

**EM ADVANCES**

# The need for a national emergency health services database

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**ABSTRACT**

**Objective:** In February 2007, the Health Council of Canada, in its third annual report, emphasized the need for pan-Canadian data on our health care system. To date, no studies have examined the strengths and weaknesses of emergency health services (EHS) administrative databases, as perceived by researchers. We undertook a qualitative study to determine, from a researcher's perspective, the strengths and weaknesses of EHS administrative databases. The study also elicited researchers' suggestions to improve these databases.

**Methods:** We conducted taped interviews with 4 Canadian health services researchers. The transcriptions were subsequently examined for common concepts, which were finalized after discussion with all the investigators.

**Results:** Five common themes emerged from the interviews: clinical detail, data quality, data linkage, data use and population coverage. Data use and data linkages were considered strengths. Clinical detail, data quality and population coverage were considered weaknesses.

**Conclusion:** The 5 themes that emerged from this study all serve to reinforce the call from the Health Council of Canada for national data on emergency services, which could be readily captured through a national EHS administrative database. We feel that key stakeholders involved in emergency services across Canada should work together to develop a strategy to implement an accurate, clinically detailed, integrated and comprehensive national EHS database.

**Key words:** administrative data, emergency health services, qualitative study, Canada

**RÉSUMÉ**

**Objectif :** Dans son troisième rapport annuel rendu public en février 2007, le Conseil canadien de la santé a fait valoir le besoin de recueillir des données pancanadiennes sur le système de soins de santé. À ce jour, aucune étude n'a porté sur les points forts et les points faibles des bases de données administrative sur les services d'urgence de santé, tels qu'ils sont perçus par les chercheurs. Nous avons donc entrepris une telle étude qualitative et avons sollicité l'opinion de chercheurs sur les façons d'améliorer ces bases de données.

**Méthodes :** Nous avons enregistré des entrevues avec quatre chercheurs canadiens en services de santé. Nous avons ensuite examiné les transcriptions afin de mettre en évidence les concepts communs, que nous avons confirmés après discussion avec tous les auteurs de l'étude.

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**Résultats :** Cinq thèmes communs se sont dégagés des entrevues : détails cliniques, qualité des données, couplage des données, utilisation des données et couverture de la population. L'utilisation et le couplage des données constituaient des points forts alors que les détails cliniques, la qualité des données et la couverture de la population représentaient les points faibles.

**Conclusion :** Les cinq thèmes qui se sont détachés de cette étude renforcent la position du Conseil canadien de la santé, qui veut recueillir, à l'échelle nationale, des données sur les services d'urgence, lesquelles pourraient aisément être saisies dans une base de données administrative sur les services d'urgence de santé. Nous sommes d'avis que les principaux intervenants dans les services d'urgence au Canada devraient unir leurs efforts afin de formuler une stratégie pour la création d'une base de données pancanadienne sur les services d'urgence de santé qui sera précise, détaillée sur le plan clinique, intégrée et circonstanciée.

## Introduction

Emergency departments (EDs) in Canada are under enormous strain because of a reduced number of inpatient beds (resulting in overcrowding), a shortage of primary care physicians and changing patient demographics. Overcrowding itself is a key issue facing the Canadian health care system.<sup>1</sup> To reduce overcrowding, we must have a better understanding of its causes thus making the collection and analysis of administrative data critically important. Administrative data refers to information collected "usually by government, for some administrative purpose (e.g., keeping track of the population eligible for certain benefits, paying doctors or hospitals), but not primarily for research or surveillance purposes."<sup>2</sup>

Two Canadian emergency health services (EHS) administrative databases were of particular interest to our research group: the Alberta Ambulatory Care Classification System (ACCS) and the National Ambulatory Care Reporting System (NACRS). ACCS was developed by Alberta Health and Wellness. NACRS was developed by the Canadian Institute for Health Information (CIHI) using the ACCS as a base. At the time of the study, Ontario was the only province that had mandated submission to NACRS. These 2 EHS administrative databases are similar in some respects and dissimilar in others. For example, NACRS mandates collection of triage information (i.e., date, time and triage level), reason for visit, visit type, seat belt and helmet indicators, and Glasgow coma scale score; however, ACCS does not. Currently Canadian institutions collect many of the data elements recommended by the Canadian Emergency Department Information Systems Working Group.<sup>3</sup>

Researchers use EHS administrative data to provide information to policy- and decision-makers, program managers, service providers, and public health officials and planners.<sup>4-8</sup> EHS researchers monitor changes in practice patterns, identify regional differences and identify risk factors for injuries.<sup>9,10</sup> They investigate the outcomes associated

with alternative methods of treating individuals in the ED and recommend changes designed to improve patient management and increase efficiencies.<sup>11-13</sup>

There is great potential for these 2 EHS databases to be used to help change practice, develop health policy and influence resource allocations.<sup>1,14-20</sup> However, data published by Rowe and colleagues suggest, from the perspective of Canadian ED directors and provincial and territorial ministries of health representatives, that this potential is largely unrealized.<sup>20</sup> A study by this group concluded that serious barriers exist because of the wide variety of data collected and the ways in which collection was done. These limit the ability to compare ED services across the country. The authors stated that "there is an urgent need to place the collection of ED information on the provincial and national agenda and to make collecting the information consistent, comprehensive and mandatory."<sup>20</sup>

To date, there has been limited discussion in the published literature about the strengths and limitations of the EHS administrative databases from the researchers' perspective. It is important that researchers' perceptions be captured because they may differ in important ways from the perceptions of other stakeholders (e.g., Canadian ED directors, regional health authorities, representatives from the provincial and territorial ministries of health, and electronic ED information systems vendors). Researchers are unique in that they design studies to compare populations over time or across geographic areas. Our objective was to collect rich qualitative data from a small nonrepresentative sample of 4 carefully selected knowledgeable health services researchers on what they perceive to be the strengths and weaknesses of Canadian EHS administrative data.

## Methods

In this exploratory study we collected data between February and March 2006 from a convenience sample of 4 Canadian health services researchers about what they perceived as the

strengths and weaknesses of EHS administrative data, their views on EHS research data needs and the usefulness of the data. We recorded their suggestions about how to improve usability, accuracy, timeliness and comparability.

Approval for the interviews was obtained from Sunnybrook and Women's Health Sciences Centre, Research Ethics Board. We selected 4 researchers who had:

- familiarity with and the use of EHS administrative databases;
- knowledge of priorities relating to EHS administrative databases; and
- involvement in health services research.

The principal investigator provided the 4 researchers with the interview guide before their semistructured interview and prepared an opening statement outlining the research question. All interviews lasted 30 to 40 minutes.

Using conventional approaches for the analysis of qualitative data developed in the 1940s by Merton and his colleagues,<sup>21</sup> we examined the transcripts, grouped ideas together and, subsequently, had other members of the team re-examine the groupings. These groupings were finalized after 2 coders agreed on the groups. Interviewees were asked to review the analysis and presentation of data to ensure that their comments were accurately reflected.

## Results

Five common themes emerged from the interviews: data

use, linkage, data quality, clinical detail and population coverage. The interviewees' ratings of the strengths and weaknesses for the 5 themes are provided in Table 1.

### Data use

Overall, data use, or the ability to answer vital health services research questions, was considered a key strength of EHS administrative databases. All the interviewees believed that there were many questions that could and should be answered using EHS administrative databases. Each provided summations of studies they had completed or were planning to do, for example, an analysis of health services use before, during and after severe acute respiratory syndrome (SARS).

### Linkage

The linkage between EHS databases and other administrative databases, such as physician claims, is the second key strength that was identified. One interviewee described several types of linkages they had performed "internally to count patients versus visits, to follow patients over time and for multiple visits, to link back to previous patient visits for missed diagnoses and also to the discharge abstract database to check on admissions." Another interviewee summarized the need for data linkage this way:

We need to be able to link this back to some mother ship that says this person lives in this environment, their average income is

**Table 1. Interviewees ratings of strengths and weaknesses for the 5 themes**

Concept	Description	No. of interviewees who identified a concept predominantly as a strength, <i>n</i> = 4	No. of people who identified a concept predominantly as a weakness, <i>n</i> = 4
Data use	The ability to answer many research questions using administrative data	4	0
Linkage	Possible to track individuals across health services by linking data with other administrative databases such as physician claims	3	1
Data quality	Lack of standard definitions, edits and coder training	2	2
Clinical detail	Missing key quality indicators of outcomes, such as antibiotics for pneumonia, time to ECG, thrombolytic times	0	4
Population coverage	A desire for a truly national EHS administrative database for Canada and the need to bring together governments for this to become a reality	0*	2

ECG = electrocardiogram; EHS = emergency health services.  
\*Two interviewees were neutral; therefore, there were no quotes.

\$42 000, they last presented to the emergency department 3 years ago with their asthma, they subsequently saw their family doctor for 2 days after being seen in the emergency department and saw a consultant 6 weeks later. They haven't been back in an emergency department for the last 4 years. That's the power of it.

### ***Data quality***

The interviewees believed that data quality (e.g., standard definitions, sufficient edits, standard training, and support for data collectors and users) was a weakness that needed to be addressed. One interviewee indicated that for published analyses, "some institutions had to be excluded due to data quality issues," meaning the institution had too much missing data.

### ***Clinical detail***

The interviewees said that the clinical detail of existing EHS databases is insufficient. One felt that the "lack of clinical detail was a major weakness." The same interviewee stated that it must be recognized that the EHS administrative databases are

for multiple uses and not designed for research purposes, so in some ways we are trying to turn a car into a boat. If the data custodians are responsive to making alterations to the database, they are not the ones ultimately gathering the data, so they have limited leverage on the actual collectors, which are the hospitals.

### ***Population coverage***

Finally, the interviewees observed that although the submission of EHS data to CIHI is mandatory in Ontario, national Canadian EHS data is missing. Unlike inpatient data, population coverage is lacking for EHS data. One interviewee stated, "I would do anything to move a national agenda forward. I think it's a critical piece of the health care agenda that we are missing and a tremendous opportunity to address huge problems in the health care system, including waiting times and overcrowding."

## **The future of EHS administrative data**

Our findings augment the calls for improvement in the EHS administrative databases that were issued by the Canadian Emergency Department Information System working group in 2001<sup>3</sup> and the Health Council of Canada in 2007.<sup>22</sup> The experienced researchers we interviewed perceive a need for national Canadian EHS administrative data. Although current data quality, clinical detail and population coverage were perceived by the interviewees as weaknesses, EHS administrative databases can be improved by working with stakeholders to consider database variables to improve data quality and clinical detail and

to move toward a national Canadian EHS administrative database.

Based on these findings, we recommend that key stakeholders involved in emergency services across Canada work together to develop a strategy to implement an accurate, integrated and comprehensive national Canadian EHS database. We believe that this Canadian EHS database could be developed through broad collaboration including stakeholders from emergency medicine, research, information technology, health information management, data custodians, governments and the public. We believe that the public should play a pivotal role in identifying concerns for health research and match these concerns to the EHS administrative data collected to ensure future improvements.

It remains unclear who should lead the development of a Canadian EHS database and what issues the stakeholders should address. One interviewee suggested that CIHI take the lead on the development of a Canadian EHS database. Other possibilities include the federal government, the provincial governments, or researchers funded either through the Canadian Health Services Research Foundation or the Canadian Institutes of Health Research. Issues to be addressed in addition to the weaknesses we have identified include funding and training in EHS research. Web-based hubs or satellite research programs responsible for training emergency health services researchers could also be considered.

### ***Limitations***

Our study was strengthened by interviewing researchers who have considerable experience using EHS administrative databases. However, we caution that only 4 interviews were conducted and the resulting generalizability of these individuals' experiences may be limited. Further research is required with a larger sample. In addition, similar studies detailing the perceptions of other stakeholders, including administrators, end-users and politicians, would be important.

## **Conclusion**

The 5 themes that emerged from this study all serve to reinforce the call of the Health Council of Canada for national data on emergency services, which could be readily captured through a national EHS administrative database. We feel that key stakeholders involved in emergency services across Canada should work together to develop a strategy to implement an accurate, clinically detailed, integrated and comprehensive national EHS database.

**Competing interests:** None declared.

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