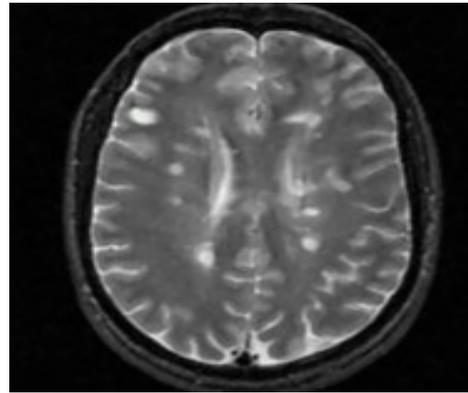


Chronic Neurologic Disorders

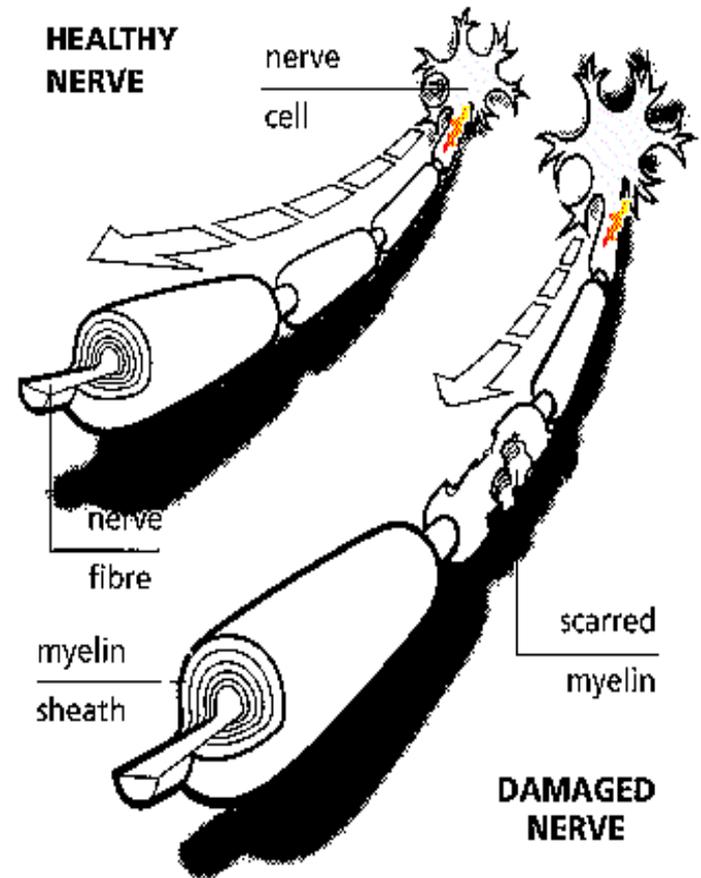
Multiple Sclerosis



**Sheryll Mae M. Coulombe, MSN,
RN-BC**

Multiple Sclerosis

- ▶ A chronic, progressive, degenerative disorder of the central nervous system (CNS)
- ▶ **Characterized by segmental demyelination of nerve fibers of brain and spinal cord**



Multiple Sclerosis

- ▶ Unknown Cause
- ▶ Related to genetics, infection, & immunity
- ▶ Affects mostly women between 20-50
- ▶ Characterized by periods of remission and exacerbation
- ▶ More progressive when diagnosed at age ≥ 50
- ▶

Multiple Sclerosis

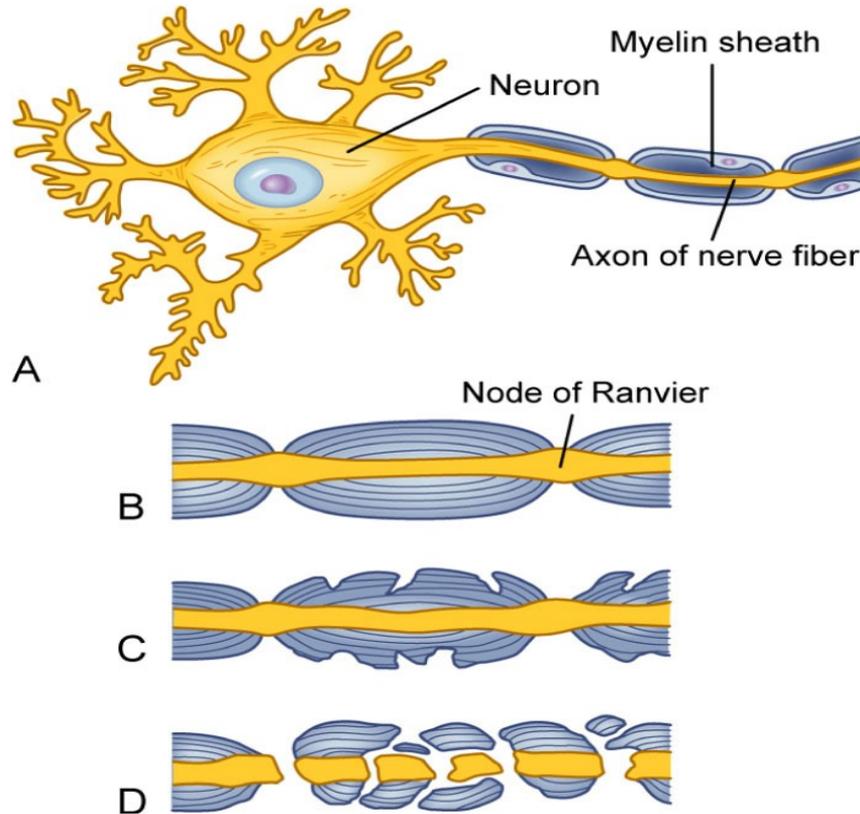
- ▶ 400,000 Americans affected
- ▶ More prevalent in temperate climates
 - Researchers suspect that exposure to some environmental agent before puberty may predispose a person to develop MS later in life

Multiple Sclerosis

- ▶ **Etiology and Pathophysiology**
- ▶ Cause is unknown
 - Possible factors include infection, smoking, physical injury, emotional stress, excessive fatigue, pregnancy, poor state of health
 - Genetic component

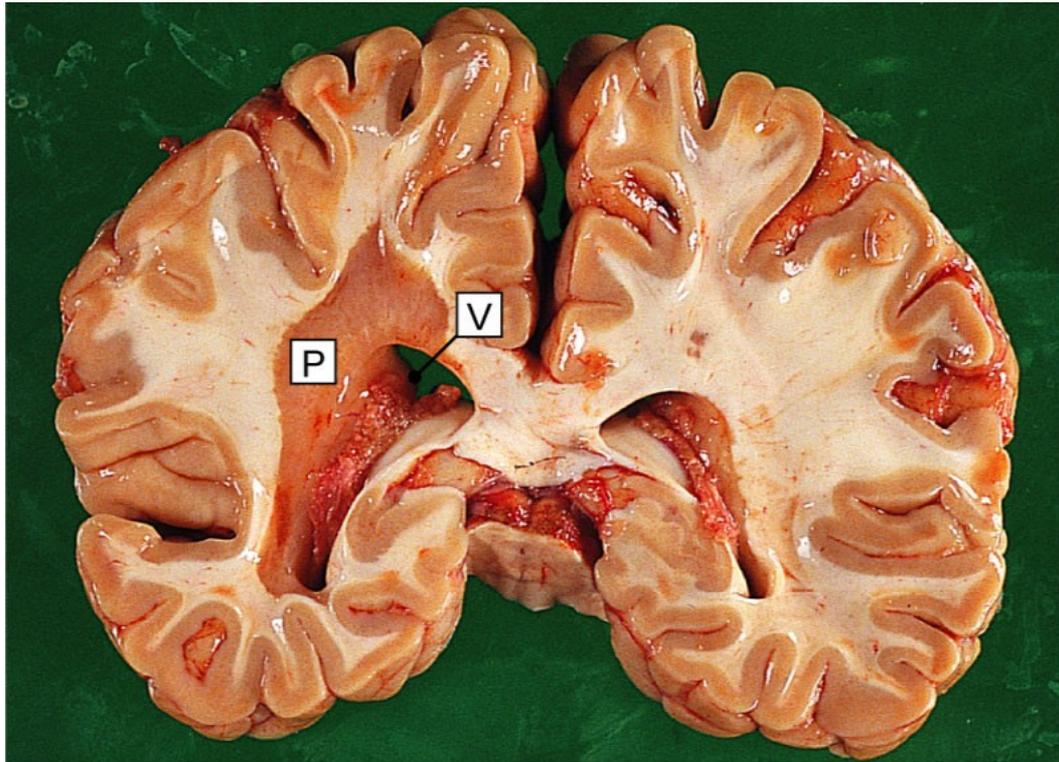
Multiple Sclerosis

▶ Pathogenesis of MS



Multiple Sclerosis

▶ Chronic Multiple Sclerosis



From Stevens A, Lowe J. Pathology: illustrated review in colour, ed 2, London, 2000, Mosby.

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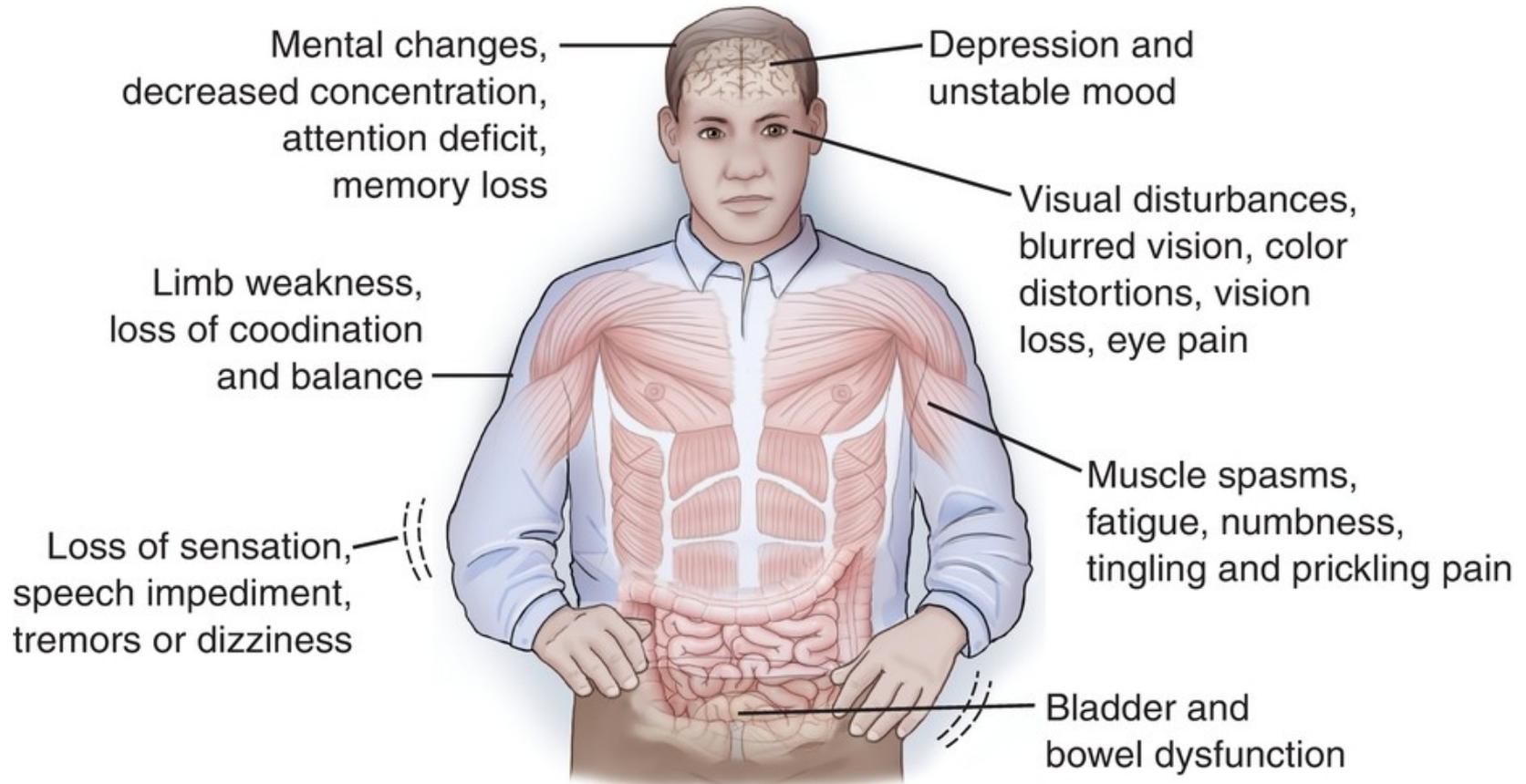
MS: Clinical Manifestations

- ▶ Onset of the disease is often insidious and gradual
 - Vague symptoms occur intermittently over months or years
 - Not enough to seek medical attention
 - Disease diagnosed long after onset of 1st symptoms

MS: Clinical Manifestations

- ▶ Chronic, progressive deterioration in some patients
 - ▶ Remissions and exacerbations in others
 - ▶ Overall trend is progressive deterioration in neurologic function
 - ▶ Symptoms may vary according to areas of CNS involved
- 

Multiple Sclerosis



Patterns of Multiple Sclerosis

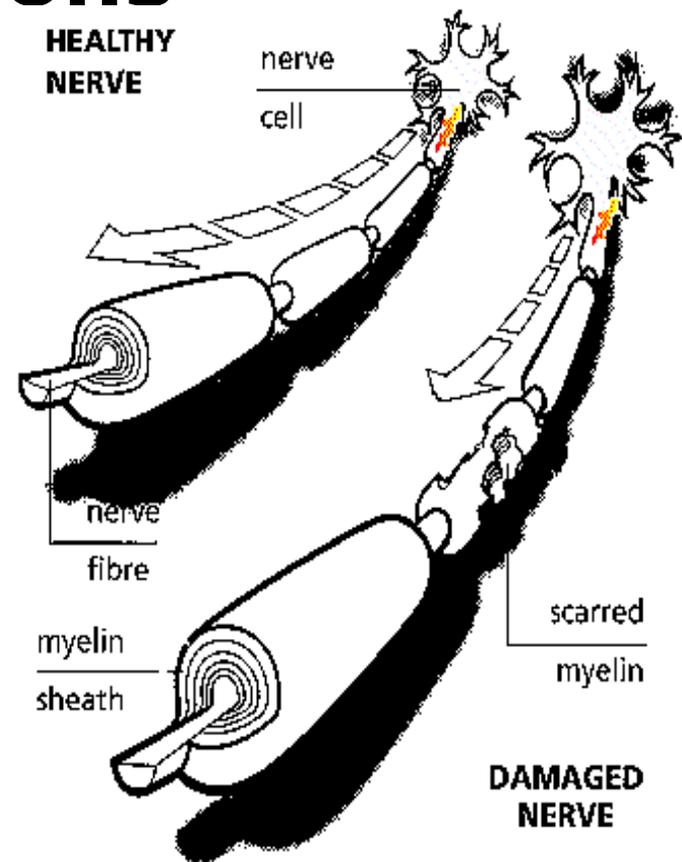
TABLE 58-11 Patterns of Multiple Sclerosis

Category	Characteristics
Relapsing-remitting	<ul style="list-style-type: none">• Clearly defined attacks of worsening neurologic function (<i>relapses</i>) with partial or complete recovery (<i>remission</i>).• Approximately 85% of people are initially diagnosed with this type of MS.
Primary-progressive	<ul style="list-style-type: none">• Steadily worsening neurologic function from the beginning with minor improvements but no distinct relapses or remissions.• About 10% of people are diagnosed with this type of MS.
Secondary-progressive	<ul style="list-style-type: none">• A relapsing-remitting initial course, followed by progression with or without occasional relapses, minor remissions, and plateaus.• New treatments may slow progression.• Most people initially diagnosed with relapsing-remitting MS eventually transition to this type.
Progressive-relapsing	<ul style="list-style-type: none">• Progressive disease from onset, with clear acute relapses, with or without full recovery. Periods between relapses are characterized by continuing progression.• Only 5% of people experience this type of MS.

Multiple Sclerosis

▶ Common Manifestations

- Visual
- Motor problems
- Sensory problems
- Cerebellar problems
- Bowel, bladder, & sexual
- Cognitive
- Emotional problems



MS: Clinical Manifestations

▶ **Sensory Manifestations**

- Numbness and tingling
 - Pain
 - Tremor
 - ↓ Hearing, Vertigo and tinnitus
 - Chronic neuropathic pain
 - Lhermitte's sign
- 

MS: Clinical Manifestations

- **Motor Manifestations**
 - Weakness or paralysis of limbs and trunk
 - Spasticity of muscles
 - Scanning of speech
- **Impaired bowel and bladder functions**
 - Constipation
 - Variable urinary problems
 - Spastic bladder
 - Flaccid bladder

MS: Clinical Manifestations

- ▶ **Sexual dysfunction**
 - Erectile dysfunction
 - Decreased libido
 - Painful intercourse

 - ▶ **Cognitive manifestations**
 - Short-term memory attention
 - Information processing
 - Attention, Planning
 - Visual perception, word finding
- 

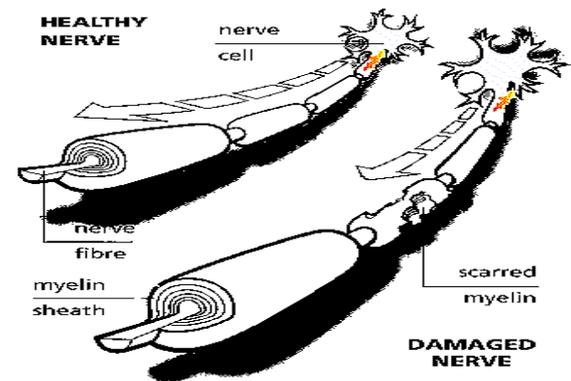
MS: Diagnostic Studies

- ▶ No definitive test for MS
 - ▶ Based primarily on history, clinical manifestations, & results of diagnostic tests
 - ▶ MRI
 - ▶ CSF Analysis
 - ▶ Evoked Potential Studies
 - ▶ Neuropsychological Testing
 - ▶ Sexual History
- 

MS: Diagnostic Studies

► For Diagnosis of MS

- Evidence of at least 2 inflammatory demyelinating lesions in at least 2 different locations within the CNS
- Damage or an attack occurring at different times (usually ≥ 1 month apart)
- All other possible diagnosis must have been ruled out





MS: Medical Management

- ▶ No cure
- ▶ Goals of treatment: ***delay progression of disease, manage chronic symptoms, & treat acute exacerbations***
- ▶ Management strategies target various motor & sensory symptoms & effects of immobility
 - Early intervention is most effective

Drug Therapy for MS

▶ **Disease-Modifying Drugs I**

- Treatment should begin as soon as condition diagnosed
- **Immunomodulators**
 - ▢ Interferon beta-1a (Rebif, Plegridy, Avonex)
 - ▢ Interferon bet-1b (Betaseron, Extavia)
 - ▢ Glatiramer acetate
 - ▢ Teriflunamide (Aubagio)

Drug Therapy for MS

▶ **Interferon Beta**

- Is a naturally occurring glycoprotein with antiviral, antiproliferative, and immunomodulatory actions

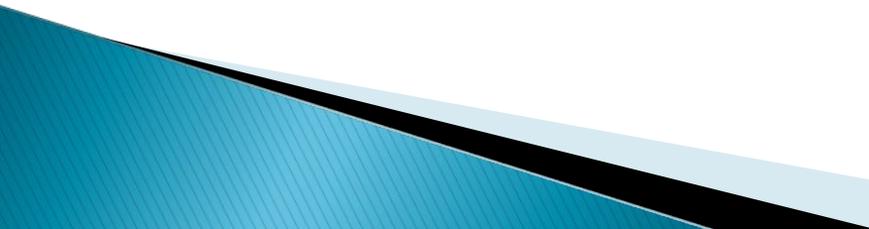
▶ **Therapeutic use**

- Reduces the frequency and severity of attacks
 - Reduces the number and size of lesions detectable with MRI
 - Delays progression of disability
- 

Interferon Beta

- ▶ **Adverse effects and drug interactions**
 - Flu-like reactions
 - Hepatotoxicity
 - Myelosuppression
 - Injection-site reactions
 - Depression
 - Suicidal thoughts
 - Drug interactions
- ▶ **Preparation, dosage, & administration**
 - Dispensed as single-use syringes and vials

Drug Therapy for MS

- ▶ **Disease-Modifying Drugs II**
 - ▶ **Immunosuppressant**
 - ▶ Only one approved by the U.S. Food & Drug Administration
 - ▶ **Mitoxantrone (Novantrone)**
 - More toxic than Immunomodulators
 - Produce greater suppression of immune function
- 

Mitoxantrone

▶ **Therapeutic use**

- Decreases neurologic disability and clinical relapses

▶ **Mechanism of Action**

- Binds with DNA and inhibits topoisomerase

▶ **Adverse effects and drug interactions**

- Myelosuppression
- Cardiotoxicity
- Fetal harm
- Reversible hair loss, injury to GI mucosa, nausea & vomiting, amenorrhea, allergy symptoms, and blue-green tint to urine & sclera

Drug Therapy for MS

- ▶ Multiple drugs used to manage exacerbations
- ▶ Corticosteroids
- ▶ Prednisone & methylprednisolone
 - Helpful in treating acute exacerbations
 - ▢ Reduce edema and acute inflammation at the site of demyelination
 - Therapeutic plasma exchange and IV immunoglobulin G

Management of MS

- ▶ Multiple drugs used to Manage MS Symptoms
 - Bladder dysfunction: detrusor hyperreflexia, flaccid bladder
 - Bowel dysfunction: constipation & fecal incontinence
 - Depression
 - Fatigue
 - Spasticity
 - Neuropathic pain
 - Improved walking
 - Dizziness & vertigo

MS: Interprofessional Care

- ▶ Other interventions may be required in treatment of spasticity
 - Surgery
 - Dorsal column electrical stimulation
 - Intrathecal baclofen pump

MS: Nursing Interventions

- ▶ Promote physical mobility
 - ▶ Prevent injury
 - ▶ Enhance bowel & bladder control
 - ▶ Enhance communication
 - ▶ Improve sensory & cognitive function
 - ▶ Teach about medications
 - ▶ Educate family
- 

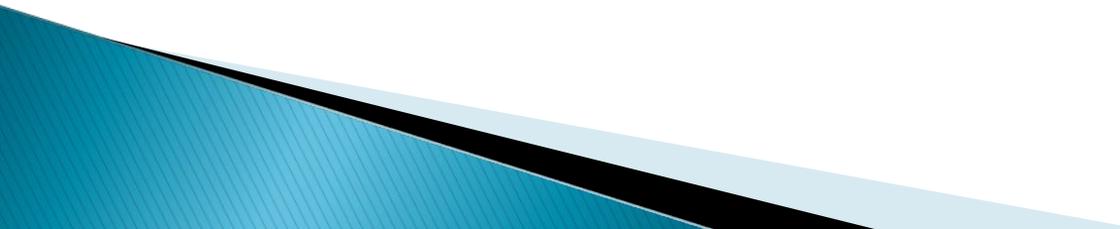
MS: Water Therapy



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MS: Nursing Interventions

▶ **Psychological**

- Anger
 - Anxiety
 - Depression
 - Acceptance
- 

MS: Nursing Interventions

▶ **Social System**

- Family
 - Financially
 - Friends
- 

MS: Nursing Interventions

- ▶ **Counseling**
 - Individual
 - Family
 - Support group