

## **MS Case 2**

Mr. C is a 55 year old white male. He came to a PT Outpatient Neurology Clinic for evaluation of his current mobility level. Mr. C was originally diagnosed with RRMS 25 years ago. His first exacerbation came 8 years after the initial onset/diagnosis. In the past 5 years he has had 3 exacerbations, 2 in the last year. At his last neurology appointment, his MD modified his diagnosis to SPMS (Secondary Progressive MS) and noted his EDSS score to be between a 6 and 7.

Mr. C's complaints include fatigue, forgetfulness, falls (from his chair 1x per week, from standing 3-4 times per week), poor balance sitting on the bed for ADL's and difficulty getting around his home with the standard weight manual wheelchair or the single point cane he has. He additionally expresses his frustration with blurred vision, decreasing safety with driving, sensory changes in the feet and leg on the right side and clumsiness with his hands.

Mr. C is still working part-time at the library managing the accounting. He lives with his wife who works full time as a Principal in a high school. His kids are at college and away from home. He lives in a one-story house with 4 steps to enter, rail on both sides (accessible to both rails) with bathroom and bedroom on the first floor. 5 years ago, all doors were widened and the bathroom was modified to be fully handicapped accessible with a roll in shower.

Mr. C has a standard manual wheelchair which he received at a garage sale which he uses partially in the home each evening. He utilizes a cane for walking otherwise and in the community, though this is getting more difficult.

Mr C's goals are to remain independent in his home and lessen the worry for his wife and children.

**DIAGNOSIS:** MS Case 2

**PRELIMINARY HYPOTHESIS: (add or delete rows as needed)**

**What impairments do you expect?**

Multi-System	Associated Single-System(s)	WHY?
Balance	<ol style="list-style-type: none"> <li>Somatosensation</li> <li>Vision: Nystagmus, gaze fixation, acuity</li> </ol>	<ol style="list-style-type: none"> <li>Sensory disturbances due to plaques are common in MS. Increased falls could be linked to altered incoming feedback.</li> <li>Cranial nerves III, IV, and VI plus the MLF are often demyelinated in MS. This could lead to INO and difficulty with gaze fixation.</li> </ol> <p>Both above are factors in ability to maintain static and dynamic balance in ADL's, transfers, and gait.</p>
Muscle Weakness	<ol style="list-style-type: none"> <li>Core musculature/spinal-extensors/stabilizers</li> </ol>	Suspected lack of proximal stability and possible demyelination of type II muscle fibers needed for balance recovery.
CNS	<ol style="list-style-type: none"> <li>Coordination: All</li> <li>Cognition: word recall, object recognition</li> </ol>	Demyelination at the cerebellar and cortical levels will lead to coordination and memory impairments, respectively.
Endurance	<ol style="list-style-type: none"> <li>CV</li> <li>Muscular</li> </ol>	Different disease states (exacerbations vs remissions) can have an impact on endurance

**What activity limitations do you expect to see? Why?** Based off the case, current level, outcome measure provided and time since injury, what do you anticipate will be a functional limitation and to what degree, why? (the why should link neuroscience and neuromuscular processes, disease progression/pathology NOT 'because it was in the case')

Activity Limitation	To What Degree (Level of assist)	WHY?
Assisted gait	Use of AD/WC intermittently	EDSS score indicative of ambulation issues
Ability to perform ADLs impaired	Mod/Max A	RRMS exacerbations can interfere with the ability of the patient to perform ADLs due to demyelination, pain, and ambulation issues.
Stairs	Mod/Max A	Patient does not have a ramp and lives in a home with stairs. Exacerbations of this disease can interfere with this task due to loss of motor control.

### **SUBJECTIVE QUESTIONS:**

Based off of the case presented and your associated coursework knowledge, identify 8 questions that would be helpful in guiding your examination and assisting in ruling in/ruling out the need for screens versus examinations and selecting appropriate outcome measures. (Limit home set-up and prior activity questions to ONLY those that you need RIGHT now to do your examination and make choices)

1. What are the circumstances when you fall? From chair? With cane?
2. Do you experience dizziness?
3. Are there specific instances when your vision is blurry or is it constant?
4. How do you get up when you fall? Require assistance?
5. When are you most fatigued?
6. What types of things do you forget?
7. Are you experiencing difficulty at work?
8. What breaks your heart? What breaks your back? (for wife)

### **SCREENS: (add or delete rows as needed in the next four sections))**

List the systems you will SCREEN (versus fully examine), identify what elements of the screen you will prioritize (or state "all" if the whole screen needs to be done) and why.

<b>SYSTEM TO SCREEN</b>	<b>What will you screen (or write "all")</b>	<b>Why?</b>
CN	Screen all except CN III, IV, VI	MS can affect motor and sensory information, however the CN's for vision are most often impacted. Due to his complaint of blurriness and what is expected in Charcot's Neurologic Triad, all CN's can be screened except those for vision.
Coordination	Alternating reciprocal, Intention tremor	If the cerebellum is involved, coordination would be impaired. Due to patient report of clumsiness in his hands, this requires at least a prerequisite look at his coordination. Intention tremor is a component of Charcot's Triad and the screen may help decide if weakness is due to fatigue or plaques along the spinal cord.
Cognition	Word recall	Memory or intellect can be affected in MS

### **EXAMINATIONS:**

List the systems you will FULLY EXAMINE (versus screen) and identify why.

<b>SYSTEM TO EXAMINE</b>	<b>What will you examine? (Or write "all")</b>	<b>WHY?</b>
Balance	All: seated, standing, SLS, perturbation reactions, anticipatory	Determine reason for falls and inability to obtain upright position

Gait	Complete analysis	Identify compensation, specific presentation of gait abnormalities, formulate qualitative and quantitative assessment
Endurance	Myotomes, Cardiovascular endurance	Identify source of fatigue; slow neural conduction rate so we expect more energy expenditure
Vision	All	Possible effects on CN III, IV, V and MLF leading to blurred vision

### FUNCTIONAL TASKS:

List the Functional Tasks you feel are necessary to assess at this initial examination and state a reason why.

Functional Task you will assess	WHY?
Static and dynamic sitting	To determine source of loss of balance
Sit to stand	Assess ability to transfer and compensations
Bed to chair	To help determine safety and source of falls
Walking w/ and w/o AD	Determine source of falls, efficiency of gait with AD, is it needed or appropriate?
WC propulsion	In order to achieve independence as stated in pt goals
Stairs	Assess for safety for home environment, community participation, meet pt goal of functional independence

### OUTCOME MEASURES:

List Outcome Measures you feel are **most relevant** for this patient and why and identify level of ICF. Add or remove rows as needed. (consider setting and appropriateness. What are goals? These outcome measures should guide your treatment toward goals as well as give you a means of prognosis and/or showing progress)

Outcome Measure Chosen	Why?	ICF Level
TIS	To assess sitting dynamic balance and compensation	Impairment; Activity
DGI	Assess dynamic gait balance and has been researched in MS pops	Activity

TUG	Combines sit to stand and gait speed while also assessing turns	Activity
T25FWT	Research support use of time walking tests for MS pops	Impairment
MSWS-12	Self report measure; highly recommended by MS EDGE	Participation

**EDUCATIONAL NEEDS:** add or remove rows as needed

Person Being Educated	What education is needed?	Why is this education needed?
Pt	Energy conservation	Pt report of fatigue, nature of disease progression
Caregiver	Proper handling when giving assistance	To reduce caregiver burden
Pt and caregiver	Education of disease and support groups	Improve coping and give realistic expectations

**WHAT IS THE ROLE OF PT FOR THIS PATIENT?** (clearly identify if this is a one time visit, suggest a timeframe for visits for the episode of care, is this for restorative, compensations, family training, equipment prescription, a combination (explain).

ROLE OF PT	Explain your plan related to the topic (if not part of plan put "not needed")	What resources will you or the patient need to accomplish this?
# of visits	16 visits	To teach compensations for greater functional independence, family training, pt education on disease and energy expenditure, equipment assessment
Equipment	Appropriately fitted WC for possible trunk support and easier maneuvering capabilities; walker/cane depending on pt use and nature of falls	Medical supply company, insurance, adaptive equipment
Community Resources	Recommend MS support group for improved outlook and coping strategies when dealing with progressive nature of disease	Online community resource: <a href="http://www.msvoice.com">http://www.msvoice.com</a>

Home exercise program	Interval training given to focus on core stability, anticipatory and reactionary balance, exercises focused in standing and sitting, walking and w/c propulsion for CV (i.e. progressive distance/intensity, altered based on RPE during exacerbations)	Input from Mr. C is most vital in developing a viable HEP to increase adherence, motivation, and a feeling of control for the patient.
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