The future of emergency medicine in Canada: submission from CAEP to the Romanow Commission. Part 2

Canadian Association of Emergency Physicians
Working Group on the Future of Emergency Medicine in Canada*

In April 2001, the Commission on the Future of Health Care in Canada was established. The Honorable Roy Romanow was given the mandate to "inquire into and undertake dialogue with Canadians on the future of Canada's public health care system" and "to develop recommendations that will ensure the long-term sustainability of a high quality, universally accessible, publicly administered health care system, for all Canadians."

The Canadian Association of Emergency Physicians (CAEP) recognized an obligation to share in this public dialogue, to communicate the current state of emergency medicine, and to identify the components necessary to achieve excellence in emergency care. The CAEP Advocacy Committee was asked to develop a document that would educate and enlighten the Commissioner. Basic themes were identified, and authors from across the country were invited to write brief, factual essays with achievable recommendations. The resulting series of essays was presented on April 30, 2002, at the Health Care Commission's open public hearing in Calgary, Alberta.

This article, part 2 of a 2-part series, includes discussions on Emergency Department Overcrowding, Human Resources Issues in Emergency Medicine, Standardization of Care and Clinical Practice Guidelines, Informatics and the Electronic Health Record, and Research in Emergency Medicine.

Key words: emergency medicine, health care delivery

Emergency department overcrowding

Emergency department (ED) overcrowding is a national problem that is now a chronic state in many departments. Although ED overcrowding is a primary concern for emergency care professionals, it is truly a system-wide issue. ED overcrowding reflects health system performance, and should be monitored as a key indicator of heath care quality.

Definition

ED overcrowding is a situation in which the demand for service exceeds the ability to provide care within a reasonable time, causing physicians and nurses to be unable to provide quality care. It can be measured by monitoring patient waiting times: time from registration to physician exam, time to be seen by a consultant, and the time necessary to move admitted patients to appropriate inpatient beds.

Causes of overcrowding

ED overcrowding is a multifactorial problem, but most of the causes lie outside the ED. These include a lack of inpatient beds for admitted patients, limited access to primary care and specialist physicians, a shortage of ED nurses and emergency physicians, increasing complexity and acuity of

* For a list of the members of the Working Group, please see the Appendix.
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ED patients, and a lack of alternative advanced diagnostic testing and treatment facilities. Many people in the public and media have the erroneous perception that large numbers of non-urgent patients utilizing EDs for minor complaints are a major cause of overcrowding. It must be emphasized that, although waiting times for this group of patients can be prolonged, they utilize a small proportion of ED resources, and that concerted efforts to divert these patients to other settings will not solve the overcrowding problem and will add costs elsewhere in the health care system.

Effects of overcrowding

Recently there has been renewed interest in patient safety and the effects of medical error. International studies have shown that 3%–16% of medical errors lead to adverse patient outcomes, and that half of these events are potentially preventable. Overcrowded EDs are environments with enormous potential for medical error because of the delays in providing patient care, the intensity of decision-making, the pressure to move patients out quickly, the lack of observation and monitoring when patients are cared for in hallways and waiting rooms, and the increased stress on caregivers.

One of the most visible effects of ED overcrowding is ambulance diversion, which has documented negative effects on the quality of health care. A less visible, but highly destructive effect is its demoralizing impact on health care professionals. Chronic overcrowding has a detrimental effect on ED staffing, and the challenge over the next few years will be to retain our skilled and experienced emergency care professionals.

Recommendations

1. Establish performance indicators and benchmarks for prospective ongoing measurement of ED overcrowding as a key component of a national health system monitoring.
2. Invest in ED information technology to track these key performance indicators, as well as relevant data on patient flow and ED workload (i.e., volume + acuity).
3. Implement the *Canadian Emergency Department Triage and Acuity Scale* (CTAS) in all Canadian EDs. Enable local, provincial and national bodies to review actual waiting times for care and monitor the effect of health system changes.
4. Federal and provincial governments should provide funding to evaluate new models of emergency care delivery, such as point-of-care testing, ED observation and treatment units, nurse practitioners and physician assistants.
5. Performance indicators, data collection mechanisms, CTAS, and system-wide regional and provincial collaborations should be included as key elements of any initiative to establish national standards for hospital emergency services.
6. Quality management should be added as a new principle to the Canada Health Act. Ongoing measurement of the impact of health system innovations on ED overcrowding will be critical in maintaining and improving the quality of Canadian health care.

Human resources issues in emergency medicine

Emergency physicians are physicians who are trained in the immediate recognition, evaluation, care and disposition of acutely ill and injured patients; in the administration, research and teaching of all aspects of emergency care; in the direction of patients to appropriate resources for required continuing care, either in or out of hospital; and in the management of the emergency medical services (EMS) system, including the medical response to disasters, for the provision of community, emergency and disaster care.

How many emergency physicians are there in Canada?

There are two routes to emergency medicine certification in Canada. The College of Family Physicians of Canada has offered a certificate of special competence in emergency medicine (CCFP-EM) since 1982. This requires an additional year of emergency medicine training after the 2-year residency in family medicine. There are currently 1074 CCFP-EM emergency physicians, and in the year 2001, 86 more will graduate from Canada's 16 EM training programs. The Royal College of Physicians and Surgeons of Canada (RCPSC) has had emergency medicine training programs since 1983. Royal College certification (FRCPC) requires the successful completion of a 5-year training program. Currently there are 334 specialist emergency physicians in Canada, of whom 20 have retired. In 2001, 25 more specialist emergency physicians will graduate from Canada's 11 RCPS training programs.

Certified emergency physicians often assume leadership positions in emergency departments (EDs), administration, EMS development, teaching or research. Without them,

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Canada's excellent systems-based approach to emergency care delivery would be reduced to a few islands of excellence in a sea of mediocrity. Unfortunately, trained emergency physicians entering the specialty inherit a legacy of stress, burnout, frustration and a shortened career span. A recent Canadian study showed that many Canadian emergency physicians suffer from depersonalization and depression. The attrition rate of emergency specialists is not currently known.

How many emergency physicians are needed?

Sadly, no one knows, and estimating the emergency physician workforce is a complex undertaking. A reasonable estimate is that one full-time equivalent emergency physician (1500 hours of service annually) is required for every 5000 patient visits, although this number will vary depending on patient acuity and complexity. Ontario data show that there were 5 million ED patient visits in 1999, which would suggest the need for 1000 certified emergency physicians in this province alone. However, apart from the CAEP manpower survey of the early 1990s, there have been no comprehensive studies of the human resource requirements needed to develop and maintain our emergency medical care system, and to make matters worse, the specialty was completely ignored in previous human resources documents like the national Barer–Stoddart Report and Ontario's McKendry and George reports.

What is the role of the family physician?

With a national shortage of trained emergency physicians, most Canadians will continue to have their emergency care delivered by family physicians who staff their community's EDs. It was estimated in the early 1990s that approximately 5000 family physicians work casually in their community's EDs. In many ways the involvement of family physicians in emergency care is a positive development. Canadian family physicians are well trained in the provision of high quality primary care, which represents 90% of the ED volume in some rural and smaller community hospitals. Family physicians also bring enthusiasm, the ability to negotiate patients through an increasingly complex health care environment, and to ensure continuity of care. There is, however, no guarantee that family physicians staffing community EDs will have adequate training in the management of actual emergencies or in resuscitation. With this in mind, in 1992, the Working Group in Emergency Medicine of the CFPC and the RCPSC recommended that all family physicians receive 2 months of adult and 1 month of pediatric emergency medicine during their postgraduate training. To date, no licensing body has adopted this recommendation.

The current emergency credentialing practice for community-based family physicians generally involves the successful completion of several 2-day life support courses. Although these are useful educational initiatives, they do not ensure competency in emergency medicine. Published literature suggests that many family physicians, on completion of their training, do not feel comfortable in the ED setting. Further, the pool of family physicians may be shrinking, and there is strong evidence showing that many family physicians, particularly those in rural communities, are withdrawing from service in their hospital's EDs.

In a 1991 Ontario survey of small hospital medical services, 44% of hospitals reported a shortage of local GPs willing and able to staff their community EDs, and 71% predicted a shortage within 5 years of local GPs willing to staff the ED. A 1994 Ontario Hospital Association (OHA) ED survey reported that 54 of 169 hospitals were having difficulty operating their EDs, that 46 were paying physicians extra money to be on-call, that 46 were under threat of withdrawal of services, and that 16 had reduced emergency services. A follow-up 1999 OHA survey revealed that 35% of hospitals in Region #2 (Central Ontario) were having difficulties ensuring adequate family physician coverage in EDs, that 29% used hospital operating funds to compensate emergency physicians, and that 9% used purchased services to provide emergency coverage. The current crisis in Quebec EDs is further evidence of this problem.

Is there a role for alternate health care providers?

For many years, physician assistants (PAs) and nurse practitioners have practised successfully in US EDs. In Canada, the concept of using nurse practitioners to assist in the low acuity areas of an ED is garnering interest. Physician extenders may be helpful in dealing with low acuity patients, but it is clear that they will never be able to function independently in that setting and cannot replace an emergency physician. This issue requires further study.

Recommendations

1. A comprehensive human resources study for emergency medicine should be undertaken.
2. CFPC and Royal College emergency medicine residency positions should be increased based on the results of the human resources study.
3. Mandatory pre-licensure emergency medicine training

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should be required of all family physicians designated to work in non-urban areas. The recommendations of the 1992 Working Group in Emergency Medicine of the CFPC and the RCPSC should be reviewed and, if still appropriate, implemented in all family practice training programs.

4. The role of alternate health care providers, as an adjunct, but not a replacement for emergency physicians, should be studied further in the Canadian context.
5. Support for emergency medicine continuing medical education programs in should be enhanced for rural physicians

Standardization of care and clinical practice guidelines: improving patient outcomes

Every Canadian has a right to a defined minimum standard of emergency care. A heart attack victim is entitled to receive the same benefit from recent advances in acute coronary care whether he or she lives in Sydney, NS, or Saskatoon, Sask. A child with acute asthma should be treated in accordance with a common current understanding of the disease process and effective available therapies, whether they are in Kelowna, BC, or Kingston, Ont. Where there exists good evidence for a clinical management approach for a given disease state, care quality should not vary based on postal code.

Unfortunately, there is clear evidence that such variability exists. Barriers to uniform national standards of care include the abysmal lack of standardization of our nation's emergency departments (EDs) and a chronic, critical shortage of certified emergency physicians. Yet, in the short term, it must be acknowledged that most emergency care in Canada will be delivered by family physicians working casually in their community's EDs. In order to provide patients maximal benefits of recent advances in acute medical and trauma care, the Canadian Association of Emergency Physicians (CAEP) favours the development, introduction and promulgation of clinical practice guidelines (CPGs).

CPGs establish standard directions and approaches that help clinicians provide appropriate care for specific clinical conditions. There are between 1200 and 2500 CPGs available in Canada. CPGs have proliferated nationally and internationally, yet their nature, quality and impact are poorly understood. They are time-consuming and expensive to develop, implement and, most importantly, to evaluate.

CPGs can play a major role in improving the quality, effectiveness and efficiency of health services and the health care system. For example, the Ottawa Ankle Rules, a simple examination tool for acute ankle injuries, improved both the quality and timeliness of care for individual patients. In addition, they probably saved in excess of $60 million annually in Ontario by reducing the utilization of unnecessary ankle x-rays. However, while CPGs have tremendous potential, there are significant barriers to their successful implementation, and overcoming these barriers will require careful strategic analysis and creative collaboration.

CPG use is more widespread in the United States than in Canada, perhaps because of a more supportive environment for their development as well as organizational, legal and external management factors. For example, funding of clinical services may be tied to health provider use of CPGs in many US managed-care systems. The greater professional autonomy of Canadian physicians makes the development and implementation of national CPGs difficult. The importance of local leadership and buy-in are key to successful implementation. There is also skepticism amongst Canadian physicians. Some physicians believe that CPGs are intended to simply save money, especially when different clinicians develop different guidelines based on the same evidence. In the future, it will be important to educate key stakeholders how to deal with this issue; otherwise, the existence of conflicting guidelines may be taken as a reason to ignore all guidelines. This key barrier to the uptake of CPGs needs to be addressed in medical schools and continuing medical education programs.

Another major barrier to implementation is funding. Some professional bodies rely on funding and assistance from the pharmaceutical industry for guideline development, which appropriately limits their credibility with many Canadian physicians. In addition, when funding is obtained, the bulk of it is typically aimed at guideline production and dissemination, leaving little for the implementation and evaluation phases. When comparing the impact on practice to costs of production and dissemination, the return on investment is very high. Finally, it is important to understand that guideline development is a dynamic process that requires funding and commitment for ongoing evaluation of use and utility, and to revise appropriately as medical knowledge advances.

In conclusion, CPGs should be more than disposable tools that are used on an intermittent basis for the occasional patient. They should be the embodiment and distilla-

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tion of collaborative, system-wide thinking and evidence-based reviews — part of the fabric of health science education and practice.

Recommendations

1. The creation, implementation, adoption and evaluation of CPGs should be viewed as an integral component of health care practice and culture — not as a stand-alone process distinct from clinical care.
2. To maximize buy-in, CPG development should involve multi-disciplinary stakeholders, including consumers, and should be based on careful reviews of existing evidence.
3. The CPG process should be transparent and explicit, and should include development of a formal CPG rating system.
4. Federal or provincial funding should be established for CPG development, dissemination, implementation and evaluation, in collaboration with the faculties of health sciences and federal or provincial research institutes.
5. Undergraduate and post-graduate medical education should include coverage of CPG development, dissemination, utilization and monitoring.

Informatics and the electronic health record

The importance of ED information systems

The emergency department (ED) is the interface between hospital and community. There is perhaps no other place where the need for immediate access to information is as acute as in the ED, where decisions are made on a continuous basis, often with limited information. Based on volume of patient visits as well as density of diagnostic and treatment information generated, the ED has unparalled need for access to and transfer of information. Almost 95% of all hospital medical admissions and 50% of surgical admissions are from the ED. In addition, there are a large number of unscheduled ED visits that require follow-up. Despite this, few health regions have established reliable methods of moving clinical and diagnostic information from the community to the ED, or of transferring ED visit information back to community care providers. The electronic transfer of information to and from the ED, the community physician and other institutions is vital, and without electronic ED information systems, useful linkages between the community and the hospital will be all but impossible. Integration of hospital and community care will not occur.

The Canadian Emergency Department Information System (CEDIS)

Between March and June of 2001, the Canadian Association of Emergency Physicians (CAEP) brought together representatives of CAEP, the National Emergency Nurses Affiliation (NENA), l'Association des médecins d'urgence du Québec (AMUQ), and the Emergency Section of the Canadian Paediatric Society, as well as experts in ED information systems to form the Canadian Emergency Department Information Systems (CEDIS) National Working Group. In a series of meetings, the working group identified the importance of implementing ED information systems across the country and of developing a standard set of ED performance reports that facilitate inter-institutional and inter-regional comparisons. In addition, the working group agreed upon a common comprehensive set of standard data elements for all Canadian EDs. This data set will be used by all EDs, for both quality improvement and clinical research.

The implementation of electronic ED information systems is the first step in moving toward a fully electronic ED database and patient health record. There are now 4 major Canadian hospitals that have implemented electronic information systems and a larger group of 10 Ontario hospitals now working with the Ontario Hospital Association to do the same. CAEP has discussed the importance of ED information systems with representatives from the federal government and the Ontario Ministry of Health. Both are supportive of the CEDIS initiative.

Moving toward an electronic health record

ED information systems have been directly linked to laboratory and imaging services within institutions and outside institutions. Similar connectivity is available to physician offices through the Internet, which could form the basis of community-to-hospital information transfer, but we are not aware of any institutions that have done this yet. An important long-term goal is the development of an electronic health record (EHR) for physician use, but this is a complicated and difficult task. The implementation of an ED information system is a first step that will allow physicians and nurses to familiarize them-

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selves with electronic information systems. This will likely allow a smoother transition to the EHR. CAEP views the implementation of an ED information system as the number one priority in the implementation of a comprehensive information system that includes the electronic patient health record.

Several institutions are currently collecting ED information, but there is no central data repository. Many generate statistical reports to guide ED process improvements but they are, at this time, institution specific. A primary CAEP goal is to have all Canadian EDs collecting a standard set of data elements, generating common performance reports, and comparing their performance to national ED benchmarks. CAEP strongly urges the Romanow Commission to consider the needs for ED information as a concern of the highest priority.

Recommendations

1. Canadian hospitals must recognize the critical need of EDs for electronic data, to be used for benchmarking, performance monitoring, research, and surveillance of human resource, patient flow and overcrowding issues.
2. Federal and provincial governments should support the Canadian Emergency Department Information Systems (CEDIS) initiative.
3. All Canadian EDs should implementation electronic information systems as first step towards a comprehensive information system (and patient health record).
4. A central repository for Canadian ED data, using CEDIS standard data elements, would facilitate the development of standard ED performance reports and enable inter-institutional and inter-regional comparisons.

Research in emergency medicine

Emergency medicine research plays an important role in conserving resources and improving health care delivery. For example, Canadian researchers have been instrumental in establishing decision rules for the efficient ordering of ankle, knee and neck x-rays after injury. In nearly every case, these rules have reduced the use of radiographs, reduced total costs to the health care system, and improved patient satisfaction — all important outcomes for the health care system to achieve.

Most patients and health care providers would strongly endorse the use of evidence-based diagnostic and treatment guidelines that represent the acknowledged standards of care across the country. Researchers in Canada and elsewhere have shown that the care provided for a common problem such as asthma is not consistent within or between hospital emergency departments (EDs) (and this is not restricted to care provided by emergency physicians). As a result, emergency airway researchers in the past 10 years have successfully created, synthesized and disseminated this evidence so that care can be standardized. Involvement of emergency physicians in the clinical practice guideline (CPG) process has lead to a collaborative national consensus guideline for asthma, and has helped to improve care across the country.

Emergency medicine (EM) is a young and evolving specialty. The need to better understand, document, and monitor the events encountered in the "bellwether" environment of the ED have resulted in the development of new research programs and initiatives. However, for a variety of reasons, progress in EM research has been slower than the need. Research in the ED setting is a Herculean undertaking compared to other specialties, because patients present in an unscheduled fashion, 24 hours a day, 7 days a week, every day of the year. In addition, the critical nature of their presentations poses more problems with respect to ethics and consent. While these issues create challenges for conducting research, we have learned to accept and overcome them. Still, there are several issues hampering a more timely resolution to the important problems facing us.

First, the lack of trained researchers has slowed the development of a core of interested clinicians to address our own unique problems. Second, EM researchers typically conduct research without the same infrastructure support of other specialty groups. There is no "Heart and Stroke" foundation for Emergency Medicine, and most EM researchers do not receive governmental or university support. We frequently compete with full-time researchers who have the time and resources to compete successfully. This inhibits research more than a lack of training. Third, while we know much about patients who die or are admitted to hospital through information databases maintained at the Canadian Institute of Health Information (CIHI), hospitals collect little or no data on the majority of patients who are treated and discharged from EDs (90% in most EDs). We have an embarrassingly unsophisticated collection of local, unlinked, non-standardized data repositories on which to document what we are seeing in the ED, assess the impact of care and quantify eventual outcomes. Without standardized data collection and linkages, much time is wasted and surveillance is virtually impossible.

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Fourth, much of our research focus does not fit into traditional domains. For example, one focus of our research is how the current lack of resources, such as beds, staff and diagnostics, impairs our ability to manage patients in a timely and effective manner. We can all offer anecdotal evidence of how delays have resulted in poor patient outcome, but we need to gather the numbers and determine where the greatest problems lie. If provincial and federal governments intend EDs to function as universally accessible, efficient, evidence-based sites of care, they need to provide the research resources to evaluate the current system and the vision to apply the results to improve the services provided.

Finally, there has been a lack of coordination within the specialty for research development. Individual EDs often conduct small-scale studies that lack the power to solve the issues facing us. While these local efforts are commendable and their research interest is necessary, a nationally-focused research agenda to solve the most pressing needs of the profession has not existed.

But the news is not all doom and gloom; solutions to these problems have been emerging. For example, more and more emergency specialists are seeking additional research training. Recently, through the Canadian Institute for Health Research (CIHR), the Canada Research Chairs (CRC), and the Ministry of Health in Ontario, EM researchers have been recognized for their excellence in research and have been given the opportunity to compete with other established researchers. The playing field has been leveled to a certain extent, but there is still much to do.

Most importantly, many EM researchers have been successful with grants and research projects that have made significant impacts on the care of our patients. Consequently, funding opportunities have grown. In Ontario, the establishment of a separate granting system for Emergency Health Services through the Research Advisory Committee (EHS-RAC) has enabled EM researchers to secure grants and receive awards for research training. However, despite its rather meager funding and incredible success, threats to its viability are creating considerable angst in the emergency medicine community. Finally, multi-centered research is now being coordinated through the CAEP Research Consortium. Research established in this manner should provide quick, efficient and valid solutions to some of the more pressing and common questions facing emergency physicians.

The EM community will play an increasingly important role in the future of health care delivery and research in Canada. However, we need assistance from local, provincial and federal governments to move forward and solve the problems that exist in the system. Without research and surveillance, the current crisis in EM will escalate and become an even more dangerous situation. We cannot afford to let this happen. The recommendations outlined represent some possible solutions for our acute care future.

Recommendations

1. Emergency medicine research should be placed higher on the Federal Minister of Health's agenda, and supported with sufficient funds and initiatives to make it successful. We propose the creation of an Emergency Medicine Institute in the CIHR. At the very least, CIHR should consider an enhanced link between the current CIHR Institutes and EM. One option would be to ensure EM representation on the key CIHR Institutes relevant to our work (e.g., cardiorespiratory, infectious diseases, public health).
2. A separate CIHR grants competition for EM, critical care, trauma and EMS should be developed. The success of the Ontario EHS-RAC model suggests this is a cost-effective method to enhance productivity and interest in EM research. Solutions to EM problems cannot be answered by researchers from other disciplines. We need the ability to ask the questions and solve the problems that are important to us.
3. The electronic data collection and informatics applications in the EDs should be improved. Electronic patient records, point-of-care testing, templated charting, CPGs and other computer solutions all have the potential to enhance care delivery and speed patient flow in our overcrowded EDs. Computerization will also enhance the ED's ability to collect relevant and timely surveillance data about changing patterns of emergency medicine.

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