

# Multiple Sclerosis (MS) Overview: Disease and Relapse Management

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## DISEASE/SKILL OVERVIEW

Chronic, inflammatory-degenerative disease of central nervous system (brain, optic nerves, spinal cord).

Precipitated by environmental factors in genetically susceptible individuals.

The hallmark of MS is inflammatory, demyelinating plaques and axonal loss in the CNS.

Characterized by relapses and remissions of neurological symptoms and progression of disability over time.

Most common chronic neurological disease of young adults.

Onset: 15-55

Female 3:1

Risk: 0.1%

Affects all ethnic groups, higher in whites.

Progressive course without cure.

Prevalence: nearly one million.

Phenotypes:

- MS is characterized by its phenotype or course:
- Clinically Isolated Syndrome (prediagnosis)
- Relapsing-remitting (85%)
- Secondary progressive (active/not active; with progression/without progression)
- Primary progressive (15% no history of relapse from diagnosis)

Course is ultimately progressive\*

Risk factors:

- Smoking
- Obesity
- Insufficient vitamin D
- Demographics
- Epstein-Barr virus exposure

## NEURO EXAM PEARLS

Presentation:

- Monocular vision loss (optic neuritis)
- Limb weakness or sensory loss due to transverse myelitis
- Double vision due to brainstem dysfunction (Internuclear ophthalmoplegia: impaired adduction of ipsilateral eye with nystagmus of abducting eye)
- Ataxia due to a cerebellar lesion

Upper motor neuron symptoms may include: spasticity, rigidity, increased deep tendon reflexes.

Positive Babinski is typical but not always present.

Lhermitte's sign: indicative of demyelination in the cervical cord.

Spinal lesion indicated by sensory level.

Cognitive dysfunction can be an early finding

New magnetic resonance guidance (MRI): Brain and entire cord at diagnosis; Brain MRI without Gadolinium contrast prior to and 3-6 months following new therapy and annually while on treatment. In the case of treatment with natalizumab and the presence of elevated JC virus antibodies: More frequent screening (every 3-4 months) with abbreviated MRI protocol for those treated with natalizumab >18 months, seropositive for JC virus with >0.9 JC virus index

Judicious use of Gadolinium based contrast agents is recommended.

Disease modifying treatments (DMTs) work in the periphery to modulate or suppress immune system cells and are ONLY effective in active disease.

## MANAGEMENT STRATEGIES/ NURSING IMPLICATIONS

### Symptoms

- May stabilize, fluctuate, or progress
- New onset may indicate relapse or pseudo-relapse
- Symptoms are:
  - Primary (fatigue, tremor etc.)
  - Secondary (falls, UTIs, wounds)
  - Tertiary (loss of job, divorce, social isolation, loss of role)

### Relapse

New or reemergence of old symptom lasting >24 hours.

Assess for pseudoexacerbation caused by infection or increased temperature, menses.

Side Effects: insomnia, hypertension, hyperglycemia, psychosis; weight gain, GI upset

Advise low sodium diet; take oral medications with food; monitor BP, blood sugar

### DMTs

Since 1993, 23 FDA approved disease modifying agents

Goal to modify the disease process by:

- Reducing number of relapses
- Delay progression of disability
- Limit number of lesions seen on MRI

## MEDICATION/SPECIALIZED LABS

Medication information does not constitute treatment advice. Consult with expert provider's opinion and FDA guidelines.

### Relapse management

High dose corticosteroids IV or PO (1 gram IV 3-5days); 650mg bid PO, 3-5 days give with food-breakfast and lunch (can crush tabs and take in milk)

Labs: CBC; glucose, LFT

## DMT

Vary by effect, side effect and route of administration

### Low efficacy and safe

#### *Injectable agents*

Interferon betas (Betaseron®, Extavia®, Avonex®, Rebif®, Plegridy®, Kesimpta®), Glatiramer acetate (Glatopa, Copazone)

IM Interferon beta-1a (Avonex); SC Interferon beta-1a (Rebif); PegInterferon-beta 1a (Plegridy); Interferon beta-1b (Betaseron, Extavia); glatiramer acetate (Glatopa, Copazone); Ofatumumab (Kesimpta)

Monitor: CBC, LFT q6mo initial, then annually; injection site reactions

#### *Oral agent*

teriflunomide (Aubagio®)

Initial TB, CBC, Chem, LFT; Monitor LFT q month for 6 months; then annual

### Moderate efficacy/ moderate safety concerns

#### *All oral administration:*

dimethyl fumarate (Tecfidera®)  
diroximel fumarate (Vumerity™)  
monomethyl fumarate (Bafiertam™)  
fingolimod (Gilenya®)  
ozanimod (Zeposia®)  
siponimod (Mayzent®)  
ponesimod (Ponvory™)

Monitor: infection, CBC, Chem 7, LFT

### High efficacy/elevated safety concerns

#### *Intravenous agents*

alemtuzumab (Lemtrada™)-monitor qmonth, 5yrs  
natalizumab (Tysabri®)  
ocrelizumab (Ocrevus™)  
ofatumumab (Kesimpta®)  
mitoxantrone (Novantrone®)  
rituximab (not FDA approved); several biosimilars

#### *Oral*

cladribine (Mavenclad®)

Monitor: CBC, TB, Varicella titer, Chem 7, LFT, Hep B,C; immune globulins; JC Virus AB with Index (Stratify test, reflex to inhibition assay)

## TEAM QUESTIONS/COMMUNICATION

- Individualize management of disease and symptoms
- Awareness and mitigation of risk factors (vit D, smoking, obesity)
- Assess often for falls
- Assess mood/depression
- Assess cognition
- Multidisciplinary approach to care
- Wellness focused care
- Coach for adherence to therapy as best option to relapses and disease progression

## PATIENT/FAMILY/CAREGIVER TEACHING SUPPORT

- Many available resources from credible .org, .edu or .gov sites
- National Multiple Sclerosis Society (NMSS) website comprehensive
- Engage social work
- Promote participation in support groups
- Nurses promote a wellness lifestyle to include nutrition, exercise, social and work relationships, minimizing stress, optimizing sleep and activities that feed the spirit and the soul.
- Recognizing and counseling when disease transitions (90% within 25yrs from diagnosis) from relapsing to secondary progressive for supportive care

## TOOLS/SUPPLIES

- Occipital Coherence Tomography (OCT) of retina as marker of progression
- Magnetic Resonance Imaging
- Multidisciplinary clinics
- OT/PT support
- Prosthetic for equipment: wheel chairs, shower chairs, grabbers, canes, walkers
- Bioness nerve stimulator
- Compression stockings or lymphedema pumps (venous insufficiency)
- Botulinum toxin to bladder detrusor
- Bowel regimen
- TENS and H wave
- Internet Sites such as YouTube.com, webinars, websites (credible from university, government and NMSS)
- NMSS Navigator program