

# General Practitioner Preferences in Managing Care of Multiple Sclerosis Patients

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**ABSTRACT:** *Background:* Multiple sclerosis (MS) is a lifelong neurological disorder requiring care in a variety of settings. The purpose of this study is to describe preferences of general practitioners (GPs) with regards to providing care for MS patients. *Methods:* A stratified sample of 900 GPs in the province of Quebec were sent a questionnaire, with 266 returning completed questionnaires. Respondents were surveyed about their preferences using four clinical scenarios describing hypothetical patients experiencing different stages of MS. Respondents were asked whether they would continue managing the patient themselves, formally refer the patient to a specialist, or seek specialist advice. *Results:* In two scenarios representing stable courses, 40.9% and 61.6% of GPs, respectively, intended to manage the patient themselves. GPs who reported having experience with MS patients were more likely to report an intention to continue management. In one scenario, GPs operating in rural areas were less likely to consider management than those in the Montreal metropolitan area (odds ratio = 0.422, 95% confidence interval 0.20-0.90). *Conclusions:* For MS patients with a stable disease course, an important proportion of GPs appear to be willing to manage long-term care for MS patients.

**RÉSUMÉ:** *Préférences des médecins généralistes concernant la prise en charge des patients atteints de sclérose en plaques.* *Contexte :* La sclérose en plaques (SP) est une maladie neurologique qui nécessite des soins tout au long de la vie, dans plusieurs contextes. Le but de cette étude était de décrire les préférences des médecins généralistes (MG) concernant les soins à prodiguer aux patients atteints de SP. *Méthode :* Un questionnaire a été envoyé à un échantillon stratifié de 900 MG de la province de Québec. Deux cent soixante-six questionnaires complétés ont été retournés. Le questionnaire portait sur leurs préférences évaluées au moyen de quatre scénarios cliniques décrivant des patients hypothétiques à différents stades de la SP. On demandait aux répondants s'ils continueraient à traiter le patient eux-mêmes, s'ils référerait le patient à un spécialiste ou s'ils demanderaient conseil auprès d'un spécialiste. *Résultats :* Dans deux scénarios où l'état du patient était stable, 40,9% et 61,6% des MG respectivement avaient l'intention de traiter eux-mêmes le patient. Les MG qui rapportaient qu'ils avaient de l'expérience dans le traitement des patients atteints de SP étaient plus susceptibles de rapporter qu'ils avaient l'intention de continuer à traiter le patient. Dans un scénario, les MG travaillant en milieu rural étaient moins susceptibles de considérer traiter le patient eux-mêmes que ceux qui travaillaient dans la région métropolitaine de Montréal (rapport de cotes = 0,422 ; intervalle de confiance de 0,20 à 0,90). *Conclusions :* Une importante proportion des MG semble disposée à suivre à long terme les patients atteints de SP dont la maladie est stable.

**Keywords:** Multiple sclerosis, general practitioner, physicians, postal questionnaire

doi:10.1017/cjn.2015.239

Can J Neurol Sci. 2016; 43: 142-148

Multiple sclerosis (MS), a lifelong, degenerative neurological condition, is prevalent in Canada, with estimates suggesting a national prevalence of more than 100 per 100,000.<sup>1</sup> Because of variability in the disease course and the wide range of symptoms, an individual living with MS can expect to come into contact with several different health care specialists during his or her lifetime. The diagnosis of MS is usually confirmed by a neurologist,<sup>2</sup> and continuing care for MS patients is offered in a variety of settings, from primary care to more specialized neurological care.

For the general population, the general practitioner (GP) is the most frequently consulted medical professional,<sup>3</sup> fulfilling the role of primary medical contact for the patient, and often determining the involvement of a specialist in patient care.<sup>4,5</sup> A recent qualitative study of patients with neurological conditions (including MS) showed that GPs are viewed favorably, mostly because of their communication skills and their willingness to address sudden and unexpected problems.<sup>6</sup> In addition, a patient's

GP is usually the most knowledgeable health care professional about that patient's specific characteristics, lifestyle, and family situation.<sup>2</sup> An evaluation of the organization of MS care settings, however, determined that GPs have too high a workload for them to feasibly assume the role of primary coordinator of care.<sup>7</sup> In at least one study of patient perceptions, GPs were perceived by MS patients as lacking in the specialized knowledge required to maintain a central role in their long-term care.<sup>6</sup> In addition, a recent article on patient sources of MS information rated GPs less favorably, compared with other health care providers, with respect

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RECEIVED JUNE 19, 2014. FINAL REVISIONS SUBMITTED APRIL 1, 2015.  
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to the amount of information provided about MS to patients and with the information provided rated less than adequate.<sup>8</sup>

From the care provider perspective, specialists and generalists do not always agree on their roles and responsibilities with regard to patients with neurological conditions.<sup>5</sup> Swarztrauber and Vickrey showed that GPs may prefer involvement in diagnosis and treatment of their patients as well as examining the patients personally before involving a specialist.<sup>9</sup> On the other hand, in some instances, generalists may overestimate their ability to manage patients who would otherwise benefit from a referral to a neurologist.<sup>5</sup> Patients with MS perceive care given by a neurologist for their MS-related ailments to be superior to care delivered by a GP.<sup>10</sup> Conversely, one regional study reported that access to a neurologist mainly concerned patients with moderate disease, and that patients with comparatively mild disease were being managed mainly by their GP.<sup>11</sup>

The purpose of the current study is to describe the preferences of GPs with regard to care of MS patients and to determine which selected demographic, geographic, and work-related factors are correlated with these preferences. Existing literature deals mainly with patients' perspectives on the quality of the care provided by the generalists and specialists involved in their care.<sup>3,6,8,10-12</sup> There is some literature dealing with the physician's perspectives, but these concern diseases other than MS.<sup>5,9</sup> This study considers the perspectives of the generalists themselves concerning MS patient management.

## METHODS

### Research Design

The data for assessing GPs preferences in MS care were collected as part of a larger study (MS Latitude) that was designed to identify and evaluate potential sources of MS cases to determine the feasibility of conducting a prevalence study of MS in the province of Quebec. In this component of the feasibility study, a survey was conducted of all neurologists, all ophthalmologists and a random sample of 900 GPs practicing in Quebec. We report here on the portion of the survey directed to GPs. The specific goals of the survey pertaining to GPs were to determine if they can serve as a source of cases of MS for a prevalence study by collecting information on their self-reported referral patterns for individuals with MS.

### Survey Instrument

The questionnaires used for neurologists, ophthalmologists, and GPs were modeled on those used in a previous survey developed by Swarztrauber, Vickrey, and Mittman, the goals of

which were to gather information on physician preferences for care of patients with transient neurological events, dementia, or Parkinson's disease.<sup>5,9</sup> Although separate questionnaires were used for GPs, neurologists, and ophthalmologists, these did not differ greatly (outside of wording for some questions) and all included the same basic content.

The data from the survey with primary relevance for the purposes of this analysis come from physicians' responses to hypothetical clinical scenarios. Four clinical scenarios were developed by a neurologist specialized in MS, each describing a particular stage or course of MS, as presented in Table 1. For each scenario, respondents were asked whether they would prefer to continue managing the described patient themselves, to "corridor" a specialist (either with the intent of continuing management or deciding whether or not to get a formal referral), or to formally refer the patient to a specialist. The term "corridor" was defined as "request for assistance from another physician without the consulted physician seeing the patient," whereas "refer" was defined as "obtain assistance from another physician through either temporary or permanent transfer of the patient."

The questionnaire included a section on demographic information (sex, year of birth, and year of licensure) as well as questions related to current working status (full-time, part-time, etc.), main patient care setting, and experience providing care for MS patients. The study protocol was reviewed and approved by the Research Ethics Committee of the Sir Mortimer B. Davis Jewish General Hospital in Montreal.

### Sample and Data Collection

Names, contact information, and some basic demographic information (namely sex, language of correspondence, and location) of practicing GPs, neurologists, and ophthalmologists were extracted from an electronic database purchased from the *College des médecins du Québec*, the professional body governing physicians in Quebec, in 2006. A stratified random sample of 900 of Quebec's 8837 GPs was selected based on location, with roughly a third of GPs coming from each of rural areas, the Montreal metropolitan area, and other urban areas within the province. The survey was mailed out between March 2006 and January 2007.

Questionnaires were self-administered. Each questionnaire contained a unique identification number and, for confidentiality purposes, mailing list management and data entry were performed separately. Physicians choosing not to participate were instructed to indicate their decision on the final page of the questionnaire, along with their reason for electing not to participate, and to return this page either by fax or mail.

**Table 1: Brief description of clinical scenarios**

Scenario	MS stage/course	Summary	Designation
A	Clinically isolated syndrome	Visual loss, pain on movement of eye.	Unstable
B	Stable relapsing remitting MS	Diagnosed with clinically definite relapsing remitting MS; currently asymptomatic, started on interferon treatment.	Stable
C	Aggressive MS	Diagnosed with clinically definite MS. New numbness of limbs, diplopia, gait ataxia, weakness in right hand despite treatment.	Unstable
D	Stable secondary progressive MS	Diagnosed 20 years ago with MS. Slowly progressive lower extremity weakness, spasticity, urinary incontinence. Uses wheelchair.	Stable

## Implementation Strategy

To encourage physicians and to increase response rates, the mailing strategy proposed by Dillman was employed.<sup>13,14</sup> Five mailings occurred over an eight-week period. First, a prenotification letter was delivered, introducing physicians to the study one week in advance. Following this, the survey package was sent, which included the survey itself, a cover letter and a preaddressed, prestamped envelope. A telephone reminder to nonrespondents was conducted between mailings of two follow-up letters. Finally, participants were sent a thank you letter.

Completed and incomplete surveys were collected anonymously. Physicians were provided with several methods of communication. An email address and toll-free phone number were provided to assist with questions pertaining to the study. Responses could either be returned by fax or by mail using the envelope provided.

## Statistical Analysis

To compare GP groups with respect to categorical variables (i.e. sex, primary medical setting, and experience with MS

patients and location),  $\chi^2$  tests were used. For continuous variables (i.e. age, years since licensure, and MS patients seen in the past six months), GP groups were compared using t-tests. In addition, we examined differences between available basic characteristics (sex, area, and language) of responders and nonresponders using  $\chi^2$  tests. Significance was set at  $\alpha = 0.05$ .

For the clinical scenarios, logistic regression was used to examine factors associated with the intent of the GP as per their responses to the scenarios. The dependent variable in each of these models was the binary variable: GP intends to manage care versus GP intends to refer the patient. For each considered scenario, we fit an initial model by complete case analysis containing all the aforementioned characteristics of interest. In a separate model, we selected only those GPs who reported that they see MS patients in their practice and reran the analysis. Statistical analyses were performed using SAS 9.4 (SAS Institute, Cary, NC, USA).

## RESULTS

Of the 900 questionnaires sent to GPs, 13 were returned because of an invalid address. After the initial mailing and

**Table 2: Characteristics of general practitioners in the complete responder sample (N = 266)**

Female, N (%)	123 (46.4)
Missing (%)	1 (0.4)
Mean age in years (SD)	48.4 (9.8)
Range	28-76
Missing (%)	1 (0.4)
Mean years since Quebec Medical License received (SD)	20.2 (10.6)
Range	1-50
Missing (%)	1 (0.4)
Main patient care setting, N (%):	
Private office	124 (46.6)
Clinic (including MS clinics)	18 (6.8)
Hospital (either affiliated with university or not)	28 (10.5)
<i>Centre local de services communautaires</i>	45 (16.9)
Other (including teaching family medicine centers, emergency departments)	42 (15.8)
Missing (%)	9 (3.4)
Sees MS patients in practice, N (%):	
Yes, ongoing	155 (58.3)
Yes, not ongoing	33 (12.4)
No	74 (27.8)
Missing (%)	4 (1.5)
Number of MS patients seen in past six months, mean (SD)	2.65 (3.0)
Range	0-25
Missing (%)	6 (2.3)
Area, N (%)	
Rural	97 (36.5)
Metropolitan	83 (31.2)
Urban	85 (32.0)
Missing (%)	1 (0.4)

SD = standard deviation

follow-up strategy were implemented, 590 of the 887 GPs responded (66.5%), either by returning completed questionnaires or indicating that they did not wish to participate. The 312 GPs (52.9%) who indicated they did not wish to participate in the study, and a further 12 (2.0%) responders who did not include a response to one or more of the clinical scenario questions, were defined as incomplete responders and are not included in the analyses. The remaining 266 (45.1%) GPs who had returned a completed survey were defined as complete responders and constitute the sample for these analyses. There were no statistically significant differences between complete responders and incomplete responders in terms of location (rural, metropolitan, or urban;  $p=0.22$ ) or first language (English or French;  $p=0.80$ ), nor were there any major differences on these characteristics between the complete responder sample of 266 GPs and the remainder of the original 900 GPs ( $p=0.36$  for location,  $p=0.68$  for language). We do note a higher proportion of female participation among complete responders than incomplete responders ( $p=0.03$ ), as well as compared to the rest of the original sample ( $p=0.02$ ) (see Supplementary table).

Characteristics of the GP sample participants are given in Table 2. More than two-thirds of the sample ( $n=188$ , 70.7%) responded that they see MS patients within their practice, whether through ongoing or short-term care. A small majority of the GPs was male ( $n=142$ , 53.4%), and most respondents were around

50 years of age. Although a large proportion practiced within a private office ( $n=124$ , 46.6%), there was representation from clinics (both MS and non-MS clinics;  $n=18$ , 6.8%), hospitals (both affiliated and not affiliated with universities;  $n=28$ , 10.5%), and *Centre local de services communautaires* (or local community service center—a public organization offering health services and family health programs for residents of Quebec;  $n=45$ , 16.9%).

The first column of Table 3 shows the GPs' preferred course of action when presented with each of the four clinical scenarios (responses for neurologists and ophthalmologists are included for comparison). For scenarios A and C (clinically isolated syndrome and aggressive MS), the majority of the general practitioners elected to refer the patient. For scenarios B and D (relapsing-remitting MS and secondary progressive MS), however, a much larger proportion of the sample reported that they would be willing to continue managing the patient. Categorizing the respondents into those indicating preference to manage (either continue managing or corridor with intent on managing) and those indicating preference to refer (either refer the patient or corridor to decide whether or not to get a formal referral) reveals that although a large majority show a preference to refer the patient in scenarios A and C, in scenarios B and D, 109 (40.9%) and 164 (61.6%), respectively, intend to manage the patient themselves.

Both scenario B and scenario D were designated as stable MS disease courses, whereas scenario A and scenario C were

**Table 3: Practice patterns of physicians for clinical scenarios**

	General practitioners N = 266	Neurologists N = 95	Ophthalmologists N = 89	p
<b>Scenario A; N (%)</b>				
Continue to manage by myself	3 (1.1)	61 (64.2)	1 (1.1)	<0.0001
Corridor a specialist with the intent of managing	23 (8.6)	3 (3.2)	6 (6.7)	
Corridor a specialist in deciding whether or not get a formal referral	26 (9.8)	1 (1.1)	5 (5.6)	
Would refer to another specialist	212 (79.7)	24 (25.1)	68 (76.4)	
Missing	2 (0.8)	6 (6.3)	9 (10.1)	
<b>Scenario B; N (%)</b>				
Continue to manage by myself	65 (24.4)	62 (65.3)	7 (7.9)	<0.0001
Corridor a specialist with the intent of managing	44 (16.5)	0 (0.0)	2 (2.3)	
Corridor a specialist in deciding whether or not get a formal referral	25 (9.4)	0 (0.0)	3 (3.4)	
Would refer to another specialist	127 (47.7)	25 (26.3)	69 (77.5)	
Missing	5 (1.9)	8 (8.4)	8 (9.0)	
<b>Scenario C; N (%)</b>				
Continue to manage by myself	1 (0.4)	48 (50.5)	0 (0.0)	<0.0001
Corridor a specialist with the intent of managing	21 (7.9)	2 (2.1)	1 (1.1)	
Corridor a specialist in deciding whether or not get a formal referral	37 (13.9)	1 (1.1)	3 (3.4)	
Would refer to another specialist	204 (76.7)	36 (37.9)	76 (85.4)	
Missing	3 (1.1)	8 (8.4)	9 (10.1)	
<b>Scenario D; N (%)</b>				
Continue to manage by myself	119 (44.7)	61 (64.2)	13 (14.6)	<0.0001
Corridor a specialist with the intent of managing	45 (16.9)	4 (4.2)	1 (1.1)	
Corridor a specialist in deciding whether or not get a formal referral	21 (7.9)	2 (2.1)	5 (5.6)	
Would refer to another specialist	80 (30.1)	20 (21.1)	59 (66.3)	
Missing	1 (0.4)	8 (8.4)	11 (12.4)	

designated as more volatile disease courses. For the remainder of the section, we will focus our analysis on the stable scenarios (scenarios B and D). In both scenarios B and D, GPs preference regarding care of the patient varied according to their experience with MS patients in the past. GPs who reported that they either did not provide ongoing care to MS patients or had not seen MS patients in their practice were more likely to consider referring the patient in scenario B ( $p=0.005$ ). GPs who reported seeing MS patients and provided ongoing care were more likely to manage the type of patient in scenario D ( $p<0.001$ ). In scenario D, male GPs were more likely to consider managing the care of the patient ( $p=0.03$ ). No other comparisons were statistically significant.

Table 4 reports covariate-adjusted odds ratios and 95% confidence intervals from the logistic regression models containing all the characteristics from Table 2. In scenario B, GPs working mainly in private offices were less likely to consider management of the patient compared with GPs working in teaching family medicine centers, emergency departments, or other settings (odds ratio [OR]=2.440, 95% confidence interval [CI]: 1.08-5.52). Also, GPs reporting having experience with MS patients without providing ongoing care were less likely to consider management than GPs not having had experience with MS patients (OR = 0.268, 95% CI: 0.08-0.86). With the model refitted using only those GPs who said they had previous experience with MS patients, statistical significance was lost in the aforementioned characteristics and not shown in any of the other observed characteristics.

For scenario D, we found that female GPs were less likely to consider management than male GPs (OR = 0.444, 95% CI: 0.23-0.84), and GPs who had experience with providing ongoing care for MS patients were more likely to consider management than those who reported not having experience with MS patients (OR = 2.141, 95% CI: 1.02-4.51). In addition, GPs operating in rural locations were less likely to consider management than those in the Montreal metropolitan area (OR = 0.422, 95% CI: 0.20-0.90). Refitting the model using only data from GPs who said they had previous experience with MS patients, again, statistical significance was not seen in any of the observed characteristics.

## DISCUSSION

We found that for scenarios with MS patients with an unstable disease course, GPs were far more likely to indicate a preference to refer the patient to a specialist outright, whereas for the stable scenarios, GPs were more evenly split on whether to continue management of the patient versus referring the patient to a specialist. These results agree with those of Minden et al<sup>15</sup> and are intuitive in the sense that GPs, when dealing with patients with unstable or severe neurological issues, would likely prefer a specialist to handle those types of situations, in contrast to more stable cases.<sup>5</sup>

In our study, GPs with experience dealing with MS patients on an ongoing basis were more likely to consider managing the patient. Interestingly, in one of our models, GPs with experience with MS patients, but not traditionally on an ongoing basis, were less likely to consider management than those with no experience

**Table 4: Association between variables and GP preference for managing care of MS patients**

Adjusted odds ratios* (95% confidence interval)	Scenario B		Scenario D	
	All GPs	GPs with MS experience	All	GPs with MS experience
Female (vs male)	0.921 (0.50-1.70)	1.010 (0.50-2.05)	<b>0.444 (0.23-0.84)</b>	0.500 (0.24-1.06)
Age (1 additional year)	0.980 (0.93-1.04)	1.017 (0.95-1.09)	0.962 (0.91-1.02)	0.993 (0.93-1.06)
Years since Quebec Medical License obtained (1 additional year)	1.010 (0.96-1.06)	0.985 (0.92-1.05)	1.030 (0.98-1.09)	1.007 (0.94-1.08)
Area (reference: Montreal metropolitan area)				
Rural	1.100 (0.55-2.21)	0.961 (0.43-2.13)	<b>0.422 (0.20-0.90)</b>	0.448 (0.18-1.09)
Urban	0.639 (0.31-1.30)	0.863 (0.39-1.91)	0.524 (0.25-1.11)	0.611 (0.25-1.47)
Main care setting (reference: private office)				
Clinic	0.691 (0.24-2.04)	0.757 (0.24-2.41)	0.916 (0.31-2.75)	0.969 (0.30-3.15)
Hospital	0.906 (0.33-2.50)	0.874 (0.18-4.15)	0.624 (0.23-1.71)	0.373 (0.08-1.80)
<i>Centre local de services communautaires</i>	1.317 (0.59-2.92)	2.079 (0.84-5.15)	1.784 (0.76-4.19)	2.92 (0.99-8.64)
Other	<b>2.440 (1.08-5.52)</b>	1.861 (0.74-4.71)	1.092 (0.46-2.58)	0.795 (0.30-2.11)
Seen MS patients				
Yes, ongoing (vs no)	1.452 (0.71-2.97)	NA	<b>2.141 (1.02-4.51)</b>	NA
Yes, not ongoing (vs no)	<b>0.268 (0.08-0.86)</b>		0.487 (0.18-1.29)	
Number of patients seen in past 6 months (1 additional patient)	1.050 (0.95-1.16)	1.041 (0.94-1.16)	0.987 (0.89-1.09)	0.993 (0.89-1.11)

NA = not available

\*Adjusted odds ratios indicate the odds of intention to manage (as opposed to intention to refer) when the covariate in question is changed compared with the reference value for that covariate, with all other covariates held equal. For categorical characteristics, the reference characteristic is included in parentheses (e.g. the first row denotes the odds of intention to manage for females compared with the corresponding odds for males, all else held equal). For continuous covariates, odds ratios refer to the multiplier of odds for each additional unit of the covariate under consideration, all else held equal (e.g. the second row denotes the odds ratio of intention to manage between two otherwise similar GPs with a 1-year difference of experience). Bold indicates statistical significance ( $p < 0.05$ ).

whatsoever. Female GPs were less likely to consider managing the care of the patient than male GPs in some of the models. This result is in line with previous findings, wherein female GPs were found to be more apt to share responsibilities than men,<sup>16</sup> or that male GPs often had higher involvement in treatment and follow-up of disease than their female counterparts.<sup>17</sup>

It was shown in some models that GPs working mainly from a private office were less likely to consider management of the patient compared with GPs working from a category of miscellaneous practice settings (which included teaching family medicine centers and emergency departments). Although we had posited that GPs in rural areas would feel more obliged to continue seeing their patients because of not being in close proximity of specialists, our findings suggest that GPs in rural locations are less likely to consider management than GPs in the Montreal metropolitan area. This result contrasts with previous findings that saw no significant differences in practice style between urban and rural GPs.<sup>18</sup> Other variables did not reach our stated level of statistical significance. These included the age of the GP, practice location, years since their medical license was obtained (a proxy for amount of experience in the medical field), and the number of MS patients seen within the last 6 months. The number of MS patients seen in the last six months may not have been significant because the number of patients seen was low and thus did not provide GPs with sufficient experience to increase their comfort level in managing these patients.

The results suggest that there is a segment of the GP population that is willing (and indeed may prefer) to manage long-term care for stable MS patients. Although it is difficult to identify these GPs based on demographic, geographic, and work-related factors alone, there are some indicators, namely sex, practice setting, and previous experience with MS patients, which may signal a preference to continue management of the patient, as opposed to seeking help from a specialist. Findings such as this can aid in better understanding GPs' preparedness to handle long-term management of MS patients. Further investigations may want to look into improving the share of the workload among generalists and specialists, effectively optimizing the allocation of resources to MS patients.

In our models, we were unable to include information on GPs' workloads. Although the questionnaire did include a question about practice size, respondents did not answer this question consistently, with some giving a fixed number and others answering on a per-year, per-month, or per-week basis, and it was unclear whether this measure reflected the patients seen solely by the physician or in the entire setting in which they practiced. Future studies should consider a more rigid definition to measure the GPs' work schedule. It should be noted that although the survey evaluated GPs' confidence in managing MS, it did not assess their knowledge thereof or the appropriateness of their confidence.

We acknowledge the low response rate and that answers were self-reported as relative weaknesses of the study. As well, respondents were self-selected, usually indicating a higher interest in the survey topic. In this case, the physicians defined as complete responders for this study were probably more likely to have experience with or interest in MS patients. We also restricted our survey to four clinical scenarios for practical reasons. It is possible that different scenarios, including magnetic resonance imaging findings, would have produced different responses. Finally,

because of differences in health care systems and the differing roles of generalists and specialists across these systems,<sup>19,20</sup> caution should be taken before generalizing results to other provinces or countries.

#### ACKNOWLEDGEMENTS AND FUNDING

This research was supported (in part) by an endMS Summer Studentship Award to MB from the Multiple Sclerosis Society of Canada and the Multiple Sclerosis Scientific Research Foundation. Collection of initial study data was supported by a grant from the Canadian Institutes of Health Research.

#### DISCLOSURES

The views expressed in this article of those of the authors and do not constitute an official position of the institution or funding organization. The authors have no conflicts of interest to disclose.

#### SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit <http://dx.doi.org/10.1017/cjn.2015.239>

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