

The CME program will start on the hour.

Approach to the Newly Diagnosed MS Patient

Current Topics in MS

Approach to the Newly Diagnosed MS Patient

Nina Bozinov, MD, MS
Multiple Sclerosis Specialist
Kootenai Neurology Clinic



**National
Multiple Sclerosis
Society**

VA



**U.S. Department
of Veterans Affairs**

Veterans Health
Administration

*Multiple Sclerosis
Centers of Excellence*

Diversity, Equity & Inclusion Statement

The National Multiple Sclerosis Society is a movement by and for all people affected by MS. Our voices and actions reflect diversity, equity and inclusion.

We welcome and value diverse perspectives.

We actively seek out and embrace differences.

We want everyone to feel respected and be empowered to bring their whole selves to ensure we make the best decisions to achieve our mission.

Vision & Mission Statements

Our Vision:

A World Free of MS.

Our Mission:

We will cure MS while empowering people affected by MS to live their best lives.

VA MS Centers of Excellence Mission

- Improve the quality and consistency of health care services delivered to Veterans with MS across the country.
- Provide resources to VA providers through a collaborative approach to clinical care, education, research, and informatics.

VA



U.S. Department of Veterans Affairs

Veterans Health Administration
Multiple Sclerosis Centers of Excellence

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Non-VA: www.vha.train.org

VA: www.tms.va.gov



As a multiple sclerosis specialist working in North Idaho, **Dr. Nina Bozinov** is working to provide comprehensive care to patients from parts of Washington, Idaho, and Montana. Dr. Bozinov trained in rural/underserved medicine as part of the University of Washington multi-state medical education program (WWAMI) for medical school. She completed her residency and 2-year clinical fellowship at Stanford including a master's degree in epidemiology and clinical research. Dr. Bozinov has a strong interest in quality improvement and patient reported outcome measures as part of clinical research and routine clinical care. She has been honored to participate in National MS Society programs including Sylvia Lawry training fellowship, ECHO program, annual Virtual Summit, and Mountain West Healthcare Provider Council. Dr. Bozinov lives in Couer d'Alene, Idaho with her husband and four daughters.



KootenaiHealth

Disclosures

- No disclosures relevant to this talk

Objectives

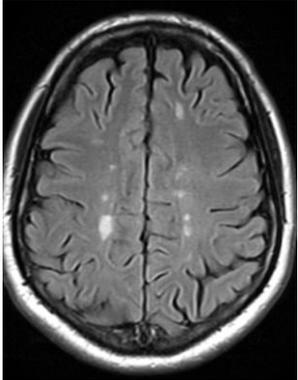
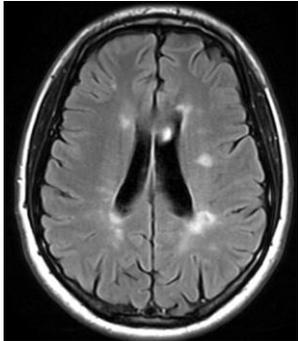
- Confirming the diagnosis
- MS disease modifying therapies
- Risk factor modification
- Symptom management
- Year 1 follow-up
- Resources



Confirming the diagnosis

Case 1

34-year-old man with a diagnosis back pain and sciatica.



2018 noticed difficulty with walking and right leg heaviness. 2019 started to use his non-dominant hand more. Also reports urinary hesitancy, constipation, and erectile dysfunction. No distinct neurologic episodes lasting longer than 24-hours that improved over time. Endorses some depressive thoughts related to his physical limitations, concerned his wife will have to be his caretaker.

...in a person who has steady progression of disease since onset

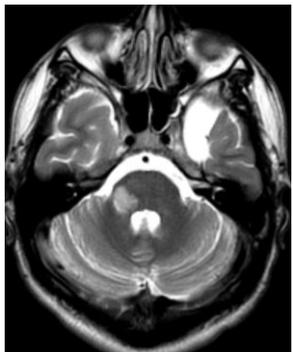
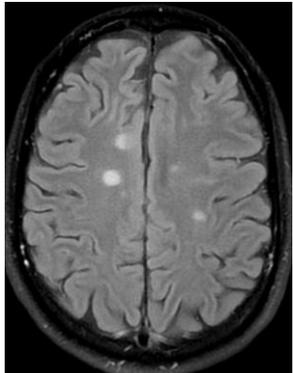
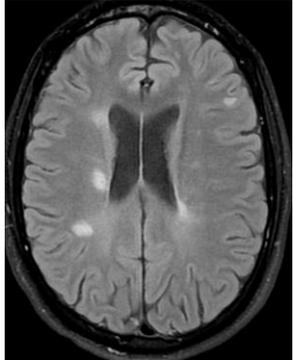
✓ 1 year of disease progression
(retrospective or prospective)

DIS shown by at least two of these criteria:

- ✓ 1 or more MS-typical T2 lesions (periventricular, cortical, juxtacortical or infratentorial)
- ✓ 2 or more T2 spinal cord lesions
- CSF oligoclonal bands

Case 2

26-year-old man referred after 3 months of neurologic episodes.



September upper respiratory infection, 2-weeks later with facial weakness.

Received diagnosis of Bell's palsy. Then had new onset of double vision with horizontal nystagmus on leftward gaze. Decreased sensation over left leg. December developed impaired balance, left arm numbness, slurred speech.

CLINICAL PRESENTATION	ADDITIONAL CRITERIA TO MAKE MS DIAGNOSIS
...in a person who has experienced a typical attack/CIS at onset	
<ul style="list-style-type: none">✓ 2 or more attacks and clinical evidence of 2 or more lesions; OR• 2 or more attacks and clinical evidence of 1 lesion with clear historical evidence of prior attack involving lesion in different location	None. DIS and DIT have been met.
<ul style="list-style-type: none">• 2 or more attacks and clinical evidence of 1 lesion	DIS shown by <u>one</u> of these criteria: <ul style="list-style-type: none">- additional clinical attack implicating different CNS site- 1 or more MS-typical T2 lesions in 2 or more areas of CNS: periventricular, cortical, juxtacortical, infratentorial or spinal cord

Misdiagnosis

MRI findings and clinical presentation can be misleading in patients with migraine or vascular comorbidities (Schwenkenbecher et al., 2019)

Also look for callosal lesions, spinal cord lesions, at least 2 different MRI sequences

Specificity improved with perivascular distribution
“central vein sign”

Misdiagnosis

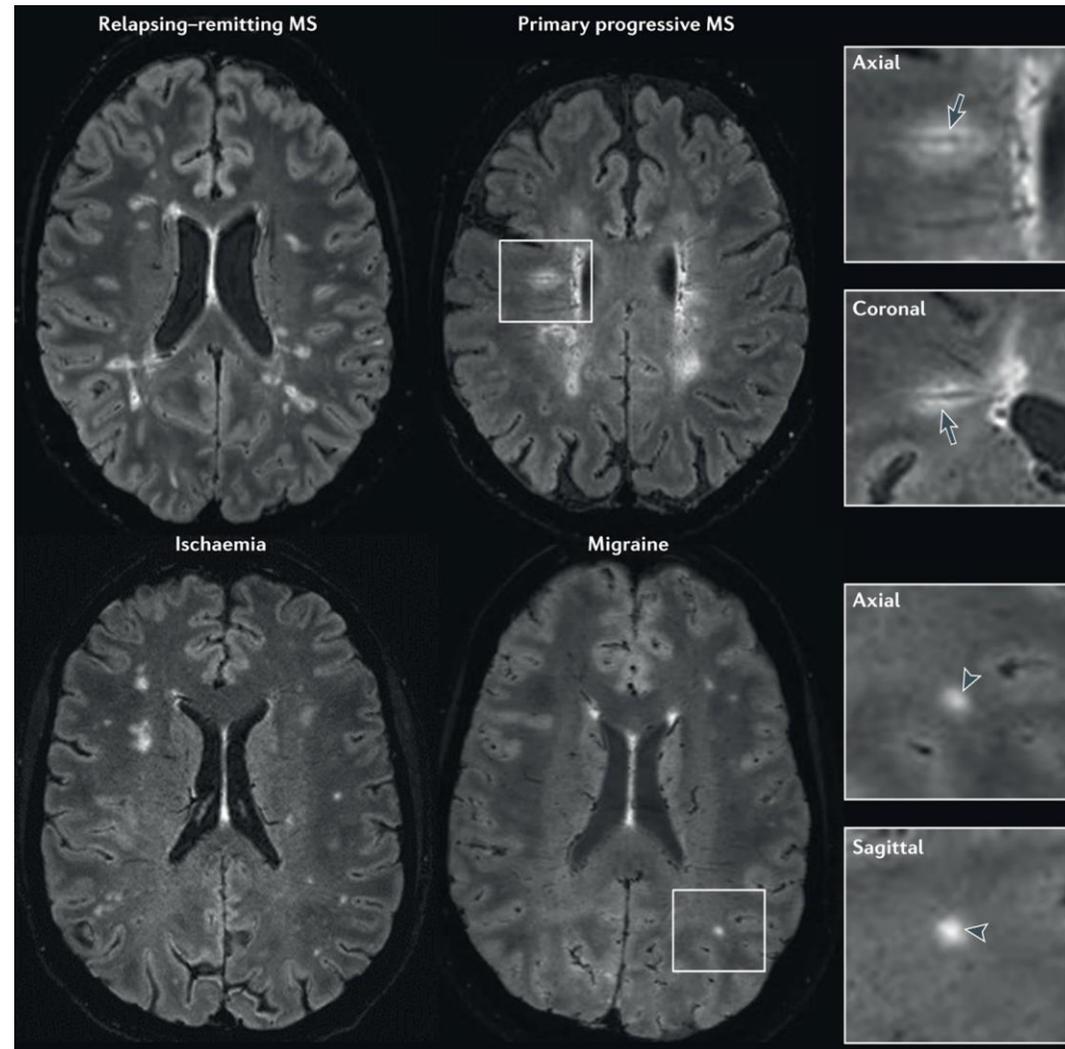
241 patients referred with established diagnosis of MS
18% patients misdiagnosed
110 patient-years of DMTs

Migraine (16%)

Radiologically isolated syndrome (9%)

Spondylopathy (7%)

Neuropathy (7%)



Sati P, et al., NAIMS Cooperative. The central vein sign and its clinical evaluation for the diagnosis of multiple sclerosis: a consensus statement from the North American Imaging in Multiple Sclerosis Cooperative. *Nat Rev Neurol.* 2016 Dec;12(12):714-722. doi: 10.1038/nrneuro.2016.166. Epub 2016 Nov 11. PMID: 27834394.

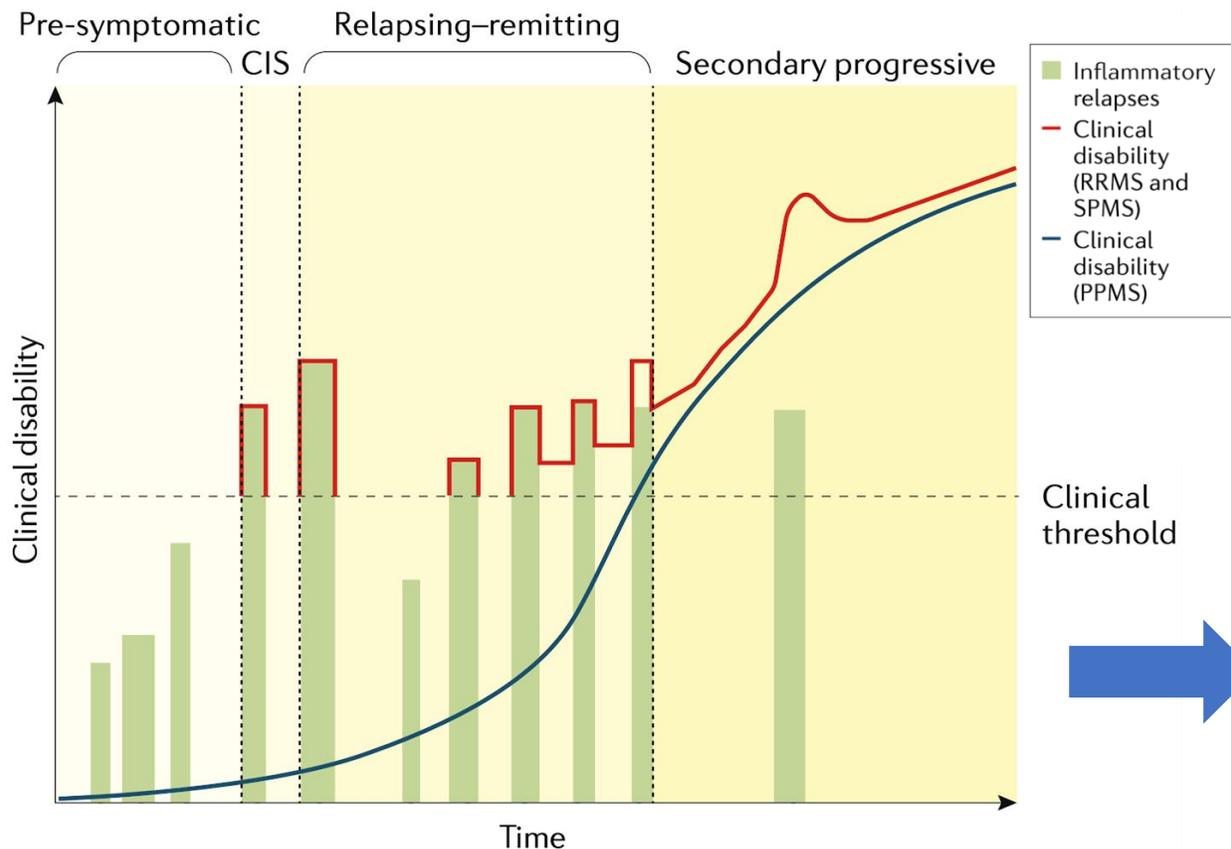
Pearls

- Does the history sound typical for relapsing or progressive MS?
- Does the patient have spinal cord lesions?
- Any other risk factors that could contribute to white matter changes?
- If the clinical picture is not meeting diagnostic criteria, consider CSF.
- Can consider monitoring with MRIs and repeat neurologic exam.

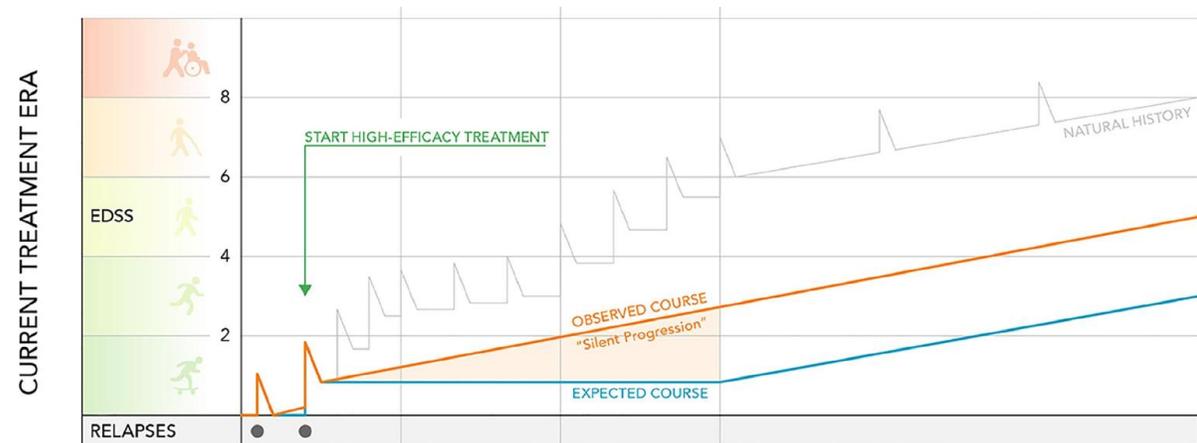
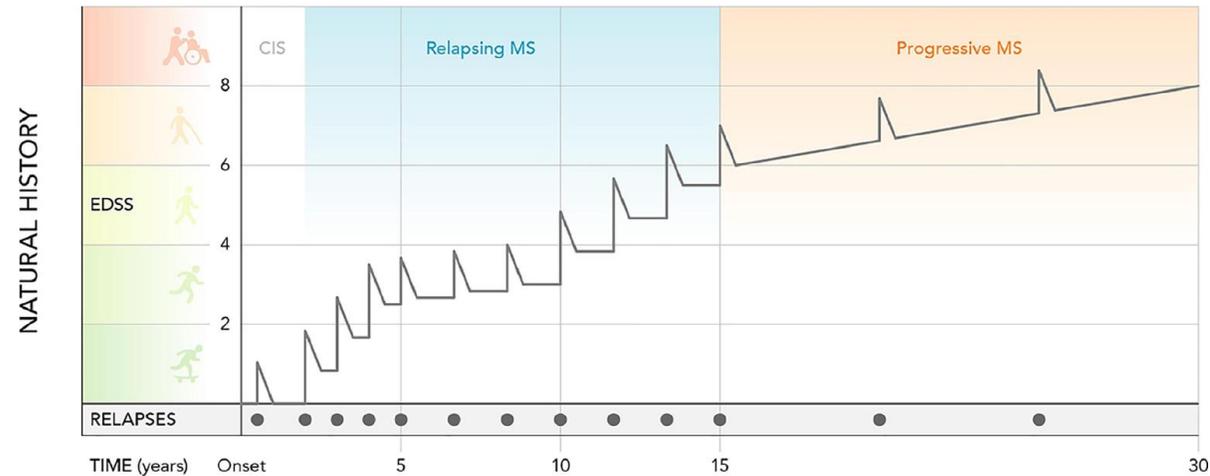


MS Disease Modifying Therapies

Clinical Course

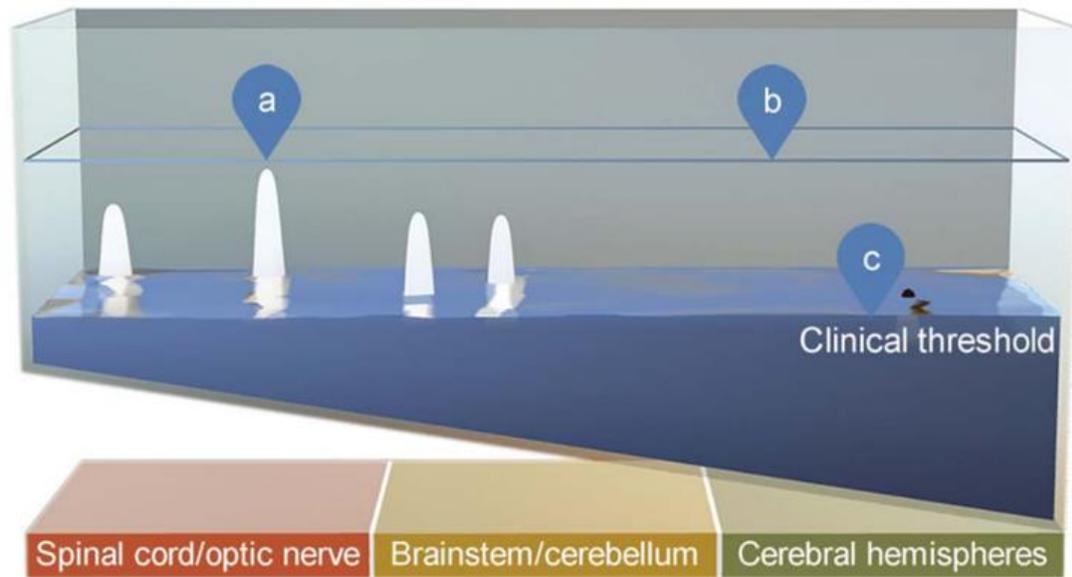


Filippi, M., Bar-Or, A., Piehl, F. *et al.* Multiple sclerosis. *Nat Rev Dis Primers* 4, 43 (2018)

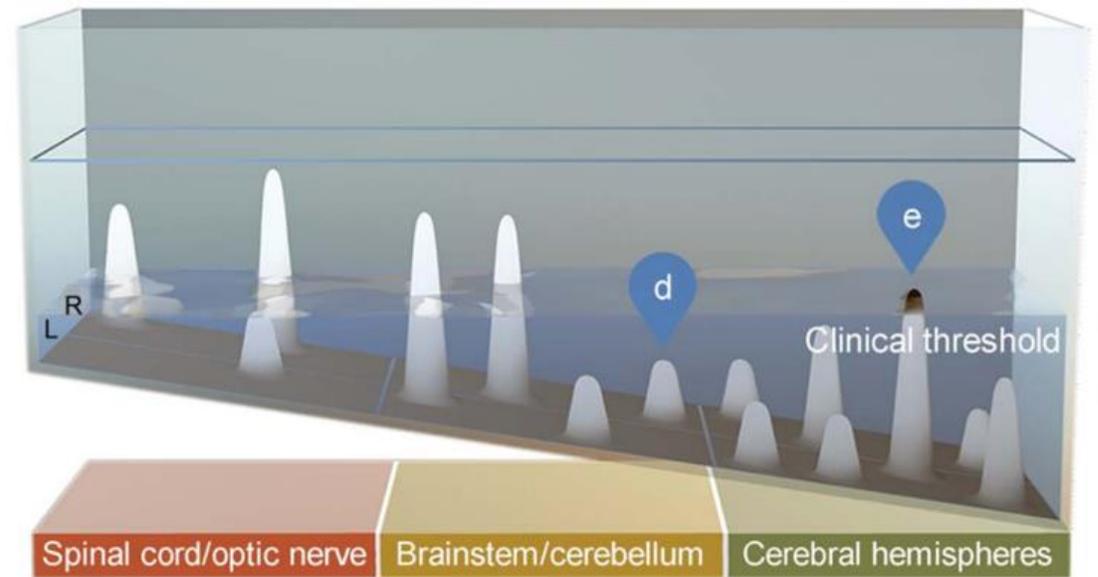


Hauser, Stephen L. *et al.* Treatment of Multiple Sclerosis: A Review. *The American Journal of Medicine*, Volume 133, Issue 12, 1380 - 1390.e2

Topographical Model



(A) Clinical view: water is opaque, only above-threshold peaks are visible.



(B) Subclinical view: water is translucent, both clinical signs and subthreshold lesions are visible.

Prognostic Factors

Favorable

- Younger age
- Female sex
- Optic neuritis
- Isolated sensory symptoms
- Complete recovery from first attack
- Long interval to second relapse
- No disability after 5 years
- Low lesion load

Unfavorable

- Older age
- Male sex
- Multifocal onset
- Efferent systems affected (motor, cerebellar, bladder)
- Incomplete recovery from first attack
- High relapse rate in the first 2-5 years
- Substantial disability after 5 years
- Abnormal MRI with large lesion load
- Higher number of enhancing lesions, T1 hypointensities “black holes”

DMTs

Injectable

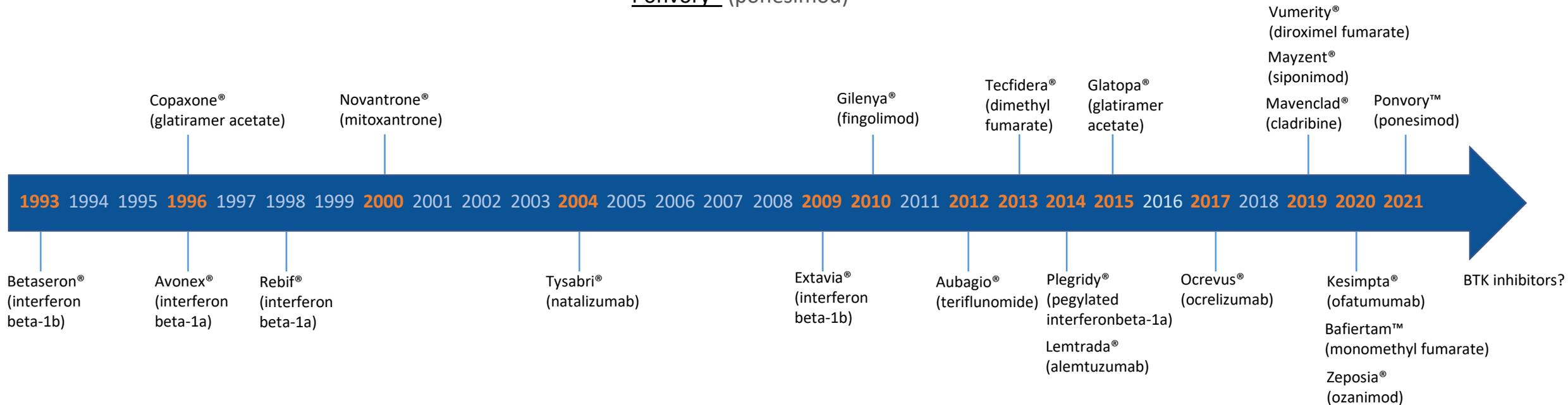
- Avonex® (interferon beta-1a)
- Betaseron® (interferon beta-1b)
- Copaxone® (glatiramer acetate)
- Extavia® (interferon beta-1b)
- Glatiramer Acetate
- Glatopa® (glatiramer acetate)
- Kesimpta® (ofatumumab) **1st injectable high efficacy**
- Plegridy® (peginterferon beta-1a)
- Rebif® (interferon beta-1a)

Oral

- Aubagio® (teriflunomide)
- Bafiertam™ (monomethyl fumarate)
- Dimethyl Fumarate (generic equivalent of Tecfidera)
- Gilenya® (fingolimod)
- Mavenclad® (cladribine)
- Mayzent® (siponimod)
- Tecfidera® (dimethyl fumarate)
- Vumerity® (diroximel fumarate)
- Zeposia® (ozanimod)
- Ponvory® (ponesimod)

Infused

- Lemtrada® (alemtuzumab)
- Novantrone® (mitoxantrone)
- Ocrevus® (ocrelizumab)
- Tysabri® (natalizumab)



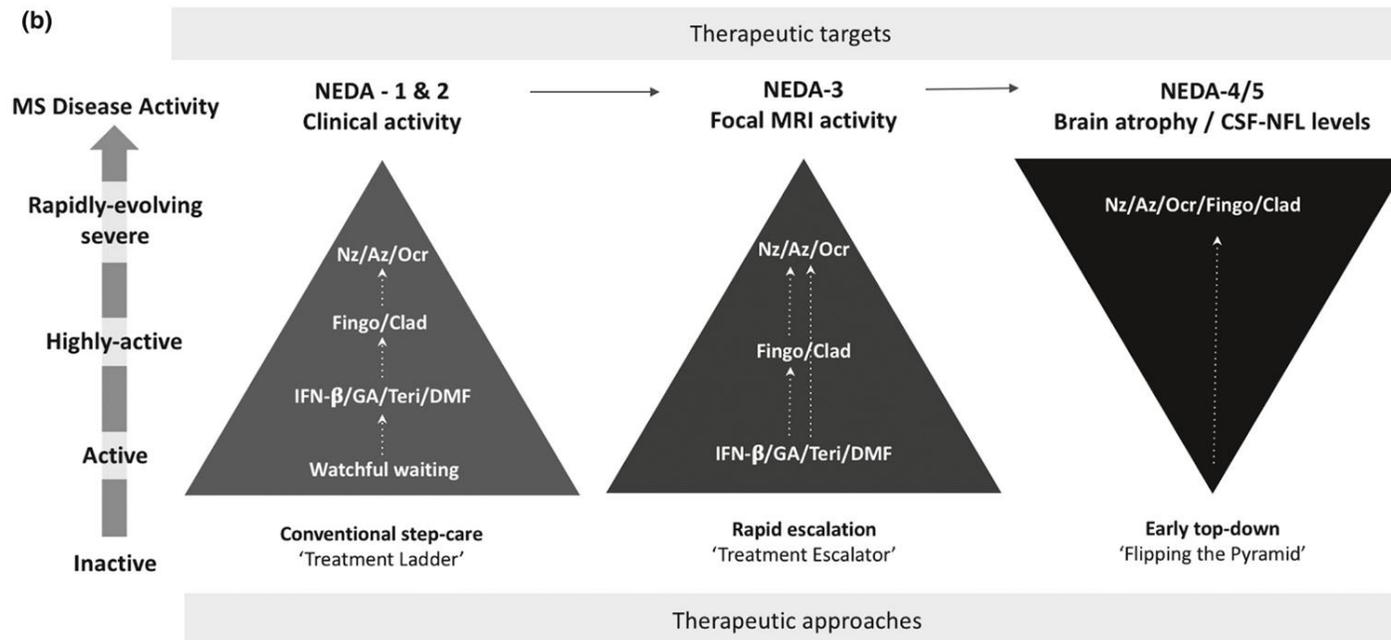
Treatment

NEDA-3 (No evidence of disease activity-3) is defined as the absence of all of the following: relapses, disability progression, and MRI activity (new/enlarged T2 lesions and/or gadolinium-enhanced T1 lesions).

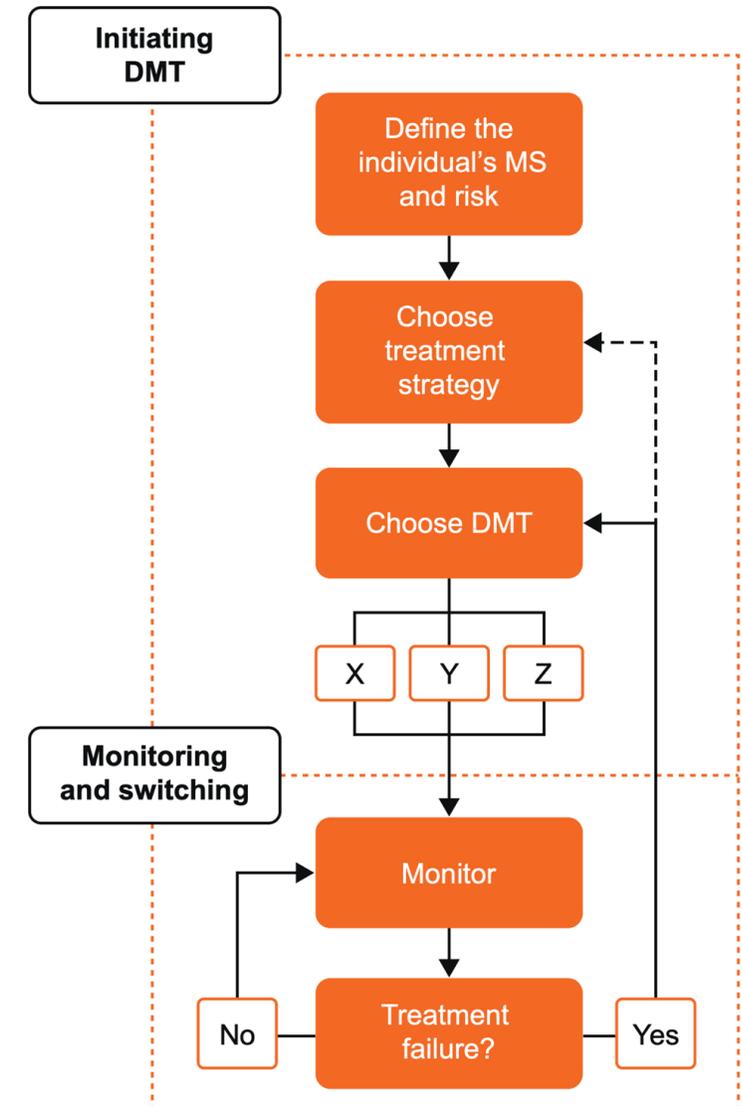
NEDA-4 status is therefore defined as meeting all NEDA-3 criteria plus having an annualized BVL (a-BVL) of $\leq 0.4\%$

Kappos L, De Stefano N, Freedman MS, Cree BA, Radue EW, Sprenger T, et al. Inclusion of brain volume loss in a revised measure of 'no evidence of disease activity' (NEDA-4) in relapsing-remitting multiple sclerosis. *Multi Scler.* (2016) 22:1297–305. doi: 10.1177/1352458515616701

Guevara, C., Garrido, C., Martinez, M., Farias, G. A., Orellana, P., Soruco, W., ... De Grazia, J. (2019). Prospective assessment of no evidence of disease activity-4 status in early disease stages of multiple sclerosis in routine clinical practice. *Frontiers in Neurology*, 10(JUL). <https://doi.org/10.3389/fneur.2019.00788>



Dobson, R. and Giovannoni, G. (2019), Multiple sclerosis – a review. *Eur J Neurol*, 26: 27-40. <https://doi.org/10.1111/ene.13819>



Shared Decision Making

Seek your patient's participation

Help your patient explore and compare treatment options

Assess your patient's values and preferences

Reach a decision with your patient

Evaluate your patient's decision

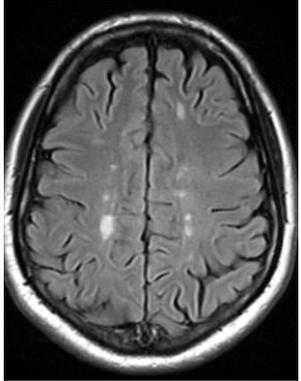
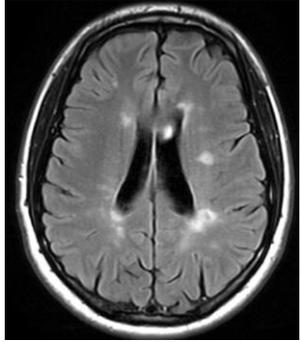
Table 1. International Patient Decision Aids Standards (IPDAS) criteria for high-quality decision aids.

Systematic development process
Clarify and express values
Disclose conflicts of interest
Use plain language
Provide information about options
Use patient stories
Deliver patient decision aids on the Internet
Base information on up-to-date scientific evidence
Establish effectiveness
Present probabilities
Guide or coach in deliberation and communication
Balanced presentation of options

Source: Adapted from Solari et al.¹⁷

Case 1

34-year-old man with a diagnosis back pain and sciatica.



2018 noticed difficulty with walking and right leg heaviness. 2019 started to use his non-dominant hand more. Also reports urinary hesitancy, constipation, and erectile dysfunction. No distinct neurologic episodes lasting longer than 24-hours that improved over time. Endorses some depressive thoughts related to his physical limitations, concerned his wife will have to be his caretaker.

Modifying the Disease Course

One medication -- **Ocrevus**[®] (ocrelizumab) -- has been approved by the U.S. Food and Drug Administration (FDA) for the treatment of primary-progressive MS (PPMS) as well as for relapsing forms of MS, which include clinically isolated syndrome, relapsing-remitting disease (RRMS) and active secondary progressive disease (SPMS with relapses). The disease-modifying therapies work primarily by reducing inflammation in the central nervous system (CNS); they do not work as well in a disease course that is characterized by nerve degeneration rather than inflammation. For this reason, they have not been shown to be effective in progressive forms of the disease unless a person demonstrates relapses or MRI activity caused by inflammation.

Several of these agents, including **Copaxone**[®] and an experimental drug called Rituxan, have been studied in PPMS, but unfortunately without a positive effect on progression. There are several clinical trials either recently completed or ongoing for progressive forms of MS and some are for PPMS. Read more about [clinical trials in MS](#).

Case 2

26-year-old man referred after 3 months of neurologic episodes.

September upper respiratory infection, 2-weeks later with facial weakness. Received diagnosis of Bell's palsy. Then had new onset of double vision with horizontal nystagmus on leftward gaze. Decreased sensation over left leg. December developed impaired balance, left arm numbness, slurred speech.

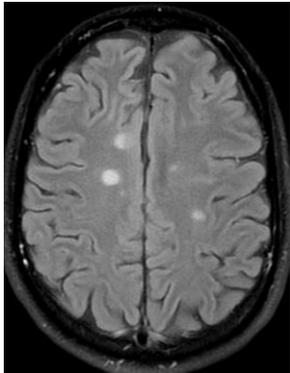
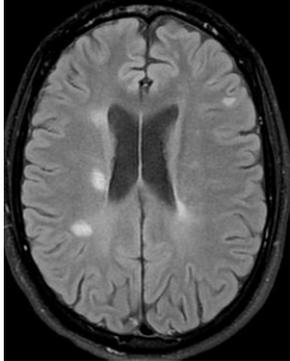


Table 1. Early Intensive Therapy. * There is not consensus regarding Cladribine and fingolimod (as some authors consider them HET and others not).

Early Intensive Therapy (EIT):	
Induction Treatment	Mitoxantrone
	Cyclophosphamide
	Stem Cell transplantation
	Alemtuzumab
Sustained High-Efficacy Treatment	Cladribine *
	Natalizumab
	Fingolimod *
	Anti-CD20 treatment

Early Intensive Therapy. * There is not consensus regarding Cladribine and fingolimod (as some authors consider them HET and others not).

Older age

Male sex

Multifocal onset

Efferent systems affected (motor, cerebellar, bladder)

Incomplete recovery from first attack

High relapse rate in the first 2-5 years

Substantial disability after 5 years

Abnormal MRI with large lesion load

Higher number of enhancing lesions, T1 hypointensities "black holes"

- Based on prognostic factors, will the DMT likely to reach NEDA?
- Does the route of administration fit with the lifestyle? Adherence.
- Patient factors for safety tolerance vs. efficacy.
- Patient factors for side effect profile, comorbidities and risk of SE.



Risk Factor Modification

RESEARCH ARTICLE

Open Access

Treatment patterns and comorbid burden of patients newly diagnosed with multiple sclerosis in the United States



David M. Kern and M. Soledad Cepeda

Optum© De-Identified Clinformatics® Data Mart Database, a US-based administrative claims database

- 84 million members with private health insurance, commercial plans and Medicare Advantage (Medicare Advantage Prescription Drug coverage).
- 5691 patients with incident MS

Table 2 Top 25 comorbidities (SNOMED) diagnosed during the year following the first diagnosis of MS

Condition	Proportion
Essential hypertension	41.3%
Hyperlipidemia	29.0%
Vitamin D deficiency	28.0%
Headache	21.9%
Low back pain	21.8%
Anxiety disorder	21.1%
Muscle weakness	17.5%
Urinary tract infectious disease	17.3%
Chest pain	17.0%
Neck pain	16.7%
Fatigue	16.4%
Dizziness and giddiness	15.8%
Dyspnea	15.2%
Gastroesophageal reflux disease without esophagitis	15.2%
Asthenia	14.9%
Cough	14.7%
Major depression, single episode	14.6%
Paresthesia	13.9%
Hypothyroidism	13.4%
Abdominal pain	13.1%
Type 2 diabetes mellitus without complication	12.2%
Chronic pain	11.7%
Obesity	11.7%
Anemia	11.6%
Cervical spondylosis without myelopathy	11.2%

Smoking

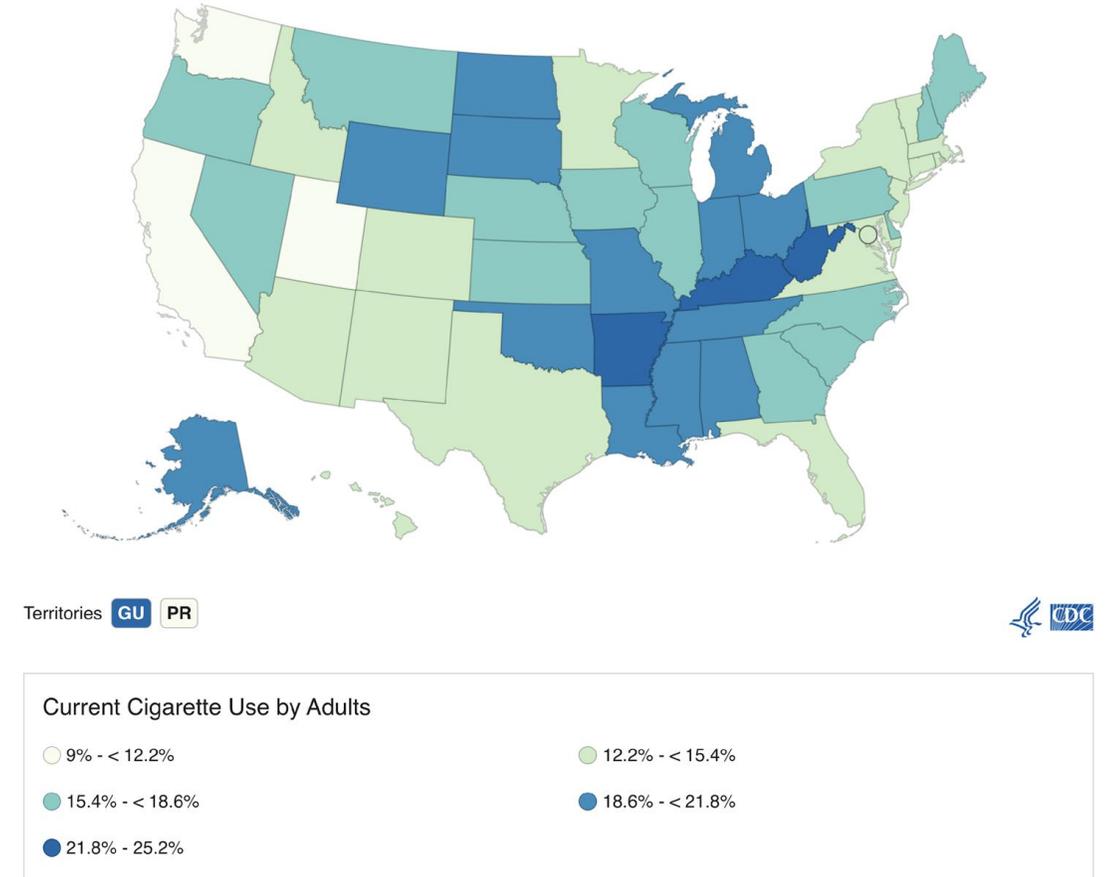


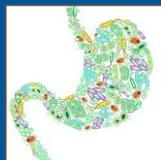
- Direct toxicity to oligodendroglia and neurons, influence immune function.
- Smokers have higher risk of developing MS, worsening disease progression, more likely to have active MS (contrast enhancement) on MRI
- Smokers have lower health related quality of life
- Smoking, BMI, insurance status, income are negatively associated with walking speed, global disability, and depression.

Briggs FBS, Thompson NR, Conway DS. Prognostic factors of disability in relapsing remitting multiple sclerosis. *Mult Scler Relat Disord.* 2019 May;30:9-16. doi: 10.1016/j.msard.2019.01.045. Epub 2019 Jan 29. PMID: 30711764.

Briggs FB, Gunzler DD, Ontaneda D, Marrie RA. Smokers with MS have greater decrements in quality of life and disability than non-smokers. *Mult Scler.* 2017 Nov;23(13):1772-1781. doi: 10.1177/1352458516685169. Epub 2017 Jan 6. PMID: 28059618; PMCID: PMC5494015.

Current Cigarette Use Among Adults (Behavior Risk Factor Surveillance System) 2018





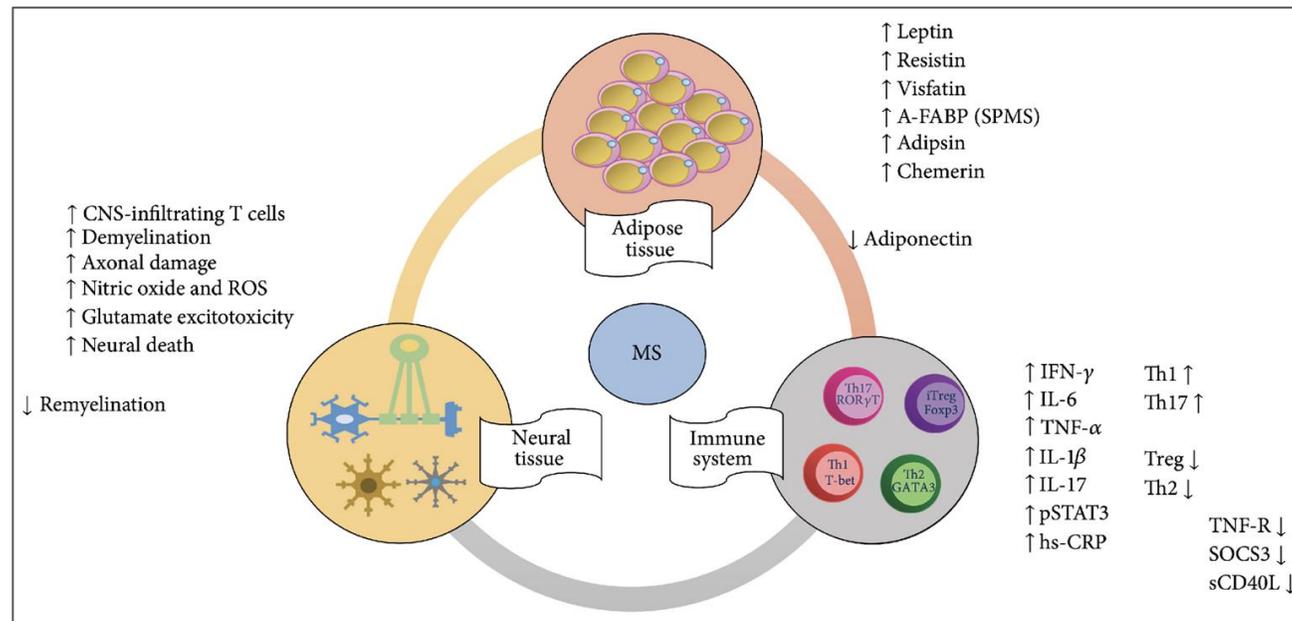
Measures of general and abdominal obesity and disability severity in a large population of people with multiple sclerosis

Kathryn C Fitzgerald, Amber Salter, Tuula Tyry, Robert J Fox, Gary Cutter and Ruth Ann Marrie

Multiple Sclerosis Journal
2020, Vol. 26(8) 976-986
DOI: 10.1177/
1352458519845836
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North American Research Committee on MS (NARCOMS) registry 3181 (55%) reported waist circumference (WC) meeting criteria for the abdominal obesity component of metabolic syndrome.

WC associated with 47% increased odds of severe versus mild disability.



Cross talk among immune, neural, and adipose tissues. Adipocytes release leptin, resistin, and visfatin, which induce a low-grade inflammatory state in patients with multiple sclerosis (MS) with obesity.

T cells migrate into the Central Nervous System (CNS), with Th1/Th17 cell release of proinflammatory cytokines, which promote the inflammatory status, and Th2/Treg release of anti-inflammatory cytokines, which contributes to modulating the severity of multiple sclerosis (MS).

Exercise & Fall Prevention

Recommended for all patients regardless of disability level

Table 2 Special considerations and precautions for exercise prescription in MS patients

Special considerations	Precautions
Fatigue	Schedule resistance training on non-endurance training days [13, 53, 54].
Spasticity	Consider foot and/or hand straps for ergometers. Use machines instead of free weights [53–55].
Heat intolerance and reduced sweating response	Encourage adequate hydration, keep room temperature between 20 and 22° C. Using of cooling fans and precooling before aerobic exercise might have positive effects on performance. It is better to plan exercise in the morning when body temperature is at the lowest [53, 54, 93].
Cognitive deficits	Provide written instructions, diagrams, frequent instructions, and verbal cues [53–55, 94]. Exercise tasks should be initially performed with minimal resistance. Individuals with cognitive impairments may require additional supervision during exercise to ensure their safety [18].
Lack of coordination in extremities	Consider using a synchronized upright or recumbent arm/leg ergometer to ensure balance and safety [53–55, 94].
Sensory loss and balance problems	Perform all exercises preferably in a seated position; use machines or elastic bands instead of free weights [53–55, 94].
Higher energy cost of walking (2–3 times greater than age-matched healthy persons)	Adjust workloads to maintain target heart rate and check heart rate regularly [13, 53–55, 94].
Daily variations in symptoms	Provide close exercise supervision and make daily modifications to exercise variables [13, 53–55, 94].
Urinary incontinence /urgency	Ensure adequate hydration, and schedule exercise in close proximity to restrooms [53–55, 94].
Symptom exacerbation	Discontinue exercises and refer the patient to a physician. Resume exercise program. Once symptoms are stable and the patient is medically ready to continue [13, 53–56, 94].

Halabchi F, Alizadeh Z, Sahraian MA, Abolhasani M. Exercise prescription for patients with multiple sclerosis; potential benefits and practical recommendations. *BMC Neurol.* 2017;17(1):185. Published 2017 Sep 16. doi:10.1186/s12883-017-0960-9

Exercise Demonstration Videos

Exercise is adaptable for all levels of ability – so whether you have little to no disability, moderate or advanced disability, it is safe for you to exercise. Check out these demonstration videos to learn specific exercise tips. *Disclaimer: Consult a medical professional before starting a new exercise routine and follow personal safety precautions to reduce the risk of injuries.*

Stretching Exercise Tips for MS

Stretching can improve muscle tightness, spasticity and range of motion.

Aerobic Exercise Tips for MS

Aerobic exercise can improve fatigue, strength, mood and cognitive function.

Breathing Exercise Tips for MS

Structured relaxation techniques can reduce fatigue and help manage stress.

Resources

Telelearnings

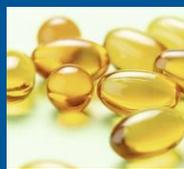
- › **Workout Your Worries: Anxiety and Exercise in MS**- telelearning brought to you by the National MS Society and Can Do MS
- › **Your Mind is a Muscle, Too: The Relationship Between Exercise and Cognition**- telelearning brought to you by the National MS Society and Can Do MS

Web-based Exercise Videos

- › **14 Weeks to a Healthier You** - free, personalized, web-based physical activity and nutrition program targeted to people with mobility limitations, chronic health conditions and physical disabilities. Created by National Center for Health, Physical Activity and Disability (NCHPAD), the program can help you get moving and make healthy nutrition choices.
- › **ChairFit with Nancy**- series of free exercise videos developed by a physical therapist with years of experience working with people with MS

<https://www.nationalmssociety.org/Living-Well-With-MS/Diet-Exercise-Healthy-Behaviors/Exercise>

Vitamin D



Deficiency <20 ng/ml, Insufficient 20-29 ng/ml

Sufficient 30 ng/ml, Toxic >100 ng/ml

30 ng/ml or below:

50,000 IU of vitamin D2 or D3 (large doses of vitamin D2 are more easily found than D3) weekly for 6 weeks by mouth followed by a daily dose between 3000 and 5000 IU of Vitamin D3

30 ng/ml of greater:

Between 2000 and 5000 IU of vitamin D3 by mouth daily.

Target levels between 40 and 100 ng/ml

Signs of vitamin D Toxicity:

Weakness, weight loss, vertigo, decreased appetite/anorexia, nausea, vomiting, diarrhea, constipation, abdominal cramping, dry mouth, excess thirst, excess urine, headache, lethargy, and muscle or bone pain.

Contraindications:

Patients with hypercalcemia, hypervitaminosis D, malabsorption syndrome (including gastric bypass surgery), decreased renal function. Caution needs to be exercised with use of vitamin D supplements in patients with heart disease, renal calculi, or arteriosclerosis.

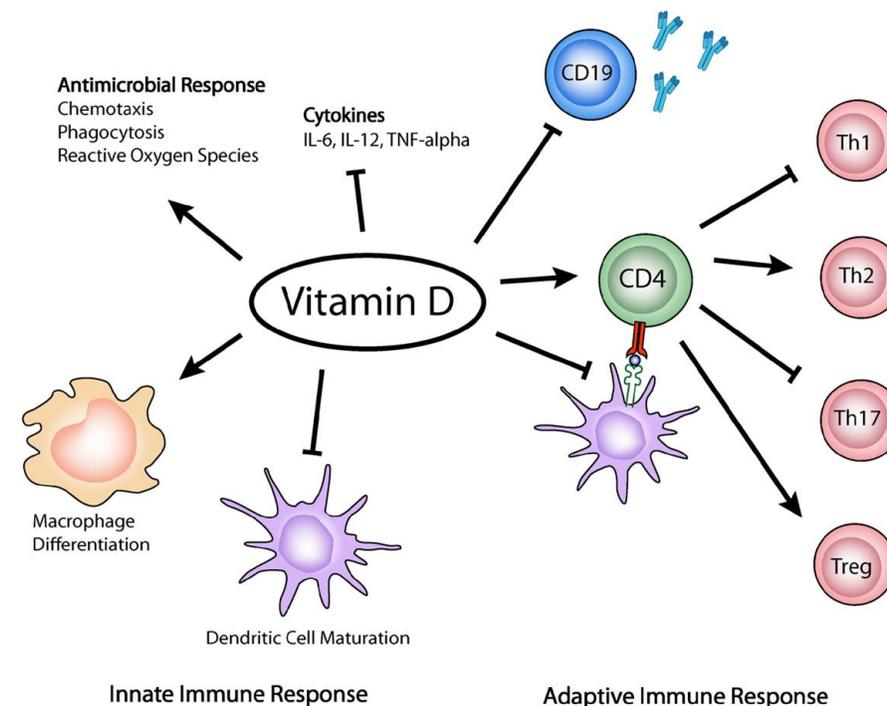


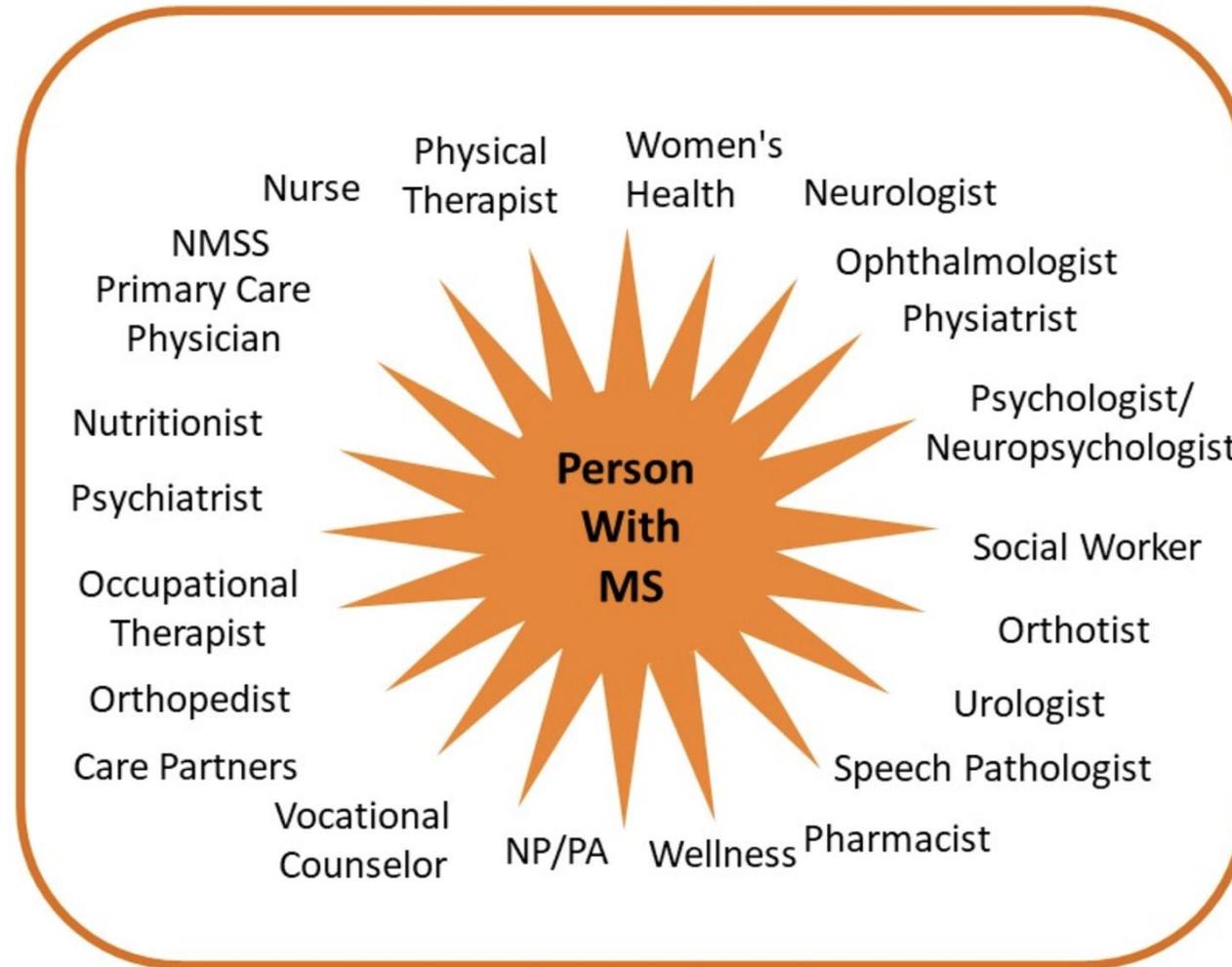
FIGURE 1 | Vitamin D effects on the innate and adaptive immune response. Vitamin D has been shown to enhance chemotaxis, antimicrobial peptides, and macrophage differentiation. It can also inhibit DCs maturation, Th1 and Th17 differentiation, and promotes immunoregulatory functions of Treg cells.

Iruretagoyena, Mirentxu & Hirigoyen, Daniela & Naves, Rodrigo & Burgos, Paula. (2015). Immune Response Modulation by Vitamin D: Role in Systemic Lupus Erythematosus. *Frontiers in Immunology*. 6. 513. 10.3389/fimmu.2015.00513.



Symptom Management

Comprehensive Care Model



Symptoms

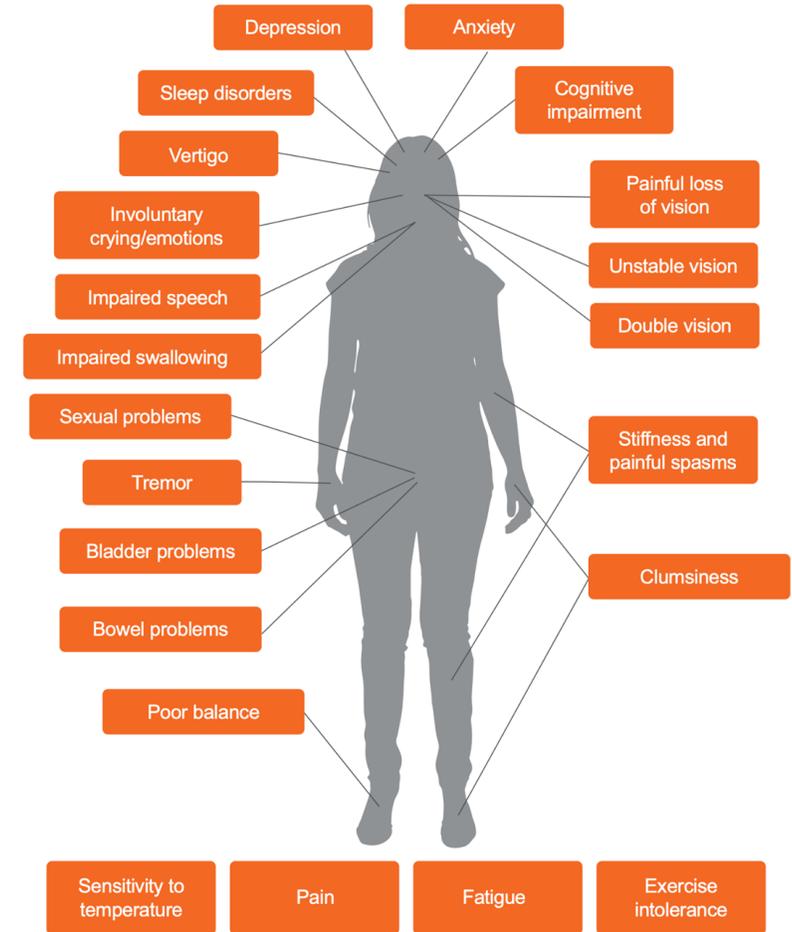
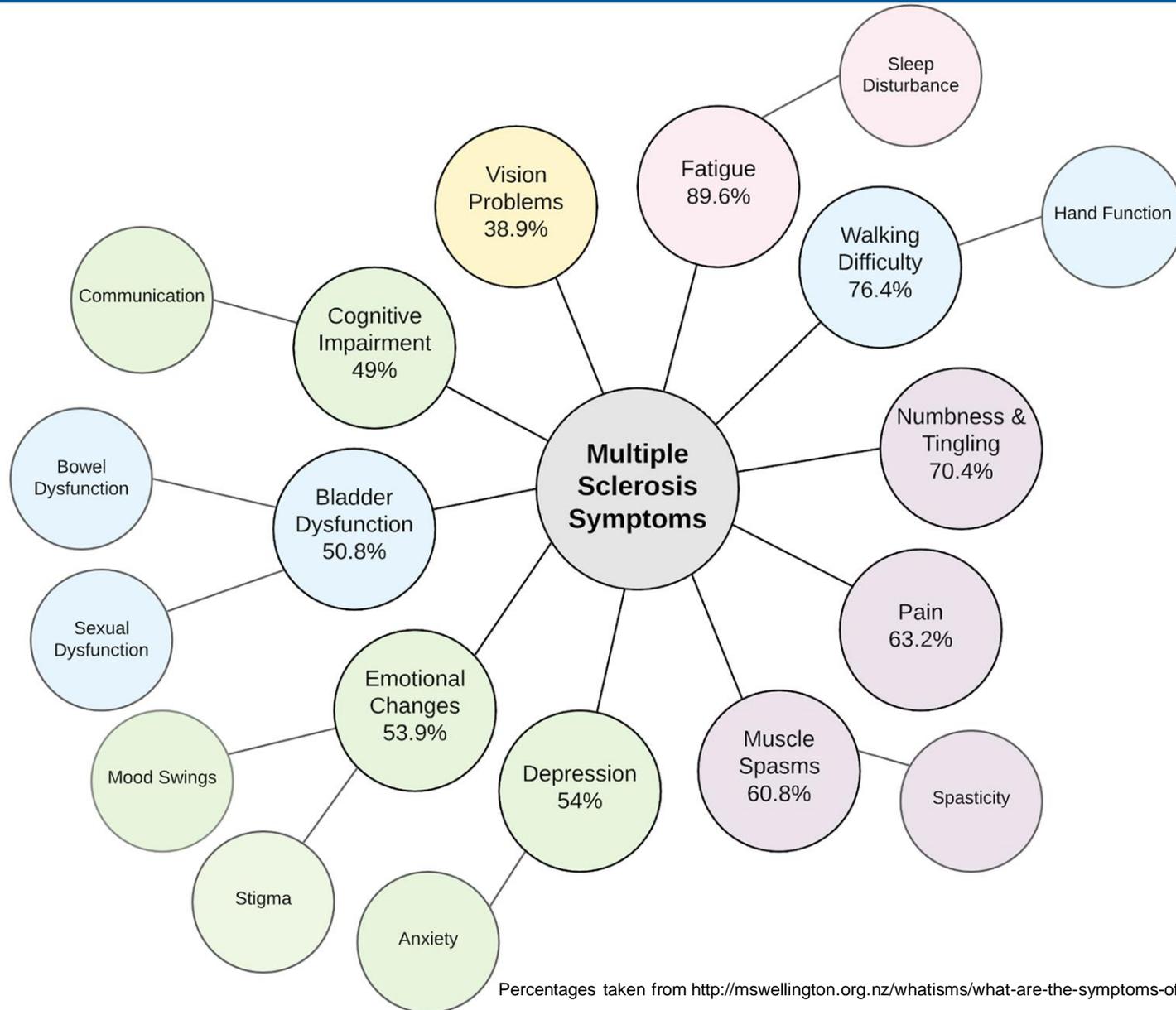


Fig. 3. The symptoms of MS (Compston and Coles, 2008; Giovannoni et al., 2012) are distressing and exhausting. Reproduced with permission from Oxford PharmaGenesis Ltd. © 2015 Oxford PharmaGenesis Ltd.

Symptoms

90%

Up to 90% of people with MS **experience fatigue**⁶

20%

Vision difficulties are common, and a first symptom in **15-20%** of people with MS⁹

2x

Depression is approximately 2x more likely in people with MS¹¹

50%

Within 15 years of onset, more than 50% of people with MS have **difficulty walking**^{5,7,8}

80%

At least **80%** of people with MS experience **bladder issues**¹⁰

2x

Sleep problems are twice as likely in people with MS¹²

Sleep

- Sleep problems higher in MS 25-54%.
- Insomnia, nocturnal movement disorders, sleep disordered breathing (SDB), narcolepsy, and rapid eye movement sleep behavior disorder.
- Factors impacting sleep nocturia, pain, depression, effect of medication, location of lesions, and disease severity.
- Sleep disturbances can lead to daytime somnolence, increased fatigue, and depression.
- They have been associated with increased risk of mortality, cardiac diseases, obesity, and diabetes mellitus.

Čarnická Z, Kollár B, Šiarnik P, Krížová L, Klobočnicková K, Turčáni P. Sleep disorders in patients with multiple sclerosis. *J Clin Sleep Med*. 2015;11(5):553-557. Published 2015 Apr 15. doi:10.5664/jcsm.4702

Up to 50% of those with MS may suffer from OSA

Symptoms of sleep apnea include:

- Snoring
- Pauses in breathing
- Gasping or choking upon awakening
- Nonrestorative sleep
- Excessive daytime sleepiness or fatigue
- Cognitive disturbances
- Nighttime awakenings

Sleep Apnea and MS. By Tiffany Braley, M.D.
<https://msfocus.org/Magazine/Magazine-Items/Posted/Sleep-Apnea-and-MS>

Cognition/Atrophy

36-year-old women

- Top: Healthy age matched control
- Bottom: RRMS patient with mild physical disability but cognitive dysfunction

Bakshi R, Hutton GJ, Miller JR, Radue EW. The use of magnetic resonance imaging in the diagnosis and long-term management of multiple sclerosis. *Neurology*. 2004 Dec 14;63(11 Suppl 5):S3-11. doi: 10.1212/wnl.63.11_suppl_5.s3. PMID: 15596734.

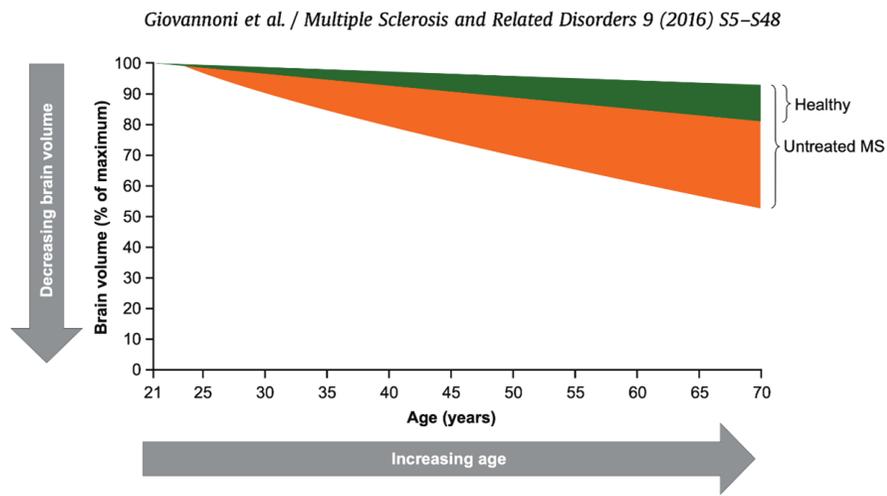
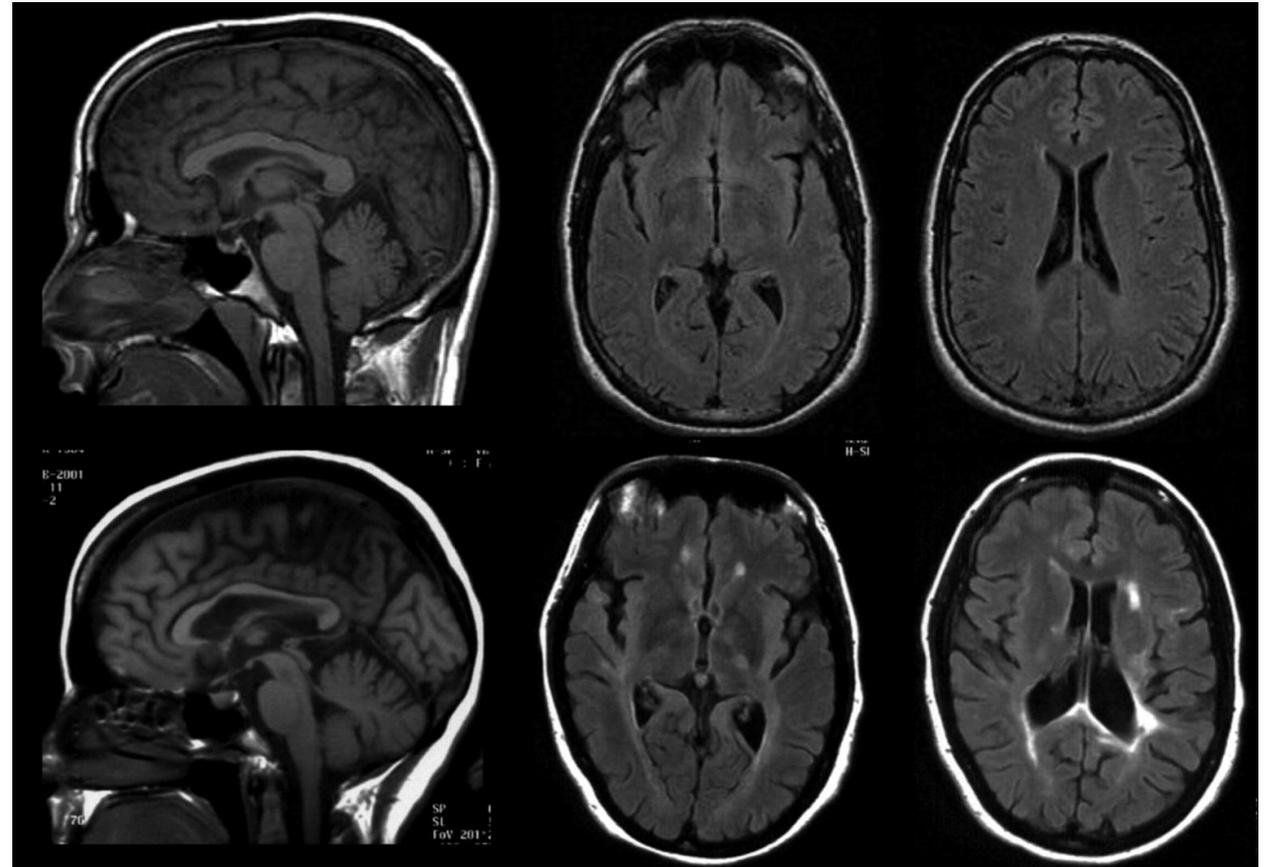


Fig. 1. Brain atrophy in many people with MS is faster than usual and proceeds throughout the disease course. This example uses atrophy rates from studies in people with untreated MS (De Stefano et al., 2010, 2014a) and healthy individuals (De Stefano et al., 2016) to illustrate how brain atrophy may be accelerated in a person with MS disease onset at 25 years of age.
Reproduced with permission from Oxford PharmaGenesis Ltd. © 2016 Oxford PharmaGenesis Ltd.



Left: T1-weighted sagittal images, marked atrophy of the brain with prominent involvement of the corpus callosum.

Middle/Right: FLAIR, diffuse superficial parenchymal volume loss suggested by prominence of the cortical sulci and fissures. In addition, central atrophy is suggested by enlargement of the third and lateral ventricles.

Rehabilitation

A RESOURCE FOR HEALTHCARE PROFESSIONALS OCCUPATIONAL THERAPY IN MULTIPLE SCLEROSIS REHABILITATION

Setareh Ghahari, PhD, OT Reg. (ont)

Marcia Finlayson, PhD, OT(C), OTR/L

Assessment for rehabilitation services should be considered early in the disease when changes may be easier to implement, including individuals who are newly diagnosed and present with any functional limitation.

Whenever possible, patients should be evaluated and treated by therapists who are familiar with neurological degenerative disorders. In physical therapy, MS treatment by a neurologic certified specialist is preferred over an orthopedic certified specialist.

<https://www.nationalmssociety.org/For-Professionals/Clinical-Care/Managing-MS/Rehabilitation>

Focus of occupational therapy

- **Self-care activities**—including functional mobility, dressing, bathing, grooming, and eating
- **Productive activities**—including paid work, home management, caregiving, and volunteer activities
- **Leisure activities**—including involvement in social and recreational pursuits

› Assessments and Interventions in MS Rehabilitation

› Clinical Bulletins

- › Assistive Technology
- › Dysarthria
- › Occupational Therapy (OT)
- › Physical Therapy (PT)
- › Swallowing Disorders

Finding an occupational therapist

To find an occupational therapist with expertise in MS care, contact the National MS Society at 1-800-344-4867.

Patient Resources

Rehabilitation In MS (video): nationalmssociety.org/videos

Managing MS through Rehabilitation: nationalmssociety.org/brochures

National MS Society website: nationalmssociety.org/Treating-MS/Rehabilitation

A RESOURCE FOR
HEALTHCARE PROFESSIONALS

EMOTIONAL DISORDERS IN MULTIPLE SCLEROSIS

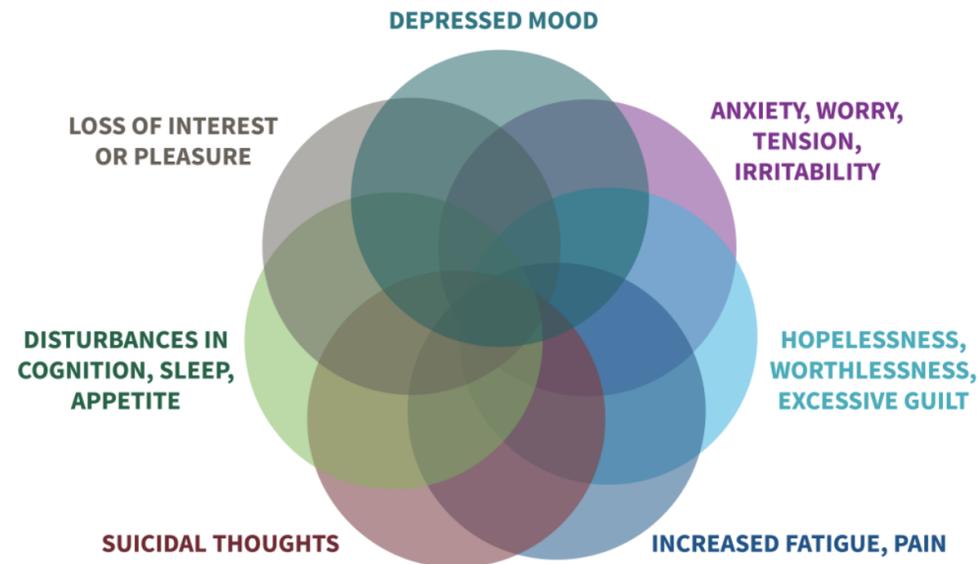
Jagriti 'Jackie' Bhattarai, PhD
Sarah Minden, MD
Aaron Turner, PhD, ABPP-RP
Rosalind Kalb, PhD

Emotional Disorders in MS

- **Depression** is the most common mental health diagnosis in MS, with a lifetime risk for major depressive disorder of 50–60%.
- **Anxiety** frequently occurs with depression. Compared to the general population, anxiety is three times more common in MS.
- **Suicidal ideation** is about three times as common in MS compared to the general population.
- **Adjustment disorder** and **bipolar disorder** are also more common in MS.
- **Pseudobulbar affect (PBA)**, involuntary laughing and/or crying often without consistent feelings, affects more than 10% of people with MS.

- Overlap between mood, fatigue, pain, sleep, and cognition
- Structural brain changes on MRI account for almost 50% of the variance in the presence of MS-related depression
Centonza A, et al. Changes in the presence of MS-related depression depression. *Nat Rev Neurol* 10, 507–517 (2014). <https://doi.org/10.1038/nrneuro.2014.139>

Figure 1: Symptoms of Emotional Disturbance



Screeener

Table 1: Screeners for Emotional Disturbance in MS

Symptom/DX	Measure	Cut-score	Source
Depression (major depressive disorder; adjustment disorder; dysthymia; bipolar affective disorder)	Patient Health Questionnaire-9 or PHQ-2	≥ 10 $\geq 1x$ "Yes"	phqscreeners.com/select-screener
	Beck Depression Inventory-Fast Screen (BDI-FS)	≥ 4	pearsonassessments.com/
	Center for Epidemiologic Studies Depression Scale (CES-D)	≥ 10	cesd-r.com
Anxiety (generalized anxiety disorder; adjustment disorder)	Generalized Anxiety Scale-7 or GAD-2	≥ 7 ≥ 2	phqscreeners.com/select-screener
	Beck Anxiety Inventory (BAI)	≥ 10	pearsonassessments.com/
	HADS-Anxiety	≥ 8	gl-assessment.co.uk
Pseudobulbar Affect (PBA)	Center for Neurologic Study – Lability Scale	$\geq 13-17$	Moore et al. (1997)

Emotional Wellness

Resources

National MS Society MS Navigator Program

Patients can connect to an MS Navigator for mental health resources and referrals to providers at nationalMSSociety.org/MSnavigator or 1-800-344-4867. Visit nationalMSSociety.org/FDR to search for mental health providers online.

American Academy of Family Physicians (AAFP) - The EveryONE Project

The AAFP website provides resources to screen for and address problematic SDOH: aafp.org/family-physician/patient-care/the-everyone-project.html

- **Social Needs Screening Tool:**
aafp.org/content/dam/AAFP/documents/patient_care/everyone_project/hops19-physician-form-sdoh.pdf
- **Social Needs Patient Action Plan:**
aafp.org/dam/AAFP/documents/patient_care/everyone_project/action-plan.pdf



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November 3rd, 2021

WATCH



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Planning For An Unpredictable Future
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Why Am I So Tired? Fatigue & Other Invisible MS Symptoms
July 7th, 2021

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WEBINAR WEDNESDAYS
Register now for webinar series taking place on the 1st Wednesday of every month.
REGISTER

MS MOVES
Join us for a new fitness program with a functional focus!
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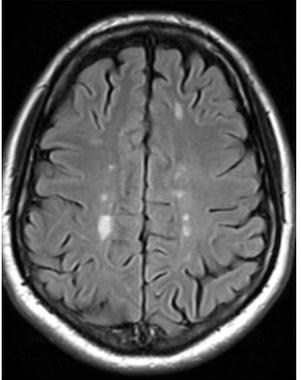
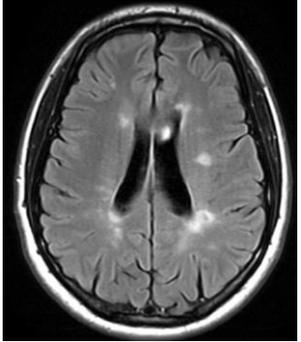
THE LEGENDARY BACK BO
SKI for MS
The ski and snowboard fundraising event of the season- is returning to two mountains alongside new virtual opportunities!
REGISTER

<p>Diet, Exercise & Healthy Behaviors Focus on diet, exercise and health-promoting strategies. Read More</p>	<p>Emotional Well-Being Enhance your resilience, manage stress and strengthen your coping skills. Read More</p>	<p>Spiritual Well-Being Finding and building on the values and beliefs that provide meaning and purpose in our lives. Read More</p>	<p>Cognitive Health Keep your mind organized, engaged, stimulated and challenged. Read More</p>
	<p>Work, Home & Leisure Engage in meaningful and rewarding activities that nurture your sense of purpose. Read More</p>	<p>Relationships Seek and actively participate in social networks, friendships and intimate relationships. Read More</p>	

Case 1

34-year-old man with a diagnosis back pain and sciatica.

2018 noticed difficulty with walking and right leg heaviness. 2019 started to use his non-dominant hand more. Also reports urinary hesitancy, constipation, and erectile dysfunction. No distinct neurologic episodes lasting longer than 24-hours that improved over time. Endorses some depressive thoughts related to his physical limitations, concerned his wife will have to be his caretaker.



- Depression
Factors (sleep, history)
Intervention (therapy, education, meds)
- Bladder/Bowel/Sexual
Factors (caffeine intake, diet, hydration, mood)
Intervention (pelvic floor, education, lifestyle, meds)
- Ambulation
Factors (weakness, spasticity, balance, sensory)
Intervention (exercise, rehab, medicine) - Treat spasticity

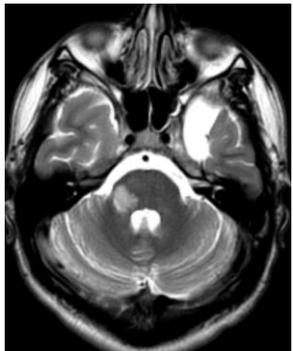
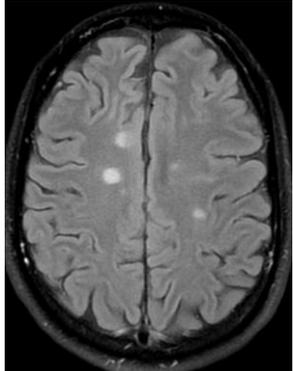
Case 2

26-year-old man referred after 3 months of neurologic episodes.

September upper respiratory infection, 2-weeks later with facial weakness. Received diagnosis of Bell's palsy. Then had new onset of double vision with horizontal nystagmus on leftward gaze. Decreased sensation over left leg. December developed impaired balance, left arm numbness, slurred speech.

Motor deficits resolved, ongoing fatigue. will be going back to graduate school.

- Cognition
 - Factors (graduate student, sleep, fatigue)
 - Intervention (education, school accommodations, lifestyle)
- Fatigue
 - Factors (graduate student, sleep)
 - Intervention (education, school accommodations, lifestyle)



Pearls

- It is important to set expectations of DMT goals vs. symptom management.
- Lifestyle education critical in addition to pharmacologic treatments.
- Make one medication change at a time. Be mindful of polypharmacy.
- If the medication is not helping despite optimizing dose, consider discontinuation.
- Symptom management is an evolving and dynamic process, continue to revisit.

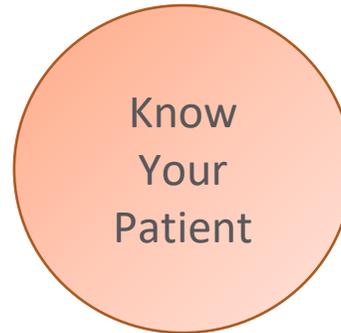


Year 1 Follow-up

Follow-up visits

Clinic setup

- Bandwidth
- Collaboration
- Mid-level providers
- Nursing support
- Social workers
- Specialty pharmacists
- NMSS navigators
- Telehealth
- Patient ability and preference



Context

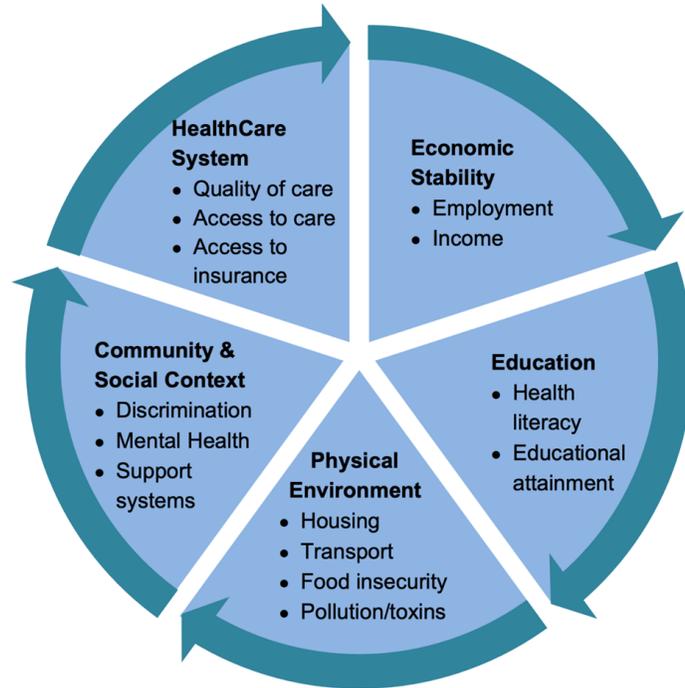
- After new diagnosis
- Starting a new disease modifying therapy
- Active symptom management
- Stable on DMT – at least every 6 months
- Stable off DMT – at least annually

Empowerment

- Patient education and empowerment
- Motivational interviewing
- Focus on wellness and quality of life

Financial Considerations

Figure 4: Social Determinants of Health (SDOH)



The American Academy of Family Physicians (aafp.org) provides screening tools that can be completed in the waiting room or during the visit with the provider. It is always important to follow up on patient-reported social barriers to care, and The EveryONE Project provides resources for this purpose. Incorporation of emotional symptoms is important when screening for SDOH.

ARTICLE

Out-of-pocket costs are on the rise for commonly prescribed neurologic medications

Brian C. Callaghan, MD, MS, Evan Reynolds, MS, Mousumi Banerjee, PhD, Kevin A. Kerber, MD, MS, Lesli E. Skolarus, MD, MS, Brandon Magliocco, MPH, Gregory J. Esper, MD, MBA, and James F. Burke, MD, MS
Neurology® 2019;92:e2604-e2613. doi:10.1212/WNL.0000000000007564

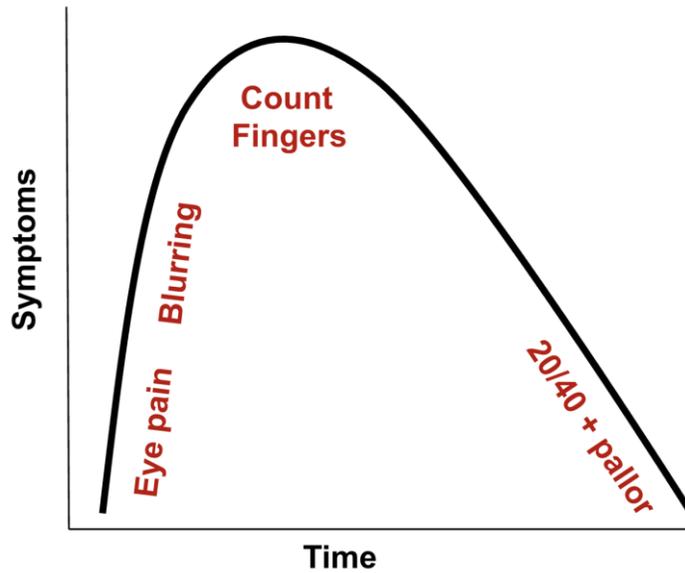
Correspondence
Dr. Callaghan
bcallagh@med.umich.edu

- 2016 patients were paying approximately \$300 per month in out-of-pocket expenses.
- For patients in high-deductible health plans, this cost doubles to about \$600 per month.

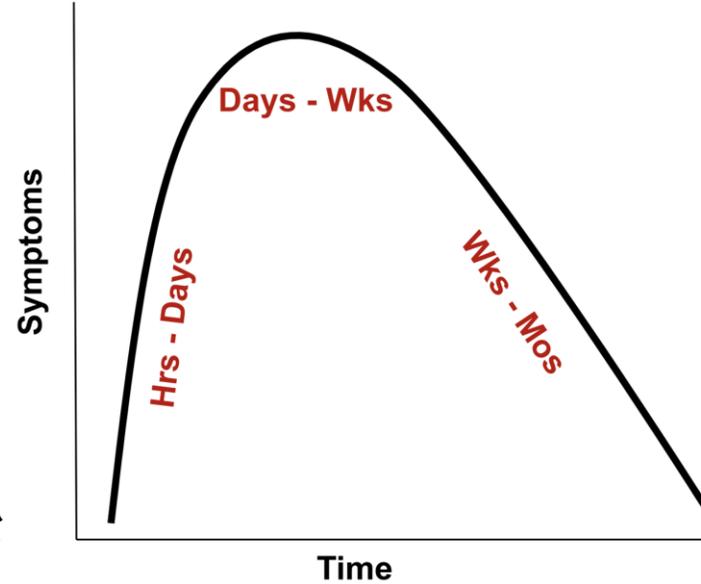
Prescriber & Patient Considerations

- Tier levels for insurance
- Copay cards
- MS Foundation funds
- Off set other costs

Relapse vs. Pseudorelapse



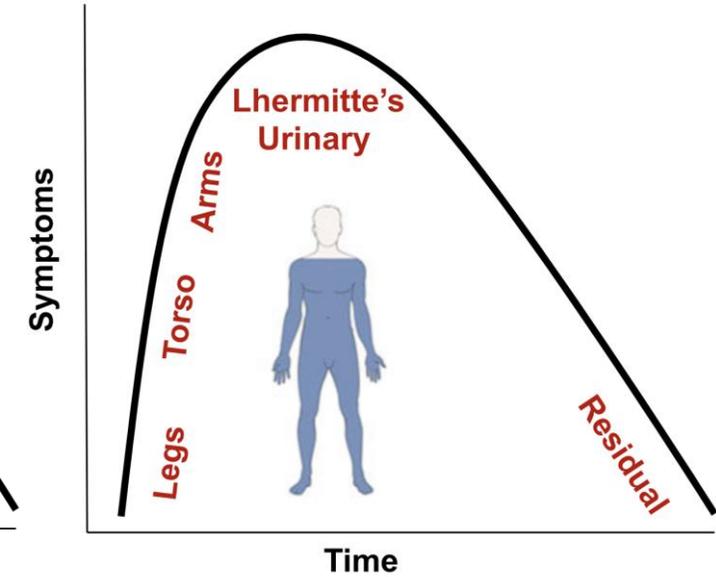
Optic Neuritis - RAPD, disc pallor, VA loss, central scotoma, red desaturation



Symptoms typical of CNS acute inflammatory demyelinating lesions

Lasting at least 24 hours

No fever or infection



Transverse myelitis - sensory loss, sensory level torso, weakness, hyperreflexia, upgoing toes, clonus, urinary retention

When to reimaging

CMSC MRI Protocol and Clinical Guidelines for MS 2018

MRI Brain

- No recent prior imaging available
- Postpartum to establish a new baseline
- Prior to starting or switching disease-modifying therapy
- Approximately 6-12 months after switching disease-modifying therapy to establish a new baseline on the new therapy
- Every 1-2 years while on disease-modifying therapy to assess for subclinical disease activity.
- Less frequent MRI scans required in clinically stable patients after 2-3 years of stable treatment (gadolinium-based contrast optional)
- Unexpected clinical deterioration or reassessment of original diagnosis (gadolinium-based contrast recommended)
- Gadolinium-based contrast agents is helpful but not essential for detecting subclinical disease activity because new T2MS lesions can be identified on well-performed standardized MR imaging unless there is a large T2 lesion burden which may obscure new T2 lesions activity

MRI Spinal Cord

- Symptoms referable to the spinal cord (myelitis, progressive myelopathy)
- Older age of onset
- Recurrent myelitis
- Limited role for establishing dissemination in time



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Home » How MSAA Can Help » MRI Access Fund

MRI Access Fund

<https://mymsaa.org/msaa-help/mri/>

Medication Management

Polypharmacy in MS

- Polypharmacy was observed in **56.5% of the patients** (N=306).
- High degrees of disability, comorbidities and inpatient treatment were associated with a significantly higher risk of polypharmacy.

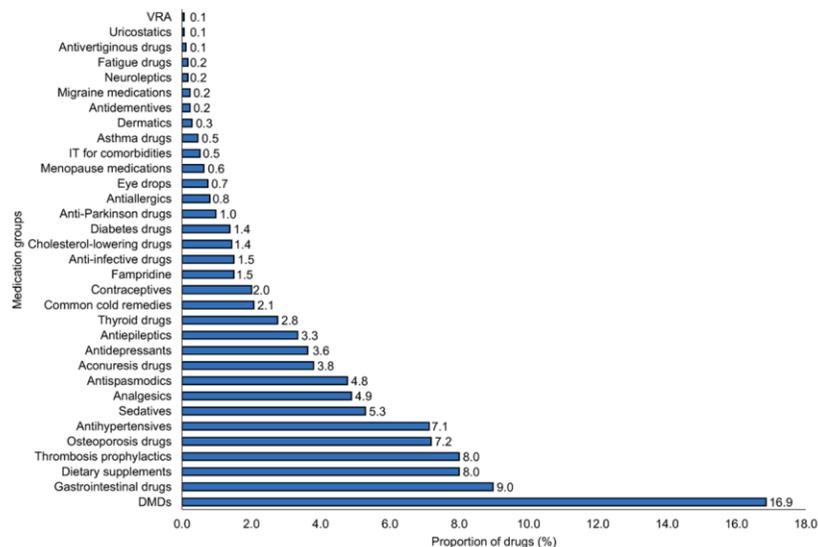
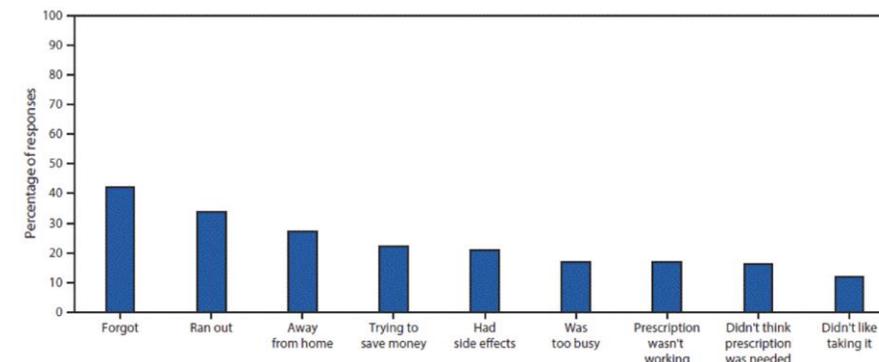


Figure 5. Proportion of categories of medications used by MS patients. The proportions of the medication groups were calculated according to the total number of drugs taken by the 306 patients included in our study (N = 1738). The proportions ranged from 0.1% (VRA, uricosstatics) to 16.9% (DMDs). DMDs, disease-modifying drugs; IT, immunotherapy; MS, multiple sclerosis; N, number of medications; VRA, vasopressin receptor antagonists.

Medication Adherence for Chronic Disease Management

- Nonadherence is associated with higher rates of hospital admissions, suboptimal health outcomes, increased morbidity and mortality, and increased health care costs.
- In the United States, 3.8 billion prescriptions are written annually.
- Approximately **one in five new prescriptions are never filled**, and among those filled, **approximately 50% are taken incorrectly**, particularly with regard to timing, dosage, frequency, and duration.

FIGURE. Self-reported reasons* for nonadherence to recommended medication regimens — United States, 2013



Source: Medication Adherence in America: A National Report Card, 2013. Adapted with permission. https://www.ncpanet.org/pdf/reportcard/AdherenceReportCard_Abridged.pdf

* Participants could provide more than one response, and as such, categories are not mutually exclusive.

Pearls

- New diagnosis of multiple sclerosis can create fear and uncertainty.
- Approach every patient and diagnosis with thoughtfulness.
- Don't let insurance be a barrier to the right disease DMT.
- Avoid cognitive anchoring, can lead to delay in diagnosis.
- Ask about adherence for DMT, vitamin D, medications.
- Set up plans for timing of re-imaging and labs.
- The best way to provide care is collaboration.
- Empower patients!



Resources

Resources



ELLECIA, DIAGNOSED IN 2011



JOSHUA, DIAGNOSED IN 2015



ERIC, DIAGNOSED IN 2003

NEW TO MS RESOURCE GUIDE

If you or a loved one have recently been diagnosed with multiple sclerosis (MS), you may not even know where to begin and what this means in terms of the rest of your life. We want you to know that you are not alone.

RESOURCES

Many people find it helpful to start by gathering the facts. Learning as much as you can about MS and getting answers to common questions can help you feel confident and in control of your health. The clickable links below will provide access to MS information and resources:

- [Newly Diagnosed](#)
- [What is MS](#)
- [Symptoms and Diagnosis](#)
- [Treating MS](#)
- [Living Well with MS](#)
- [Relationships](#)
- [Work, Home and Leisure](#)
- [Disclosing Your Diagnosis](#)
- [Knowledge Is Power](#)
- [Resources and Support](#)
- [MS Navigator](#)
- [Get Involved](#)

CONNECT WITH US

- [@nationalMSSociety](#)
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- [@MSSociety](#)
- [@nationalMSSociety](#)
- [@national-MS-society](#)



HANNAH, DIAGNOSED IN 2017

TOGETHER WE ARE STRONGER.

The National MS Society's mission is that we will cure MS while empowering people affected by MS to live their best lives.

We help you do that by addressing the challenges of living with MS through a variety of resources and support options. We have resources for families, spouses and children who can also experience the effects of MS.

CONTACT US

1-800-344-4867
ContactUsNMSS@nmss.org
nationalMSSociety.org



PUBLICATIONS & RESOURCES FOR HEALTHCARE PROFESSIONALS

Connect with us! [@mssocietyHCP](#)

THE NATIONAL MS SOCIETY'S PROFESSIONAL RESOURCE CENTER PROVIDES:

- Easy access to comprehensive information about MS management
- Dynamic, engaging tools and resources for clinicians and their patients
- Literature search services to support high quality clinical care

CLINICAL PUBLICATIONS

[nationalMSSociety.org/clinicalbulletins](#)

- Disease and relapse management
- Health and wellness
- Symptom management
- Rehabilitation
- Health insurance appeal letters
- Applying for Social Security Disability

CONTINUING MS EDUCATION

[nationalMSSociety.org/professional-education](#)

- Online courses/webinars for MS healthcare providers
- ECHO MS
- Pediatric difficult case calls
- Mental health discussion calls

RESOURCES FOR YOUR PRACTICE

[nationalMSSociety.org/PRC](#)

- Clinical study measures
- Multiple Sclerosis Action Plan
- AAN practice guideline
- Literature search service
- The latest on COVID-19 and telemedicine

RESOURCES FOR PATIENTS

[nationalMSSociety.org](#)

- Newly diagnosed information
- Symptom management and wellness
- Resources and support
- Research information and participation
- MS Activist Network
- COVID-19 updates

NATIONAL E-NEWSLETTER

[nationalMSSociety.org/clinicalcareconnection](#)

- The latest news for MS professionals

LOCAL E-NEWSLETTER

- Local events
- Continuing education
- Advocacy updates

FELLOWSHIPS/MENTORSHIPS

[nationalMSSociety.org/fellowshipsgrants](#)

- Clinical care physician fellowships
- Postdoctoral research fellowships
- Clinician scientist development awards
- Psychology Graduate Students Mentorships
- Medical Student Mentorships

[nationalMSSociety.org/PRC](#)

Email healthprof_info@nmss.org for information and resources, to request the MS Clinical Care Connection and to learn about Society-branded slide decks for education and training purposes.

1-800-344-4867 | [nationalMSSociety.org](#)

Resources

The screenshot shows the VA website's navigation and content for Multiple Sclerosis Centers of Excellence. At the top, there is a header with the VA logo, U.S. Department of Veterans Affairs, a search bar, and a 'Sign in' button. Below the header, there are navigation links for 'VA Benefits and Health Care', 'About VA', 'Find a VA Location', and 'My VA'. The main content area is titled 'Multiple Sclerosis Centers of Excellence' and includes a breadcrumb trail: 'VA > Health Care > Multiple Sclerosis Centers of Excellence > Veterans > Treatment and Management Options for Multiple Sclerosis'. A left sidebar contains a menu with categories like 'Multiple Sclerosis', 'Veterans', 'Caregivers/Partners', and 'More Health Care'. The main content area is titled 'Treatment and Management Options for Multiple Sclerosis' and contains several sections: 'Disease Modifying Therapies', 'Choosing the Best DMT For You', and 'QUICK LINKS'. The 'QUICK LINKS' section includes a 'Hospital Locator' form and a list of links such as 'Generic and Biosimilar Disease Modifying Therapies', 'Making the Decision to Use Disease Modifying Therapies for MS', 'MS Medications: Decisions and Discussions', 'National MS Society: Medications', 'New Drugs in the Pipeline' (fall 2020 newsletter), and 'Understanding Your Medications'.

VA Benefits and Health Care ▾ About VA ▾ Find a VA Location My VA

VA > Health Care > Multiple Sclerosis Centers of Excellence > Veterans > Treatment and Management Options for Multiple Sclerosis

Multiple Sclerosis Centers of Excellence

▾ Multiple Sclerosis

- Multiple Sclerosis Centers of Excellence Home
- Sign Up To Receive MS Information

▾ Veterans

- About MS
- Benefits and Services
- Find a Clinic
- Frequently Asked Questions
- Living Well/Whole Health
- Research
- Resources
- Symptoms
- Treating/Managing MS
- Veteran Stories

▸ Caregivers/Partners

▸ Health Care Professionals

▸ Programs and Products

▸ MS Centers of Excellence

Ask a Question

▸ More Health Care

Treatment and Management Options for Multiple Sclerosis

The goals for MS therapies are to reduce the frequency of relapses, slow the progression of the disease, manage symptoms, and improve quality of life. Medications for MS focus on controlling the immune system and managing symptoms. People with MS should work with their MS Multidisciplinary Care Team to find the best approach to address their MS symptoms.

Disease Modifying Therapies

Over sixteen different disease modifying therapies (DMTs) have been approved by the US Food and Drug Administration (FDA) for the treatment of MS. These include injectable, oral, and infused medications. DMTs have been shown to reduce relapses and neurologic disability, but be aware that DMTs do not treat chronic symptoms or restore lost function.

People with MS who are good candidates for a DMT should start treatment as soon as possible. Research shows that early treatment with DMTs can reduce long-term disability from MS. Use of DMTs is not limited by the frequency of relapses, age, or level of disability. Treatment is not stopped unless it is clearly no longer effective, there are intolerable side effects, or a better treatment becomes available.

As with all medications, there can be side effects. Your health care provider will discuss these with you and help you to select the most appropriate medication. If your condition changes or you experience bothersome medication side effects, your VA health care team will work with you to find solutions.

Choosing the Best DMT For You

- Discuss your MS disease course with your health care provider as well as the benefits and risks of therapies.
- Contemplate the route of the therapy - oral, self-injection by needle, or clinic appointment infusion (into the vein) - and your ability to take the therapy as prescribed.
- Understand how often you'll need to be seen for exams, labs, infusions, and follow-up care.
- Consider your overall health and family planning

Information on medications for MS can be found on the [DMTs for MS](#) page, which provides links to National MS Society information.

QUICK LINKS

Hospital Locator

Zip Code

- [Generic and Biosimilar Disease Modifying Therapies](#)
- [Making the Decision to Use Disease Modifying Therapies for MS](#)
- [MS Medications: Decisions and Discussions](#)
- [National MS Society: Medications](#)
- [New Drugs in the Pipeline](#) 📄 (fall 2020 newsletter)
- [Understanding Your Medications](#)



Society Information and Resources for People Affected by MS

The National MS Society provides services, support and resources for navigating your best life with MS. To learn more, contact us at 1-800-344-4867 or visit nationalMSSociety.org/resources.

SUPPORT

MS NAVIGATOR®

Our nationwide team of MS Navigators is made up of compassionate, highly skilled professionals who work with you one-on-one to ensure that you are informed, connected and supported throughout your MS journey. MS Navigators work to find solutions for the unique and often complex challenges of MS. Connect with an MS Navigator by phone at 1-800-344-4867, email at ContactUsNMSS@nmss.org or via chat Monday through Friday, 7 a.m. to 5 p.m. MT. For more information, visit nationalMSSociety.org/MSNavigator.

SELF-HELP GROUPS

Self-help groups bring people together who share common life experiences for support, education and mutual aid. Members lift each other up through personal struggles and encourage each other to try new things and live each day to its full potential. Visit nationalMSSociety.org/SupportGroup to find a support group.

MSFRIENDS®

The MSFriends program connects you one-on-one with peers who understand MS. MSFriends are volunteers who are trained, focus on your needs and provide emotional support. Learn more about MSFriends Helpline and MSFriends Paired by visiting nationalMSSociety.org/MSFriends.

FACEBOOK COMMUNITY GROUP

An opportunity to learn about health and wellness, symptom management and other MS-specific topics, while also sharing, commenting, and connecting to other group members for advice and support. facebook.com/groups/nationalMSSocietycommunity

ADVOCACY

CURRENT POLICY ISSUES

The National MS Society and MS activists advocate at the federal, state and local levels for increased MS research funding, access to quality care, disability rights, long-term services, awareness and organizational support. Learn more about the policy issues we are currently advocating for at nationalMSSociety.org/advocacyissues.

MS ACTIVIST NETWORK

Join the MS Activist Network! Receive updates and action opportunities on federal, state and local policy affecting the MS community. In just a few clicks, you can email your public officials about why an issue is important to you. nationalMSSociety.org/MSactivist



Multiple Sclerosis Action Plan

What to do if you have new or significantly worsening MS symptoms

MS symptoms can appear in many ways, including:

- **Weakness, numbness, tingling, spasms of pain** in your arms, legs, or face
- **Problems with walking, coordination, loss of balance**
- **Vision problems**, such as **blurred vision** (especially in one eye which is painful), or **double vision**
- **Difficulty going to the bathroom**, such as having to rush to the bathroom or accidents
- **Fatigue** that is much more than usual
- **Memory loss or difficulty concentrating**, slow thinking, brain fog
- **Speech problems** - slurred speech

Knowing when to contact your MS provider can be difficult. If you develop a symptom listed in the box on the left, your MS provider will have a higher level of concern depending on:

- **New or old:** Are you having new symptoms you have not had before, or are you having a return of symptoms you have had previously? (We call worsening of old symptoms a “pseudo-relapse” also known as “pseudo-exacerbation” or “false attack”. It is called this because the symptom happens when something has aggravated your condition, like a fever, infection, or hot weather, rather than your MS being currently active.)
- **Severity:** Are your symptoms severe enough that they are interfering with your usual activities?
- **Symptom duration:** How long have your symptoms been going on?
- **Other body stressors:** Are you fighting off an infection, not sleeping well, overheated, on a new medication, or under a lot of stress which could temporarily worsen old MS symptoms?

Below is a chart with 3 “levels of concern” (Green, Yellow and Red), with guidelines on what to do:

Level of Concern	New or Old	Symptom Severity	Symptom Duration	Other Body Stressors	Action Plan
Green (Low) (likely a pseudo-relapse caused by worsening of old symptoms)	Old	Not interfering with regular activities	24 hours or more	Yes (your MS provider may want certain lab tests including a urinalysis to look for an infection – often the cause of a pseudo-relapse).	Contact your MS provider to report the symptoms, keep well rested/hydrated, manage any illness with your primary care provider, and watch for any increasing symptoms.
Yellow (Medium) (possibly a new MS relapse)	Old or new but mild (minimal interference with regular activities)	Starting to interfere with regular activities	Symptoms persisting for more than 24 hours	No	Contact your MS provider and schedule an appointment within a few days; if symptoms are fading already, your MS medical team may opt to “watch and wait.”
Red (High) (clearly a new MS relapse)	New	Interfering with regular activities	More than 24 hours and not improving	No	Contact your MS provider as soon as possible. Your MS provider will recommend next steps which might include an urgent office visit or other intervention.

If your symptoms don't exactly fit into this chart, always contact your MS provider to describe your symptoms, and your MS medical team can help sort out the level of concern. Please contact your MS provider and discuss symptoms which concern you, no matter what zone you are in.

Thank You

Contact
Nina Bozinov
nbozinov@kh.org



Your feedback is important to us!

Please take the program survey in the TRAIN and/or TMS websites. This will give you access to your CME/CE certificate.

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What's On Your Mind?

Please type your question into the  Q&A area in the lower right corner of your screen.



Thank you and please join us for the next webinar on May 9, 2022!

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