Multiple sclerosis (MS) is a chronic autoimmune disease affecting the central nervous system (CNS). More than 2.3 million patients worldwide (>400,000 in the United States) have been diagnosed with MS, and 80% have relapsing-remitting MS (RRMS), in which a clinical attack heralds disease relapse. Disease-modifying therapies (DMTs) have been shown to reduce the frequency and severity of relapses as well as the development of new brain lesions, as shown by magnetic resonance imaging (MRI). The variable clinical course of RRMS and the inevitable progression to disability makes treatment challenging, and personalized care is recommended. The lack of updated treatment guidelines in combination with the availability of DMTs with a wide range of safety and efficacy profiles may serve as a hindrance to the optimal management of RRMS. A study was conducted to determine if an online educational intervention could improve neurologists’ knowledge and competence regarding factors involved in selecting DMTs for RRMS.

**METHODS**

**Instructional Method**

The online educational activity, a Practice Challenge, was presented in the form of 2 case scenarios that included questions to assess both knowledge and clinical decision making (Figure 1). Clinical decision questions provided tailored feedback and clinical consequences based on the specific answer choices selected and allowed learners who answer the question incorrectly on the first attempt as well as an opportunity to answer it again (a second attempt) after feedback was provided. Knowledge assessment questions were placed before exposure to educational content (pre-assessment questions) and repeated after exposure to the educational content (post-assessment questions). The educational intervention was hosted on the Medscape Education website and data was collected from August 19th, 2014 through September 22, 2014.

**Assessment Method**

To determine measurable improvements in knowledge or competence, first- and second-attempt answer choices were evaluated for the clinical decision questions and pre-assessment and post-assessment answer choices were compared for the knowledge assessment questions.

For the knowledge assessment questions, a paired 2-tailed t-test was used to assess whether the mean pre-assessment score was different from the mean post-assessment score. Pearson’s r statistic was used to measure changes in responses to individual questions. Probability values (P-values) were also calculated to determine significance level; a P-value of less than .05 indicates statistical significance.

A total of 188 neurologists from outside of the United States were included in the data analysis. A large effect size (r=0.86) was calculated for the educational impact of the learning on clinical decision making and a medium effect size (r=0.73) was calculated for the educational impact of the learning on knowledge-based questions. As a result of participating in the educational intervention, specific areas of improvement included:

- Evaluation of neurologist responses to clinical decision questions before feedback indicated that between 34% and 80% of learners understood the identification and management of RRMS and pre-MS syndromes, while between 15% and 37% improved their understanding of these concepts after receiving tailored feedback (Figure 2).

- Significant improvements in knowledge questions (P<0.05 for all comparisons) correct responses on post-assessment questions compared with the pre-assessment responses were between 7% and 43% higher after CME completion. Knowledge questions addressed the topics of the McDonald criteria for the diagnosis RRMS, when to initiate DMTs, DMT mechanisms of action, and risk factors for the development of progressive multifocal leukoencephalopathy (Figure 3).

**RESULTS**

Online problem-based education that incorporates clinical decisions was successful in improving knowledge and competence of neurologists regarding the diagnosis of RRMS and pre-MS syndromes, initial treatment decisions, switching to a new DMT, and the mechanisms of action of current DMTs. Future education should address when and how to select an appropriate DMT.

The educational intervention and outcomes measurement were funded through an independent educational grant from Biogen, Inc.

**Disclosures:**

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**REFERENCES**


