Enhancing the quality of care for patients with multiple sclerosis through performance improvement CME

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Summary

Multiple sclerosis (MS) is an inflammatory neurodegenerative disease marked by a heterogeneous clinical presentation and disease course. Although improvements in the recognition and management of MS have been made in recent years, challenges remain due to the complex nature of the disease. Clinicians must remain current with their skills as knowledge surrounding MS care continues to advance. Here we report results of a performance improvement (PI) continuing medical education (CME) activity that was designed to promote evidence-based care of patients with MS. Participants demonstrated significant improvements in assessing disease-related complications, treating cognitive dysfunction, assessing adherence, and providing disease-related educational materials. These data support the role of PI CME in improving clinician practices that align with quality MS patient care.

Multiple sclerosis (MS) is a progressively debilitating neurologic disease for which management goals are twofold: 1) prevent and minimize disease activity and 2) manage disease-related symptoms and complications.¹ Fulfilling these goals often requires achieving and maintaining an optimal response to disease-modifying

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therapy (DMT). As such, physicians need to appropriately identify suboptimal responders and adjust treatments accordingly.² Additionally, physicians must evaluate and address the multitude of complications associated with MS.¹

Quality of patient care has become a focus of governing medical organizations. In 2005, the Physician Consortium for Performance Improvement, convened by the American Medical Association (AMA), set forth the performance improvement (PI) continuing medical education (CME) model.³ Following a 3-step process, clinicians improve their practice abilities through a series of self-assessments of evidence-based performance measures, implement an intervention plan based on assessed measures, and reevaluate their performance to reflect on adopted changes. Additionally, the American Board of Medical Specialties recognizes through its Maintenance of Certification process that practice-based learning is an essential component for quality patient care.⁴

Cognizant of the challenges surrounding MS patient care, Med-IQ, an accredited medical education company, developed a PI CME initiative that focused on promoting evidence-based standards of disease assessment and treatment to improve the delivery of quality care by neurologists and others involved in the care of patients with MS. Participant performance prior to and after the improvement period is reported here as an example of the potential practice changes that may be achieved.

METHODS

Based on the AMA PI CME model, an activity focused on the care of patients with MS was developed and made available to study participants between June 2010 and January 2012. Activity design was conceived in collaboration with expert faculty and based on Med-IQ's previous PI experience. The activity consisted of 3 stages—A, B, and C. In Stage A, registered participants, who had answered a questionnaire of basic practice patterns, completed retrospective patient chart reviews using a standardized data collection form. Chart reviews were designed to evaluate participants in select performance measures (table e-1 at neurology.org/cp), including assessment and management of disease-related symptoms, treatment, and adverse drug effects. Participants were measured on the percent of patients with documented assessment of treatment adherence and promotion of patient education. Selection of performance measures was based on faculty recommendations and review of national guideline recommendations from the American Academy of Neurology, Consortium for Multiple Sclerosis Centers, and National Multiple Sclerosis Society.^{5–7}

A report was generated detailing the participant's performance results and provided a comparison of those data to their peers' results (i.e., other clinicians participating in the PI CME activity) and national performance standards (when available). In Stage B, participants used results from Stage A to create a personalized plan for improvement. Participants were asked to implement individual improvement plans for 3 months. A CME-certified online publication was provided to participants to support their efforts toward self-change. The activity included detailed, practical information on the care and management of patients with MS and several useful tools to aid clinicians. In Stage C, participants performed a second retrospective chart review. Results were compared with individual initial performance, peer performance, and appropriate national standards. Participants were incentivized to earn 5 AMA PRA Category 1 Credits upon completion of each stage, as well as an additional 5 credits upon completion of the entire initiative, for a total of 20 credits. No monetary compensation was provided.

Abstracted information was submitted from a total of 10 patient charts per participant—5 charts in Stage A and 5 charts in Stage C, as required by the American Board of Psychiatry and Neurology Maintenance of Certification Program.⁸ Patients eligible for the study had a relapsing form of MS, were under the care of the participant for at least 1 year, and were seen by the participant within the past 12 months. Patients with clinically isolated syndrome or nonrelapsing forms of MS were excluded. Patient information was abstracted by individual participants and submitted in an unidentifiable format.⁹

Supplemental Data

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χ^2 analyses and Fisher exact tests were conducted to compare Stage A results with Stage C results regarding the percent of patients with documented performance of evidence-based recommendations. Unique patient data were provided by participants in both stages such that resulting analyses were unlinked. Results were considered statistically significant at the $p < 0.05$ level.

RESULTS

Participant and patient characteristics

A total of 250 participants completed Stage A of the activity; of those, 113 participants completed Stage C. The most common practice type was salaried institution (i.e., hospital or clinic) followed by solo practice (table e-2). Participants who completed the activity (i.e., completers) were more likely to have practiced for 11 to 20 years as compared to noncompleters. Both completers and noncompleters reported seeing similar numbers of patients with MS each week; of these patients, 73% and 74%, respectively, were estimated to have relapsing disease. Completer and noncompleter participants also displayed similarities in their belief that their patients had a moderate understanding of MS and available DMTs, methods used to assess treatment response, medication adherence assessment frequency, and methods to assess disease-related symptoms (data not shown).

A total of 1,130 patient charts were submitted by activity participants who completed Stages A and C. Patient groups in Stages A and C were comparable; most patients were between the ages of 30 and 49 years, female, classified with relapsing-remitting MS, and able to walk without aids or limitations on distance (table 1). The median number of years since diagnosis was 5 and 6 years, respectively.

Management of MS-related complications

Assessment of cognitive function, bowel/genitourinary complications, sensory complications, and fall risk (e.g., gait dysfunction, limb weakness, clumsiness) improved significantly after activity participation (table 2). Similar percentages of patients were noted to have these individual complications in both Stages A and C (data not shown). However, after the improvement period, participants increased offers for therapeutic intervention to treat cognitive complications (Stage A, 78%, $n = 218$, vs Stage C, 82%, $n = 225$; $p = 0.011$). Offers for therapeutic interventions to treat genitourinary complications and sensory complications did not change significantly.

Use of DMT and management of related side effects

No change was seen in the percent of patients who received any DMT over the activity period (Stage A, 87%, $n = 565$, vs Stage C, 85%, $n = 565$; $p = 0.232$), nor in the specific use of interferon- β , glatiramer acetate, natalizumab, or mitoxantrone (table 3). Interestingly, participants were slightly less likely to consider initiating DMT after the improvement period (Stage A, 97%, $n = 565$, vs Stage C, 93%, $n = 565$; $p = 0.028$). Participants also reported that they initiated DMT less often in their patients (Stage A, 87%, $n = 536$, vs Stage C, 81%, $n = 517$; $p = 0.009$). When asked to explain why treatment was not initiated, 44% (Stage A, $n = 89$) and 49% (Stage C, $n = 146$) of responding participants stated that patients were currently receiving a DMT.

For the management of treatment-related adverse effects, participants typically followed recommended monitoring parameters for ordering laboratory tests, assessing complete blood cell counts with platelets and liver function tests for patients treated with interferon- β for at least 1 year (table 4). A high percentage of participants at baseline performed these tests in patients treated with interferon- β for less than 1 year, and no significant changes in performance were observed. However, participants assessed all patients receiving interferon- β for skin reactions more often at the end of the improvement period ($p < 0.001$).

Patients treated with glatiramer acetate were assessed more often for skin lesions at the injection site in Stage C (table 4). Additionally, clinicians performed more neurologic assessments for progressive multifocal leukoencephalopathy and liver function tests at the

Table 1 Patient characteristics

	Stage A	Stage C	p
Age, y, %	n = 563	n = 555	
<20	1	2	0.627 ^a
20-29	13	14	
30-39	29	26	
40-49	29	32	
50-59	20	20	
>60	8	7	
Sex, %	n = 559	n = 548	
Female	73	72	0.685 ^a
Male	27	28	
Years diagnosed with MS	n = 549	n = 530	
Mean	11	7	0.285
Median	6	5	0.231
Current MS classification, %	n = 558	n = 530	
RRMS	84	83	0.865 ^a
PRMS	6	6	
SPMS with relapses	10	11	
Current level of disability, %	n = 558	n = 547	
Ambulatory without aids or limitations on distance	60	57	0.756 ^a
Ambulatory without aids, but for limited distance ^b	19	20	
Ambulatory only with a cane or crutch	12	12	
Ambulatory only with 2 canes or walker	5	6	
Wheelchair bound	4	6	
Abbreviations: MS = multiple sclerosis; PRMS = progressive-relapsing multiple sclerosis, RRMS = relapsing-remitting multiple sclerosis, SPMS = secondary progressive multiple sclerosis.			
^a p Value applies to the change within the group of data analyzed.			
^b Fewer than 3 city blocks or less than 1/3 mile without stopping.			

recommended intervals in natalizumab-treated patients. Patients treated with mitoxantrone were assessed for baseline and follow-up evaluation of left ventricular ejection fraction in both Stages A and Stage C; however, small patient numbers did not allow for tests of statistical significance regarding any changes in monitoring practices.

Patient education and adherence

Participants demonstrated gains in assessing patient adherence to medication (Stage A, 93%, n = 481, vs Stage C, 98%, n = 468; $p < 0.001$) and documenting that adherence in the patient's chart (Stage A, 89%, n = 444, vs Stage C, 96%, n = 456; $p < 0.001$; table e-3). Prior to enacting performance improvement strategies, only 69% of patients received printed educational materials. However, in Stage C, participants noted that 87% of patients received educational materials (Stage A, n = 565, Stage C, n = 565; $p < 0.001$).

DISCUSSION

Participants completing this PI CME initiative showed significant improvements in the execution of several evidence-based measures, which can directly affect patient quality of life, clinical outcomes, and patient knowledge and understanding of their disease. Importantly, participants

Table 2 Monitoring of disease-related complications

	Stage A	Stage C	p
Cognitive: cognitive dysfunction, depression, fatigue	n = 565	n = 565	
	85%	96%	<0.001
Bowel/genitourinary: sexual dysfunction, urinary problems	n = 548	n = 542	
	82%	97%	<0.001
Sensory: pain, paresthesias	n = 565	n = 565	
	90%	97%	<0.001
Fall risk: gait dysfunction, limb weakness, clumsiness	n = 565	n = 565	
	90%	95%	0.002

were significantly more likely to assess patients for disease-related complications, including cognitive impairment, bowel and genitourinary function, sensory impairment, and fall risk after completing a program of self-evaluation and learning. It is especially important for clinicians to screen for disease-related complications because patients may not recognize or report issues.¹⁰ Complications can have a profound impact on a patient's quality of life and can significantly disrupt activities of daily living.¹¹ In some instances, early interventions to improve symptoms may also reduce the risk of future morbidity.¹⁰

Participants in this study also significantly increased their offering of therapeutic intervention to patients with cognitive impairment. For some patients, cognitive dysfunction may be more severe than physical disabilities.¹² Absenteeism, reduced work hours, early retirement, and the need for additional assistance are costly to both patients and society.¹¹ Furthermore, the ability to make medical decisions is compromised in patients with neurologic deficits.¹³ Stimulants, cholinesterase inhibitors, memantine, and daily physical exercise have all been evaluated to improve cognitive function,¹² although controlled studies have failed to support benefit of either memantine¹⁴ or donepezil.¹⁵ Cognitive rehabilitation, which involves teaching patients to use cognitive resources more efficiently or doing repetitive cognitive exercises, may improve performance, but much work remains to determine optimal treatment.¹⁴

Performance measures surrounding patient adherence and education were also improved upon. Long-term adherence to medication is a challenge for patients with MS. Among patients initiating therapy, more than 40% will be nonadherent after 1 year.¹⁶ Approximately 30% of patients discontinue treatment due to perceived lack of efficacy, whereas other patients discontinue because of related side effects.¹⁷ Furthermore, patients who are nonadherent to DMT are more likely to be admitted to the hospital.¹⁶ However, by educating patients—as many as 80% of whom search for information about their symptoms on the Internet—about their disease and providing patients with realistic treatment expectations, clinicians may improve adherence to MS treatment schedules and the quality of life and health of their patients.

Although the overall use of any DMT did not change significantly from the pre to post period, a small but statistically significant decrease was reported in the percent of patients initiated on a DMT over the study period. (Of note, fingolimod, teriflunomide, and dimethyl fumarate were not approved for use during the study period.) These data may be the result of misinterpretation of the question, as evidenced by 44% and 49% of participants reporting in both stages that the reason for not initiating treatment was due to the fact that the patient was already receiving a DMT. The original intent of the question was to assess whether the patient had ever been initiated on a DMT by any clinician. Although a standardized patient chart form was used, this reflects a potential limitation of the project design in which the perception of the

Table 3 Therapeutic treatments

	Stage A	Stage C	p
Any DMT	n = 565	n = 565	
	87%	85%	0.232
Interferon-β	n = 480	n = 458	
	48%	50%	0.566
Glatiramer acetate	n = 477	n = 457	
	33%	34%	0.795
Natalizumab	n = 476	n = 454	
	16%	13%	0.312
Mitoxantrone	n = 471	n = 459	
	2%	1%	0.429

Abbreviation: DMT = disease-modifying therapy.

^ap Value applies to the change within the group of data analyzed.

form questions and retrospective collection of data are subject to the individual interpretations of each participant.

Subsequent to the development of this initiative, 76 quality indicators of MS patient care across 23 domains were published.¹⁸ Comparatively, this PI CME initiative sought to assess quality of care surrounding bladder, bowel, sexual, and cognitive dysfunction; mobility; use of DMTs and adherence to associated monitoring requirements; relapses; management of exacerbations; and patient education. In an effort to achieve comprehensiveness while also considering the time and resource burden associated with completing quality improvement initiatives, several measures were not assessed in this initiative, including anxiety, fatigue, pressure ulcers, spasticity, speech, swallowing, difficulties with activities of daily living, provision of social resources, coordination of care, promotion of exercise, general preventive care measures, and health insurance status. Patients with MS require high levels of comprehensive care. Although this initiative was able to make gains in several areas of quality care, several other important areas that require attention remain.

The limitations of this study are similar to those found in other PI CME activities.¹⁹ A disappointingly large percentage of participants did not complete the initiative. Among the PI completers, many reported that time and resource commitment were notable factors and potential deterrents; therefore, it is reasonable to believe that participants who completed this initiative were highly motivated. Additionally, a study examining the effect of the PI process on patient outcomes found that improvements were greater among clinicians who participated in PI CME compared with traditional CME activities; however, patient outcomes in the PI CME completer group were similar to those in the group treated by clinicians who participated in, but did not complete, the PI process.²⁰ Indeed, survey results of another PI CME activity revealed that noncompleter participants who had developed improvement plans found their plans to be helpful and continued to apply these changes to their practices.¹⁹

Participants may have been biased with chart selection and reporting behaviors. Because patient charts were the unit of analysis, individual physician performances were somewhat more likely to influence overall changes. However, a larger pool of patient charts would have dampened this effect and may have elucidated more nuanced differences in the use of various treatments. Although the effects of participant changes in practice behaviors on patient outcomes and quality of life were not measured, data from national quality improvement programs, such as the American Heart Association's Get With the Guidelines registry, demonstrate that clinician adherence to guideline-recommended processes results in improved patient outcomes.

Table 4 Monitoring of treatment-related adverse effects

	Stage A	Stage C	p
Interferon-β treatment duration	n = 229	n = 226	
<1 year	24%	22%	0.553 ^a
$\geq$ 1 year	76%	78%	
Interferon-β treatment <1 year	n = 55	n = 48	
Complete blood count	91%	96%	0.445
Liver function test	93%	94%	1.000
Interferon-β treatment $\geq$1 year	n = 169	n = 176	
Complete blood count	89%	98%	0.001
Liver function test	90% ^b	98% ^c	0.004
Skin reactions (interferon-β treatment)	n = 226	n = 227	
	67%	86%	<0.001
Skin reactions or lipoatrophy (glatiramer acetate treatment)	n = 159	n = 155	
	69%	92%	<0.001
Neurologic examination for PML (natalizumab treatment)	n = 72	n = 59	
	96%	100%	0.252
Liver function (natalizumab treatment)	n = 74	n = 60	
	89%	98%	0.042

Abbreviation: PML = progressive multifocal leukoencephalopathy.
^ap Value applies to the change within the group of data analyzed.
^bn = 166.
^cn = 175.

The results of this PI CME initiative demonstrate a proof of concept that participation in a 3-stage process consisting of self-assessment, improvement implementation, and reassessment is associated with positive changes in practice behaviors. Many strategies for monitoring treatment response are available, yet no clear marker currently exists, providing no standard against which to compare physician performance; however, by increasing physician awareness of the need for monitoring and execution of associated performance measures, quality improvement initiatives may help physicians improve patient outcomes. MS is a progressively debilitating disease that imposes a considerable burden on the health care system, families, and patients themselves. By improving assessment of disease-related complications, treatment of cognitive dysfunctions, adherence assessments, and disease education, clinicians can provide their patients with improved care that will likely optimize treatment and potentially enhance their quality of life. As clinical consensus surrounding the best management practices for MS continues to evolve, PI CME is a valid tool for communicating and fostering the adoption of these standards.

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