The Quebec emergency department guide: A cross-sectional study to evaluate its use, perceived usefulness, and implementation in rural emergency departments

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ABSTRACT

Objectives: The Quebec Emergency Department Management Guide (QEDMG) is a unique document with 78 recommendations designed to improve the organization of emergency departments (EDs) in the province of Quebec. However, no study has examined how this guide is perceived or used by rural health care management.

Methods: We invited all directors of professional services (DPS), directors of nursing services (DNS), head nurses (HN), and emergency department directors (EDD) working in Quebec's rural hospitals to complete an online survey (144 questions). Simple frequency analyses (percentage [%] and 95% confidence interval) were conducted to establish general familiarity and use of the QEDMG, as well as perceived usefulness and implementation of its recommendations.

Results: Seventy-three percent (19/26) of Quebec's rural EDs participated in the study. A total of 82% (62/76) of the targeted stakeholders participated. Sixty-one percent of respondents reported being "moderately or a lot" familiar with the QEDMG, whereas 77% reported "almost never or sometimes" refer to this guide. Physician management (DPS, EDD) were more likely than nursing management (DNS and especially HN) to report "not at all" or "little" familiarity on use of the guide. Finally, 98% of the QEDMG recommendations were considered useful.

Conclusions: Although the QEDMG is considered a useful guide for rural EDs, it is not optimally known or used in rural EDs, especially by physician management. Stakeholders should consider these findings before implementing the revised versions of the QEDMG.

RÉSUMÉ

Objectif: Le *Guide de gestion de l'urgence* au Québec est un document unique en son genre, qui contient 78 recommandations visant à améliorer l'organisation des services d'urgence (SU) dans la province de Québec. Toutefois, aucune étude n'a porté sur la manière dont le Guide est perçu ou appliqué par les gestionnaires des soins de santé en région.

Méthode: Tous les directeurs des services professionnels (DSP), directeurs des soins infirmiers (DSI), infirmières-chefs (IC) et directeurs des services d'urgence (DSU) travaillant dans des hôpitaux situés en région, au Québec, ont été invités à répondre à une enquête en ligne (144 questions). Nous nous sommes appuyés sur de simples analyses de la fréquence (pourcentage [%] et intervalles de confiance à 95 %) pour établir le degré général de connaissance du Guide et de son application ainsi que pour déterminer le degré de perception de son utilité et l'état de la mise en œuvre des recommandations.

Résultats: Dans l'ensemble, 73 % (19/26) des SU situés en région, au Québec, ont participé à l'étude, de même que 82 % (62/76) des parties ciblées. Soixante et un pour cent des répondants ont indiqué « bien connaître » ou « connaître assez bien » le Guide, tandis que 77 % ont indiqué se reporter « parfois » ou « presque jamais » au Guide. Les gestionnaires des soins médicaux (DSP, DSU) étaient plus nombreux que les responsables des soins infirmiers (DSI et surtout les IC) à indiquer qu'ils utilisaient ou connaissaient « peu » ou « pas du tout » le Guide. Enfin, 98 % des recommandations contenues dans le Guide étaient considérées comme utiles.

Conclusions: Tandis que le Guide est considéré comme utile dans les SU situés en région, il n'est pas appliqué de la meilleure

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façon qui soit par les intervenants ou il est mal connu de ceux-ci, en particulier des gestionnaires des soins médicaux. Les différentes parties devraient donc tenir compte des résultats de l'étude avant la mise en œuvre des versions révisées du Guide.

Keywords: application, emergency department management, implementation, policymakers, recommendation, rural regions, usefulness

INTRODUCTION

Twenty percent of the Canadian population reside in rural areas.[1] The Canadian rural population is older than the urban population[2] and presents more health problems and a lower life expectancy. In addition, rural Canadians generally have limited local access to family doctors, specialists, and advanced diagnostic imaging.[3] Emergency departments (EDs) thus constitute a safety net for this population,[4] yet providing quality 24/7 emergency care is a considerable challenge. Budget constraints, increasing health care costs, and physician recruitment and retention issues have challenged the viability of rural emergency services.[5–10] Recent studies suggest that rural EDs provide limited services, and an average of 300 patients per year/facility require inter-facility transfers often on an urgent basis to access diagnostic services and definitive care at urban referral centres often hundreds of kilometres away.[11–14] Appropriate care for the specific and significant needs of rural populations requires optimization of rural emergency services.[1,4,15–17] Yet, there are no recent established standards on what services they should provide.

In an effort to address some of the problems faced by rural EDs, in 1997, the Canadian Association of Emergency Physicians published a report entitled *Recommendations for the Management of Rural, Remote, and Isolated Emergency Health Care Facilities in Canada*.[18] The document constituted a first step towards establishing standards of care in Canadian rural EDs. However, the report included few recommendations concerning the distribution of specific complex services (e.g., computed tomography [CT] scan, surgical services, trauma services, inter-establishment transfers). Moreover, emergency medicine has considerably progressed over the last 20 years since the publication of this report. New standards need to be established for rural emergency care.

To our knowledge, Quebec is the only province to have published an ED management guide that includes specific recommendations for rural EDs. The Quebec Emergency Department Management Guide (QEDMG) includes 78 recommendations designed to 1) propose a model for ED management and functioning, 2) introduce recommendations that promote optimal management of EDs, 3) provide managers with solutions for optimal ED functioning based on type and volume of patients, and 4) encourage managers to put the solutions into action.[18,19] However, to date, no study has evaluated the implementation of these recommendations in rural or urban EDs in Quebec.

The objectives of the present study are to survey Quebec's rural ED/hospital management staff to determine 1) general familiarity with the QEDMG, 2) perceived usefulness of the QEDMG recommendations, and 3) implementation of the recommendations.

METHODS

Study design

This cross-sectional study was conducted between July and December 2012. The study constituted one component of a larger evaluative and descriptive study of rural EDs in Quebec and the use of the QEDMG.[12,20]

Data were collected from directors of professional services (DPS), directors of nursing services (DNS), head nurses (HN), and emergency department directors (EDD). Eligible participants who worked in a rural hospital in the province of Quebec were 18 years of age or older and had worked full-time in their current position for a minimum of 6 months. Eligible hospitals offered 24/7 medical coverage, had hospital beds, and were situated in a rural area as per the Statistics Canada definition.[21] As per the Guide to Canadian Health Care Facilities,[22] 26 hospitals (amounting to approximately 400,000 visits per year in total) were identified by the Ministry of Health and Social Services and by the Quebec Director of Emergency Departments.

An initial email message was sent to the 76 ED professionals identified as eligible participants. Thereafter, we contacted each eligible participant by telephone or by email to obtain consent to participate in the study and to answer any questions. Each consenting participant received an email invitation to participate in an online survey (using SurveyMonkey software). All of the data

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collected were anonymized and processed confidentially; in no cases were the data matched to their source.

Before being posted online, the survey was pre-validated by a committee of experts, including four emergency physicians, one EDD, one HN, and one hospital manager. The pilot group was created to validate the clarity of the questions and to estimate the response time. The group completed the survey in less than 20 minutes, confirmed that the objectives of the study were clearly explained, and did not report any particular difficulties responding to the questions. The protocol was evaluated and approved in a multicentre process by the research ethics committee at the Alphonse-Desjardins Community Health and Social Services Center (project MP-HDL-1213-011).

Data collection

The survey included 144 questions and was divided into two parts. The first part comprises sociodemographic questions (i.e., workplace, position, seniority in the establishment and in the position). The second part was designed to explore familiarity with the QEDMG and implementation of the recommendations in the 2006 version of the guide. Survey respondents were specifically questioned about familiarity with and implementation of 69 of the 78 recommendations in the QEDMG (138 questions; 2 per recommendation). The nine QEDMG recommendations not retained for the survey were not applicable to rural EDs.

The first question about familiarity and implementation of the guide was the following: *In general, how familiar are you with the recommendations in the ED management guide?* Possible responses ranged from "not at all" to "a lot" on a four-point Likert-type scale.

The second question was formulated as follows: *In general, in your work, how often do you refer to the recommendations in the guide?* Possible responses ranged from "almost never" to "almost always" on a four-point Likert-type scale. For each recommendation, respondents were asked to indicate their degree of agreement with the following statements: a) "This recommendation is useful for my establishment" and b) "This recommendation is applied in my establishment."

Statistical analyses

Descriptive analyses and a simple analysis of variance were used to determine average seniority (in the establishment and in the position) and between-group differences in seniority. A simple frequency analysis (percentage [%] and 95% confidence interval [CI]) was used to determine familiarity with and general use of QEDMG recommendations for each group of participants. The frequency analysis (% and 95% CI) for usefulness and application of the recommendations used a dichotomized four-point Likert scale. We dichotomized the variable due to the small sample size and to reveal a more global trend that could be analysed using statistical methodologies. The non-dichotomized results are presented in Appendices 1 and 2. A chi-square test was used to compare the differences between percentages in the category. Proportion tests were used for comparisons between categories for a given response. The statistical significance was set at $p < 0.05$. All analyses were conducted using SAS software (version 9.3).

RESULTS

Participants and participating hospital characteristics

In total, 19 of 26 (73%) eligible hospitals consented to participate in the study. Together, the participating EDs treat approximately 400,000 patients per year, a figure that represents nearly 70% of all visits per year in Quebec's rural EDs. Sixty-two (17 DPS, 18 DNS, 16 HN, 11 EDD) of the 76 eligible participants responded to the online survey (response rate of 82%). With the exception of one hospital, each establishment had at least three respondents, representing three of the four employment categories targeted by the study. On average, employees had 12.7 ± 11.1 years of seniority in their respective establishments, and 5.0 ± 4.8 years of seniority in the position. EDDs had fewer years of seniority in their establishments than did DPS, DNS, and HN: 18.1 ± 10.6 (DPS), 12.1 ± 10.8 (DNS), and 13.5 ± 12.6 (HN) v. 4.3 ± 3.3 (EDD) ($p = 0.013$). Years on the job were similar across positions: 5.7 ± 5.5 (DPS), 4.5 ± 3.1 (DNS), 5.9 ± 6.2 (HN), and 3.7 ± 3.4 (EDD) ($p = 0.574$).

General familiarity and use of QEDMG recommendations

Results regarding general familiarity with the QEDMG are shown in Table 1. In response to the question: *In general, how familiar are you with the recommendations in the ED management guide?*, DPS and EDD were more

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Table 1. Responses to the question: *In general, how familiar are you with the recommendations in the ED management guide?*

		Categories			
Responses	All (62) % [95% CI]	DPS (17) % [95% CI]	DNS (18) % [95% CI]	HN (16) % [95% CI]	EDD (11) % [95% CI]
Not at all/a little	39 [26.9-51.1]	53 [29.3-76.7]	33 [11.3-54.7]	19 [0-38.2]	55 [25.6-84.4]
Moderately/a lot	61 [48.9-73.1]	47 [23.3-70.7]	67 [45.3-88.7]	81 [61.8-100]	45 [15.6-74.4]
p-value	0.012	0.726	0.030	0.001	0.064

CI = confidence interval; DNS = director of nursing services; DPS = director of professional services; EDD = emergency department director; HN = head nurse.

Table 2. Responses to the question: *In general, at work, how often do you refer to the recommendations in the guide?*

Responses	All (62) % [95% CI]	DPS (17) % [95% CI]	DNS (18) % [95% CI]	HN (16) % [95% CI]	EDD (11) % [95% CI]
Almost never/sometimes	77.4 [67-87.8]	88.2 [72.9-100]	88.9 [74.4-100]	50.1 [25.6-74.6]	81.8 [59-100]
Often/almost always	22.6 [12.2-33]	11.8 [0-27.1]	11.1 [0-25.6]	47.4 [22.9-71.9]	18.2 [0-41]
p-value	0.001	0.001	0.001	0.878	0.001

CI = confidence interval; DNS = director of nursing services; DPS = director of professional services; EDD = emergency department director; HN = head nurse.

likely to report "not at all" or "little" familiarity with the QEDMG ($p < 0.05$) than HN. Among DNS and HN, "moderately to a lot" was a more common response than was "not at all to a little" ($p < 0.05$).

With respect to the question: *In general, at work, how often do you refer to the recommendations in the guide?*, DPS, DNS, and EDD were more likely than were HN to use the QEDMG "almost never or sometimes" ($p < 0.05$). Among DPS, DNS, and EDD, "almost never to sometimes" was a more common response than was "not at all to a little" ($p < 0.05$). For HN, there were no significant differences in frequency between the two responses (Table 2).

Usefulness and implementation of QEDMG recommendations

On average, survey respondents considered 98% of the QEDMG recommendations to be useful. DNS and EDD reported the lowest proportion of implemented recommendations (Table 3). Of all of the recommendations considered either useful or applied, 18 were considered useful but not applied (Table 4).

Table 3. Percentage and 95% CI of recommendations considered useful and applied

	n	% of Recommendations considered useful % [95% CI]	% of Recommendations applied % [95% CI]	*p*-value
DPS	17	98 [91.3-100]	82 [63.7-100]	0.106
DNS	18	97 [89.1-100]	77 [57.6-96.4]	0.061
HN	16	97 [88.6-100]	81 [61.8-100]	0.134
EDD	11	97 [86.9-100]	71 [44.2-97.8]*	0.075

CI = confidence interval; DNS = director of nursing services; DPS = director of professional services; EDD = emergency department director; HN = head nurse.

DISCUSSION

As a Ministry of Health and Social Services initiative, the QEDMG is an extensive document with more than 70 recommendations designed to improve the organization and provision of quality care in all EDs in the province of Quebec. However, it was previously unclear whether ED management stakeholders actually knew of its existence and even used it. The results of this study showed that, although rural ED management staff found 98% of the guide's recommendations potentially useful, roughly 40% of respondents had little or no prior knowledge of the QEDMG itself. More concerning, 80% of physician managers (EDD and DPS) "rarely or almost never" refer to this guide in their duties of managing the ED or the hospital. Overall, these findings reveal that, despite the investments made by the Quebec Ministry of Health and Social Services and multiple stakeholders to develop and revise this

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Table 4. Eighteen of 69 recommendations considered useful but are rarely applied (in brackets, personnel targeted by the recommendation)

1. B2.2.D. Form a committee of nurses and physicians to evaluate the quality of the triage process and of continuing education for nurses (EDD, HN).
2. B2.7.B. Develop a protocol that outlines wait times for consultations; create designated appointment availability in specialty and external clinics for ED users (EDD).
3. B2.7.D. Ensure that follow-up consultations take place outside of the ED (DPS, EDD).
4. B.2.9.A. Develop a protocol for evaluating the necessity of laboratory and medical imaging tests for ED patients (EDD).
5. B.2.11.A. Establish a policy for ED visitors (EDD, HN).
6. B.3.C. Create a chart to track ED functioning and performance indicators (EDD, HN, DPS).
7. B.4.1.A. Use the hierarchy of care to adapt ED services for children (DPS).
8. B.4.1.C. Offer specific training in pediatrics to the medical and nursing team (EDD, HN).
9. B.4.1.D. At triage, identify children whose security or development are at risk; implement an intervention protocol that respects youth protection laws (DPS).
10. B.5.3.A. Adjust ED functioning and allocation of resources according to patient volume (EDD).
11. B.5.4.B. Establish an annual continuing education program for nurses and support staff (EDD, HN).
12. B.5.5.A. Ensure the presence of a pharmacist in the ED, as needed (EDD, HN).
13. B.5.7.A. Establish an action plan for personnel recruitment and retention (EDD, HN).
14. B.5.7.B. Implement measures designed to protect ED personnel (EDD, HN).
15. B.6.3.A. Ensure that ED rooms are appropriately equipped for patients with specialized needs (EDD, DNS, DPS, HN).
16. C.1.A. Establish an action/support team in each establishment with an ED (none).
17. C.2.A. Establish a team of physicians and nurses responsible for managing daily ED admissions (DPS, DNS).
18. C.3.B. Implement and evaluate a plan for managing overflow in rural health care services (none).

guide,[18] knowledge and use of its contents is quite limited, especially in a physician leadership position in rural settings.

Our results also indicate that, contrary to managers and directors, HN are already familiar with and refer frequently to the QEDMG. Further study is required to explain these findings. However, HN are government employees and, as such, we may hypothesize that training on the guide may have been part of their job description. In contrast, EDD are self-employed physicians, often taking on this leadership position part-time in addition to clinical duties. In rural settings, these physicians most often provide a full scope of services (clinic, hospitalist, obstetrics, etc.).[20] Leadership positions are traditionally of low interest for clinical physicians.[23] Moreover, our results indicated that EDD have the least seniority in their establishments as compared with other management categories of interest. Hence, EDD may have had little time to familiarize themselves with the QEDMG explaining, in part, their limited knowledge of the guide.

Further research is necessary to reach a clearer understanding of the reasons why ED physician managers and directors scarcely follow recommendations included in the guide. Additional research is also required to establish whether and how this limited knowledge and use of the guide by ED managers and directors could impact the functioning of EDs in the long term.

Interestingly, of the 18 recommendations considered useful but rarely applied, the majority are addressed specifically to the EDD. Furthermore, several of the 18 recommendations considered useful but not applied refer to the use of funds to equip rural EDs with specialized and often costly medical devices designed to meet the particular needs of the rural population (e.g., for traumatology). For example, one recommendation is to "ensure that ED rooms are appropriately equipped for patients with specialized needs."[4] The Quebec health and social services system has faced significant budget constraints for the past few years,[5–8] which may contribute to the failure in implementing this QEDMG recommendation.

STRENGTHS OF THE STUDY

This study constitutes the first detailed exploration of familiarity, use, and implementation of QEDMG recommendations in a Canadian province. The existence of such a guide, created collaboratively by policymakers and medical associations and federations at the initiative of the Quebec Ministry of Health and Social Services, is unique in Canada. We surmise that the guide was costly to design and implement. The

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Ministry of Health and Social Services is currently working on a third version of this guide. The methodology and results of this study will likely be useful for the next version.

Participants in the online survey were representative of the groups targeted by the study. The high response rate of ED management personnel (81%) was impressive considering the number of survey questions (N = 144 questions). Participants represented more than 70% of Quebec's rural EDs that treat on an average of 400,000 patients per year in total. Previous knowledge transfer initiatives at the launch of this rural ED study, of which this specific project was part, may have fostered interest and participation in this project.[13]

Finally, the survey evaluated the recommendations as formulated in the guide, without modification. Managers and directors were required to read and reflect on all of the recommendations, inevitably increasing awareness of the guide and its applications.

LIMITATIONS

Firstly, we surveyed ED managers and directors without surveying frontline nurses and physicians. Although interesting, this was beyond the scope of the current study. Secondly, this study focused on rural EDs only as part of our ongoing research program. Knowledge of the guide may have been different in large urban, community, and teaching hospitals. Because these centres are geographically closer to the Ministry of Health and Social Services decision-making centres, barriers to knowledge transfer initiatives with this guide (time to travel, costs, etc.) could have been smaller than in rural centres. We recommend conducting further study to investigate this specific matter. Thirdly, the survey did not evaluate the impact of management staff familiarity with the QEDMG on patient care. For example, future work could explore the relationship between recommendations, familiarity with recommendations, actual implementation and the impact on care (including equipment, specialized support services, inter-establishment transfers, etc.). However, it may explain why Quebec rural EDs have greater 24/7 in-hospital access to services such as CT scanners, general surgery, and intensive care[15] relative to other Canadian provinces.[13,14,24] When the level of specific services to be offered is clearly outlined, rural hospitals may find it easier to advocate for better services or standards of care compared to when there is no established guide.

CONCLUSION

The province of Quebec has a unique and useful guide designed to optimize ED organization to ensure integrated services and a patient-based approach focused on quality care for both rural and urban citizens. Without empirical data or guidelines to prescribe which services should be offered in rural areas, rural EDs may face limitations in services and even a threat of closure.[15,18] Yet, few rural physicians report knowledge of this guide and rarely use or refer to it. However, the results demonstrate the perceived usefulness of the ED management guide in Quebec by all groups of key stakeholders. Because the level of access to services in Quebec rural EDs is greater than that offered in other provinces, the relevance of such a document in Canada where there is no standard of care for rural EDs is underscored.[15,18] Future versions of this guide should optimize knowledge transfer efforts, especially targeting physician management positions.

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SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit https://doi.org/10.1017/cem.2017.423

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APPENDIX 1. RESPONSES TO THE QUESTION: IN GENERAL, HOW FAMILIAR ARE YOU WITH THE RECOMMENDATIONS IN THE ED MANAGEMENT GUIDE?

		Categories			
Responses	All (62) % [95% CI]	DPS (17) % [95% CI]	DNS (18) % [95% CI]	HN (16) % [95% CI]	EDD (11) % [95% CI]
Not at all	6 [0-11.9]	6 [0-17.3]	0	0	27 [0-53.2]
A little	33 [21.3-44.7]	47 [23.3-70.7]	33 [11.3-54.7]	19 [0-38.2]	27 [0-53.2]
Moderately	42 [29.7-54.3]	41 [17.6-64.4]	44 [21.1-66.9]	43 [18.7-67.3]	36 [7.6-64.4]
A lot	19 [9.2-28.8]	6 [0-17.3]	23 [3.6-42.4]	38 [14.2-61.8]	9 [0-25.9]

CI = confidence interval; DNS = director of nursing services; DPS = director of professional services; EDD = emergency department director; HN = head nurse.

APPENDIX 2. NON-DICHOTOMIZED AND RAW ANALYSIS OF THE RESPONSES TO THE QUESTION: IN GENERAL, AT WORK, HOW OFTEN DO YOU REFER TO THE RECOMMENDATIONS IN THE GUIDE?

Responses	All (62) % [95% CI]	DPS (17) % [95% CI]	DNS (18) % [95% CI]	HN (16) % [95% CI]	EDD (11) % [95% CI]
Almost never	25 [14.2-35.8]	29 [7.4-50.6]	6 [0-17]	6 [-0- 17.6]	73[46.8-99.2]
Sometimes	53 [21.3- 44.7]	59 [35.6-82.4]	83 [0-100]	44 [19.7-68.3]	9 [0-25.9]
Sometimes	19 [9.2-28.8]	12 [0-27.4]	11 [0-25.5]	44 [19.7-68.3]	9 [0-25.9]
Almost always	3 [0-7.2]	0	0	6 [-0- 17.6]	9 [0-25.9]

CI = confidence interval; DNS = director of nursing services; DPS = director of professional services; EDD = emergency department director; HN = head nurse.

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