

A Data-Driven Approach to Improving Clinical and Economic Outcomes in Multiple Sclerosis

Physician Credit

Accreditation Statement

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of The Consortium of Multiple Sclerosis Centers, Nurse Practitioner Alternatives, and Pharmacy Times Office of Continuing Professional Education. The Consortium of Multiple Sclerosis Centers is accredited by the ACCME to provide continuing medical education for physicians.

Credit Designation

The Consortium of Multiple Sclerosis Centers designates this enduring material activity for a maximum of 2.25 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Nursing Credit

Accreditation Statement

Nurse Practitioner Alternatives is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

This activity has been awarded 2.25 credits (1.25 of these credits are in the area of pharmacology).



Pharmacist Credit

Accreditation and Credit Designation

Pharmacy Times Office of Continuing Professional Education is accredited by the Accreditation Council for Pharmacy Education (ACPE) as a provider of continuing pharmacy education. This activity is approved for 2.5 contact hours (.25 CEUs) under the ACPE universal activity number 0290-9999-13-162-H01-P. The activity is available for CE credit through November 15, 2014.

Instructions for Obtaining Credit

Participants must read each article in this supplement, complete the online posttest achieving a passing score of 70% or higher, and complete an online evaluation and request for credit. Detailed instructions on obtaining CE credit are included following the sample online posttest.

Sample of Online Posttest

Choose the best answer for each of the following:

1. Of the approximately 2.3 million individuals worldwide that have MS, roughly how many reside in the United States?
 - a. 100,000
 - b. 250,000
 - c. 400,000
 - d. 1,000,000

2. Which of the following is NOT a recognized form of MS?
 - a. Primary-progressive MS
 - b. Progressive-relapsing MS
 - c. Relapsing-relapsing MS
 - d. Secondary-progressive MS

3. In general, the criteria for a confirmed diagnosis of MS must include:
 - a. Evidence of damage in at least 2 separate areas of the central nervous system (disseminated in space), evidence that the damage occurred at different time points (disseminated in time), and the ruling out of all other possible diagnoses
 - b. Evidence of damage in at least 2 separate areas of the central nervous system (disseminated in space) and evidence that the damage occurred at different time points (disseminated in time), without ruling out all other possible diagnoses
 - c. Evidence of damage in at least 3 separate areas of the central nervous system (disseminated in space), and the ruling out of all other possible diagnoses
 - d. Evidence of damage that occurred at different time points (disseminated in time), and the ruling out of all other possible diagnoses

4. In T2-weighted magnetic resonance images, white matter:
 - a. Appears brighter than grey matter
 - b. Appears darker than grey matter
 - c. Appears equivalent to grey matter
 - d. Does not appear at all

5. Disease-modifying drugs used to treat MS are intended to:
 - a. Reduce the intensity of relapses, the development of brain lesions, and the further progression of disability
 - b. Reduce the frequency of relapses, the development of brain lesions, and the further progression of disability
 - c. Reduce the frequency of relapses and the development of brain lesions without impacting the further progression of disability
 - d. Reduce the frequency of relapses and the further progression of disability without impacting the development of brain lesions

6. Studies that have examined the natural course of MS have found that clinical progression of relapsing-relapsing MS results in secondary-progressive MS:
 - a. Within 5 years in more than 50% of all cases, and in 90% within 15 years
 - b. Within 5 years in more than 75% of all cases, and in 100% within 10 years
 - c. Within 10 years in more than 50% of all cases, and in 90% within 25 years
 - d. Within 10 years in more than 75% of all cases, and in 100% within 25 years

7. Between 2009 and 2013, the number of US Food and Drug Administration–approved disease-modifying drugs (DMDs) for the treatment of MS has:
 - a. Almost quadrupled
 - b. More than tripled
 - c. Nearly doubled
 - d. Remained unchanged

8. According to the 2010 revision of the McDonald criteria for diagnosing MS, relapses are defined as patient-reported or objectively observed events that are typical of an acute inflammatory demyelinating event:
 - a. In the central nervous system, current or historical, with a duration of at least 24 hours, in the absence of fever or infection
 - b. In the central nervous system, current or historical, with a duration of at least 48 hours, in the absence of fever or infection
 - c. In the central nervous system, current or historical, with a duration of at least 24 hours, in the presence of fever or infection
 - d. In the peripheral nervous system, current or historical, with a duration of at least 24 hours, in the absence of fever or infection

9. The potential signs and symptoms of relapse are:
 - a. Few and fairly consistent in presentation
 - b. Few but will vary in presentation depending upon the location of the demyelinating event and inflammation
 - c. Numerous and will vary in presentation, depending upon the location of the demyelinating event and inflammation
 - d. Numerous and will vary in presentation, regardless of the location of the demyelinating event and inflammation

10. Typically, the standard of care and first-line treatment option for relapses in MS is:
- 1 to 3 days of intravenous methylprednisolone (500-1000 mg/d), with or without an oral taper, or a high-dose oral steroid
 - 1 to 3 days of intravenous methylprednisolone (1000-1500 mg/d), with or without an oral taper, or a high-dose oral steroid
 - 3 to 5 days of intravenous methylprednisolone (1000-1500 mg/d), with or without an oral taper, or a high-dose oral steroid
 - 3 to 5 days of intravenous methylprednisolone (500-1000 mg/d), with or without an oral taper, or a high-dose oral steroid
11. All of the following statements regarding the use of cerebrospinal fluid (CSF) analysis in MS are false, EXCEPT:
- CSF analysis is not used in the diagnostic process for MS
 - Patients with MS may encounter mild, intrathecal leukocytosis
 - Patients with MS may experience occasional moderate lymphocytic pleocytosis
 - Patients with MS typically have reduced intrathecal synthesis of immunoglobulins of restricted specificity
12. According to investigators who studied the effects of corticosteroids on both short- and long-term recovery from optic neuritis in MS, research has indicated that treatment:
- Demonstrated significant improvement in short-term outcomes and established long-term benefits for attaining pre-relapse functioning
 - Demonstrated significant improvement in short-term outcomes, but did not establish long-term benefits for attaining pre-relapse functioning
 - Did not demonstrate any notable short- or long-term improvements
 - Did not demonstrate any short-term improvements, but did establish long-term benefits for attaining pre-relapse functioning
13. What is the target of the humanized monoclonal antibody alemtuzumab?
- Cell adhesion molecule α 4-integrin
 - Glycoprotein antigen CD20
 - Glycoprotein antigen CD52
 - Myelin oligodendrocyte glycoprotein MOG35-55
14. Which DMD switching strategy requires a washout period?
- Interferon beta to glatiramer acetate
 - Interferon beta to fingolimod
 - An immunosuppressive DMD to natalizumab
 - Teriflunomide to mitoxantrone
15. In recent years, payers have witnessed a:
- Plateau in research and development for MS, but a moderate growth in treatment costs
 - Rapid evolution of therapeutic treatment options for MS, as well as an increase in treatment costs
 - Rapid evolution of therapeutic treatment options for MS, and a plateau in overall treatment costs
 - Reduction of therapeutic treatment options for MS, as well as a reduction in treatment costs
16. The very nature of MS is marked by relapses and progression, which makes the disease:
- Quite costly, but not detrimental to patient health-related quality of life
 - Quite costly and also detrimental to patient health-related quality of life
 - Not necessarily costly, but detrimental to patient health-related quality of life
 - Not necessarily costly, and not detrimental to patient health-related quality of life
17. According to the results of the recently published MS Benchmarks Analysis, disease-modifying drugs accounted for:
- 65% of the total annual pharmacy costs per patient, and 39% of the total costs for managing MS
 - 75% of the total annual pharmacy costs per patient, and 49% of the total costs for managing MS
 - 85% of the total annual pharmacy costs per patient, and 59% of the total costs for managing MS
 - 95% of the total annual pharmacy costs per patient, and 69% of the total costs for managing MS

18. According to the results of several longitudinal studies, approximately what percentage of patients with MS maintain employment?
- a. 10%-40%
 - b. 20%-50%
 - c. 30%-60%
 - d. 40%-70%
19. According to a report by Express Scripts, Inc, the average cost per prescription for an MS agent for an employer in 2012 was:
- a. \$3583
 - b. \$4583
 - c. \$5583
 - d. \$6583
20. Medications that are placed into the specialty tier of a formulary will generally have:
- a. Higher patient out-of-pocket costs, be co-insurance based, and have decreased member cost share through deductibles and co-insurance
 - b. Higher patient out-of-pocket costs, be co-insurance based, and have increased member cost share through deductibles and co-insurance
 - c. Lower patient out-of-pocket costs, be co-insurance based, and have increased member cost share through deductibles and co-insurance
 - d. Lower patient out-of-pocket costs, be co-insurance based, and have decreased member cost share through deductibles and co-insurance

Physician and Nursing Credit

Instructions for Receiving Continuing Physician Education (CME) Credit and Continuing Nursing Education (CNE) Credit: Testing and Grading Information

This lesson is FREE online at www.AJMC.com/ce where you will be directed to the online posttest and evaluation form to receive instant grading and request your CME or CNE certificate.

Testing and Grading Directions

1. Each participant evaluating the activity and achieving a passing grade of 70% or higher on the online posttest will be sent a CME or CNE certificate.
2. Participants receiving a failing grade on any exam will be notified and permitted to take 1 reexamination at no cost.
3. To receive credit, go to www.ajmc.com/ce, locate this activity in the CE course list, click on the online posttest link, and complete the online posttest and evaluation form to receive your certificate. Your certificate will be e-mailed to you within 3 weeks.

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Pharmacy Credit

Instructions for Receiving Continuing Pharmacy Education (CPE) Credit: Testing and Grading Information

This lesson is FREE online; receive instant grading and download your CE statement of credit at **www.PharmacyTimes.com**.

Testing and Grading Directions

1. Each participant evaluating the activity and achieving a passing grade of 70% or higher on the examination will receive a CE statement of credit stating the number of credits earned. This form should be safeguarded and may be used as documentation of credits earned.
2. Participants receiving a failing grade on any exam will be notified and permitted to take 1 reexamination at no cost.
3. To receive credit and an immediate CE statement of credit online, go to **www.PharmacyTimes.com**, complete the online evaluation form and online posttest (achieving a passing grade of 70% or better), and you will be able to print your CE statement of credit.