Academic Physical Medicine and Rehabilitation Acute Care Consultations

Shannon L. MacDonald, Lawrence R. Robinson

ABSTRACT: The objective of this study was to describe the provision of Physical Medicine and Rehabilitation acute care consultations in the United States and Canada. Physical Medicine and Rehabilitation department chairs/division directors at academic centers in Canada and the United States were mailed an 18-item questionnaire. Seven of 13 (54%) Canadian and 26/78 (33%) American surveys were returned. A majority of Canadian and American academic institutions provide acute care consultations; however, there were some national differences. American institutions see larger volumes of patients, and more American respondents indicated using a dedicated acute care consultation service model compared with Canadians.

RÉSUMÉ: Consultations en physiatrie offertes par des établissements universitaires en lien avec des soins de courte durée. L'objectif de la présente étude est de décrire l'offre de consultations en physiatrie aux États-Unis et au Canada en lien avec des soins de courte durée. Pour ce faire, tant des directeurs de départements en physiatrie que des responsables de programmes de centres de recherche ont reçu par la poste un questionnaire en 18 points. En ce qui regarde les questionnaires destinés à des Canadiens, 7 sur 13 ont été retournés, soit 54 % ; du côté des répondants américains, 26 sur 78 l'ont été, soit 33 %. Si une majorité d'établissements universitaires du Canada et des États-Unis offrent des consultations en lien avec des soins de courte durée, des différences entre ces deux pays ont été notées. À cet égard, les établissements américains tendent à prendre en charge un plus grand nombre de patients ; en outre, plus de répondants des États-Unis ont indiqué, si on les compare à ceux du Canada, avoir utilisé un modèle de service s'appliquant spécifiquement à des consultations liées à des soins de courte durée.

Keywords: Physical and rehabilitation medicine, Rehabilitation, Early medical intervention, Referral and consultation

doi:10.1017/cjn.2018.18 Can J Neurol Sci. 2018; 45: 470-473

Physiatrists frequently practice either in a rehabilitation hospital or in an outpatient clinic. However, Physical Medicine and Rehabilitation (PM&R) physicians may also be involved in the acute care setting. Anecdotal evidence suggests that many academic PM&R departments in North America provide acute care consultations, but the role of PM&R in this setting is not well described. To date, few studies have characterized service delivery models, and the potential benefits of providing PM&R acute care consultations to both patient and healthcare systems are relatively unknown.[1]

Ultimately, the goal of providing PM&R acute care consultations is to improve patient and systems outcomes. There is some evidence that PM&R acute care consultation in the traumatic brain injury population, particularly early intervention, has been associated with motor and cognitive improvements, as well as shorter acute care lengths of stay.[2,3] Yet, a study in the geriatric trauma population did not support early PM&R consultation.[4]

Further research is necessary to delineate the potential benefits of providing PM&R acute care consultations. An important first step is to explore the current role PM&R has in academic acute care centers in Canada and the United States. The objective of this study was to describe the current provision of PM&R acute care consultations in the United States and Canada and to explore any differences between Canadian and American models of care.

METHODS

An 18-item questionnaire was mailed to potential participants. Multiple-choice and semantic differential-style questions were used to gather non-numerical data. A second questionnaire was mailed to those who did not respond to the original request in an attempt to limit selection bias. All questionnaires were mailed between March 2016 and February 2017.

Potential participants included PM&R department chairs/division directors (i.e., academic leaders) in Canada and the United States. A cover letter explaining the study accompanied each package, and consent was implied by participants returning a completed questionnaire. This study was approved by our institutional research ethics board.

From the Department of Medicine, Division of Physical Medicine & Rehabilitation, University of Toronto, Toronto, Ontario, Canada (SLM, LRR); Sunnybrook Health Sciences Centre, St. John's Rehab, Toronto, Ontario, Canada (LRR).

Preliminary data were submitted as an abstract and presented as a podium presentation at the Canadian Association of Physical Medicine & Rehabilitation annual scientific meeting in May 2017 in Niagara Falls, Ontario, Canada. Abstracts presented at CAPM&R are submitted to the Journal of Rehabilitation Medicine for publication.

RECEIVED NOVEMBER 12, 2017. FINAL REVISIONS SUBMITTED FEBRUARY 8, 2018. DATE OF ACCEPTANCE FEBRUARY 13, 2018.

Correspondence to: Lawrence R. Robinson, Sunnybrook Health Sciences Centre, St. John's Rehab, 285 Cummer Avenue, Room S125, Toronto, ON, Canada, M2M 2G1. Email: Larry.Robinson@sunnybrook.ca

The questionnaire was designed to measure the following: (i) the proportion of PM&R academic units that provide acute care consultations, (ii) the reasons why some PM&R divisions do not provide this service, (iii) the current methods of providing PM&R acute care consultations, (iv) services referring to PM&R, and (v) how important PM&R academic leaders believe it is to provide acute care consultations.

Questionnaires with missing data were not excluded from the overall analysis; however, missing data were omitted from individual analyses, where appropriate. Frequencies and means/medians were calculated and differences in Canadian and American responses were analyzed using the independent *t*-test and Pearson's χ^2 test. All data were stored in a spreadsheet (Excel 2010, Redmond, Washington) and analyzed using Excel or IBM SPSS Statistics version 22 (Armonk, NY). A p value of 0.05 or less was considered statistically significant.

Results

A total of 7/13 (54%) Canadian and 26/78 (33%) American surveys were returned. The median number (range) of physiatrists in each PM&R unit was 11 (6-53) in Canada and 19.5 (2-55) in the United States. All Canadian and 25/26 (96%) American respondents reported providing acute care consultations. The center that did not provide acute care consultations cited not having enough staff and/or resources to offer this service. The mean (SD) number of consults seen per month was 190 (150) in the United States and 65 (52) in Canada ($p = 0.04$).

When asked whether a dedicated PM&R acute care consultation service saw all consults or whether the staff member providing consultation depended on the diagnosis or reason for consultation, only 2/7 (29%) Canadian, as opposed to 18/25 (72%) American, respondents reported using a dedicated consult service model ($p = 0.04$). Established patient referral guidelines were used in 2/7 (29%) Canadian and 9/25 (36%) American centers ($p = 0.72$). Residents were involved in the provision of acute care consultations in 6/7 (86%) Canadian and 24/25 (96%) US institutions.

Four out of seven (57%) Canadian and 20/24 (83%) American respondents reported being involved in multi-disciplinary rounds for at least one patient category ($p = 0.15$). The top three patient categories involving PM&R in multi-disciplinary rounds were stroke ($n = 3$), spinal cord injury ($n = 3$), and acquired brain injury ($n = 2$) in Canada, and stroke ($n = 16$), trauma ($n = 10$), and acquired brain injury ($n = 8$) and spinal cord injury ($n = 8$) in the United States.

On the basis of the estimates of the number of monthly referrals that divisions receive for 15 PM&R-relevant patient diagnostic categories, the top three patient categories (as measured by volume) seen in Canada were stroke, spinal cord injury, and acquired brain injury, whereas the top three patient categories seen in the United States were stroke, musculoskeletal disorders (MSK), and trauma. The top three referring services in Canada were Neurology, Neurosurgery, and Orthopedics and in the United States they were Neurology, Medicine, and Orthopedics. Frequent reasons for consultation are summarized in Table 1.

Most centers reported that their referrals were appropriate or very appropriate (Table 2) and that physiatrists were either satisfied or very satisfied with providing consultations for patients admitted to acute care (Table 3).

Table 1: Frequent reasons for consultation (more than one could be indicated)

	Canadian (%) ($n = 7$)	American (%) ($n = 25$)
Assess readiness for rehabilitation	86	100
Diagnostic clarification	0	12
Prognostication	14	24
Management of physiatric-related complications	29	52
Discharge planning	29	72
Other	14	4

χ^2 analyses demonstrated that department satisfaction with providing acute care consultations was not affected by the department size ($p = 0.11$), volume of consults ($p = 0.71$), having a dedicated consult service ($p = 0.77$), the presence of referral guidelines ($p = 0.86$), or the need to travel to another site ($p = 0.28$).

Most respondents reported that the provision of acute care consultations was either very or extremely important for clinical care and education. There was less importance attached to research (Table 4).

Discussion

One of the largest studies to examine the provision of PM&R acute care consultations in the United States was in 1998. Melchiorre[5] surveyed PM&R medical directors in 164 US level I trauma centers and reported that 91% of PM&R departments provided consultations for trauma patients. Melchiorre also reported that in most US trauma centers an individualized referral was required for PM&R to assess trauma patients (as opposed to having PM&R "auto consulted" on all admissions). Approximately half of the departments had residents rotating through them and 76% were involved in multi-disciplinary rounds.

The results of our study indicate that the majority of Canadian and American academic institutions provide acute care consultations; however, there were some national differences. American institutions reported seeing larger volumes of patients, and more American respondents indicated using a dedicated acute care consultation service model compared with Canadians. Musick et al[6] demonstrated that having a dedicated faculty responsible for the provision of acute care consultations increased the number of referrals. The greater use of a dedicated acute care consultation service model may partly account for the larger volumes of patients seen in the United States compared with Canada.

Table 2: Appropriateness of referrals

	Canadian (%) ($n = 7$)	American (%) ($n = 23$)	p Value
Very appropriate	43	48	
Appropriate	43	48	
Neutral	0	0	0.65
Inappropriate	0	0	
Very inappropriate	14	4	

https://doi.org/10.1017/cjn.2018.18 Published online by Cambridge University Press

Table 3: Satisfaction with providing consultations for patients admitted to acute care

	Canadian (%) ($n = 7$)	American (%) ($n = 25$)	p Value
Very satisfied	14	24	0.20
Satisfied	71	64	
Neutral	0	12	
Unsatisfied	0	0	
Very unsatisfied	14	0	

Training requirements may, at least in part, be responsible for some of the differences noted between the United States and Canada. In the United States, it is a post-graduate education accreditation standard from the Accreditation Council for Graduate Medical Education (ACGME) that PM&R residents provide "consultation to other inpatient services".[7] Furthermore, in order for US hospitals to receive a level I or II trauma center designation, "rehabilitation consultation services" must be available in the critical care phase.[8] These requirements for US PM&R training programs and trauma centers may also be responsible for the larger volume of patients seen and the more formalized consultation service models used in the United States compared with Canada.

The most common patient categories seen by PM&R acute care consultants (stroke, spinal cord injury, acquired brain injury, MSK, and trauma) was not surprising as these are, traditionally, some of the core populations serviced by PM&R. With the exception of the MSK population, PM&R consultants were also more likely to be involved in multi-disciplinary rounds for these patients.

The most common reason for consultation was to assess readiness for rehabilitation. Although PM&R was occasionally consulted for other issues, such as PM&R-relevant complications and prognostication, this was much less frequent, especially in Canada. The observed differences between the two countries is possibly reflective of the more formalized/established consultation service models used in the United States rather than the need (or lack of need) of PM&R services. Expanding the indications for why PM&R sees patients in acute care is an area of potential growth for both countries. Most centers reported not having referral guidelines. It is unclear whether having established referral guidelines, which include examples of potential reasons for consultation, would result in an increase in referrals for reasons other than to assess readiness for rehabilitation.

Most institutions reported that providing PM&R acute care consultations was both satisfying and clinically important. Even factors such as travel and a lack of referral guidelines did not appear to affect satisfaction. Although respondents attached less importance to research, we believe that acute care consultations help facilitate PM&R research. In a general sense, performing acute care consultations helps build personal relationships with other specialists. This often leads to joint or collaborative research opportunities, which would not be available if physiatrists were only taking care of patients in rehabilitation facilities. Moreover, the provision of acute care consultations allows the physiatrist to participate in relevant acute care data collection, which would not be possible otherwise.

This study was limited by a relatively small sample size and low response rate; only 36% of institutions responded, which may have resulted in a potential selection bias.[9] As data for the divisions that did not participate were unavailable, it is unclear whether there were systemic differences between responders and non-responders. In addition, the use of a questionnaire to gather data may have resulted in recall bias. Finally, this study specifically focused on the involvement of PM&R physicians in the acute care setting, and we did not collect information regarding other models of care, such as having advanced practice nurses assess patient readiness for rehabilitation.

Conclusion

Many academic centers in Canada and the United States are providing PM&R acute care consultations. Most patients seen had one of the common physiatric diagnoses, and most consultation requests were to assess readiness for rehabilitation. There were some national differences; US institutions saw larger volumes of patients and were more likely to use a dedicated consultation service model compared with Canadian institutions. These differences may, in part, be related to specific standards for trauma centers and post-graduate education programs in the United States. It is currently unclear whether similar standards should be adopted in Canada.

Although we believe that PM&R acute care consultations have the potential to improve patient and system outcomes, further research is required to delineate the patient populations and

Table 4: Reported importance of providing acute care consultations for clinical, educational, and research purposes

	Clinical		Educational		Research	
	Canadian (%) ($n = 7$)	American (%) ($n = 25$)	Canadian (%) ($n = 7$)	American (%) ($n = 25$)	Canadian (%) ($n = 7$)	American (%) ($n = 25$)
Not important at all	0	0	0	0	14	0
Not very important	0	0	0	0	14	4
Somewhat important	29	4	14	4	43	52
Very important	14	16	43	36	14	16
Extremely important	57	80	43	60	14	28
	$p = 0.14$		$p = 0.53$		$p = 0.29$	

https://doi.org/10.1017/cjn.2018.18 Published online by Cambridge University Press

outcomes that can most benefit from early PM&R involvement. This study showed that most centers provide PM&R acute care consultations. As a next step, we are currently examining the impact of PM&R acute care consultations on trauma patients' acute care length of stay, incidence of complications, and functional outcomes to help guide future recommendations regarding the provision of this service.

Acknowledgments

This work was supported by the Sunnybrook AHSC AFP Innovation Fund.

Disclosures

SLM nothing to disclose. LRR reports grants from Sunnybrook AHSC AFP Innovation Fund, during the conduct of the study.

Statement of Authorship

Conception and design of study, analysis of data, revising the manuscript critically for important intellectual content, and approval of the version of the manuscript to be published were carried out by SLM and LRR. Acquisition of data and drafting the manuscript were carried out by SLM.

References

1. Tam AK, Berbrayer D, Robinson LR. What should be the role of physiatrists in early acute care rehabilitation?: Current literature, models of care, and thoughts for the future. Am J Phys Med Rehabil. 2016;95(3):225-9.
2. Greiss C, Yonclas PP, Jasey N, et al. Presence of a dedicated trauma center physiatrist improves functional outcomes following traumatic brain injury. J Trauma Acute Care Surg. 2016;80(1):70-5.
3. Wagner AK, Fabio T, Zafonte RD, Goldberg G, Marion DW, Peitzman AB. Physical medicine and rehabilitation consultation: relationships with acute functional outcome, length of stay, and discharge planning after traumatic brain injury. Am J Phys Med Rehabil. 2003;82(7):526-36.
4. Taheri PA, Iteld LH, Michaels AJ, Edelstein S, Di Ponio L, Rodriguez JL. Physician resource utilization after geriatric trauma. J Trauma. 1997;43(4):565-8; discussion 8-9.
5. Melchiorre PJ. Status of physiatry and physical medicine and rehabilitation departments in adult level I trauma centers. Arch Phys Med Rehabil. 1998;79(1):62-6.
6. Musick D, Nickerson R, McDowell S, Gater D. An exploratory examination of an academic PM&R inpatient consultation service. Disabil Rehabil. 2003;25(7):354-9.
7. Accreditation Council for Graduate Medical Education (ACGME). ACGME program requirements for graduate medical education in physical medicine and rehabilitation. Chicago, IL: ACGME; 2016.
8. Committee on Trauma, American College of Surgeons. Resources for optimal care of the injured patient. Chicago, IL: American College of Surgeons; 2014.
9. Abdulaziz K, Brehaut J, Taljaard M, et al. National survey of physicians to determine the effect of unconditional incentives on response rates of physician postal surveys. BMJ Open. 2015;5:e007166.

https://doi.org/10.1017/cjn.2018.18 Published online by Cambridge University Press