**Welcome to Advanced Patient Case Modules in MS!**

**Audience: 2nd year scholars**

These modules have been created to further your knowledge and understanding of MS as a disease, the roles as a physical therapist treating patients with MS, the wide variability in presentations of MS, and your skills problem-solving complex patient scenarios. It is our hope that these modules will solidify your current knowledge from the first-year modules and your respective clinical rotations, expand your evaluative and treatment knowledge and skills, advance your resources as a future clinician, and promote the integration of updated and current research into the MS STEP UP program.

There are two advanced patient cases modules, one is a moderately-advanced case of MS and one is a case of advanced MS.

**Format of the Modules:**

Read through the description of each module followed by the objectives within each module. The modules contain 3-4 Voicethreads each, and each Voicethread concludes with a forum prompt. After posting your forum responses, you should access the next Voicethread in the module. Email notifications will be sent to VLT members so they can read and provide feedback to your response.

You are expected to have evidence to back up your responses, but these forums are aimed at encouraging active learning, synthesis, and integration of the concepts provided within the modules. Always feel free to reach out to previous scholars, VLT members, your MS STEP UP advisor, and your co-scholar for assistance, advice, and/or support during your learning!

**Sakai Lesson Page:**

**Title**: Case of Moderately Advanced MS: “Pete”

**Dates**: MS STEP UP 1st Year Summer OR 2nd Year Fall Semester

**Description**:

The purpose of this module is to promote advanced clinical reasoning and knowledge related to evaluating and treating patients with moderately advanced MS. This patient case module is focused on a 49-year-old male with Secondary Progressive Multiple Sclerosis who was diagnosed at age 39. He currently uses a Nitro rollator for short distance walking and a motorized scooter for longer distances. He lives alone in a first-floor apartment. His EDSS is 6.5. See the listed objectives for a brief overview of topics to be covered.

The structure of this module includes 4 Voicethreads, separated by prompts for forum posts. Once forum posts are submitted, you should have access to previous answers to the forum questions, and VLT members will be notified of your post, so that they can provide additional feedback on your responses. Links to Voicethreads and Forums are below.

**Objectives**:

Part 1: Meet Pete

* Develop proficient understanding of the **pathophysiology** and risk factors of MS
* Differentiate the types of MS and understand **diagnostic criteria and prognosis**associated with each
* **Analyze magnetic resonance imaging (MRI)** of the brain and cervical spine with MS lesions and understand the different types of MRI and contrast agents used
* Explain the **roles of BDNF and neuroplasticity** in physical rehabilitation
* Differentiate **primary from secondary symptoms** of MS
* Understand the various **roles of the physical therapist in MS care** across lifespan
* Navigate complicated **socioeconomic, financial, and social situations**
* Consider the **impact of insurance and healthcare coverage** for people with MS across the disease course and how you demonstrate progress in a neurodegenerative disease

Part 2: Pete’s Evaluation and Intervention

* **Prioritize impairments** in complex patient case including psychosocial, neuromuscular, and systemic conditions following the ICF model
* Become familiar with common **disease-modifying therapies (DMTs)** and symptom-related medications for people with MS along with common side effects with each
* **Analyze** **medication list** and recognize presenting symptoms as negative side effects associated with common MS medications
* Become proficient in **gait analysis** in MS
* **Analyze and prioritize outcome measures** commonly used with persons with MS
* Analyze all components of a **comprehensive PT evaluation** in patient case of moderately-advanced MS

Part 3: Adapting Pete’s Plan of Care

* Create comprehensive **PT plan of care for moderately-advanced MS**
* Prioritize interventions for a **home exercise program** for complex patients
* **Identify resources** both in the local community and at the national level
* **Change / Adapt / Accommodate plan of care** according to medical updates
* Navigate **transition from ambulating community distances to use of a manual or power wheelchair**
* Understand the risk factors and modifiable interventions for **early-onset osteoporosis** in individuals with MS
* Develop a working knowledge of **advocacy procedures, public policy,** **and** **service systems**

Part 4: Advancing Pete’s Treatment with “Hot Topic” Intervention

* Become knowledgeable of the **pathophysiology of and symptoms associated with central vestibular dysfunction in MS**
* **Identify individuals** with MS who would likely benefit from a central vestibular rehabilitation component in their plan of care
* Become proficient in performing a **comprehensive evaluation** of central vestibular dysfunction
* **Develop a plan of care** including treatment options for central vestibular dysfunction
* Become familiar with **outcome measures** utilized to track progress and objectify improvements regarding central vestibular function

**Recommended Readings and Resources**:

* Can Do MS
* NMSS and the MS Navigator
* PTNow
* MS Primer
* The Radiology Assistant: Multiple Sclerosis: https://radiologyassistant.nl/neuroradiology/multiple-sclerosis
* O’Sullivan Text
* Shirley Ryan Ability Lab
* *You are expected to conduct your own literature reviews to provide current evidence-based responses to forum questions*

**Voicethreads**:

1. Introduction to Patient Case and MS Diagnostics
2. Navigating Patient Objective Examination in MS
3. Adapting Plan of Care in MS
4. Hot Topic Voicethread in MS for Advancing Treatment of Patient Case

**Forums**:

* **Initial Forum Prompt** (at end of Voicethread 1)

Answer the following prompt as well as 1 of the 2 additional questions:

After hearing Pete’s subjective updates in terms of social support, finances, and symptom changes among others, what other questions should you ask? Consider MS-specific symptoms that may have been overlooked or that have drastic effects on quality of life and certain complaints that Pete is reporting. This is a very open-ended question, so there is a lot of leeway. Do not feel the need to be comprehensive, but list and justify at least 5 additional questions.

Choose 1 of the following:

1. Considering the MRI’s of Pete’s brain and cervical spine, and specifically the locations of his lesions, what sort of examination findings do you expect? How would you expect his physical mobility (transfers, bed mobility, gait) to look like?
2. Reflect on the pros and cons of using a motorized scooter for community mobility. Do you think that this is an appropriate mode of navigating long distances for Pete? If not, what other means of navigating the community would you recommend for Pete and why?

* **Evaluation/Analysis Skills Forum Prompt** (at end of Voicethread 2)

Answer the following prompt as well as 1 of the 2 additional questions:

After watching the three videos of Pete ambulating and transferring, describe his gait in the discussed five-step breakdown, followed by treatment recommendations. Consider the preventive vs. rehabilitative vs. compensatory decision-making process and what would optimize Pete’s quality of life and mobility independence. Are there any safety concerns regarding his current ambulatory abilities that are not being addressed?

Choose 1 of the following:

* 1. Pete’s new apartment has 2 stairs to enter. Based on his ambulatory abilities, do you think he is able to safely navigate stairs? He spoke to the landlord who told him that the apartment has been “grandfathered in” and does not have to comply with ADA regulations. What resources does Pete have to either fight for the landlord to put in a ramp or to have a ramp put in with outside help?
  2. Based on Pete’s videos of bed mobility, transfers, and gait, what additional assistive devices and safety measures do you recommend for his new apartment?
* **Conclusion Forum Post** (at end of Voicethread 3)

Answer the following prompt as well as 1 of the 2 additional questions:

Power wheelchair (PWC) evaluations and the actual receival of a PWC are often long processes. Based on Pete’s falls history and risk factors, do you think it is appropriate to fit him for a power wheelchair? If so, how do you go about having that conversation? If not, why do you think it is worth postponing?

Choose 1 of the following:

1. Discuss the risk factors and preventive measures of osteoporosis in MS and how this may have played a role in Pete’s shoulder injury. Consider the role of common steroids used to mitigate the effects of exacerbations and pseudo-exacerbations in MS and their relation to osteoporosis. What are some options to minimize the effects of osteoporotic changes?
2. Pete has worked with a case manager to get disability status and health insurance. Based on his recent move to his own apartment, lack of family support, and falls, what options does he have for additional help? Will insurance cover this aid? What is the role of PT in this?

* **Hot Topic Proposal Forum Post** (at end of Voicethread 4)

Answer the following prompt:

Propose an innovative treatment or evaluative technique that would enhance Pete’s plan of care in some way. Choose something that is relatively new in the literature. Your choice does not have to have extensive evidence behind it, but should be specifically researched in persons with MS.

**Case of Advanced MS: “Molly”**

**Title**: Case of Advanced MS: “Molly”

**Dates**: MS STEP UP 2nd Year, Fall Semester

**Description:**

The purpose of this module is to promote advanced clinical reasoning and understanding related to working with patients with advanced MS. This patient case module is focused on a 51-year-old woman with Secondary Progressive Multiple Sclerosis who was diagnosed at age 27. She currently uses a power wheelchair for mobility and receives assistance from her husband for activities of daily living. Her EDSS is 8. See the listed objectives for an overview of topics to be covered. The structure of this module includes three parts, each with one voicethread and forum prompts. Once forum posts are submitted, VLT members will be notified of your post so they can provide feedback on your responses. Links to the three parts are below.

**Objectives:**

* Understand **diagnostic criteria** for MS including types of **imaging** used and neurologic imaging results associated with MS
* Gain knowledge of types of **medication** for people with MS, and risk-factors and interactions associated with these medications
* Develop an understanding of the assessment and impact of possible **cognitive and emotional changes** in advanced MS
* Discuss the role physical therapists can play in facilitating **interdisciplinary care** for people with advanced MS
* Identify options for power **wheelchairs** and wheelchair adaptations
* Understand factors that contribute to **prognosis** in advanced MS
* Gain knowledge of how MS impacts **pregnancy**
* Identify evidence-based **interventions** for people with advanced MS
* Consider **wellness** programs and alternative therapies for people with advanced MS
* Determine when and how to implement **caregiver education**
* Discuss the impacts of **insurance** and healthcare coverage for people with advanced MS
* Develop a working knowledge of **advocacy** procedures, public policy, and service systems

**Readings and Resources:**

* Can Do MS
* NMSS and the MS Navigator
* PTNow (l*inked*)
* MS Primer (*linked*)
* O’Sullivan Text
* Shirley Ryan Ability Lab
* *You are expected to conduct your own literature reviews to provide current evidence-based responses to forum questions*

**Voicethreads:**

Part 1: Meet Molly (link)

Part 2: Molly’s Evaluation and Intervention (link)

Considerations for Molly (link)

**Forums: *(linked*)**

**Prompts following Part 1:**

Answer the following prompt and 1 of the 2 remaining prompts.

* Based on what you know about Molly so far, what other subjective information would you want to gather and which objective examination components do you want to prioritize? What outcome measures would be suitable for Molly and why? What do you anticipate for Molly’s prognosis?

(Pick one of the following)

* Consider Molly’s medications. What might be the reason Molly is no longer on a disease-modifying therapy? What risks and interactions are you aware of associated with these medications or her previous Ocrevus medication? Are you familiar with any evidence for or against the use of CBD products for patients with MS?
* Molly became pregnant with her daughter 2-3 years after her MS diagnosis. Imagine you had been Molly’s PT at that time and that she is expressing concerns to you about whether MS may impact her fertility, pregnancy, and if her child could inherit MS. How would you respond to these questions?

**Prompts following Part 2:**

Answer the following prompt and 1 of the 2 remaining prompts:

* Based on this additional information, has your anticipated prognosis for Molly changed? What interventions would you prioritize for Molly at this time, what would your plan of care look like, and what would you include in her HEP? If her cognition continues to decline, how might you adapt these interventions? List three short-term and three long-term goals for Molly, and how you intend to assess her progress toward these goals.

(Pick one of the following)

* Molly’s wheelchair has been malfunctioning. The main issue is with changing the height and tilt of the chair. An error message will pop up stating that the chair is at an unsafe height or unsafe tilt with only minor adjustments, and will prevent Molly from continuing to adjust the height/tilt. She also believes the chair is slower than usual, and there has been a new, odd clicking noise. What are Molly’s options for maintenance for her wheelchair in order to assess and fix these issues or consider a new chair? What are some resources for her during this process? What is the role of PT?
* Molly is travelling to Croatia, Austria, and Switzerland in a few months with her husband. Make a list of accommodations she and her husband must consider ahead of time. Consider accessibility for flights/trains/lodging/sight-seeing, energy management strategies to make the most of the trip, accessibility laws/expectations in these countries, additional equipment they may need to bring, general health/medical considerations, etc.

**Final Forum Prompts:**

* Please briefly describe any concluding thoughts, new information learned, or questions you have related to Molly’s case. Share any new information you may have learned in your literature searches that would be relevant to Molly or a similar patient that you found interesting. Do you have any evidence-based complimentary or alternative therapies you might recommend for people using power wheelchairs?
* Propose an innovative treatment or evaluative technique that would enhance Molly’s plan of care in some way. Choose something that is relatively new in the literature. Your choice does not have to have extensive evidence behind it, but should be specifically researched in persons with MS.
* Please provide feedback on this module addressing the value and relevance of the module, the structure and organization, and if there are any suggestions for improvement of the module for future scholars.

**Hot Topics Page**

In this section, you will find information related to topics that are fairly new in MS rehabilitation research. Consider a topic you have recently learned about related to MS rehabilitation (something you learned at CMSC, in searching literature for these modules, your critically appraised topic, etc.) and its potential application for a patient you have worked with in clinic. Below are previously researched topics, as well as outlines of how to structure and present your topic via voicethread for other scholars and VLT members.

Hot Topic Outline (document link)

Vestibular Rehabilitation (voicethread link)

HIIT (voicethread link)