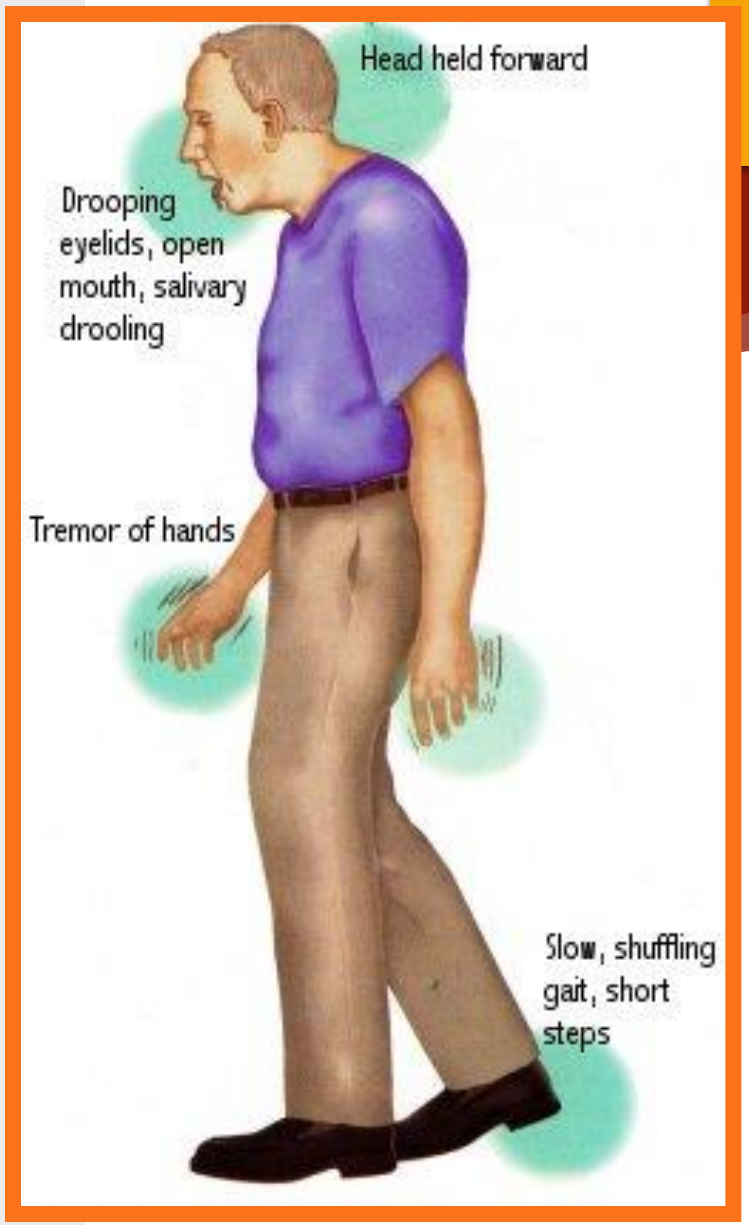
The stages of Parkinson's

- **Stage Four**
  1. Severe symptoms
  2. Can still walk to a limited extent
  3. Rigidity and bradykinesia
  4. No longer able to live alone
  5. Tremor may be less than earlier stages
  5. On-off fluctuations of medication with dyskinesias



The stages of Parkinson's

- **Stage Five**
  1. Cannot stand or walk
  2. Motor fluctuations and cognitive impairment
  3. Requires constant nursing care



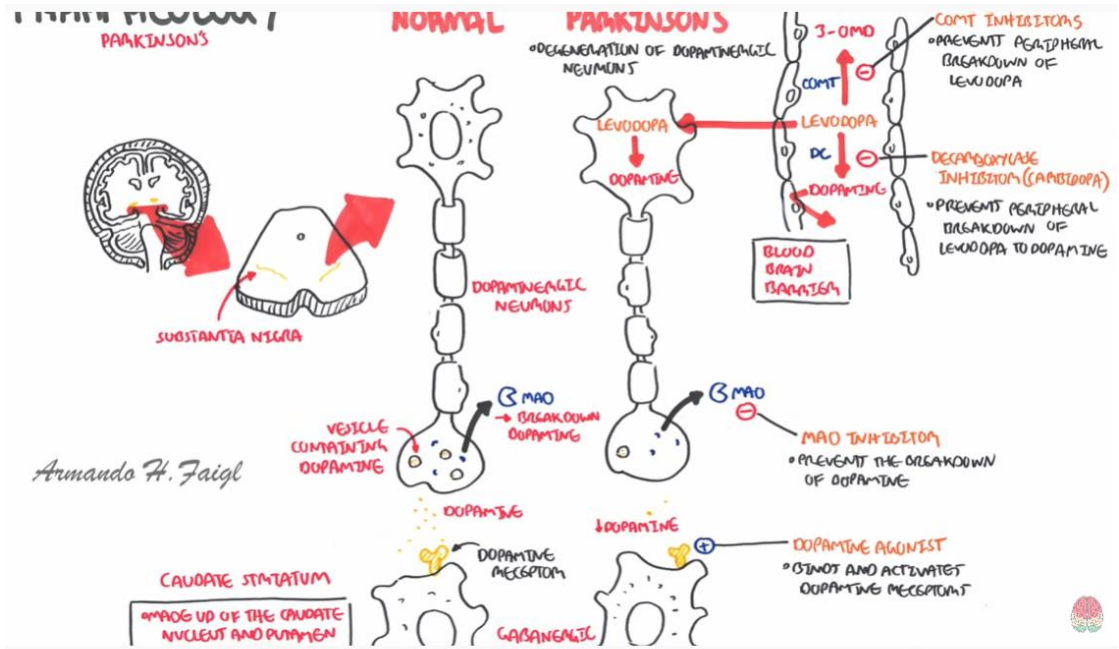
Hoehn and Yahr Staging

- **Stage 1** -- symptoms are only on one side of the body
- **Stage 2** -- symptoms are on both sides of the body, but balance isn't impaired.
- **Stage 3** -- there is some balance impairment and disability.
- **Stage 4** -- disability is severe, but the person can still walk or stand without help.
- **Stage 5** -- the person cannot stand or walk, and is wheelchair-bound or bedridden.

The Hoehn and Yahr scale focuses solely on the progression of motor symptoms and does not consider the psychiatric, cognitive, and autonomic non-motor symptoms that often cause more disability than motor symptoms as PD advances. This is a major limitation of the Hoehn and Yahr scale.

Medications- *Handouts*

- Medications Approved for the Treatment of Parkinson's Disease in the USA
- Medications to Avoid



harmacology - Parkinson's Disease

Understanding Parkinson's Disease 11:24

Parkinson's Disease Drugs 1:36:33

Pharmacology-Parkinson's Disease, Levodopa meds nursing NCLEX 7:26

Medications-

- Sinemet (carbidopa levodopa)
  - Levodopa enters the brain and is converted to dopamine while carbidopa increases its effectiveness and prevents or lessens many of the side effects of levodopa, such as nausea, vomiting, and occasional heart rhythm disturbances.
  - It is generally recommended that patients take Sinemet on an empty stomach, at least 30 minutes before, or one hour after meals.
- CREXONT® (carbidopa and levodopa) extended-release
- Vyalev (foscarbidopa and foslevodopa) subcutaneous 24-hour continuous infusion of levodopa-based therapy
  - The manufacturer says coverage for Medicare patients is expected in the second half of 2025.

Medications-

- The **FDA has approved several drugs for the treatment of Parkinson's disease**:
- Nourianz (istradefylline): An add-on treatment to levodopa/carbidopa for patients experiencing "off" episodes.
- Xadago (safinamide): An add-on treatment for patients currently taking levodopa/carbidopa and experiencing "off" episodes.
- Nuplazid (pimavanserin): The first drug approved to treat hallucinations and delusions associated with psychosis in some people with Parkinson’s disease.

VYALEV:

Indicated for the treatment of motor fluctuations in adults with advanced Parkinson's disease (PD).

- ❑ **24-HOUR CONTINUOUS DELIVERY morning, day, and night**
- ❑ **SUPERIOR "ON" TIME VS ORALS without troublesome dyskinesia**
- ❑ **ONLY SUBCUTANEOUS LEVODOPA-BASED THERAPY that replaces all oral levodopa and COMT inhibitors**
- ❑ ***~3x* increase in daily good "On" time vs oral IR CD/LD**

- **Surgery**

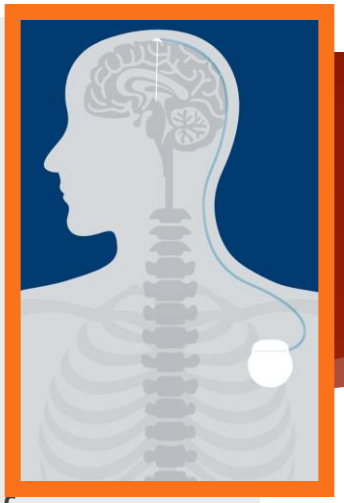
  Deep brain stimulator implants

  - DBS involves implanting an electrode into a targeted area of the brain, usually the subthalamic nucleus (STN) or the globus pallidus interna (GPI). The implants are placed on one side or both sides of the brain as needed. The electrodes are stimulated through a connection to a pacemaker-like device located under the skin in the chest.

- **Focused Ultrasound (FUS)**

  - Focused ultrasound is a procedure in which beams of ultrasound waves are focused on a designated target in the body, thereby concentrating enough energy to create a small lesion. Individual ultrasound waves do not contain enough energy to do damage as they pass through the body's tissue. It is not until multiple waves are all focused on a particular spot that a lesion is formed, which can disrupt abnormal circuitry in the PD brain, thus helping to restore more normal movement.

Integrative Medicine



- PT, OT and SLP
  - It is never too early to consult PT, OT, and speech experts.
- Nutrition
  - A healthy diet can increase energy, maximize the potential of medications, and promote overall well-being.
- Exercise: include cardiorespiratory exercise, resistance exercises, flexibility exercises, and gait and balance training (**Tai chi)**
- Yoga
- Acupuncture & massage
- Meditation
- Cannibidiol (CBD)
- Art therapy
- Music therapy
- Medical Marijuana

Increased Risk

- **Melanoma**
- In addition to PD, other risk factors for developing melanoma are: male gender, Caucasian race, constant exposure to ultraviolet (UV) light and family history of melanoma.
- Use the melanoma ABCDE's to monitor irregularities in moles and beauty marks:
  - **A**symmetrical
  - **B**orders are uneven or irregular
  - **C**olors such as many shades of brown within the same mole, or even red or blue
  - **D**iameter bigger than the eraser on a pencil
  - **E**volution – grows over time

Increased Risk

- **Neurogenic Orthostatic Hypotension (nOH)**
  - a persistent drop in blood pressure that occurs within three minutes of standing. brings blood to the brain..
- **Pseudobulbar Affect (PBA)**
  - characterized by frequent, uncontrollable outbursts of crying or laughing. Outbursts can be intense and often do not match the situation or the way the person is actually feeling.

Nursing Plan of Care: Assessment

- Complete Health History
- Mental status
- How disease has affected Role, family
- Observe appearance, posture, gait pattern
- Determine level of extremity stiffness, tremors, and ability to move
- Investigate safe mobility, Self-care deficit

Nursing Diagnoses

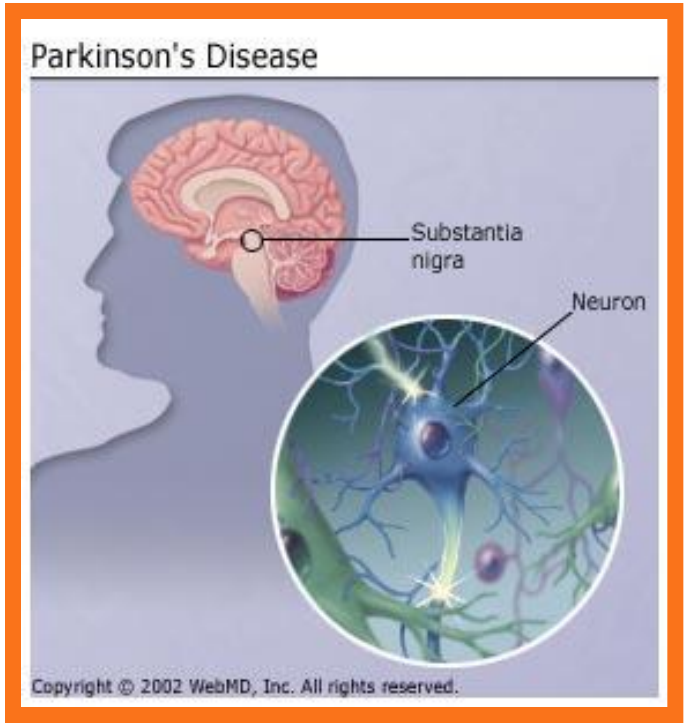
- Ineffective individual coping re: depression and increasingly severe physical limitations
- Knowledge deficit re: disease progression, treatment, ongoing adaptations, and availability of support systems.
- Impaired physical mobility re: tremor, rigidity, bradykinesia or akinesia, and postural instability.
- Self-care deficits re: tremor, rigidity, bradykinesia, and postural inability.
- Inadequate nutrition re: difficulty with chewing, swallowing, and drooling.
- Impaired verbal communication re: low voice, slow speech, and difficulty moving facial muscles.
- Risk of injury re: tremors, bradykinesia, and altered gait.

Interventions

- Develop positive coping mechanisms
- Develop a sound knowledge base about PD
- Improve mobility and maximize neuromuscular function
- Maintain independence in ADL's
- Achieve satisfactory hydration and nutritional status
- Improve verbal communication
- Maintain safety

PD: Summary

- Rehabilitation Interventions
  - Activity
  - Freezing episodes intervention (pt. education)
  - Aspiration
  - Diet- Proteins separate from medications
  - Fall Risk
  - ADL Deficits
  - Body image concerns
  - Decreased blink
  - Social Isolation
  - Dysarthria
  - Increased risk for pneumonia
  - Family/ Caregiver Stresses

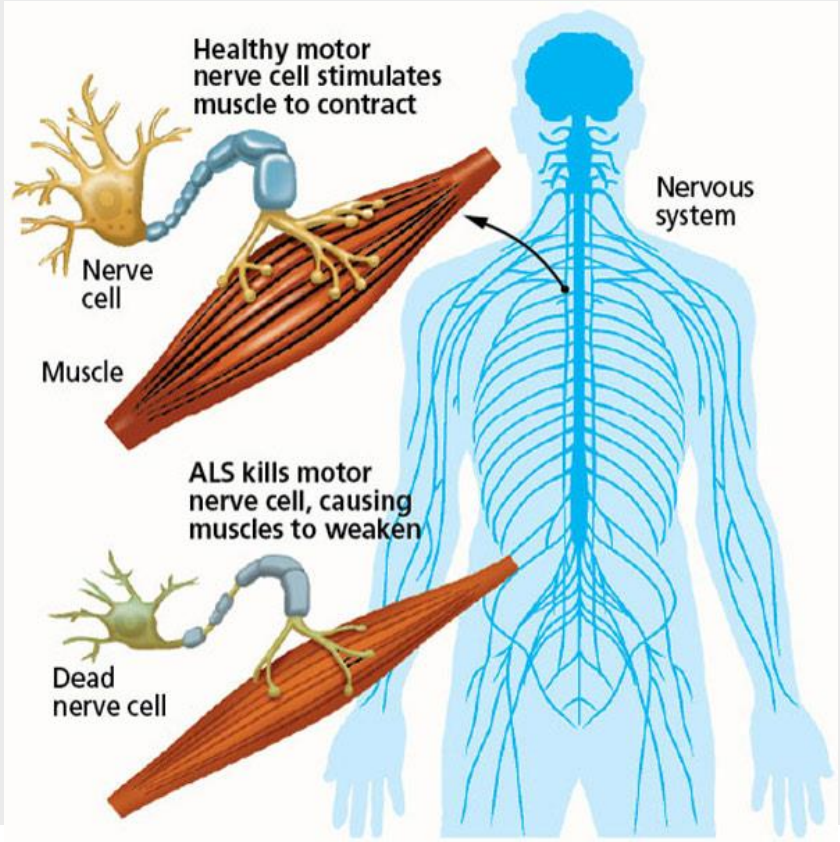


Freezing episodes-Interventions

- Stop trying to continue activity
- Call for help
- Change direction
- Use a sound or rhythm to stimulate movement
- Think of or sing a tune, try to move to beat
- Count silently or out loud, try to move to count
- Visualize an object and try to step over object
- Use floor tiles as stepping stone, try to step stone to stone
- Use flashlight to illuminate floor, try to step into light
- Draw an imaginary line, try to step over line
- If frequently freezes in same place, visualize beyond the obstacle

Amyotrophic Lateral Sclerosis

- Lou Gehrig's Disease



Amyotrophic Lateral Sclerosis

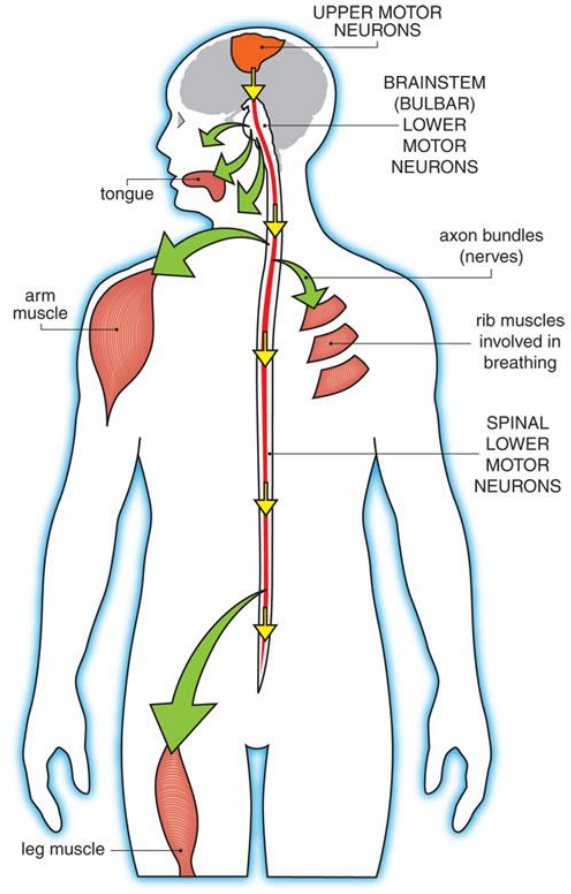
- Neurological disorder with progressive degeneration of skeletal muscle motor/nerve cells throughout the nervous system
- No cerebellar effects
- No sensory loss- posterior nerve roots not affected
- Anterior horn cells of S2 not affected, rare bowel & bladder deficits
- Movement disorder is profound

Variations in Disease Progression

- **Functional Loss may start with Upper-motor neurons, lower-motor neurons, bulbar symptoms only or a combination**
- **Onset is often subtle- first symptoms maybe disregarded**
- **No Single Diagnostic Test to diagnosis ALS**
- **No know Prevention and No known Cure**
- **Treatments to assist in slowing deterioration**

Amyotrophic Lateral Sclerosis

- Symptoms-
  - Upper motor neuron disease
    - Weakness
    - spasticity
    - hyperactive reflexes
    - hypertonicity
    - Disuse atrophy
  - Lower motor neuron disease
    - Weakness
    - Flaccidity
    - Hypoactive reflexes
    - Hypotonicity and muscle atrophy



- Intellectual ability, vision, hearing, and sensation are not generally affected
- Some people do experience cognitive deficits
  - Cognitive impairment can be
    - Frontotemporal dementia with cognitive decline and increased apathy
    - Mild cognitive impairments with no detectable progression