Module 1:
Multiple Sclerosis Disease Overview

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Objectives

<table>
<thead>
<tr>
<th>Define</th>
<th>What MS is and what happens in MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understand</td>
<td>Who gets MS and what causes MS</td>
</tr>
<tr>
<td>Explain</td>
<td>How MS is diagnosed</td>
</tr>
<tr>
<td>Describe</td>
<td>The types of MS and MS symptoms</td>
</tr>
</tbody>
</table>
What is MS?

- **Immune mediated disease**
  - Immune system causes damage in the central nervous system (CNS – brain, optic nerves and spinal cord)

- **Primary CNS targets**
  - Myelin coating around the nerves
  - Nerve fibers (axons)
  - Cells that make myelin (oligodendrocytes)

Image: [https://www.va.gov/MS/Veterans/about_MS/index.asp](https://www.va.gov/MS/Veterans/about_MS/index.asp)
What happens in MS?

Activated immune system cells enter the CNS

Blood Brain Barrier

Immune system cells cause inflammation and damage to myelin, nerve fibers and cells that make myelin

Inflammation and damage interfere with nerve transmission
What happens to the myelin and nerve fibers?
What Causes MS?

- Genetic predisposition
- Environmental trigger

Imune attack

Loss of myelin & nerve fiber
Who gets MS?

2X

NEARLY 1 MILLION
PEOPLE LIVING WITH MS
IN THE UNITED STATES

MS PREVALENCE BY GENDER

1976 ESTIMATE
37% MALE
63% FEMALE

2017 ESTIMATE
26% MALE
74% FEMALE

MS PREVALENCE BY REGION
(PER 100,000 U.S. RESIDENTS)


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How is MS diagnosed?

• MS is a clinical diagnosis
  – Medical history
  – Neurological exam findings

• Tests provide support
  – Magnetic resonance imaging (MRI)
  – Spinal fluid analysis (spinal tap)

• Other tests exclude diagnoses that look like MS
  – Blood tests for other autoimmune conditions, infections, vitamin deficiencies, familial conditions

• Diagnostic criteria:
  – Evidence that damage has occurred in at least two separate areas of the CNS at different points in time
  – There must be no other explanation
What are the symptoms of MS?

- Emotional changes
- Cognitive problems
- Vision problems
- Dizziness and vertigo
- Bladder/bowel
- Numbness, tingling, pain, spasticity
- Weakness, walking and balance problems
- Heat sensitivity
- Fatigue
Disease courses of MS

**Relapsing-Remitting**
- Symptoms: Temporally separated peaks
- Time: Progression with remissions

**Secondary Progressive**
- Symptoms: Steady increase
- Time: Continuous progression

**Primary Progressive**
- Symptoms: Steady increase
- Time: Continuous progression

**Relapsing course** can be:
- Active or Inactive
- Worsening or Not Worsening

**Progressive courses** can be:
- Active with or w/o progression
- Not active with or w/o progression

Module 2
Levels of Ability and Wellness in MS

L TO R: ANGELA, DIAGNOSED IN 2002
NICK, DIAGNOSED IN 1998
EMILY, DIAGNOSED IN 2005