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INTRODUCTION

COURSE OBJECTIVES

After completing this course, the learner will be able to:

1. Differentiate the incidence, prevalence, pathophysiology, and clinical presentation of multiple sclerosis from other common neurological disorders.

2. Identify major components of the medical diagnosis and pharmacological management of multiple sclerosis.

3. Utilize terms from the International Classification of Functioning, Disability and Health (ICF) model to describe the impact and management of multiple sclerosis.

4. Select observations and specific measures most appropriate for the examination of a particular individual with multiple sclerosis.

5. Recommend a rehabilitation plan of care using evidence-based interventions to maximize patient/client function and quality of life.

Multiple sclerosis (MS) is a chronic, inflammatory, and neurodegenerative disease of the brain, spinal cord, and optic nerve mediated by the immune system. Because MS has no known cure and can start at a young age, with symptoms appearing as early as childhood, the disabling effects of this disease may continue to limit function throughout people’s lives. Although progress has been made toward identifying agents and protocols that modify the disease and mitigate many of the symptoms, a cure remains elusive. In particular, rehabilitative assessments and interventions have changed in the past 20 years. Despite recent progress, however, patients with MS still have movement impairments, including losses in strength, endurance, and sensation, leading to restrictions in activities and participation. Thus, health care has gaps to fill in the management of the disease process of MS, both in applying research already performed and in prioritizing future endeavors, so that patients receive the most benefit. Although a cure for this disease remains to be found, rehabilitation retains critical importance for optimizing quality of life in patients with MS.

Gaps in knowledge about managing any disease process can hinder rehabilitative care, but the complexities associated with MS exacerbate the problem. MS is both degenerative and variable in its presentation, so each patient with MS, as well as the same patient at different times, can display different dysfunctions. Therapists who studied MS management only briefly during their entry-level coursework or those who have treated people with MS based on recommendations from some time ago, may resort to fixed or outdated assessment or intervention protocols. Without knowledge of the benefits and safety of more rigorous exercise in MS, therapists may prescribe exercise of inadequate intensity and discharge patients too soon, with minimal instruction for activities to continue progression in movement abilities. Patients who are discharged from rehabilitation with a recommendation to avoid activities
that induce fatigue may discount any future rehabilitation as a waste of time and money, thus losing the opportunity to maximize their functional abilities throughout their lives. If therapists know enough to “kick it up a notch,” the rehabilitative process could have significantly greater benefits for patients.

This course provides rehabilitative personnel with the background and evidence to increase effective management of movement disorders in people with MS. This up-to-date review will enable physical therapists to better target the specific needs of their patients. Although some standardization in assessments may be useful, individualization of assessment and treatment planning is needed. The evidence supporting assessment and intervention tools can help the therapist select assessments and interventions most likely to contribute to successful outcomes given a particular patient’s characteristics. The evidence also provides an indication of the likely benefit of a particular intervention when it is applied with the intensity, frequency, and timing reported in the literature. This course starts with a review of the incidence and prevalence, pathophysiology, diagnosis, and pharmacological management of this disease. The course then describes rehabilitative management, including assessment and intervention for people with MS. The intent is to encourage therapists to “kick it up a notch,” to apply sufficient intensity of appropriate evidence-based rehabilitation that challenges patients and improves their quality of life.
KICK IT UP A NOTCH: EVIDENCE-BASED PHYSICAL THERAPY FOR PEOPLE WITH MULTIPLE SCLEROSIS

INCIDENCE, PREVALENCE, AND SUBTYPES OF MULTIPLE SCLEROSIS

Incidence and Prevalence

MS is the primary cause of nontraumatic disability in young and middle-aged adults and the most common inflammatory disease of the central nervous system (CNS). Approximately 350,000 to 400,000 people in the United States and 2.1 to 2.3 million people worldwide have the disease, with 10,000 new diagnoses in the United States each year. Although these incidence rates are much lower than those for cerebrovascular accident (or stroke), MS typically results in longer-term dysfunction because it starts earlier (National Institute of Neurological Disorders and Stroke [NINDS], 2014). The onset of MS is usually between the ages of 20 and 50, with an average of 32 in the United States (Wingerchuk, 2011). However, it can be diagnosed in people of any age, with approximately 5% of all diagnoses occurring before 16 years of age (Ness et al., 2007).

The underlying etiology of MS may be related to age, sex, genetics, geography, ethnic background, or a combination of these factors. Women are affected three times more frequently than are men (Dunn & Steinman, 2013). Even so, men are more likely to have more rapid disease progression with a poorer prognosis (Courtney, Treadaway, Remington, & Frohman, 2009; Kantarci & Wingerchuk, 2006). Caucasians with Northern European ancestry have the greatest incidence of MS, whereas people of Asian, African, or Hispanic ancestry are at lower risk. African Americans have a lower incidence than do Caucasians, but when disease occurs they become disabled earlier, suggesting more aggressive disease progression (Weinstock-Guttman et al., 2003). Inuits, Yakuts, Hutterites, Hungarian Romani, Norwegian Lapps, Australian Aborigines, and New Zealand Maoris do not appear to develop MS. Having a first-degree relative with MS increases the risk of disease from 1 in 750 to 1 in 40, but identical twins have only a 25% to 30% chance of both individuals being diagnosed with MS. Such data indicate that genetics plays a role but that factors beyond genetics are also involved (Compston & Coles, 2008).

Several researchers have reported associations between environmental factors and the development of MS. People who reside above or


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