The importance of tailoring physicians' trauma care training needs in rural environments

Payam Tarighi, MD, PhD
Jill E. Sherman, MPH
Oxana Mian, MA
Avery B. Nathens, MD, PhD

This study was presented in part as a poster at the 73rd annual meeting of the American Association for the Surgery of Trauma, Sept. 10–13, 2014, Philadelphia, PA

Accepted for publication
Apr. 13, 2015

Correspondence to:

P. Tarighi
Sunnybrook Health Sciences Centre
Evaluative Clinical Sciences
2075 Bayview Ave.
Rm K3W-27
Toronto ON M4N 3M5
payam.tarighi@sunnybrook.ca

DOI: 10.1503/cjs.002315

SUMMARY

Gaps in the provision of care exist in the initial evaluation and management of patients first cared for in the most rural settings. We designed a survey to explore what unmet educational needs might exist so as to improve the care of patients before transfer. Here we discuss opportunities for tailored training that will enhance learning capacity, narrow the trauma education gap and improve trauma care, particularly in rural environments.

For a trauma system to have the maximal survival benefit, severely injured patients must survive long enough to reach trauma centre care. This objective is challenging, particularly in more rural environments where discovery and transport times might be prolonged. In this context, a component of care delivered in either lower-level or nondesignated centres is critical. In rural environments, these are often small community hospitals where the resources for evaluation and management are few and the experience of providers is limited.¹ While focused courses to enhance the knowledge and skills of providers have shown benefit, we sought to evaluate the current status and perceived educational needs of physicians working in emergency departments (EDs) across several regional trauma systems in Canada. The principle objective was to identify opportunities to better prepare physicians working in more rural environments.

We designed a cross-sectional survey to evaluate the current status and perceived educational needs of emergency physicians who might be responsible for the initial evaluation and management of major trauma patients. The content of the survey was guided by formative research, consisting of 2 focus groups and a field test. Our population of interest was physicians working in the EDs of non-trauma centres or level III–V trauma centres located at least 30 minutes from the nearest level I or II trauma centre. We identified a total of 382 hospitals across 7 provinces (British Columbia, Alberta, Ontario, New Brunswick, Newfoundland and Labrador, Nova Scotia and Prince Edward Island) meeting our inclusion criteria.

Survey data were collected in 2 waves, October 2011 and December 2012, following identical procedures. Survey packages containing a cover letter, an information and instruction guide, a consent form, a questionnaire and a prepaid return envelope were mailed to selected physicians. For the initial survey 2196 physicians were selected and for the second wave 367 additional physicians were selected, for a total of 2563 physicians. Exploration of regional differences and needs across the rural–suburban continuum are available in Appendix 1 (available at canjsurg.ca).

STRUCTURED EDUCATIONAL OPPORTUNITIES

We identified opportunities to enhance training through structured learning opportunities. Physicians indicated difficulty in accessing Advanced Trauma Life Support (ATLS) and Pediatric Advanced Life Support (PALS) courses, and there was lack of awareness about newer trauma educational opportunities, such as the Rural Trauma Team Development Course (RTTDC). Limitations to accessing ATLS might explain why one-third of physicians did not have recent ATLS certification, even though most (80%) respondents felt it would meet their educational needs. The positive impact of courses like ATLS on physicians' knowledge and skills has been documented, and there are strong recommendations that ATLS should be taken by any physician involved in the care of injured patients.² Many physicians indicated a preference for training courses in their communities, emphasizing the value of either using telemedicine as a medium for ATLS delivery or having experts provide courses locally.³ Increasing the cadre of ATLS instructors from more rural centres may also improve the availability of ATLS courses outside of major cities.

Interestingly, there was limited awareness of or experience with the RTTDC; this might be a reflection of either its relative novelty compared with ATLS, lack of awareness among trauma training providers in Canada or the availability of similar alternatives. Other rural-focused training courses reported by participants included the Combined Advanced Life Support Course (CALS) with Trauma Module and the Comprehensive Approach to Rural Emergencies (CARE) Course developed in British Columbia.

Knowledge/expertise gaps among rural providers

There were specific areas that physicians identified as particularly challenging and for which additional educational opportunities would be helpful. Three-quarters of participants expressed interest in content related to pediatric trauma, orthopedic/peripheral vascular trauma, airway management and blunt chest/abdominal trauma. These potential gaps are almost certainly related to the relative infrequency with which they are confronted by these problems. A major challenge for improving the impact of training lies in helping physicians maintain knowledge and skills in environments with limited exposure to major trauma. Many physicians in rural environments might see fewer than 5 patients with severe injuries per year.

Preferences in mode of learning

Having rural physicians travel to major urban areas for didactic lectures is suboptimal, drawing physicians away from where they are most needed. Further, we identified that respondents' preferred mode of learning was practice-

oriented, with a distinct preference for simulation-based training. The integration of simulation into ATLS is a challenge, but one that might serve providers and patients well.

EDUCATION AND SUPPORT IN PRACTICE

This survey identified gaps in training opportunities, knowledge and experience of physicians responsible for the initial care of injured patients in rural environments. Structured learning opportunities like ATLS are difficult to access for rural physicians. The RTTDC is likely more suitable for the most rural environments and provides teams with an understanding of what they can accomplish together using their own resources. Unfortunately, promulgation of RTTDC in Canada has been limited. Leaders in trauma care should take the responsibility of raising awareness of opportunities like these to enhance the care of patients in their regions. Where possible, simulation-based training should be incorporated to provide rural practitioners with hands-on experience with their local teams.

The reality of infrequent exposure and potential delays in transfer related to weather and/or transport need can't be ignored. Physicians in regional trauma centres need to better support their rural providers in real-time through telemedicine and/or teleresuscitation. Additionally, providing structured feedback to providers based on patients transferred from their institutions brings an educational opportunity to every practice encounter.⁴ Taken together, telemedicine with real-time consultation and remote learning opportunities might very well improve trauma care in rural settings.⁵

Our survey had several potential limitations. Recall bias may have been introduced when physicians were asked about their past practices and training courses. Additionally, our low response rate (nearly 20%) leads to the potential of nonresponse bias, where physicians electing not to participate might have had very different perspectives on educational needs and gaps. Moreover, given the expected challenges with response rates, we opted for perceived knowledge gaps over actual ones to try to get a little closer to providing these physicians with something from which they might be able to benefit. However, one of our major strengths was the diversity of physicians participating, with representation of those certified in emergency medicine and those without such credentials, and the broad geographic representation from across Canada. Furthermore, we used a combination of quantitative and qualitative approaches to ensure a full spectrum of responses.

We believe that the delivery and content of trauma education materials should be tailored based on the needs of providers, as the practice setting and physicians' experiences call for very different requirements. This work focused on providers practising outside of major urban areas who have different interests and needs related to content and mode of delivery than providers in the most urban

areas. The ATLS, PALS and other trauma educational offerings should be more accessible, and greater use of tele-education should be considered. Furthermore, courses focusing on trauma team approaches in the context of scarce resources (e.g., RTTDC) need greater promotion and emphasis. We believe that educational opportunities will be more effective if learning is based on real cases from the local setting, and real-time consultation will provide physicians the training and support they require to in turn provide optimal care in the most rural environments.

Affiliations: From the Sunnybrook Health Sciences Centre, Toronto, Ont. (Tarighi, Nathens); the Centre for Rural and Northern Health Research, Laurentian University, Sudbury, Ont. (Sherman, Mian); and the Department of Surgery, University of Toronto, Toronto, Ont. (Nathens).

Funding: Funding for this work was received from the Canadian Institutes of Health Research. A. Nathens is supported by the de Souza Chair in Trauma Research.

Competing interests: None declared.

Contributors: All authors contributed substantially to the conception, writing and revision of this commentary and approved the final version for publication.

References

1. Helling TS. The challenges of trauma care in the rural setting. *Mo Med* 2003;100:510-4.
2. Mohammad A, Branicki F, Abu-Zidan FM. Educational and clinical impact of Advanced Trauma Life Support (ATLS) courses: a systematic review. *World J Surg* 2014;38:322-9.
3. Ali J, Sorvari A, Camera S, et al. Telemedicine as a potential medium for teaching the Advanced Trauma Life Support (ATLS) course. *J Surg Educ* 2013;70:258-64.
4. Duchesne JC, Kyle A, Simmons J, et al. Impact of telemedicine upon rural trauma care. *J Trauma* 2008;64:92-7, discussion 7-8.
5. McCrum ML, McKee J, Lai M, et al. ATLS adherence in the transfer of rural trauma patients to a level I facility. *Injury* 2013;44:1241-5.

Canadian Journal of Surgery

Change of address

We require 6 to 8 weeks' notice to ensure uninterrupted service. Please send your current mailing label, new address and the effective date of change to:

CMA Member Service Centre

1870 Alta Vista Dr.
Ottawa ON K1G 6R7

tel 888 855-2555 or
613 731-8610 x2307
fax 613 236-8864
cmamsc@cma.ca

Journal canadien de chirurgie

Changement d'adresse

Il nous faut de 6 à 8 semaines d'avis afin de vous assurer une livraison ininterrompue. Veuillez faire parvenir votre étiquette d'adresse actuelle, votre nouvelle adresse et la date de la prise d'effet du changement, à l'attention du

Centre des services aux membres de l'AMC

1870, prom. Alta Vista
Ottawa ON K1G 6R7

tél 888 855-2555 ou
613 731-8610 x2307
fax 613 236-8864
cmamsc@cma.ca

ASSOCIATION
MÉDICALE
CANADIENNE

CANADIAN
MEDICAL
ASSOCIATION