Acute and Chronic Neurological Diseases: Quick Notes

Cynthia B. Hernandez, BSN,MSN/Ed,RN,CRRN

Neurological Conditions

- Multiple Sclerosis

Objectives

Participants will be able to:

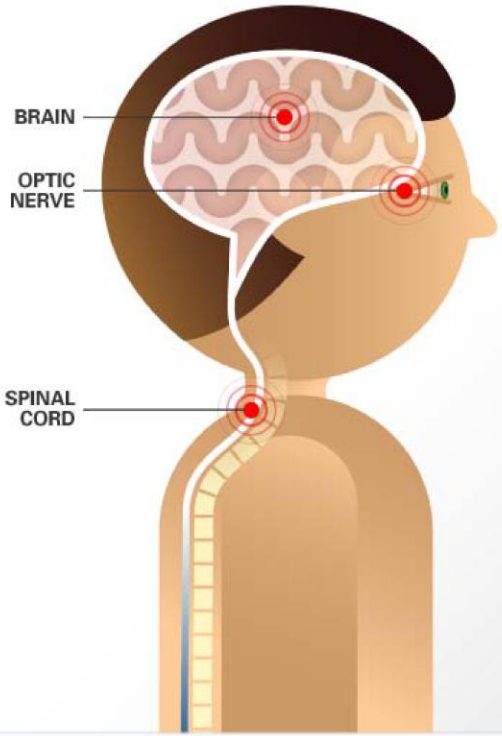
- **Describe scope of each neurological disease/condition**
- **State Symptoms of each neurological disease/condition**
- **Identify the Goals of the Rehabilitation Nurse related the specific neurological disease/condition**
- **Describe the Nursing Interventions for each neurological condition**

Multiple Sclerosis

MULTIPLE SCLEROSIS 101

What is Multiple Sclerosis?

Multiple sclerosis (MS) is a chronic condition that involves an immune system attack against the central nervous system, specifically the brain, spinal cord, and optic nerve at the back of the eye



There are 4 disease courses in MS

Relapse-remitting MS, the most common course, involves attacks followed by remissions when partial or complete recovery occurs — the condition is stable between attacks

Primary-progressive MS is characterized by slowly worsening neurologic function with no relapses or remissions

Secondary-progressive MS may occur in patients with relapse-remitting MS and is characterized by steadily progressive disease, with or without any relapses

Progressive-relapsing MS, a very rare course, with slowly worsening neurologic function and clear attacks of worsening or relapse

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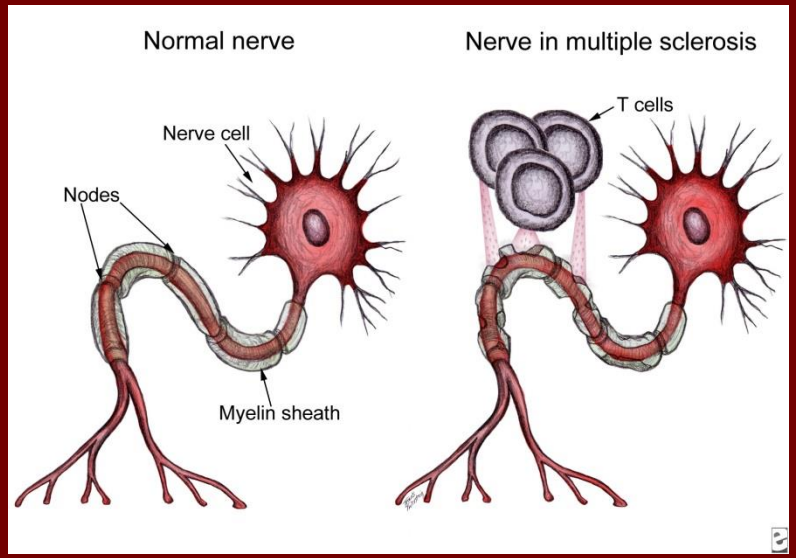
Management Options

- Goal

  To decrease the number and frequency of relapses, enhance recovery from exacerbations, alleviate symptoms, maintain independence and ensure the highest quality of life.



Epidemiology

- Major cause of disability and economic hardship in young adults 20-50 years of age.
- Incidence
  - The average person in the United States has about one in 750 (0.1%) chance of developing MS.
  - The data shows that the number of people with MS across the globe has increased from 2.3 million in 2013 to 2.8 million in 2020 and 2.9 in 2023.
  - Approximately 200 people are diagnosed weekly
- There are at least twice as many females (69%) with MS as there are males (31%).
- MS occurs in most ethnic groups
  - more common in Caucasians of N. European ancestry.

Epidemiology

- Occurs more often
  - In women than men
  - In people who live in colder northern latitudes
  - In people who have 1st degree relatives with MS
- There are at least 30,000 people living with MS who are under 18.
  - This number is considerably higher than reported in 2013.
  - It likely reflects a number of childhood MS prevalence studies that have been completed since then and more countries reporting data rather than an increased incidence of MS amongst children.

- Average age of onset- 30, most diagnosis between 15-50
- Onset after 40,
more likely is Primary Progressive

Etiology

- Specific cause remains unknown
- Factors that may be involved in causing MS are:
- Viral

  A latent viral infection may cause inflammation of white matter or trigger an autoimmune reaction that precipitates demyelination
- Immunologic

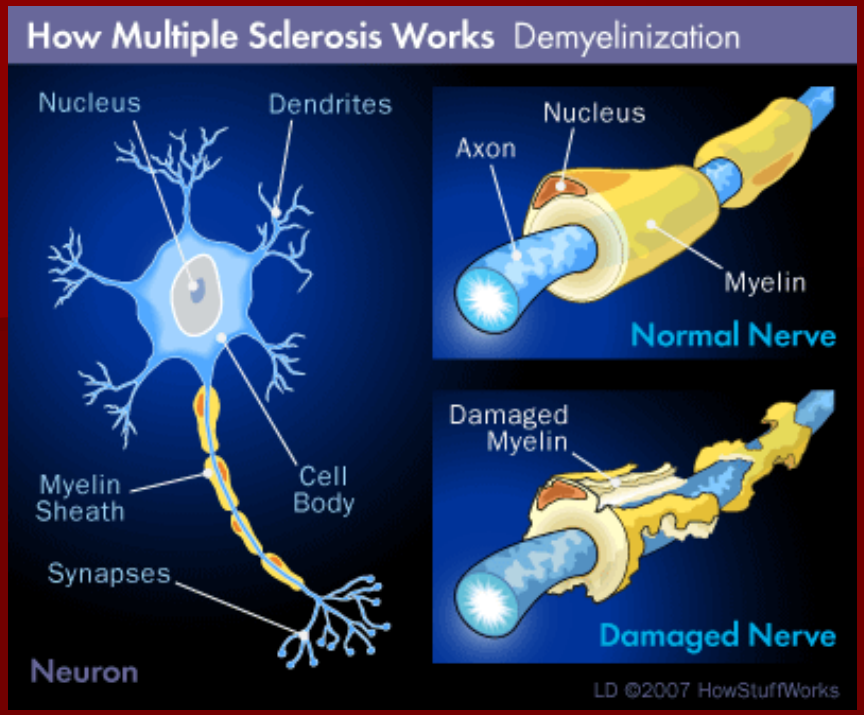
Etiology

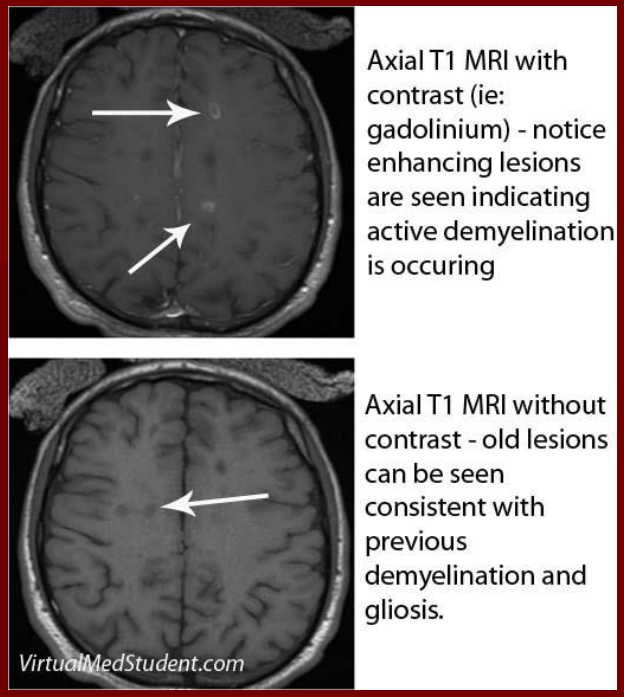
- **Genetic susceptibility**

  There is no specific genetic pattern of transmission for MS, researchers support a multigenic predisposition that makes certain people susceptible to MS

- **Stressors have been suggested as triggers**

  Emotional stress
  Fatigue
  Pregnancy
  Secondary illness
  Trauma
  Extreme physical exertion
  Viral infection/ Epstein Barr





Normally the blood brain barrier protects the brain from immune-cell attack. In MS, activated T Cells migrate into the CNS- starting an antibody-antigen response leading to inflammation. The myelin is attacked, oligodendrocytes disappear and astrocytes remove damaged myelin forming scar tissue.

Multiple Sclerosis

Myelin is lost in multiple areas, leaving scar tissue

- **A chronic neuroimmunologic condition that affects the white matter of the central nervous system.**
- **Affects primarily adults in the prime years of life**
- **Characteristics**
  - **Numerous etiologic possibilities**
  - **Uncertain prognosis**
  - **Episodes of remission and relapse**

Multiple Sclerosis

- Unpredictable disease that results in diverse neurologic impairments, requires a collaborative approach to care
- Associated with Signs and Symptoms caused by the loss of myelin sheath integrity that interferes with the efficiency of nerve impulse conduction in the CNS

Multiple Sclerosis

- Involves partial or complete destruction of the myelin sheath followed by sclerotic plaques or scar tissue formation
- Lesions in the CNS are called Plaques.

  Plaques consist of complete and incomplete destruction of the myelin, lesser degree of damage to axis cylinders or neurons, proliferation of glial cells, changes in blood vessels. Older lesions become sclerotic.(ARN, 2002)

- In 1996 the United States National Multiple Sclerosis Society standardized the following four subtype definitions:
  - Relapsing-remitting-
  - Secondary progressive
  - Primary progressive
  - Progressive relapsing
  - Clinically-isolated syndrome (2001)

Clinically isolated syndrome (CIS)

- First episode of neurologic symptoms that lasts at least 24 hours and is caused by inflammation or demyelination in the central nervous system. The episode usually has no associated fever or infection and is followed by a complete or partial recovery.

CIS can be either monofocal or multifocal:

- **Monofocal episode**: The person experiences a single neurologic sign or symptom — for example, an attack of optic neuritis — that's caused by a single lesion.

- **Multifocal episode**: The person experiences more than one sign or symptom — for example, an attack of optic neuritis accompanied by numbness or tingling in the legs — caused by lesions in more than one place.

Clinically isolated syndrome (CIS)

- **If MRI-detected brain lesions similar to those in MS are present then the risk of developing MS is High:** *the person has a 60 to 80 percent chance of a second neurologic event and diagnosis of MS within several years.*

- **If there is no MRI-detected brain lesions then the risk of developing MS is Low** : *the person has about a 20 percent chance of developing MS.*

Studies have shown that early treatment with disease-modifying medications may decrease the risk, or delay the occurrence, of a second exacerbation.

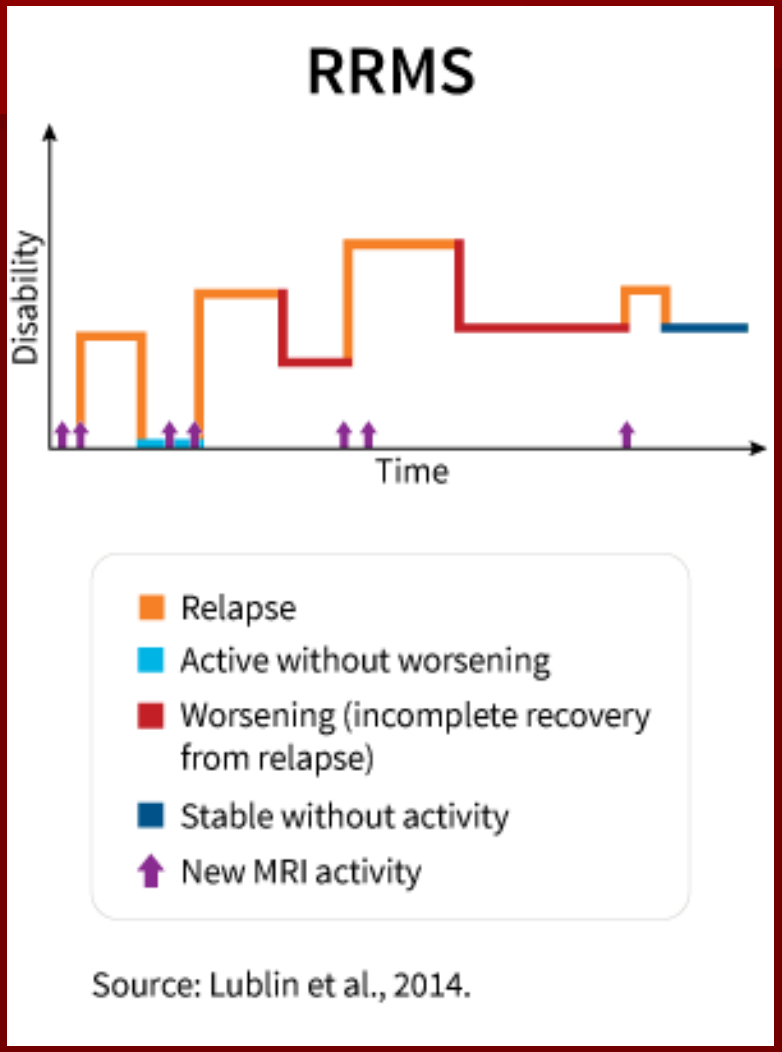
Results from these studies have led to FDA approval of several disease-modifying treatments to be used by people diagnosed with CIS.

•A person with CIS, by definition, is experiencing the first episode of symptoms caused by inflammation and demyelination in the CNS; a person with MS has experienced more than one episode.

•With CIS, an MRI may demonstrate damage only in the area responsible for the current symptoms; with MS, there may be multiple lesions on MRI in different areas of the brain.

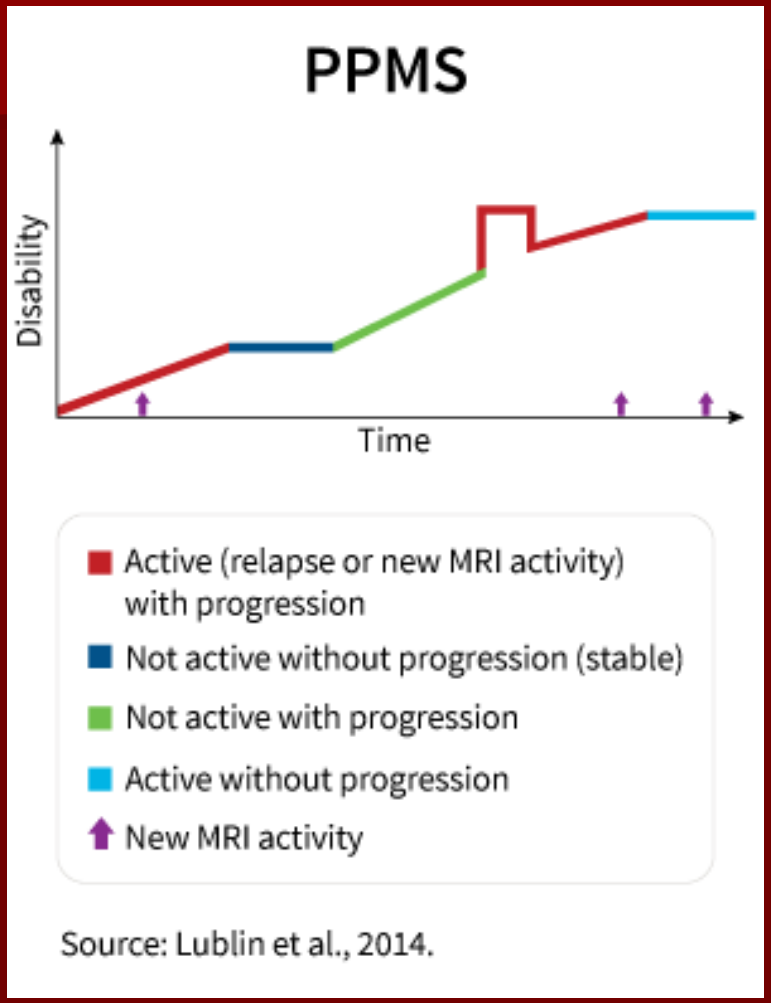
•According to the 2017 revisions to the diagnostic criteria, when CIS is accompanied by evidence on MRI that another episode has occurred, the diagnosis of MS can be made. The presence of oligoclonal bands in a person's cerebrospinal fluid can also help make the diagnosis.

Relapsing-remitting MS (RRMS).



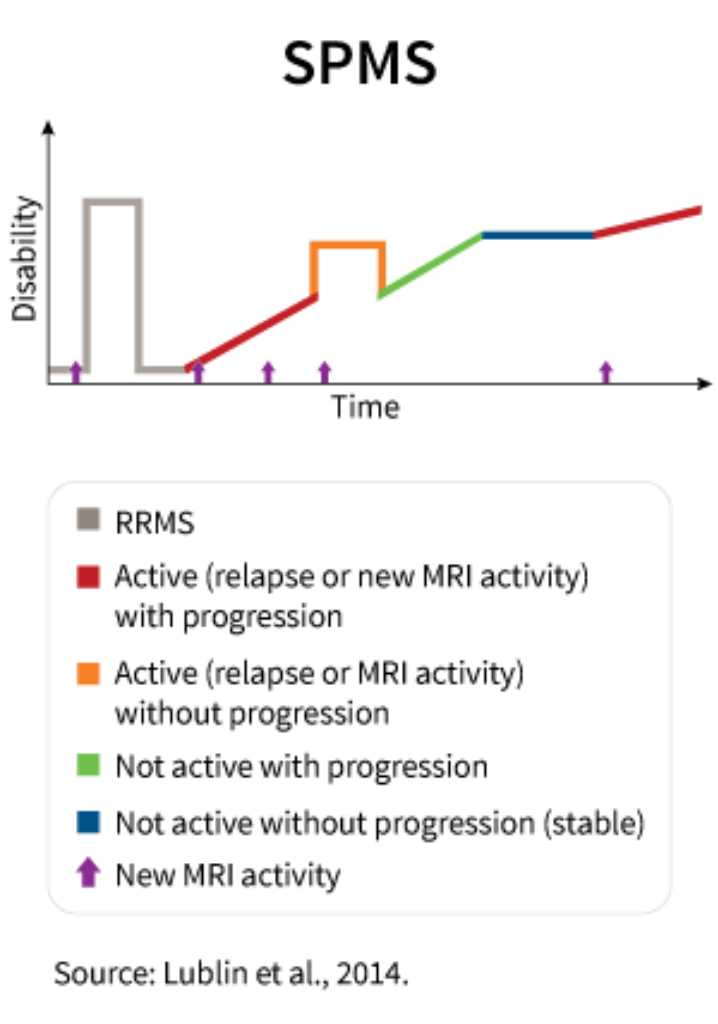
The most common MS course, RRMS may now also be described either as active—meaning the individual is experiencing a relapse and/or new MRI activity—or as not active, meaning that no disease activity is occurring. However, RRMS characterized as "not active" may still be worsening, if there is a confirmed increase in disability due to symptoms persisting after a relapse. Conversely, doctors may characterize a person's RRMS as active but not worsening if they see new MRI activity, but no increase in clinical symptoms.

Primary progressive MS (PPMS).



PPMS is characterized by steadily worsening neurologic function or disability from the onset of symptoms. A diagnosis of PPMS may be further modified at any point in time as active, with new MRI activity and/or relapses, or as not active. In addition, both active and not active PPMS may be further modified as with progression, meaning there is objective evidence of sustained worsening over time, or without progression. Active PPMS may still be described as "without progression" if there are new lesions on MRI, but no observable increase in disability

Secondary progressive MS (SPMS)



Like PPMS, SPMS is characterized by a progressive worsening of neurologic function; however, unlike PPMS, SPMS follows an initial relapsing-remitting course. It can be characterized at different points in time as active or not active, as well as with progression or without progression. As with active PPMS, people with active SPMS should discuss treatment with a DMT with their healthcare providers.

Management of MS uses a comprehensive, interdisciplinary approach that encompasses:

- relapse management
- disease modification
- symptom management
- rehabilitation
- psychosocial support
- wellness

Management

Clinical Manifestations

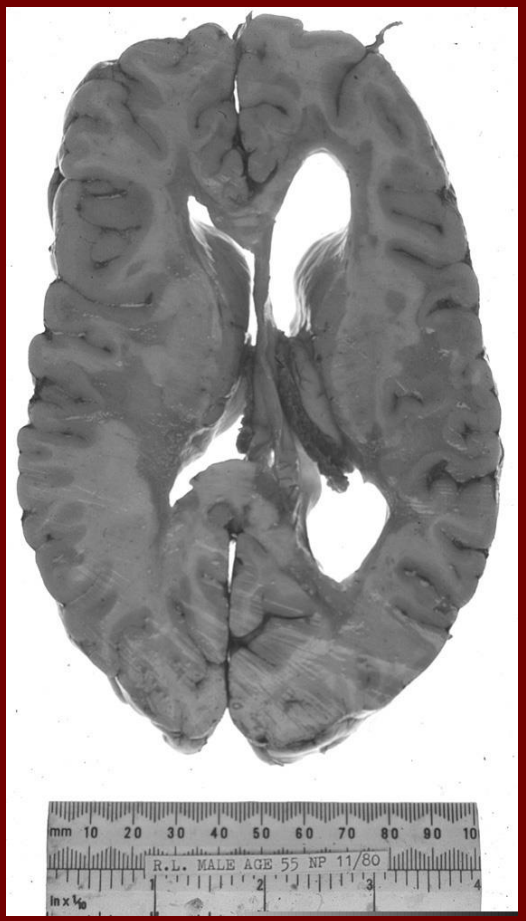
- **Primary Symptoms**
  - Occur as result of nerve conduction deficits
  - Reflect a specific area of dysfunction in the CNS
  - Range from mild to severe, unpredictable, vary from person to person, and time to time in the same person

Primary Signs & Symptoms

- Paresis/paralysis
- Spasticity
- Hyperreflexia
- Vertigo
- Nystagmus
- Dysarthria
- Seizures
- Heat intolerance
- Dysphagia
- Cognitive deficits
- Bladder dysfunction
- Mild to disabling fatigue
- Vision loss, diplopia
- Sensory loss, paresthesia
- Balance disturbances, ataxia
- Numbness, tingling, pain and tremors
- Euphoria, depression
- Hearing deficits, tinnitus

Clinical Manifestations

- **Secondary Symptoms**
  - Occur as a consequence of primary symptoms
  - Include problematic complications resulting from decreased neurologic function



Secondary Signs and Symptoms

- Injuries
  - Falls, skin breakdown, contractures, fractures
- Self Care Deficits
- Decreased Safety due to visual deficits
- Interruption in rest, disturbed sleep
- Decline in libido and orgasmic ability
- Urinary tract infections
- Bowel and bladder incontinence or retention
- Gait pattern deficits, communication deficits, swallowing deficits
- Marked decline in healthy and effective coping strategies

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Clinical Manifestations

- **Tertiary Symptoms**
  - Evolve as cumulative and detrimental effects of the disease affect all aspects of the person's life

  Include:
  - Psychosocial
  - Vocational
  - Financial
  - Emotional problems

Consider Sexuality

Tertiary Signs and Symptoms

- Loss of job
- Change in Roles
- Social Isolation
- Divorce
- Ineffective coping with anxiety, denial, anger, reactive depression, and suicide
- Loss of financial stability, self-esteem, and self-worth

Nursing Process

- **History**
  - **Current symptoms**
  - **Time of onset**
  - **History of relapses**
  - **Recent or past viral infections**
  - **Stress**
  - **Pregnancy**
  - **Exposure to extreme temperatures**
  - **Self Care Deficits**