

**A SURVEY OF THE INFORMATIONAL NEEDS
OF DECISION MAKERS FOR THE DESIGN AND EVALUATION
OF TRAUMA SYSTEMS IN CANADA**

by

David C. Evans

A.B., Princeton University, 1984
M.D, C.M., McGill University, 1988

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE

in

The Faculty of Graduate Studies

(Health Care & Epidemiology)

UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

October 2010

© David C Evans, 2010

ABSTRACT

Background. Across Canada there are substantial differences in the organization and evaluation of regional trauma systems. The design, evaluation and improvement of trauma care is frustrated by variable definitions of trauma systems, their primary objectives, and preferred performance measures. Tools that support decision makers in design and policy development are needed^{2,3}.

Objective. This research aimed to 1) describe decision makers' perceptions of the scope and objectives of ideally organized regional systems of trauma care and injury control in Canada, and 2) identify decision makers' informational needs, specifically with regard to performance measures meaningful as actionable guidance for the design and policy development of regional systems of trauma care and injury control.

Methods. Based on a literature review of commonly used trauma system performance measures, a 35-question structured electronic survey was constructed, vetted by a reference group of experts, tested, and circulated over a 3-week period. The framing sample was 342 health administrators and trauma directors self-reported to be involved in decision making for organized injury management and control from all health regions of Canada. Survey responses were collated and descriptive statistics generated.

Results. There were 82 complete responses for a response rate of 24.0%. There was strong support for a broadly inclusive definition of a trauma system and for government oversight using standard performance indicators. Among responders there was near equal support, 41.2% and 31.7% respectively, for ensuring delivery of rapid and appropriate care (processes of care) and minimizing individual and societal burden of injury (outcomes of care) as the overarching drivers of system design. Of 24 listed performance indicators, measures of timeliness of care, preventable deaths, severity-adjusted hospital mortality, safety, satisfaction and access to care were preferred.

Conclusion. This study showed that decision makers responsible for regional trauma systems in Canada believe that the ideal trauma system should coordinate multiple agencies influential in injury management around clear system objectives that address both major and minor trauma, and that government endorsed national standards are needed to ensure efficient and effective processes that reduce the individual and societal burden of injury.

PREFACE

The research conducted in support of this thesis was approved by the Behavioural Research Ethics Board, Office of Research Services, University of British Columbia, under certificate number H10-01491.

The concept for this research, the majority of the literature review, the study design and methodology, the creation of the survey tool, the application for institutional research ethics approval, most of the conduct of the survey, the preparation and interpretation of study results, including graphs and tables, and all writing was completed by the student.

The following collaborators contributed, in part, to this work:

Boris Sobolev, Ph D, senior researcher Centre for Clinical Epidemiology and Evaluation, Vancouver General Hospital and professor, Department of School of Public and Population Health, University of British Columbia, provided conceptual guidance and formal supervision for this work.

Michael Sarai (third year undergraduate, Department of Pharmaceutical Sciences, University of British Columbia) and Vivienne Sullivan (second year undergraduate, Faculty of Medicine, Royal College of Surgeons, Ireland) both assisted with the collection and preliminary screening of research materials identified in the literature searches conducted. Both also assisted with identification, confirmation of contact information, and initial contact of potential survey respondents comprising the study sampling frame.

Ellen Randall (research coordinator, Trauma Services, Vancouver General Hospital) assisted with compilation of the study sample frame, provided methodological critique of the survey tool, and assisted with distribution of the survey.

Nathaniel Bell Ph D (research fellow, Trauma Services, Vancouver General Hospital), Richard Simons MD (surgeon and co-director, Vancouver Coastal Health Regional Trauma Program), Morad Hameed MD (surgeon, Vancouver General Hospital), Catherine Jones RN (co-director, Vancouver Coastal Health Regional Trauma Program), and Rick Rogers (chair, British Columbia Trauma Advisory Committee) all contributed feedback on structure and content of the survey tool used in this research.

John Evans, Ph D, provided methodological guidance on statistical analysis.

TABLE OF CONTENTS

ABSTRACT.....	ii
PREFACE.....	iii
TABLE OF CONTENTS.....	iv
LIST OF TABLES.....	vi
LIST OF FIGURES.....	vii
ACKNOWLEDGEMENTS.....	ix
DEDICATION.....	xi
1. INTRODUCTION.....	1
1.1 Trauma as a public health issue.....	1
1.2 The challenge of building trauma systems.....	3
1.3 Decision-making for health care systems.....	4
1.4. The need for shared goals.....	6
1.5 Gauging health system effectiveness through structured reporting.....	9
1.6 Variability in the delivery of organized injury care.....	10
2. STUDY OBJECTIVES.....	13
3. METHODS.....	14
3.1 Definitions.....	14
3.2 Literature review.....	15
3.3 Survey tool development.....	16
3.4 Determination of the sample frame.....	18
3.5 Survey implementation.....	19
3.6 Data analysis.....	20
4. RESULTS.....	22
4.1. Survey response rate.....	22
4.2. Survey questions.....	25
4.2.1. Eligible respondents.....	26
4.2.2. Respondent profile.....	26
4.2.3 Views on the nature of trauma systems.....	39
4.2.4 Identification of policy-relevant trauma system issues.....	46
4.2.5 Perceptions of decision-making processes for trauma care.....	49

4.2.6	Perceptions of trauma system reporting	53
4.2.7	Indicators of trauma system effectiveness.....	59
4.2.8	Respondent feedback on the survey	65
5.	DISCUSSION	68
5.1	Profile of respondents.....	68
5.2	Canadian decision makers' perceptions of the ideal trauma system	68
5.3	Defining the information needs of decision makers	71
5.4	Policy challenges and intersecting domains	72
5.4.1.	Injury control.....	73
5.4.2.	Pre-hospital care	73
5.4.3.	Acute hospital care	74
5.4.4.	Rehabilitation.....	74
5.4.5.	Disaster preparedness	75
5.4.6.	Workers compensation.....	75
5.4.7	Public health.....	75
5.4.8.	Public security	76
5.4.9.	What are preferred indicators for trauma system performance? ...	76
5.4.10.	How is reporting on trauma systems used?	77
5.4.11.	How are policy decisions made for trauma systems?	78
5.5	Limitations of the study	80
6.	CONCLUSIONS	84
	REFERENCES	85
	APPENDIX A	92
	Canadian Regional Health Service Areas	92
	APPENDIX B	97
	Canadian Lead Trauma Hospitals	97
	APPENDIX C	100
	Survey Instrument (English)	100
	APPENDIX D	116
	Survey Instrument (French).....	116

LIST OF TABLES

Table 1	Responders vs. non-responders by province or territory and highest function	24
Table 2	Highest role by education and training background	29
Table 3	Perception of the principal objective of a trauma system by proportion of survey respondents.	41
Table 4	Trauma system issues identified by respondents.....	46
Table 5	Impact of various factors on trauma system decision making.....	49
Table 6	Decision maker perceptions of importance of specific indices of trauma system ...	64
Table 7	Acquired information about decision makers' perceptions and needs regarding organized systems of trauma care in Canada	79

LIST OF FIGURES

Figure 1	Derivation of survey response rate.....	23
Figure 2	Survey respondents vs. non-respondents by province or territory.....	25
Figure 3	Survey respondents vs. non-respondents by estimated highest role.....	25
Figure 4	Survey respondents by province or territory of origin and highest level of responsibility for injury management.....	28
Figure 5	Highest function by highest level of training.....	29
Figure 6	Training and education background by respondents.....	30
Figure 7	Respondents' areas of professional responsibility.....	31
Figure 8	Years of experience in organized trauma care / injury control.....	32
Figure 9	Survey respondents' type of involvement with trauma systems.....	33
Figure 10	Survey respondents' involvement with adult and /or pediatric trauma systems.....	34
Figure 11	Decision makers' perception of the adequacy of their trauma systems.....	36
Figure 12	Scope of trauma systems within which respondents worked.....	37
Figure 13	Respondents' perception of degree of definition of trauma systems in their region.....	38
Figure 14	Agreement with the Trauma Association of Canada's definition of a mature trauma system.....	39
Figure 15	Should a fully developed trauma system address both major and minor trauma? .	40
Figure 16	Perception of the principal objective of a trauma system by highest level of influence.....	41
Figure 17	Level of agreement that successful accreditation by an external authority should be required of all trauma systems and trauma facilities.....	42
Figure 18	Degree of agreement that a lead government agency should provide oversight for the performance of a trauma system.....	43
Figure 19	Who should provide oversight for trauma systems in Canada?.....	44
Figure 20	Perception of injury control as a public health concern compared to other priorities in Canada.....	45
Figure 21	Impact of various factors on trauma system decision making.....	50
Figure 22	Number of respondents agreeing that trauma system decisions should maximize overall system effectiveness.....	51
Figure 23	Support for collaboration with injury-related organizations to develop a regionalized system of trauma care.....	52
Figure 24	Where emphasis should be placed in trauma system reporting?.....	53
Figure 25	Primary objective of a trauma system.....	54
Figure 26	Proportion of respondents who produce or receive trauma system reports.....	55
Figure 27	Usefulness of trauma system reporting for decision making.....	56

Figure 28	Availability of data sources for trauma system reporting.	57
Figure 29	Estimation of the feasibility of improving trauma system reporting.	58
Figure 30	Should standard performance indicators be used to enable inter-system comparisons?.....	59
Figure 31	Perception of need for trauma system performance standards.	60
Figure 32	Perceptions of ranked importance of structure, process and outcome indicators to guide trauma system development.....	61
Figure 33	Decision maker perceptions of the importance of specific performance indices of trauma systems reporting.	63
Figure 34	Relevance of the survey	65
Figure 35	Survey was easy to answer	65
Figure 36	Survey was clear.....	66
Figure 37	Survey length was reasonable.....	66

ACKNOWLEDGEMENTS

Funding support from the Canadian Institutes for Health Research and the Michael Smith Foundation for Health Research is gratefully acknowledged. This work forms, in part, a contribution to the study *An integrated strategy for policy-relevant process-outcome evaluation in a regional trauma system* (CIHR PHE # 104085 Feb 24, 2009), for which the student is principal investigator.

I owe my sincere gratitude to a number of individuals for their support in helping to complete this work.

First and foremost, to Boris Sobolev who accepted to supervise this work I owe profound thanks. His sharp insight into complex matters, his masterful adjustments to my course of inquiry, and his generous patience and latitude in guiding my arduous progress has been irreplaceable.

Summer students Michael Sarai (University of British Columbia) and Vivienne Sullivan (Royal College of Surgeons, Ireland) are acknowledged for their faithful assistance in assembling the sample frame and verifying contact information for the survey. The fine quality of their work is proof that it wasn't 'the best summer ever' for either of them.

Nathaniel Bell, Richard Simons and Catherine Jones provided feedback *ad libidim*, of both the hallway variety and more formally, that helped tremendously to shape the ideas behind this work.

To my brother, John, I owe thanks for helping me solve more problems than just those attributed to this work.

In naively agreeing to manage my first-ever bid for peer-reviewed grant funding from the *Canadian Institutes for Health Research*, a ridiculously ambitious proposal bringing together 31 of the busiest people I know to collaborate on a nebulous project aiming to improve trauma care in BC, Canada and the world, Candace Tegert attacked the unwieldy morass of her first-ever CIHR grant application (only 550 pages) with humour, grace, unbounded energy and encouragement for which I am ever grateful. This work is a direct consequence of her stupendous success.

Also a direct consequence of that effort, Ellen Randall, fellow master's candidate and public health aficionado, kindly accepted the job of coordinating the newly beginning research activity of the aforementioned grant. Her diligent help in critiquing, preparing and disseminating the survey

has been invaluable. More than this, her up-beat, thoughtful and enthusiastic collaboration leaves me not worn and distracted as I should be, but eager to continue our work together.

For enabling me to become a student all over again in my fifth decade when I should have been doing committee work, I am most grateful to Garth Warnock, and the Department of Surgery, University of British Columbia. I am also ineffably indebted to my brothers in arms, the UBC trauma surgeons (Richard Simons, Ross Brown and Morad Hameed) for generously covering necessary clinical, administrative and academic duties while I attended classes, and for politely refraining for five years from ever asking whether I was really going to finish this thing. To these people I owe a renewed passion for the noble work we all do.

I wish to express gratitude to brother John, cousin Heather, and my parents who kept mindful watch and supplied no end of encouragement.

Finally, I owe inexpressible thanks to Barbara Bell and my children who have done without my full attention for far too long.

DEDICATION

To my father, who instilled in me his profound reverence for learning, and taught me long ago that to ask the proper question is half of knowing.

To my mother, who instilled in me her limitless energy for challenge, and taught me long ago that to bring spirited good-humour is half of going.

1. INTRODUCTION

1.1 Trauma as a public health issue

Major trauma is the principal cause of death among individuals under age 45 in Canada, accounting for more potential years of life lost than ischemic heart disease and lung cancer combined¹. Over 400,000 people are injured yearly in British Columbia. Of these, 1,700 die, 9,000 suffer permanent disability, 32,000 are hospitalized and an estimated 41,000 potential years of life are lost. The yearly cost of injury had been estimated at over 2.8 billion dollars in B.C. and close to 19.8 billion nationally^{4,5}.

Over the past 20 years, Canada has invested significantly in building an integrated system of trauma care⁶. Although developed regional trauma systems are reported to reduce injury-related mortality by up to 20%⁷⁻¹⁰, there is wide variation in system design including system integration strategies, triage and transport protocols, paramedic training, performance standards, acute care delivery models, funding and remuneration schemes, and clinical programs⁷. This variation is due in part to the absence of compelling evidence linking trauma care processes to patient-centered outcomes¹¹. This evidence is lacking for two principal reasons: (1) processes of care descriptors are inadequate¹²⁻¹⁸ and (2) patient-centered outcome data specific to trauma care are largely unavailable¹⁹⁻²⁶.

Since a 1966 National Academy of Sciences - National Research Council report to the US Congress cogently described accidental death and disability as the neglected disease of modern society²⁷, those then committed to the management of injury began to conceive, design and implement organized systems of trauma care that viewed injury as an unrecognized epidemic in need of a public health approach to control. On the heels of the American military experience in Viet Nam, early efforts transferred wartime lessons in emergency and acute trauma care to the civilian hospital and pre-hospital settings to put into place the first formally recognized systems of trauma care. These systems targeted major trauma and subsequently became the template from which trauma systems in Canada were largely elaborated. Although the rudimentary elements of organized care were present, they were disjointed, undeveloped and unsupported by the full structure of an integrated health system.

The early absence of organized data gathering on injury and its management was an obvious challenge to the construction of a cohesive health system for trauma care. By the 1980's there was however sufficient informational structure to describe on a large scale the tri-modal distribution of death following major trauma where three peaks in fatality were identified²⁸. The

first occurs at the time of injury and can only be obviated by primary and secondary prevention strategies. The second occurs within hours of injury, is due primarily to hemorrhage and neurologic damage, is controlled by tertiary prevention strategies, and is ostensibly where the predominant focus of modern trauma systems generally lies. The third peak occurs days to weeks following injury and is due largely to complications of arising from early care where tertiary prevention again is applicable.

With the gathered momentum of the 1970's and 1980's, formalized systems of trauma care began to appear across the U.S. and, with a lag of approximately a decade, also in Canada⁶. After nearly 40 years, many North American trauma systems are now well developed. In many ways, however, these systems have still not evolved beyond a loosely interconnected patchwork of autonomously functioning elements – ambulance, acute care hospitals of varying capability, rehabilitation facilities, injury prevention organizations, disaster preparedness strategies, and educational and research programs – all operating in somewhat in isolation to achieve a loosely defined set of goals.

Although it's clear that regionalized trauma care as it exists today was never conceived a priori as a single seamless system, it is also clear that we would like it ultimately to become that way. In its accreditation guideline²⁹, the *Trauma Association of Canada (TAC)* defines a trauma system as:

a preplanned, organized, and coordinated injury control effort in a defined geographic area which (1) is publicly administered, funded and accountable (2) engages in comprehensive injury surveillance and prevention programs (3) delivers the full spectrum of trauma care from the time of injury to recovery (4) engages in research, training and performance improvement and (5) establishes linkages with an all-hazards emergency preparedness program.

While this is an apt and usable definition which resonates loudly in the academic literature, it may be more the noble and hopeful consensus of large-minded clinical experts than bankable public health policy firmly endorsed by the various levels of government and health administration that would need to fund, operationalize, and enforce it. To the present, plausibly due to an important disjunction between system designers and enablers, there has been extremely variable implementation of injury management strategies across Canada, as elsewhere. In a recent survey of Canadian trauma systems, it was found that only 5 provinces utilized the TAC Trauma System guidelines for system development, and in only three provinces (Ontario, Quebec, and Nova Scotia) do ministries of health mandate provincial trauma systems. No federal mandate

exists to provide integrated trauma services and all jurisdictions indicated funding was a barrier to system implementation or development³⁰. The most plausible reason for wide variability in the breadth, depth and composition of trauma systems in Canada is variability in the published literature addressing effectiveness of implemented models of care and system integration strategies. While it is generally accepted that survival improves by approximately 20% when patients are managed by an organized trauma system than not⁷, how these systems should be configured, and to what specific ends, is still surprisingly unclear.

1.2 The challenge of building trauma systems

The publicized death of actress Natasha Richardson on Mar 17, 2009 from a potentially survivable head injury following a fall while skiing focused uncomfortable attention on Quebec's trauma system. It also raised questions about informed decision-making within Canada's healthcare system. Why did it take over 4 hours for a brain-injured skier from a major resort to receive neurosurgical care? Why was she routed to two hospitals? Should she have had a CT scan at the first one? Should helmets be mandatory for skiers? Could a helicopter have saved her? Why did Quebec buy planes for medical transport but not helicopters like several other Canadian provinces? When asked, a medical officer for the Quebec ministry of health responded that "A serious analysis is underway within the ministry on these questions"³¹ More than 200,000 Canadians will be hospitalized for major trauma next year⁴ and the conclusions of analyses like these will be crucial to them. As policy-relevant data on trauma system performance to inform these decisions is limited and not linked to long-term patient-centered outcomes³², resulting decisions on system design and development will be difficult.

Trauma-system decision-makers have widely identified a reporting strategy linking trauma care performance to patient-centered outcomes as a high priority for trauma system re-design³³⁻³⁵. The recent development of the Trauma Quality Improvement Project (TQIP) launched by the *American College of Surgeons* reflects an urgent need to identify successful system design strategies that use validated benchmarking to facilitate outcome-driven performance improvement in American trauma centres¹¹ which we also require in Canada. The *American College of Surgeons Committee on Trauma (ACS-COT)* is recognized as the authority on organized trauma care in the United States and has elaborated a nationally adopted guide, now in its seventh edition³⁶, built more on expert consensus than evidence outlining optimal resources for organized trauma care. Designed for individual trauma centres, this document specifies requirements for system-level organization which has been nationally adopted as a checklist for institutional verification and accreditation in trauma care delivery at all levels.

An expanding element of the trauma centre verification and accreditation program of the ACS-COT has been formalized performance improvement reporting. Necessarily this implies, at least in part, regular data collection and analysis around a constellation of standard objectives. Although galvanized in trauma system doctrine, it is well accepted that these standards are not evidence-derived, unvalidated, and therefore of unmeasured and uncertain practical utility.

Trauma registries have been developed and are now widely implemented to assist the important process of performance evaluation and improvement. The US National Trauma Data Bank (NTDB) was established in 1995. In Canada, the National Trauma Registry (NTR) was established two years after the Ontario Trauma Registry in 1996 as a coalescence of provincial registries then existing in several, but not all, Canadian provinces. In 2008, TQIP was launched to provide performance-related feedback to U.S. trauma centers using the infrastructure of the NTDB. Aiming to report validated, risk-adjusted outcomes-based data, the TQIP allows participating trauma centres (65 as of 2011) to benchmark performance against other centres to potentially identify institutional characteristics associated with improved outcomes. The process is limited by the information collected, namely death at hospital discharge as the primary outcome measure and ten complications of care as secondary measures (acute respiratory distress, deep vein thrombosis, pneumonia, urinary tract infection, sepsis, coagulopathy, cardiac arrest, decubitus ulcer, alcohol or drug withdrawal) which may have little real bearing on overall system performance.

A recent scoping review of trauma system performance indicators³⁷ evaluated 192 original articles among nearly 7000 citations to identify 1572 quality indicators and arranged them into 8 categories: ACS-COT audit filters, other audit filters, patient safety indicators, trauma system criteria, outcome indicators, guideline availability and adherence, peer review, and processes of pre-hospital and hospital care. Approximately 60% were process indicators while 23% were outcome indicators. Fewer than 5% represented post-acute care and injury prevention. The study concluded that evidence to substantiate most quality indicators cited was negligible and empirical studies would be needed to elaborate a practical method of assessing trauma care performance.

1.3 Decision-making for health care systems

Effective decision-making for health care systems is clearly challenged. It relies squarely on the nature and quality of information available, which is wholly contingent on the nature and quality of information desired. In order to facilitate design changes and policy implementation that will be

effective in reducing disease burden and preserving and improving the health of a population, this information must be valid, accurate, obtained efficiently and used proactively.

Currently, there is extensive interest in improving the mechanisms of evidence-informed decision making for health system governance³⁸⁻⁴⁶. This growing field of study examines processes by which health system policy makers are best able to access, comprehend and apply available evidence about health systems. It is further recognized that high-level administrative decision-making must be quickly renderable, measurable in its effect, affordable and should preferably yield results on an appreciable timeline. A cynic might refer to the latter as an election cycle. While there is always an obligation to look to the peer-reviewed scientific literature for guidance, there is perhaps an even greater onus on administrators to look at local health care delivery systems for contextual evidence that implemented strategies are accomplishing what is expected, and if they are not, that surveillance mechanisms in place will provide useful and timely guidance on the development of new options.

Although a number of strategies and tools have been proposed⁴⁷ to facilitate evidence-informed decision-making, such implements do not generally serve the needs of health system administrators tasked with oversight for quality assurance and performance improvement of established systems. This critical aspect of health system maintenance requires constant feedback to directors and managers that is directly informative about the functioning of key elements within a given system.

Because compelling evidence is often not available to cogently guide decision-making, a 'deliberative' process is required⁴⁸. Deliberative processes not only factor in scientific evidence on effectiveness, but also colloquial evidence on context. This is achieved through stakeholder consultation. It is an inclusive and transparent process that practicably addresses pervasive uncertainty by challenging science, inviting discussion, introducing ethical consideration, contextualizing political exigency and focusing on consensus building and collaborative priority setting to elaborate actionable policy in an efficient and timely manner. At the core of effective decision-making is a guiding common creed of mission, vision and values. Scientific evidence, irrespective of its quality and generalizability, may be wholly irrelevant to system managers and designers if not aligned with the overarching societal objectives that direct system building. In order to reduce discordance between isolated scientific effort and the background societal need for usable knowledge, agencies funding healthcare research have introduced successful programs that assure direct linkages between decision-makers and scientists. These include the Canadian Institute of Health Research (CIHR) *Partnerships in Health System Improvement* grant program and a similar strategy from La fond de la recherche en santé Québec (FRSQ)⁴⁸. Just as

the practical needs of health care providers treating patients must guide medical research, so must the needs of health system overseers guide population-level health system research.

1.4. The need for shared goals

Building on the well-developed, if not nationalized commitment to organized trauma care in the United States, the U.S. Department of Health and Human Services Health Resources and Services Administration recently tabled an extensive plan to enable systems of injury management at the federal level. This document, Model Trauma System Planning & Evaluation - Integration of the Public Health and Trauma Care Systems for Improved Injury Outcomes⁵⁰ declares the following:

Trauma systems should include all activities that are related to the prevention, education, delivery, and rehabilitation of the injured. From a financing perspective, it is essential that there be agreement and understanding of the goals and objectives for the entire trauma system. Once this general understanding is achieved, the investments and financial commitments can be matched to the desired strategies.

Agreement and understanding of the goals and objectives for the system is indeed the critical challenge. Without better information on the effectiveness of the multitude of individual elements and strategies that make up an organized system of injury care, however, it is improbable that government regulation will push very hard to set into place the ideal system of injury care.

Although Canada's trauma care advocates are envious of the impending American edict for high-quality systematized trauma care, there is sanguine realization that the public purse is limited, and that other priorities, healthcare-related and otherwise, must be managed. As such, the last decade has seen a focused effort on the part of the Canadian government to revisit and realign the national health care agenda to ensure it reflects the needs and wants of Canadians, but also to ensure it is thoughtfully prioritized and sustainable.

In 2003, therefore, the First Ministers of Canada convened to advance a 10-year plan to strengthen health care in Canada⁵¹. Broadly, this plan articulated that ensuring Canadians have access to the care they need, when they need it will become a national priority. Adhering to the principles of the Canada Health Act, the plan, further specified target objectives for the future development of the country's combined systems of health care. These included: (1) reduced wait

times and improved access (2) increased supply of health care professionals (3) improved home and community care services (4) primary care reform, particularly to benefit Canadians living in remote and rural locations (5) access to care in the north (6) a national pharmaceuticals strategy (7) health promotion focusing on disease and injury prevention (8) investment in health system innovation (9) accountability and reporting on health system performance to stakeholders, and (10) practical dispute avoidance and resolution measures. As they were elaborated in a non-partisan fashion collaboratively by the premiers of all Canadian provinces and territories, these objectives are important because they comprise a collective statement of values by which all component systems of the integrated national health care system will be guided in the foreseeable future. Any evaluation of health system performance must necessarily judge movement towards these goals. It is further anticipated that investment, whether it be funding scientific research or building health system infrastructure, will occur in line with this prioritization scheme.

Importantly, as part of the health ministers' accord, there was agreement to collaborate nationally on the development of a comprehensive framework of comparable indicator reporting on health status, health outcomes and quality of service. The federal government and all 14 jurisdictions ultimately agreed to report on 70 comparable indicators⁵², with initial attention directed to reporting activities on several priority program and service areas for the health system, notably primary health care and homecare services which were deemed critical concerns for health system reform and sustainability.

As expected, many of the subsequent annual health system reports of provincial and territorial regional health authorities⁵³⁻⁶⁵ reflect to some degree the national priorities articulated for Canada in the 2003 accord and concordant regional investment in local health system policy and design is visible therein. The content of regional health authority reporting is also informative for the types of measures and indicators used to describe performance of the system. These are the metrics by which the success of decision-makers will necessarily be judged, and they represent, in a crude but realistic way, the outcomes that must be targeted by health system managers, system analysts, and health system researchers alike. Theoretically, data that cannot be translated into these comprehensible measures of performance are likely of limited value to decision makers charged with strategic and operational planning to improve the overall performance of a system.

There are seven indicator categories: primary health care, home care, programs and services, pharmaceutical management, diagnostic and medical equipment, health human resources, and health status (healthy Canadians). Interestingly, as specifically regards the management and control of injury, only a few of these indicators are pertinent. These include:

Directly pertinent to injury

Potential years of life lost due to unintentional injury

Potential years of life lost due to suicide

Indirectly pertinent to injury

Patient satisfaction with hospital care

Patient perceived quality of hospital care

Prescription drug spending as a percentage of income

Self-reported wait times for diagnostic services

Patient satisfaction with physician care

Patient perceived quality of physician care

Health-adjusted life expectancy (HALE), (for overall population, and by income)

Self-reported health

How deliberately the refinement of Canadian healthcare systems has been tailored to align with the clearly established federal and provincial or territorial directives at the regional health authority level and downward is difficult to judge. The evolving national culture of targeted health system performance based on vision and shared values is nonetheless important as it provides a clear framework within which the consolidation of healthcare delivery systems such as that for trauma care and injury control should occur.

In keeping with the theme of public accountability for goal-directed sustainable government programs, including healthcare, the British Columbia Legislative Assembly's Select Standing Committee on Public Accounts endorsed eight principles for good performance reporting^{66, 67} for use by public sector organizations in 2003. These included

1. explain the public purpose served
2. link goal and results
3. focus on the few critical aspects of performance
4. relate results to risk and capacity
5. link resources, strategies and results
6. provide comparative information
7. present credible information, fairly interpreted
8. disclose the basis for key reporting judgments

1.5 Gauging health system effectiveness through structured reporting

Healthcare and public health policy makers, managers and administrators have few consensus documents or evidence-based guidance on effective and accepted approaches of health system quality reporting⁶⁸. If vision and goals can be established, however, health system quality reporting can at least begin to gauge system performance in a meaningful way with comparison to accepted benchmarks. It will also help to judge the efficiency of resource utilization with the intention that unacceptable variance will lead to design changes and other improvements. Ultimately, it is an important means of demonstrating accountability to stakeholders, and identifying knowledge gaps for researchers. Structured, pre-planned health system reporting is arguably the most important medium by which decision makers will direct the development of healthcare delivery systems. Regular reporting draws on the routinely collected measurement of desired variables using a refined and consolidated infrastructure that enables efficient data processing and information management. It does, however, require a deliberate and well-thought investment that begins with consensus about goals and objectives. Structured reporting then permits preferred indicators to be applied optimally to development of policy and the objective evaluation of implemented health management strategies as a first step in an iterative performance improvement process that incrementally moves system outcomes toward a collectively determined target.

There is arguably little regularly generated standardized reporting on organized trauma care and injury control currently available in Canada.

Although it collects a minimal data set from all Canadian hospitals, and a comprehensive data set from participating lead trauma centres in most, but not all, provinces, the National Trauma Registry under the aegis of the Canadian Institute for Health Information (CIHI) publishes rudimentary statistics comparing injury data across jurisdictions. Although a great deal of data is generated, little of it is linked to usable metrics of system effectiveness.

The principal comparator is hospitalization rate per 100,000 population (a surrogate for incidence of significant injury) where a maximum three-fold difference was recently reported in the provincial/territorial averages. The lowest average rate in 2010 was in 420/10⁵ in Ontario and the highest was 1,285/10⁵ in NWT (CIHI indicator report, 2010). The age-standardized rate of acute care hospitalization due to injury per 10⁵ population is considered to reflect the adequacy and effectiveness of injury prevention efforts including public education, product development and use, community and road design, and prevention and treatment resources. (CIHI indicator report, 2010. http://secure.cihi.ca/cihiweb/products/Healthindicators2010_en.pdf).

CIHI also reports periodically on potential years of life lost (PYLL) due to injury. Potential years of life lost is the number of years of life "lost" when a person dies "prematurely" from unintentional injuries. The average individual is assumed to live to age 75. PYLL are calculated by taking the median age in each standard age group, subtracting from 75, and multiplying by the number of deaths in that age group disaggregated by sex and cause of death. These data are presented as a count (total PYLL) and as a rate per 100,000 population.

PYLL was one of 70 health indicators developed in consultation with stakeholders to provide a comparative picture of health system progress within Canada under the 2003 First Minister Health Accords. Eighteen core indicators were approved by all federal, provincial and territorial jurisdictions in 2004 and 19 more from the original list of 70 have since been added.

PYLL due to unintentional injury was agreed upon as one of the 'health status and wellness' indicators. Other indicators with indirect relevance to trauma include PYLL due to suicide, life expectancy, and health-adjusted life expectancy (HALE). HALE measures the number of years *in full health* that an individual can expect to live given current morbidity and mortality conditions. It takes into account life expectancy, which is the number of years a person would be expected to live, starting from birth (for life expectancy at birth) or at age 65 (for life expectancy at age 65), if the age- and sex-specific mortality rates for a given observation period are held constant over the estimated life span. A more comprehensive indicator than life expectancy, HALE introduces the concept of *quality* of life by using the Health Utility Index (HUI) to weigh years lived in good health higher than years lived in poor health.

1.6 Variability in the delivery of organized injury care

Despite a considerable history of development and maturation, our collective understanding of what works best in trauma systems remains tentative, and essential issues must still be addressed before we can begin to know that our healthcare system is managing injury as effectively as possible. The input of decision makers committed to upholding overarching objectives balanced off of competing priorities must be sought. Their view on what a trauma system is and what it should accomplish is paramount.

What are the components of a trauma system? Do we intend trauma systems to target only major trauma requiring specialized care, or all trauma acknowledging that whether a mechanism of injury results in major or minor trauma is sometimes very arbitrary. Which organizations should be brought together to address injury management on a regional level? Police services, coroner's

office, automobile insurance boards, workers compensation, and armed forces all play potentially vital roles in injury control on a population level yet do not interact with regional trauma programs in Canada in any structured manner that consistently feeds information back to policy developers or system designers. .

Is the goal of an organized system of injury to maximize survival at hospital discharge? Severity-adjusted hospital survival is the standard measure of trauma hospital and trauma system effectiveness in comparative studies. Yet, is this adequate? The long-term survival of severely debilitated and dependent patients, or the demise of others at any point after initial discharge, are almost universally counted as 'successes' by current quality improvement processes that capture only vital status at discharge. As surrogates for good outcomes, often a limited set of complications are followed while in hospital, or a finite set of care processes deemed critical to survival are monitored. The latter typically include time to hospital presentation after injury via the pre-hospital system, time to key interventions such as critical imaging or surgery, the response time of key consultants, the use of resources such as intensive care or radiology, and length of stay. This is very much in keeping with the national emphasis currently placed on access to care, but does the considerable expense that this may entail achieve the goals we really care about? There is persistent and unresolved debate about the benefit of advanced pre-hospital care for major injury and other conditions ³², some rigorous research showing no benefit with out of hospital advanced levels of care, definitive airway management, or helicopter medical evacuation services - all contrary to longstanding basic principles of trauma care. Indeed, the 'golden hour' of trauma care, the dictum that drives a great deal of the modern approach to injury care that seeks to move patients rapidly through the initial phases of assessment, though logical, has never been substantiated.

Because currently established data collection systems (trauma registries) are geared to gathering the data believed to be necessary, the performance improvement processes of trauma systems are targeted to optimizing what is measured. Functional recovery, return to work, quality of life, and patient satisfaction, however, rather than simply survival, may truly be a better stone on which to sharpen the system. Is a demonstration of efficient processes (performance) enough to confirm that desired outcomes are being achieved (effectiveness) by these processes? Do we care about the incidence of injury in the population? Statistics Canada routinely compares the incidence of hospital admission for injury per 100,000 population among all jurisdictions in the country, yet most trauma systems are oblivious to how they impact this measure. If it were our principal goal to reduce the incidence of injury, then far more resources than currently allocated should likely support injury prevention and the measurement of effectiveness of injury control strategies. Currently, injury prevention organizations work at arm's length from the regional

trauma systems in Canada which focus predominantly on pre-hospital and hospital care. As per the First Minister's Accord of 2003, the principal nationally endorsed marker of injury control is potential years of life lost (PYLL) due to unintentional injury or suicide. Do we know, or want to know, how policy developed for our integrated systems of trauma care impact this measure? Currently, this is not a measure collected by any trauma system in Canada. What about patient-centered measures of care, also underscored as a metric of quality? There is no current notion of how to apply this important measure in current trauma systems. Perhaps health-adjusted life expectancy and measures of the burden of injury are more appropriate. How should burden of injury be defined and measured? Finally, if we care about efficiency and sustainability, we must also care about cost, yet cost of care, however problematic it may be to measure, is not a routinely reported feature of trauma system reporting.

2. STUDY OBJECTIVES

The challenges facing decision makers charged with the design and management of injury on the population level are considerable. The overarching aim of this research was to describe the informational needs of Canadian trauma system decision makers.

Specifically, the study objectives were to:

1. Describe decision makers' perceptions and expectations of the scope and objectives of ideally organized regional systems of trauma care and injury control in Canada.
2. Identify reportable performance measures meaningful to Canadian decision makers as actionable guidance for the design and policy development of regional systems of trauma care and injury control.

3. METHODS

3.1 Definitions

This research focuses on the informational needs of decision makers at all levels responsible for regionally organized systems of trauma care and injury control. This description is intentionally wide in scope and includes all organized effort at injury management within a geographically defined region. A 'regionally organized system of trauma care' would generally be considered to be a 'trauma system' with a narrower but traditional focus on the pre-hospital and acute hospital management of major trauma. The term 'trauma system' is problematic and avoided where it can be taken in a narrow context when the broader scope of all aspects of injury management at the population level are intended. The term 'trauma system' may not imply to all the necessarily equally important management of injury prior to its occurrence (injury prevention) and afterward (rehabilitation). Trauma systems are also generally perceived to address the management of 'major' trauma which may be inappropriately restrictive when addressing injury in general as a public health challenge.

Major trauma traditionally refers exclusively to severe or multiple injury either sustained by a major mechanism, or denoted by severe physiologic or anatomic derangement generally requiring an advanced level of specialized multidisciplinary care.

The term 'injury control' generally refers to population level injury prevention strategies that target both major and minor trauma. Although recognized to be important, organized injury prevention is often not a well-integrated component of many, if not most, established trauma systems. Injury prevention organizations often exist quite independent of trauma systems which may or may not operate side by side within common regional boundaries. Because injury control may reasonably be viewed on a public health level as a robust element of a well developed regionally organized system of trauma care, the expansive term 'injury management' is used hereafter to refer to the totality of both trauma systems and organized injury control. Careful phraseology is expected to be very important in the construction of any survey tool aimed at elucidating conceptual notions of organized systems of trauma care.

3.2 Literature review

Published literature

A focused review was then made of all outcome-based comparative studies of trauma systems and trauma centres in order to identify (1) system-relevant design issues pertinent to decision makers, and (2) the performance measures applied to the comparative evaluation of these issues. Using MEDLINE and EMBASE, a search strategy combining “Outcome and Process Assessment (Health Care)” with “Wounds and Injuries”, “Trauma” , “Trauma Systems” , “Injury” , “Injury Control” , or “Injury Management” was conducted.

To review available literature on performance and effectiveness reporting of health and trauma systems, a second search was conducted combining subject headings “Health Services Research/ut [Utilization]” with “Policy Making”/exp or “Decision Making”, “Organizational”/exp. The titles of all recovered articles were reviewed and appropriated abstracts retrieved. Full articles were then collected and reviewed if abstracts or titles revealed research, review or opinion on decision-making for health care systems.

Grey literature survey

In order to augment the published literature review, a search of the grey literature was conducted. The websites of national health agencies including Health Canada (Government of Canada), Stats Can, Canadian Institutes for Health Information (CIHI), Canadian Health Services Research Foundation,(CHSRF), Manitoba Centre for Health Policy (MCHP), the Trauma Association of Canada (TAC) ,the American College of Surgeons Committee on Trauma (ACS-COT), The US Department of Health and Human Services / Health Resources and Services Administration (HHS/HRSA) and linked websites were explored for documents relevant to trauma systems or injury control. The websites of all Canadian provincial health ministries, regional health authorities, and known regional and hospital-based regional trauma programs were also explored to obtain statistical reports and reference documentation relevant to trauma system management, evaluation and reporting. National, provincial and regional reports were specifically scrutinized for evidence of public health and injury-related priorities, goals and challenges, as well as relevant quantitative measures applied to these.

Using information obtained from review of both published and gray literature, information was collected and categorized in the following categories:

- Trauma system definition
- Trauma system policy and design challenges
- Trauma system effectiveness, comparative assessment, performance / outcome indicators
- Health system / trauma system reporting
- Health system / trauma system decision making

Information from the literature survey was used to develop the survey tool.

3.3 Survey tool development

The principle objective in developing the survey was to create a tool capable of describing the views of trauma system decision makers on the definition, purpose, and value of a regionally organized approach to injury management. The secondary objectives were to identify real injury-specific issues faced by decision makers, and to discern which types of system-relevant performance measures decision makers considered important in evaluating trauma system performance. Prior to commencing, approval for this study was obtained from the University of British Columbia Research Ethics Board (H10-01491).

The approach to development of the survey tool was multifaceted and is well described⁶⁸. First, an extensive search was made to collect and inventory public domain web-available documents from Canadian administrative health organizations that addressed health and trauma system performance. Targeted sources were websites of federal and provincial health ministries, national health agencies, individual regional health authorities, regional emergency medical services, regional and local trauma programs, and identifiable injury prevention groups. Once obtained, electronic documents were organized and reviewed for (1) general strategic themes; (2) prioritization of objectives that are (a) directly relevant to injury management or (b) indirectly relevant to injury management; and (3) the identification of specific health system performance indices that are, again, (a) directly or (b) indirectly relevant to injury management.

Next, a reference group of local trauma system experts and administrators was identified and enlisted to provide advice and feedback on developing the survey tool to meet the stated objectives. This group was comprised of 3 regional health system administrators responsible for organized trauma care, 2 regional trauma program directors, and 2 trauma systems researchers. Individual semi-structured interviews were held with the members of the reference group to identify general themes related to effectiveness reporting on regionally organized systems of

major trauma care and injury control. This input was then integrated with information obtained from the review of electronically published health system reports to create a draft survey tool. The major sections of the survey tool were: a) respondent profile (no personal identifiers); b) perceptions of organized trauma care and injury control; c) identification of relevant trauma system and/or injury control issues; d) identification of preferred performance measures and system reporting issues; and e) respondent feedback on the survey.

Once created, the survey draft was circulated to the reference group for further feedback. Recommendations were incorporated and a working draft finalized.

An electronic survey tool was then created with the finalized draft using the *Vovici Enterprise Feedback Management (EFM)*® software and platform available through the Information Technology Department of the University of British Columbia. *Vovici EFM*® is a Canadian-hosted survey platform which complies with the B.C. Freedom of Information and Protection of Privacy Act with all data stored and backed up in Canada.

The survey, once mounted electronically, was then tested for clarity and ease of use on an expanded reference group which included 4 trauma local program managers / directors in addition to the original reference group members. The average time to complete the survey was noted and additional feedback was used to modify the survey to its final format.

The final survey comprised 34 questions organized in the following manner:

Confirmation of eligibility	Qu. 1
Respondent profile	Qu. 2-8, 17-19
Views on the nature of trauma systems	Qu. 9-11,30-33
Identification of policy-relevant trauma system issues	Qu. 12-13
Perceptions of decision-making processes for trauma care	Qu. 14-15, 28
Perceptions of trauma system reporting	Qu. 16, 20-22, 27, 29
Indicators of effectiveness	Qu. 23-26
Survey feedback	Qu. 34-35

Written scripts were developed to a) introduce the study and solicit appropriate additional respondents through referral, b) deliver the survey link, and c) thank respondents and remind potential non-respondents to complete unreturned surveys. The survey and scripts were then translated into the French language and reviewed by a professional translator.

3.4 Determination of the sample frame

An intensive campaign was carried out to identify a sampling frame of eligible survey respondents. The target population was determined *a priori* to be individuals at all levels of health services administration with formal authority for, or influence over, organized systems of injury management in Canada.

Definition of the target population

Specifically, the target population was defined as all (1) health ministry representatives, (2) hospital or health authority administrators, and (3) regional or hospital medical directors or managers who are in any way involved in design, management, or policy development for injury management in Canada.

Definition of the sample frame

The sample frame was constructed from the target population in the following manner.

Health ministry

Provincial / territorial health ministers or deputy ministers potentially responsible for trauma care or injury control were identified by exploring the websites of the ministries of health of the all Canadian provinces and territories. Areas of responsibility for injury management of interest included emergency medical services (EMS) or pre-hospital services, acute hospital care, rehabilitation, injury prevention, and disaster response. Where contacts were unclear, health ministries were contacted to identify potentially appropriate individuals their formal positions and their e-mail contact information.

Regional health authorities

All health regions within Canada were identified using the most recent report published by Statistics Canada (2207 data)⁷⁰ updated for recent changes known not to have been accounted for, namely the consolidation of 16 health service delivery areas in British Columbia to 6 regional health authorities, nine regional health authorities in Alberta to one integrated provincial health authority (2008), and seven health regions in New Brunswick to two regional health authorities. Ontario's 31 public health units were recognized as reorganized into 14 local health integration networks (LHIN's) in 2006. There were therefore 74 identified health service regions in Canada.

As all of them would anticipate the need for injury control strategies and preplanned or systematized trauma care, it was considered that all were appropriate to share views on what a trauma system is and how it should be designed to work, even though the majority of health service areas in Canada likely play a minor role in trauma systems oversight and design.

Hospital administration and trauma programs

The directors and managers of known major Canadian trauma programs, both adult and pediatric, 23 in total, were identified through the Trauma Association of Canada and a list of contacts was created.

A master list of contacted potential respondents was thus developed. Included in the introductory contact correspondence was an explanation of the survey and its objectives, a request for participation and permission to forward the survey link, and a request to identify other individuals within the targeted organization who may be appropriate for participation. The directors and managers of major Canadian trauma programs were asked to identify the administrators at the hospital and regional level to whom they report to widen the sampling frame. EMS service directors were also approached where they could be identified, whether at the provincial or regional level.

All originally identified contacts and referred contacts were sent correspondence to explain the study and request participation. All potential respondents were informed that participation was anonymous and that formal consent for study participation was implied in completion of the survey. Where confirmation of research ethics board approval was requested, or where application to local research ethics boards was required, the requests were complied with where feasible.

3.5 Survey implementation

With the sampling frame identified and contacted, the survey link was then distributed. Responses were collected and collated electronically over a period of 3 weeks by the survey engine. At intervals of approximately 5 days, two survey reminders were sent out after the initial distribution. The survey link was left active for 21 days. Following closure of the survey tool, the raw data set was transferred to an *MS Excel*[®] spreadsheet, reviewed, cleaned and locked down. All study data was maintained on a secure server housed at Trauma Services, Vancouver General Hospital.

3.6 Data analysis

Because the survey was sent only to those contacts who granted preliminary permission to participate, and because the first question of the survey was confirmation of the appropriateness of the respondent, the survey response rate was determined on three levels.

A primary response rate was determined to be the number of surveys completed from the entire sampling frame. All members of the sampling frame were contacted to request participation in the study.

Since surveys were sent only to those in the sampling frame who agreed to reply to the survey, a secondary response rate was determined to be the number of surveys returned of all that were sent out.

Since the first question of the survey asked respondents to confirm their eligibility to respond to the survey according to established inclusion criteria, and only those who responded positively were requested to complete the survey, a small number of respondents who initially agreed to complete the survey were subsequently excluded. Whether eligible or not, all who were sent the survey were asked to submit their responses, if even only to declare themselves ineligible. A number of respondents who initially agreed to complete the survey and received it started answering but did not submit the survey. In these cases, it cannot be known whether non-submission was due to ineligibility, abandonment of the survey, or technical failure of the survey platform. A tertiary response rate was thus determined to be the number of surveys completed out of all surveys sent out.

Data was collected electronically by the survey platform. The master data set was transferred to an MS Excel spreadsheet and explored by univariate analysis. Responses to each question were tabulated and graphed as appropriate.

The responses to selected questions were analyzed using background information provided by the respondents, such as highest level of administrative function or highest level of education as directly relevant to the process of decision making for a trauma system. Because respondents were able to indicate multiple areas of their administrative authority, the highest level of administrative function was determined to be that which likely conferred the strongest authority over the ultimate decision to enact a design or intervention decision at the highest level for the system. In rank order from highest to lowest, these were: health ministry official, regional health authority administrator, pre-hospital services administrator, hospital administrator, regional trauma director, hospital trauma program director, hospital trauma program manager.

Similarly, because respondents were able to indicate multiple areas of education or training, for the purposes of analyzing selected responses, the highest level of education likely to be associated with most direct influence over trauma system design and change implementation was determined to be, in rank order of most important to least important: health administration, business / management, medicine, nursing, and other.

Simple descriptive statistics were applied to proportions. The normal approximation to the binomial distribution was used to calculate the standard error of the mean (SEM) and 95% confidence intervals. Where questions offered a 'cannot say' option, these responses were dropped from the total number of responses provided they were less than 5% of the total number of responses. Statistical significance was determined at the $\alpha = 0.05$ level.

4. RESULTS

4.1. Survey response rate

As shown in Figure 1, from an estimated total target population of 1,000 potential respondents, 342 were identified as initial contacts and approached by e-mail for permission to forward the survey link. This included initially targeted contacts and referrals. Of all contacts (initial + referral), 166 failed to respond to the initial request, declined to participate, or had mailings bounce back due to absences or invalid e-mail addresses. The resulting group of potential respondents therefore consisted in 183 individuals to whom the survey link was sent. Of these, the electronic survey software determined that 67 did not open the survey link to begin the survey, 28 opened the survey link but did not submit the survey, and 88 submitted the survey. It cannot be known whether those who opened the survey link but did not submit it did so because 1) they had determined themselves to be ineligible after reading Question 1 but did not follow the instructions to submit the survey at that point, 2) they abandoned the survey due to frustration or for some other reason, 3) the survey software failed (1 respondent sent communication outside of the survey that the software had failed, although eventually submitted successfully), or for some other reason. The final survey response rate was thus determined to be 24.0%, the number of completed eligible surveys accrued (N = 82) from the sample frame (N = 342). Of all who were sent the survey, 44.8% (82/183) returned eligible surveys.

There were 145 items requiring response in each survey for a total of 12,760 response fields. Required responses were missing in 303 fields, for an overall item non-response rate of 2.34%. An item non-response rate less than 5% is considered favourable⁶⁹.

Figure 1 Derivation of survey response rate.

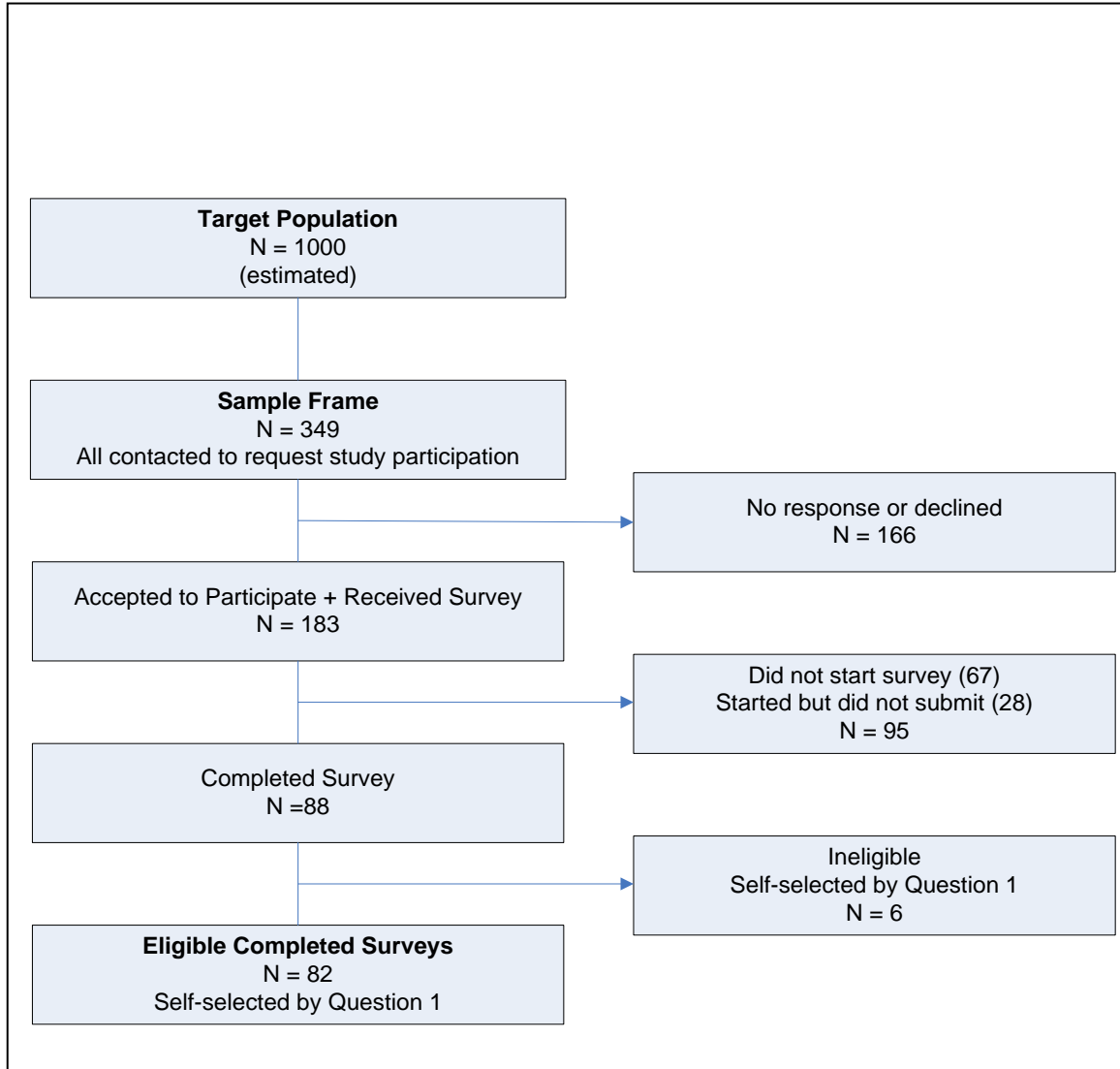


Table 1 Responders vs. non-responders by province or territory and highest function

	MH		RHA		EMS		RTD		HA		HTD		TPM		Other		TOTAL		
	R	NR	R	NR	R	NR	R	NR	R	NR	R	NR	R	NR	R	NR	R	NR	
BC	1	6	4	16	7	3	1	4	0	1	1	3	3	1	0	1	17	35	52
AB	1	6	3	1	2	0	1	0	0	0	0	1	0	0	0	0	7	8	15
SK	1	4	4	15	1	1	0	0	0	0	0	1	0	0	0	5	6	26	32
MB	0	2	2	19	1	0	0	0	0	0	2	2	0	0	0	1	5	24	29
ON	0	6	4	26	3	1	1	0	4	3	7	21	4	2	1	2	24	61	85
QC	0	11	2	11	0	0	1	0	0	1	0	3	0	0	0	1	3	27	30
NB	2	2	1	2	0	0	1	0	0	0	0	0	0	0	0	1	4	5	9
NS	0	4	2	13	1	1	0	1	0	1	0	1	0	0	0	1	3	22	25
PEI	1	8	0	1	1	2	0	0	0	0	0	0	0	1	0	0	2	12	14
NL	0	2	3	6	3	1	0	0	0	0	0	2	0	0	1	1	7	12	19
YK	2	8	0	0	2	0	0	0	0	0	0	1	0	0	0	0	4	9	13
NT	0	8	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0	12	12
NV	0	5	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	7	7
TOTAL	8	72	25	110	21	9	5	6	4	8	10	36	7	4	2	15	82	260	342
	80		135		30		11		12		46		11		17		342		

In Table 1, the following annotations are used: MH: ministry of health; RHA: regional health authority; EMS: emergency medical services; RTD: regional trauma director; HA: hospital administrator; HTD: hospital trauma director; TPM: trauma program manager; R: responder; NR: non-responder.

Figure 2 Survey respondents vs. non-respondents by province or territory.

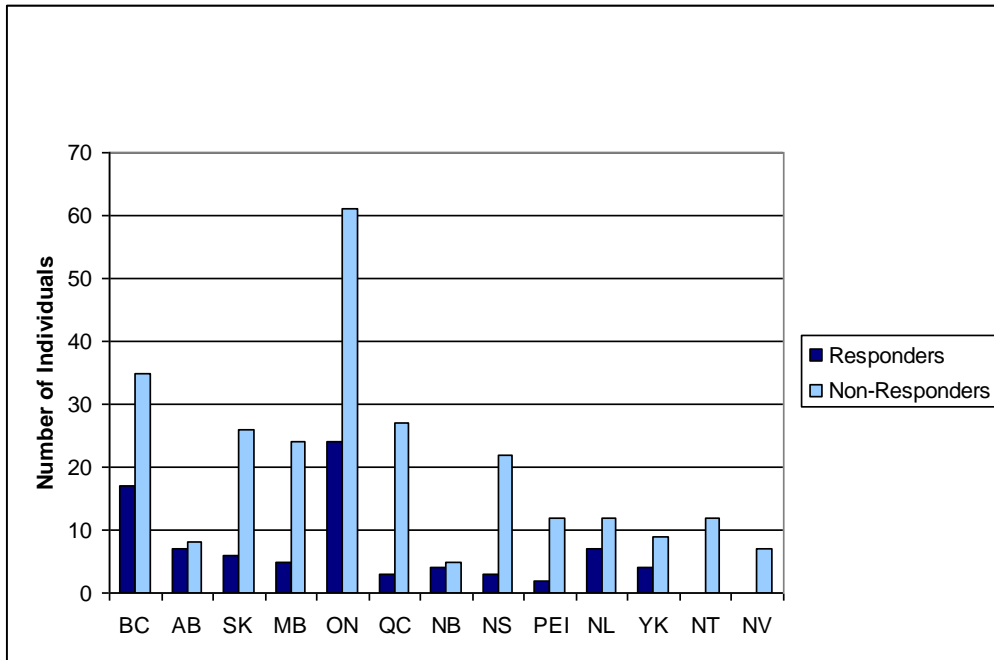
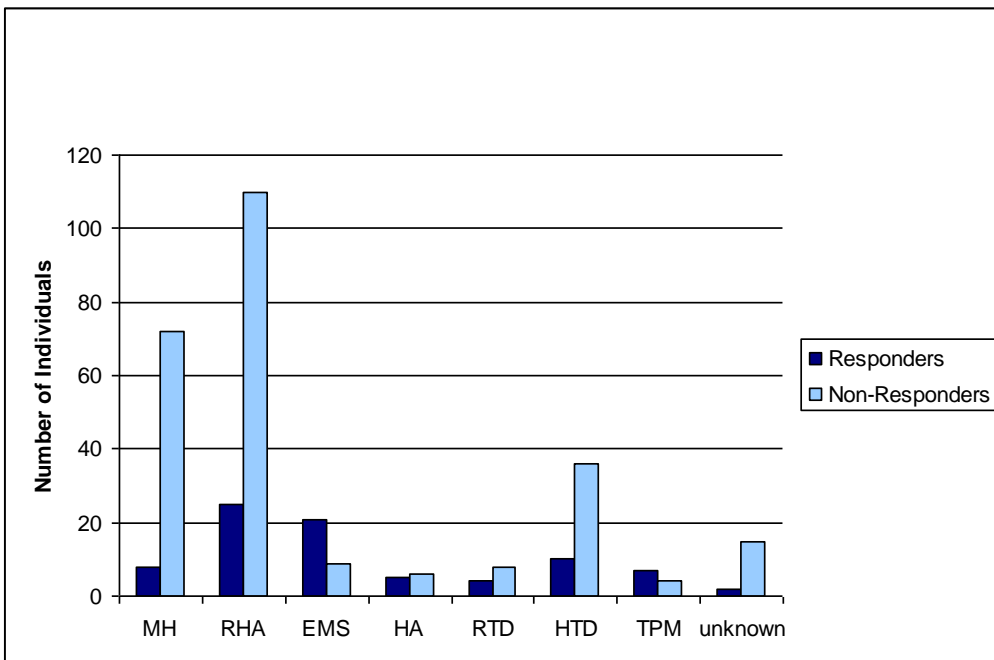


Figure 3 Survey respondents vs. non-respondents by estimated highest role.



4.2.1. Eligible respondents

Question 1 Eligibility

Are you a health ministry representative, hospital or health authority administrator, medical director, or program manager in any way involved in design, management, or policy development for injury management in Canada?

Must choose one:

- yes ----- Continue survey*
- no ----- proceed to end of survey and submit*

Of the 88 who completed the survey, 6 considered themselves ineligible by their responses to Question 1. 82 respondents (93.4%) were therefore self-described as eligible to participate in the survey.

4.2.2. Respondent profile

Ten questions (numbers 2-8, 17-19) addressed the background and experience of respondents with regard to responsibility for formalized systems of injury management. Background information regarding the extent of respondents' responsibilities for organized trauma care is important to understanding potential biases in interpreting the survey results.

Question 2 Functional roles

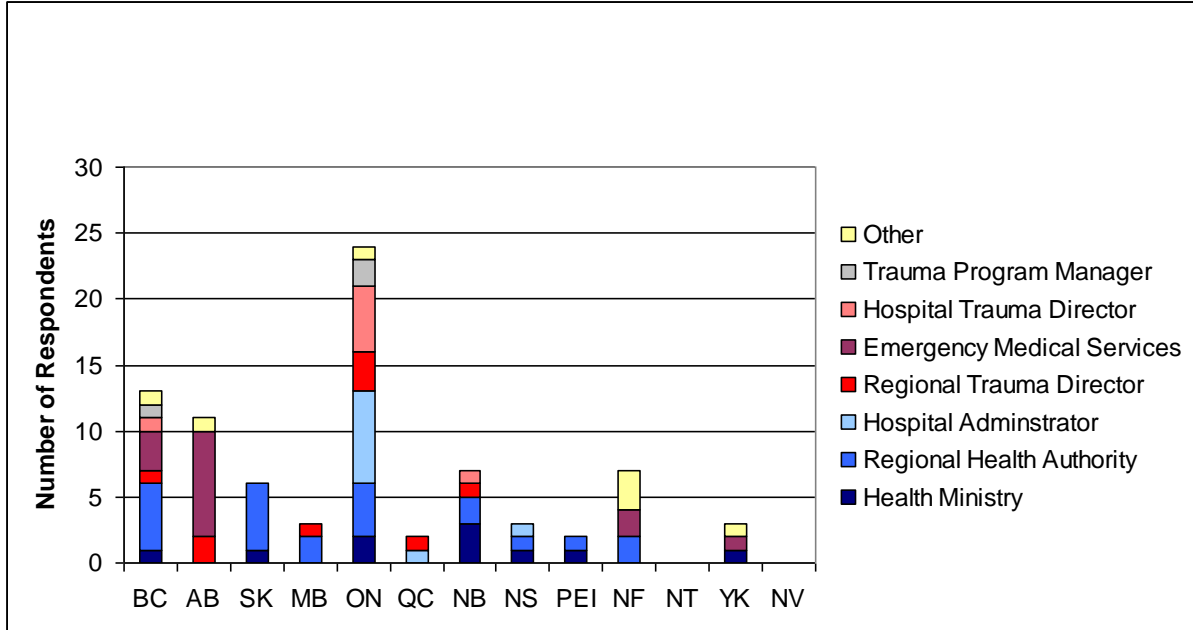
Describe your role in injury management in your jurisdiction.

Respondents were asked to indicate all roles that applied to their professional involvement in injury management among the following options: health ministry official, regional health authority administrator, hospital administrator, regional trauma director, hospital trauma director, pre-hospital services administrator, and other (specify). In a later question, respondents were asked to indicate the province or territory in which they worked.

Because respondents were able to indicate multiple roles, the highest level of function was determined to be that most probably associated with the greatest influence over trauma system decision making in the following order of decreasing importance: health ministry official, regional health authority administrator, pre-hospital services administrator, hospital administrator, regional trauma director, hospital trauma director, and hospital trauma program manager. Five respondents that answered 'other' were able to be reclassified as one of the named options according to the free text response given.

Figure 4 combines the responses to Question 2: *“Describe your role in injury management in your jurisdiction”* and Question 8: *“Where do you work?”* using the highest level of authority or influence indicated by respondents across a national distribution. Grouping health ministry representatives, regional health authority administrators and hospital administrators together as 'health system administrators' and all remaining categories together as 'clinical trauma program directors', it is seen that nearly 30% of respondents served as 'health system administrators' at their highest level of function. Several regions of the country are severely underrepresented, notably Quebec, Manitoba, NWT and Nunavut.

Figure 4 Survey respondents by province or territory of origin and highest level of responsibility for injury management.



Question 3 Educational and training

What is your educational/training background?

Respondents were asked to indicate all categories of formal education and training that applied to them. Options were the following: health administration, business / management, medicine, nursing and other (specify). Figure 5 displays these results by graphing highest level of function by highest level of education and/or training. Because 12 respondents (14.6%) declared more than one of the roles listed, the highest function in terms of capacity to influence decision making for a trauma system was as determined for the preceding question.

Twenty-three respondents (28%) declared receiving training or educational preparation in more than one of the listed options, As such, it was assumed that the highest level of education or training in terms of capacity to influence decision making for a trauma system would be, in order of importance: health administration, business / management, medicine, nursing, and other.

Table 2 provides the recorded counts.

Figure 5 Highest function by highest level of training

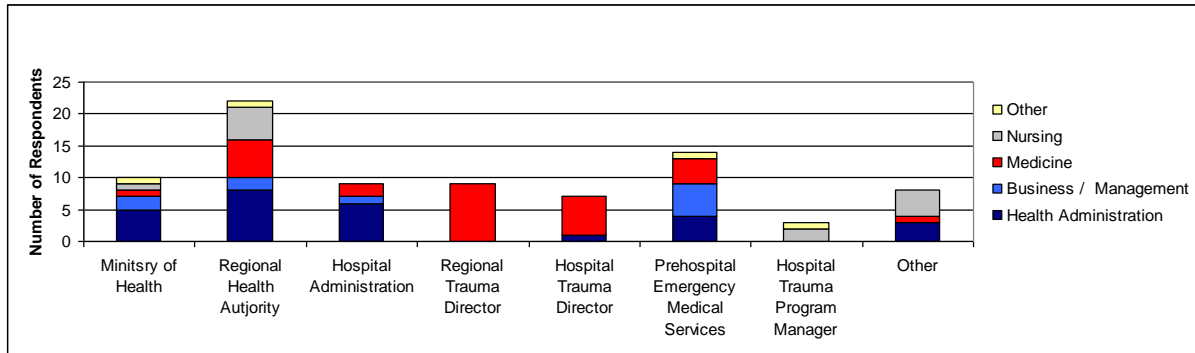
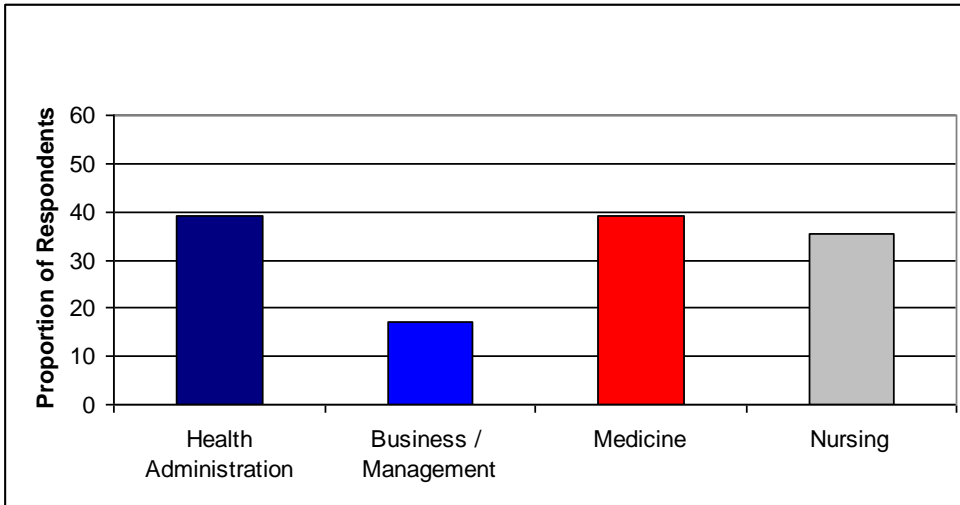


Table 2 Highest role by education and training background

	Health Administration	Business / Management	Medicine	Nursing	Other	Total
Ministry of health	5	2	1	1	1	10
Regional health authority	8	2	6	5	1	22
Hospital administration	6	1	2	0	0	9
Regional trauma director	0	0	9	0	0	9
Hospital trauma director	1	0	6	0	0	7
Pre-hospital (EMS)	4	5	4	0	1	14
Trauma program manager	0	0	0	2	1	3
Other	3	0	1	4	0	8

Among all respondents, there was a fairly even distribution of experience in health administration, medicine and nursing, with approximately one third of respondents falling into each of these categories (Figure 6). Interestingly, nearly half (47%) of the 32 respondents with formal training in health administration also had professional nursing backgrounds, whereas only two of 32 were physicians.

Figure 6 Training and education background by respondents

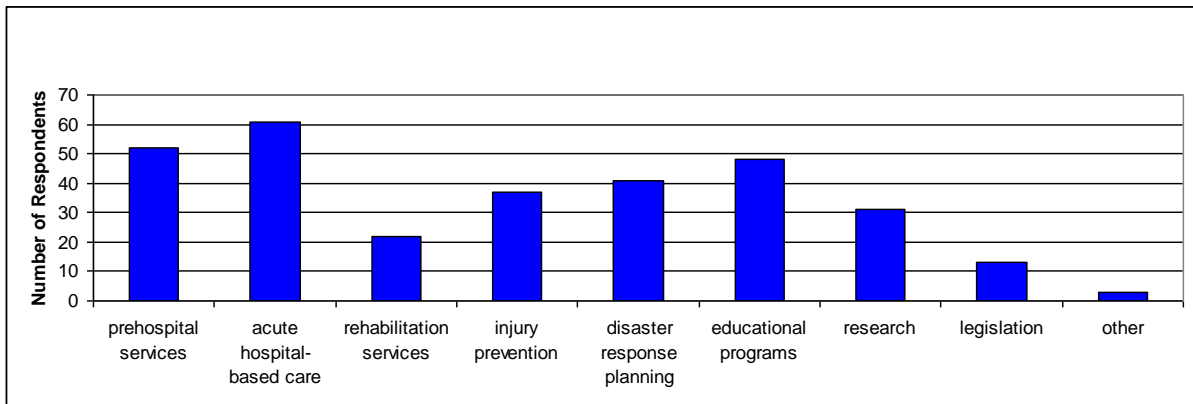


Question 4 Domain of influence

Over which of the following domains related to injury management do you have influence or authority?

Respondents were asked to identify all areas of their current involvement in the organized management of injury from among the following options: pre-hospital care/emergency medical services, acute hospital-based care, rehabilitation services, injury prevention, disaster response planning, educational programs, research, legislation, and other (specify).

Figure 7 Respondents' areas of professional responsibility

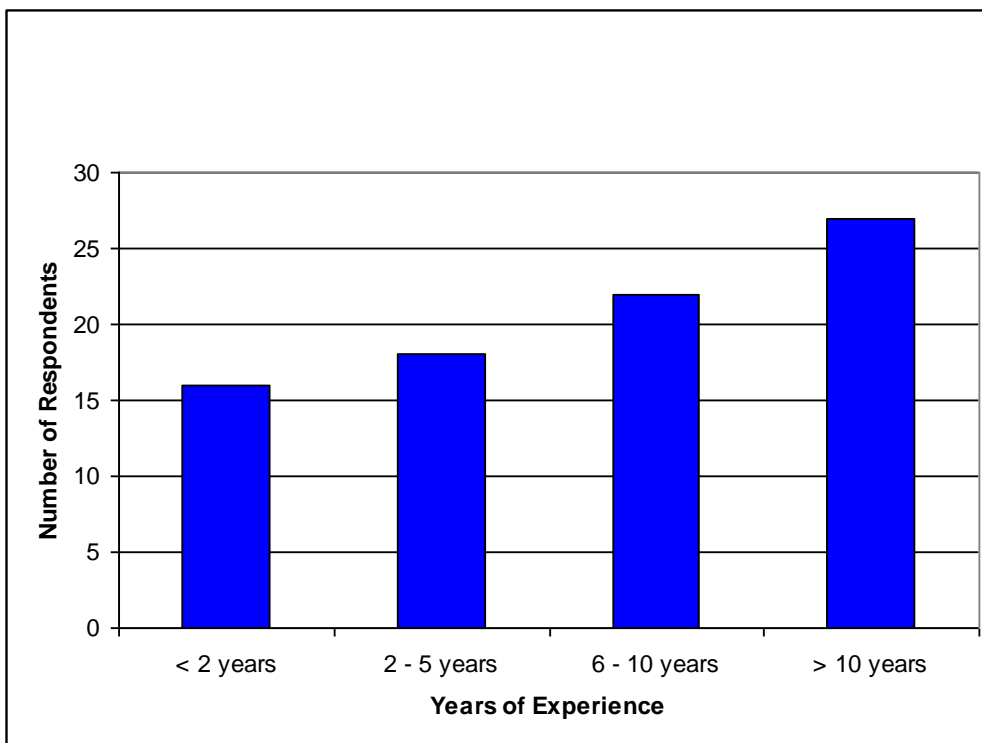


Question 5 Years of experience

Approximately how long have you been involved with decision making for organized trauma care and/or injury control?

Respondents were asked to specify the approximate number of years they had been involved with decision making for organized trauma care and/or injury control by selecting one of the following: < 1 year, 1-5 years, 6-10 years, and > 10 years. Over half of respondents (58%) had more than 5 years experience in decision-making for systems of injury care, and most of this group (32.5%) had more than 10 years experience.

Figure 8 Years of experience in organized trauma care / injury control.

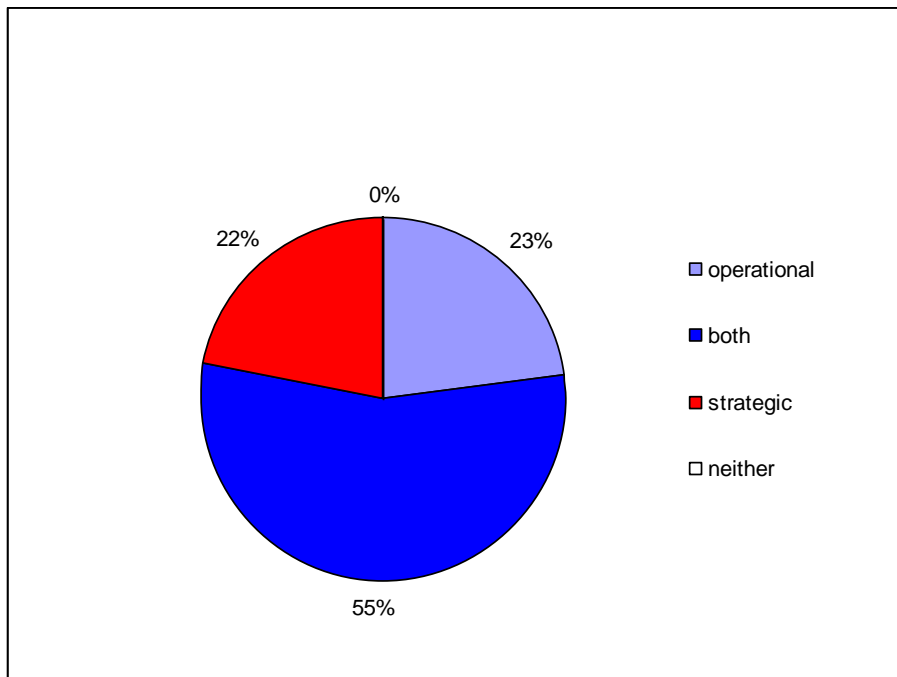


Question 6 Strategic / operational roles

How would you best describe your current function with regard to your trauma system?

In order to ascertain the nature of respondents' functions within their trauma systems, they were asked to characterize their activities related to injury management as one of strategic, operational, both or neither. Most respondents (55%) claimed both strategic and operational roles, and none claimed neither one nor the other.

Figure 9 Survey respondents' type of involvement with trauma systems

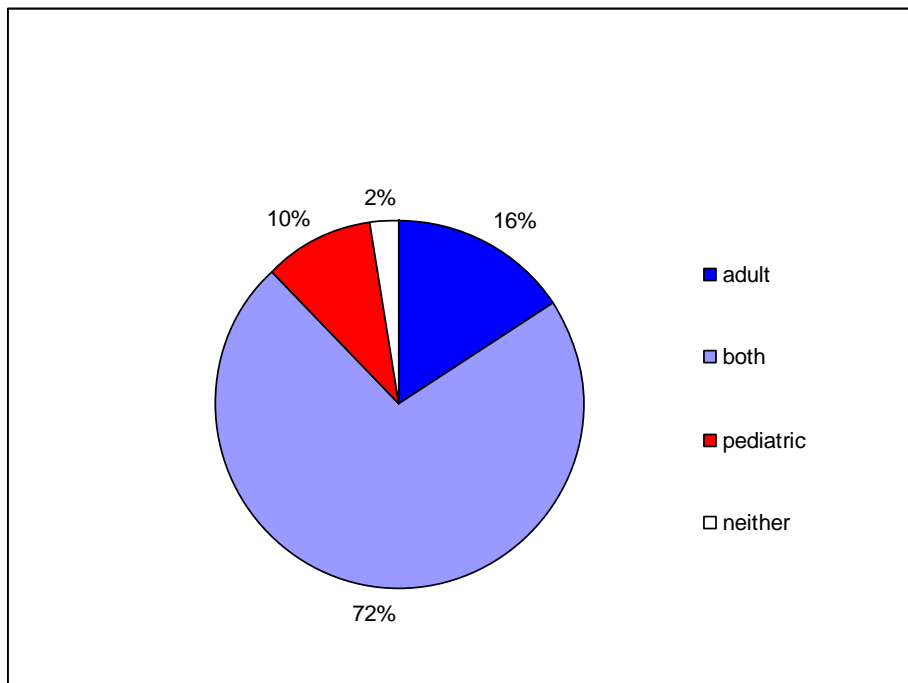


Question 7 Adult and/or pediatric influence

Does your authority or influence in injury management include adult care, pediatric care, both or neither?

In order to ascertain the whether respondents' were principally involved in adult and/or pediatric care, they were asked to specify the scope of their influence related to injury management as one of strategic, operational, both or neither. As expected, the vast majority (72%) worked trauma in systems that managed both adult and pediatric patients. There was a lower proportion of pediatric-only compared to adult-only respondents, 10% and 15%, respectively, as would be expected given a preponderance of adult-only trauma centers in the country.

Figure 10 Survey respondents' involvement with adult and /or pediatric trauma systems



Question 8 Province / territory

Where do you work?

Respondents were asked to specify in which province or territory they worked. The results are displayed stratified by highest functional role in Figure 2. The distribution of respondents across Canada is as follows:

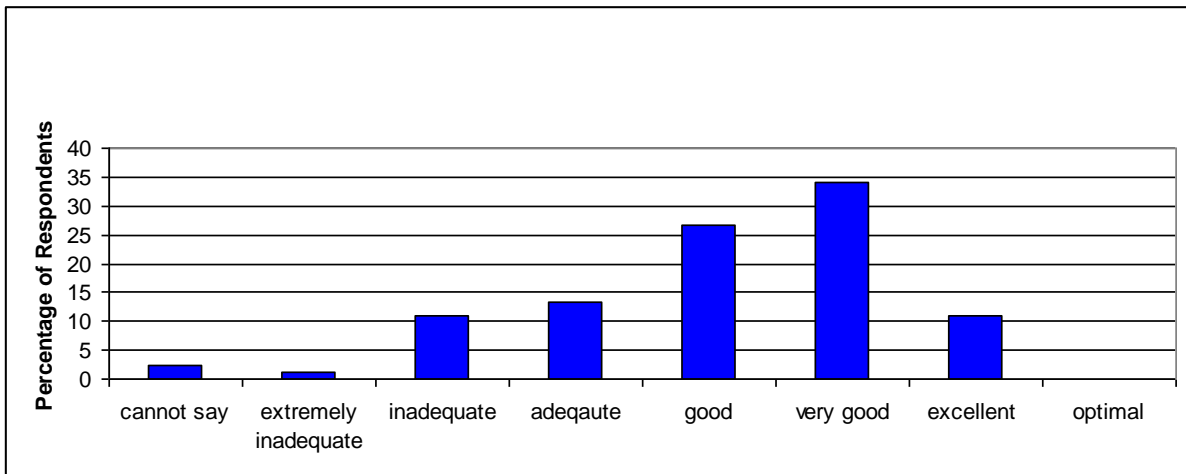
British Columbia	17
Alberta	7
Saskatchewan	6
Manitoba	5
Ontario	24
Quebec	3
New Brunswick	4
Nova Scotia	3
Prince Edward Island	2
Newfoundland and Labrador	7
Yukon Territory	4
Northwest Territories	0
Nunavut	0
—	82

Question 17 Adequacy of trauma care

How adequate do you consider injury management to be in your jurisdiction?

Respondents were asked characterize the adequacy of injury management within their jurisdiction by selecting one of the following descriptors: optimal, excellent, very good, good, adequate, inadequate, extremely inadequate, or cannot say.

Figure 11 Decision makers' perception of the adequacy of their trauma systems

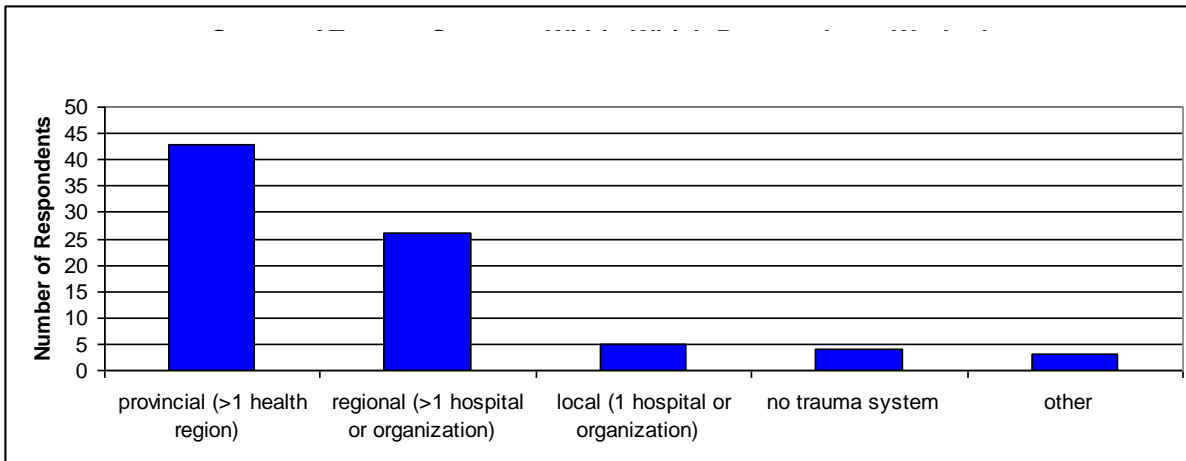


Question 18 Scope of trauma systems

How would you describe the scope of the trauma system with which you are involved?

Respondents were asked to describe the scope of the trauma systems within which they had influence as one of: provincial (>1 health region), regional (>1 hospital or organization), local (1 hospital or organization), no trauma system, or other (specify).

Figure 12 Scope of trauma systems within which respondents worked.

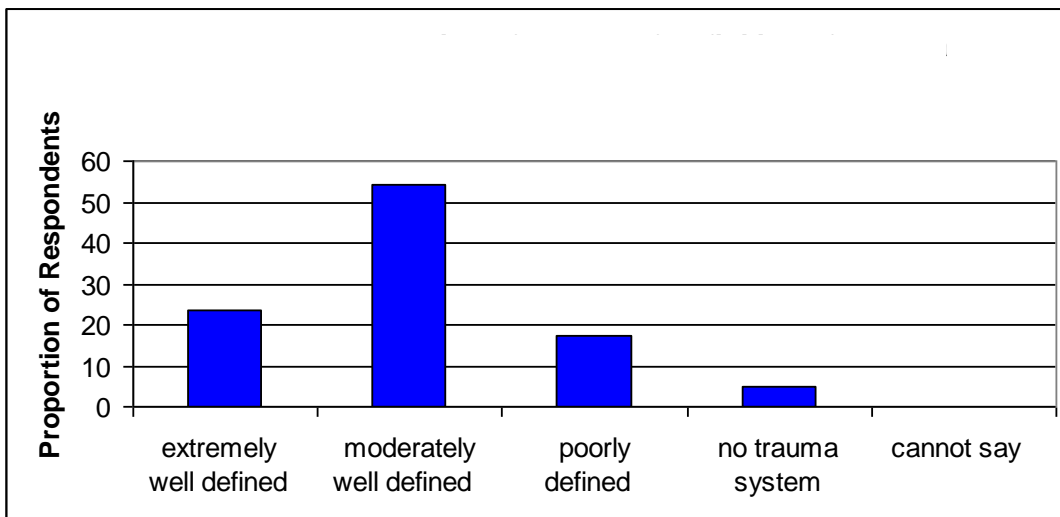


Question 19 Definition of trauma systems

How well defined do you consider the trauma system in your jurisdiction to be?

Respondents were asked to characterize how well defined they considered the trauma systems within which they worked by selecting one of the following options: a trauma system exists and is extremely well-defined, a trauma system exists and is moderately well-defined, a trauma system exists but is poorly defined, an organized system of trauma care does not exist, and cannot say. 54.3% and 23.5% felt their systems were well defined and extremely well defined, respectively.

Figure 13 Respondents' perception of degree of definition of trauma systems in their region.



4.2.3 Views on the nature of trauma systems

Seven questions addressed respondents' views on the definition and purpose of trauma systems.

Question 9 Trauma Association of Canada definition

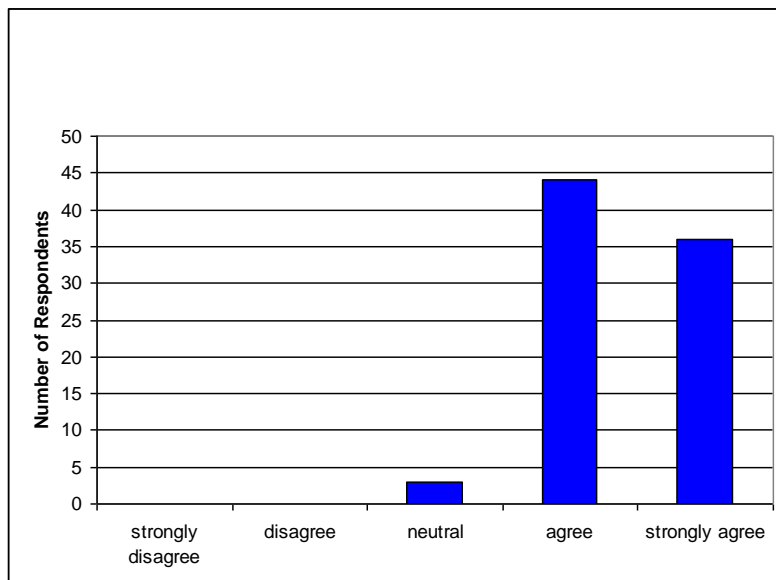
A trauma system has been described as:

a preplanned, organized, and coordinated injury control effort in a defined geographic area which (1) is publicly administered, funded and accountable (2) engages in comprehensive injury surveillance and prevention programs (3) delivers the full spectrum of trauma care from the time of injury to recovery (4) engages in research, training and performance improvement and (5) establishes linkages with an all-hazards emergency preparedness program.

Do you agree with this statement?

Respondents were asked to state the strength of their agreement with the definition of a trauma system advanced by the Trauma Association of Canada using a 5-point Likert scale.

Figure 14 Agreement with the Trauma Association of Canada's definition of a mature trauma system.

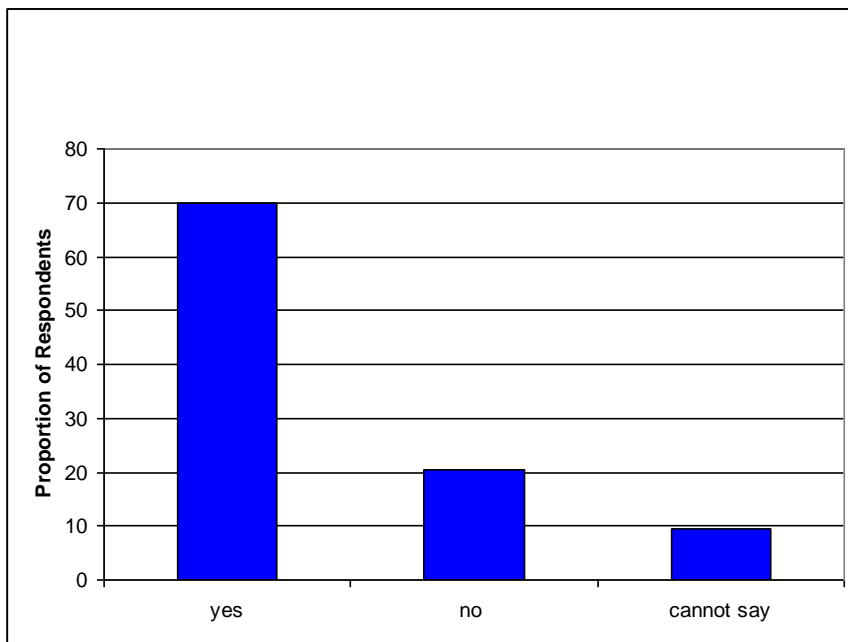


Question 10 Major and minor trauma

Do you consider that a fully developed trauma system should address minor trauma as well as major trauma?

Respondents were asked whether a mature trauma system should extend beyond major trauma care to include minor trauma by answering: yes, no, and cannot say. One-fifth (20.5%) felt that minor trauma (normally defined as single system injury without risk to life or limb not requiring specialized care) should not be addressed by fully developed trauma system, while almost 70% felt that it should. Fewer than 10% (9.6%) stated they could not answer.

Figure 15 Should a fully developed trauma system address both major and minor trauma?



Question 11 Primary objective of trauma systems

Which one of the following do you consider best describes the primary objective of a trauma system?

Respondents were asked to indicate what they believed the principal objective of a trauma system to be by indicating one of: ensure delivery of appropriate care for trauma as rapidly as possible, maximize survival following trauma, minimize the individual and societal burden of injury resulting from trauma, minimize the incidence of trauma in a population, cannot say, and other (specify).

Figure 16 Perception of the principal objective of a trauma system by highest level of influence.

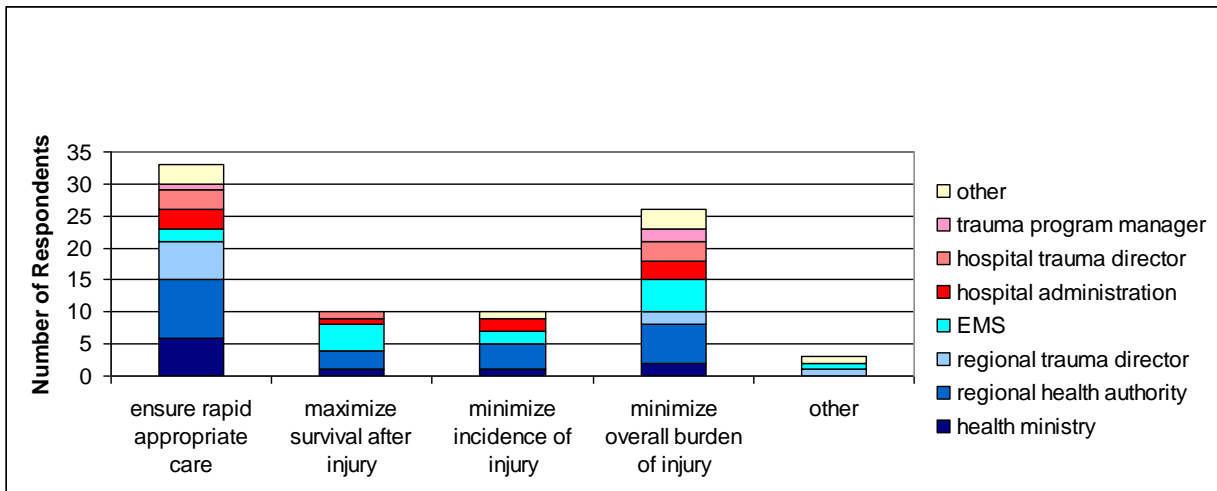


Table 3 Perception of the principal objective of a trauma system by proportion of survey respondents.

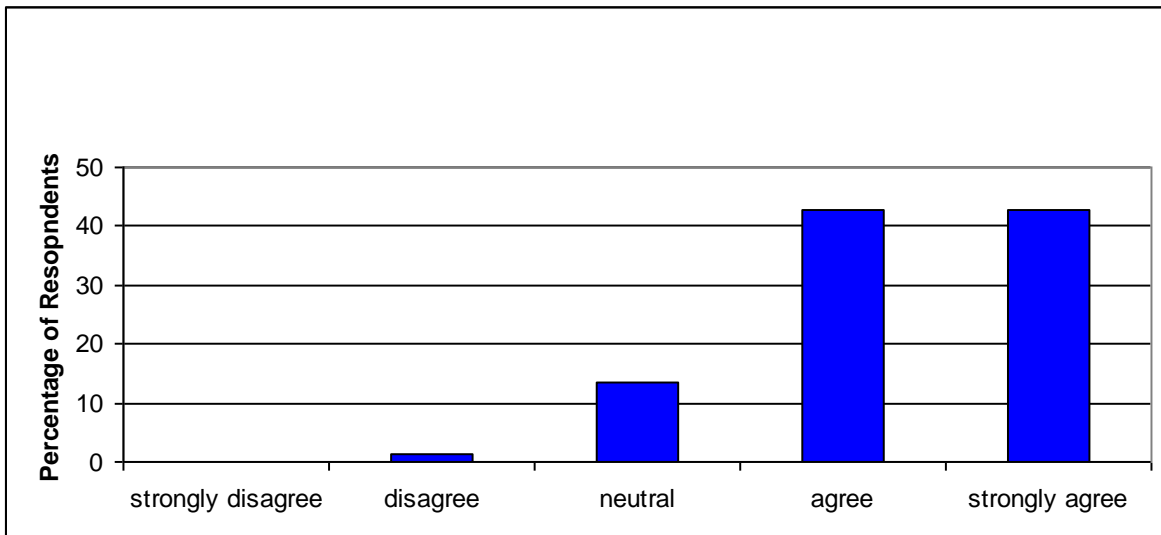
OBJECTIVE	% (95% CI)
<i>ensure rapid appropriate care</i>	43.9% (95% CI 32.9, 54.9)
<i>maximize survival after injury</i>	12.2% (95% CI 5.0, 19.4)
<i>minimize incidence of injury</i>	12.2% (95% CI 5.0, 19.4)
<i>minimize overall burden of injury</i>	31.7% (95% CI 21.4, 42.0)

Question 30 Requirement for accreditation

Do you agree that successful accreditation by a recognized external authority should be required of all trauma systems and all trauma facilities?

Respondents were asked whether successful accreditation by a recognized external authority should be required of all trauma systems and all trauma facilities by indicating one of the following options on a 5-point Likert scale: strongly agree, agree, neutral, disagree, and strongly disagree.

Figure 17 Level of agreement that successful accreditation by an external authority should be required of all trauma systems and trauma facilities.



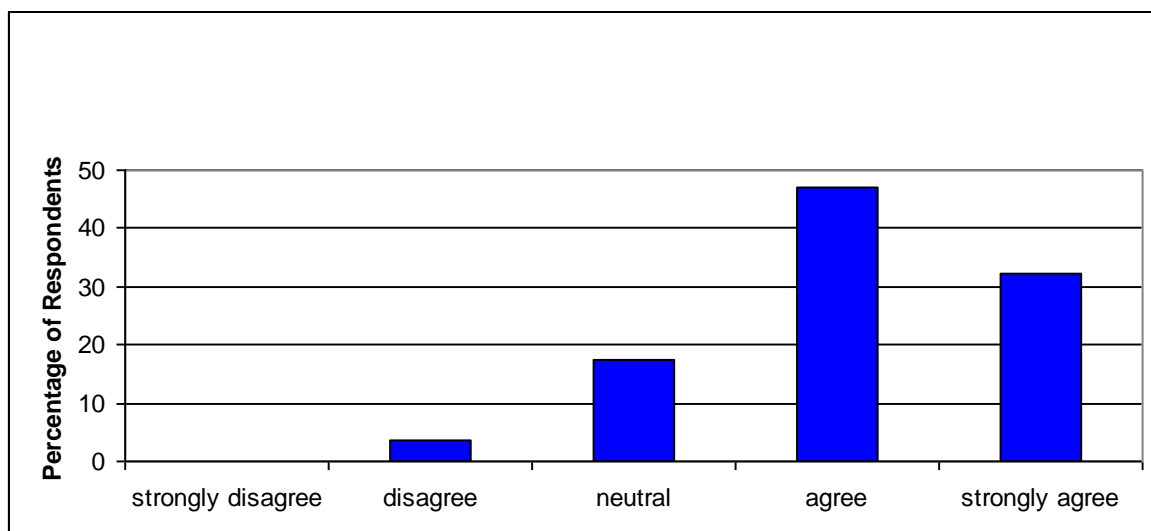
Question 31 Role for government oversight

Do you agree with the following statement?

To achieve the objectives of a trauma system, a lead governmental agency authorized to develop policy is required to ensure appropriate system planning, resourcing, implementation, coordination and evaluation.

To ascertain whether respondents supported the concept of governmental authority and responsibility for trauma system activity, they were asked to indicate the strength of their agreement with a statement endorsing an oversight role for government published in the Trauma System/Centre Accreditation Guidelines of the *Trauma Association of Canada*²⁹. Respondents indicated the degree of their support using a 5-point Likert scale by choosing one of: strongly agree, agree, neutral, disagree, and strongly disagree.

Figure 18 Degree of agreement that a lead government agency should provide oversight for the performance of a trauma system.

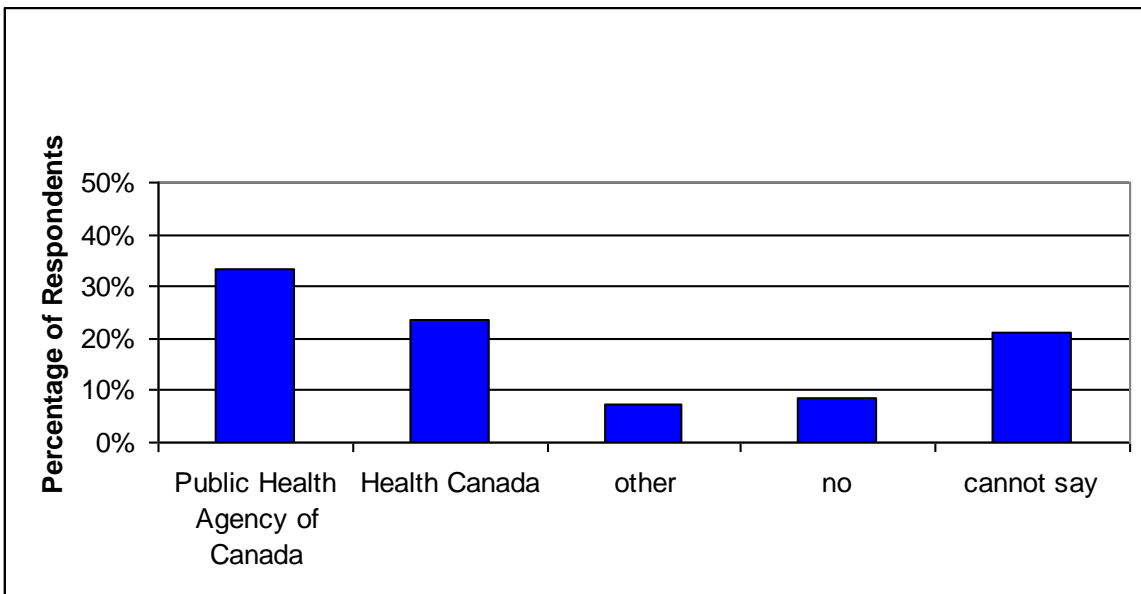


Question 32 Possible agencies for oversight

Given that the prevention and control of injuries and the preparation for and response to public health emergencies are mandates of the Public Health Agency of Canada, do you feel that this or some other government agency should provide oversight for injury control in Canada?

The Public Health Agency of Canada declares a mandate for the prevention and control of injuries and the preparation for and response to public health emergencies (cite). In order to explore in more detail the perceived role of government oversight for organized trauma care and injury control in Canada, respondents were asked which, if any, government agency should provide such oversight by selecting one of the following options: yes - Public Health Agency of Canada, yes - Health Canada, yes – other (specify), no, and cannot say. Of those who felt some government agency (PHAC, Health Canada, or other) should have oversight of trauma systems in Canada, 62% (31/50) had a highest level of function at a regional level, while 75% of those who could not say (17) or were opposed (7) had jobs at this level.

Figure 19 Who should provide oversight for trauma systems in Canada?

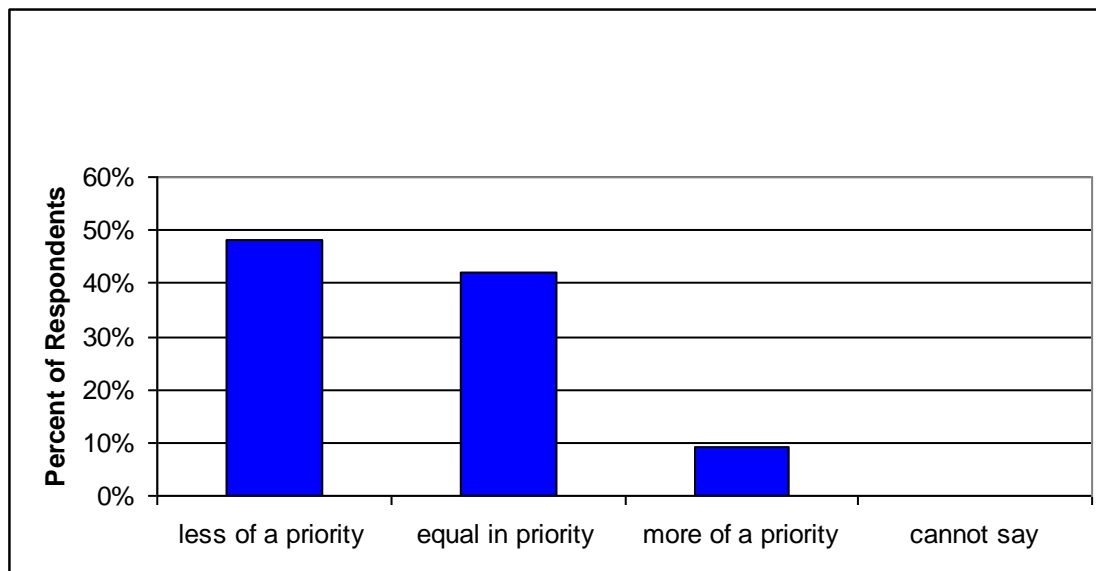


Question 33 Trauma as a healthcare priority

In your opinion, how much of a priority is injury control as a public health concern compared to all other current concerns (cancer, cardiovascular disease, bone and joint disease, mental illness, etc)?

Respondents were asked to prioritize injury control as a public health concern in relation to all other current concerns (cancer, cardiovascular disease, bone and joint disease, mental illness, etc) by indicating selecting one of the following responses: less of a priority, equal in priority, more of a priority, or cannot say.

Figure 20 Perception of injury control as a public health concern compared to other priorities in Canada.



4.2.4 Identification of policy-relevant trauma system issues

Question 12 Trauma system policy issues

Indicate whether the feature listed HAS BEEN or LIKELY WILL BE the subject of a policy decision within your trauma system.

In order to identify the relative importance of commonly addressed design and management issues relevant to organized trauma care and injury control, respondents were asked to comment on a list of such issues prepared through the literature review and informal interviews with trauma directors and managers. By answering yes, no or don't know, respondents were asked to indicate whether the issues listed had previously been or will likely become the subject of a policy decision within their trauma system.

Table 4 Trauma system issues identified by respondents.

Prior and Foreseeable Challenges Perceived by Trauma System Decision Makers	Yes (%)
establishment of inter-facility transfer agreements for trauma	90.4
designation of a hospital facility to receive major trauma	84.3
disaster response planning	84.1
support for a trauma registry	80.5
advanced skill training for paramedics (intubation, medications, etc)	78.0
allocation of hospital resources for major trauma	77.1
implementation of an injury prevention strategy	75.6
compliance with external review recommendations	74.4
allocation of EMS resources to support trauma care	72.3
funding for a trauma-related program or issue	67.5
rotor-wing air evacuation program	63.9
funding for trauma research or education	62.2
prioritized ICU admission for trauma	59.8
hiring of clinical staff dedicated to trauma management	54.3
protected surgical resources for trauma	52.4
alternate funding for physicians involved in trauma care	48.8

Question 13 Additional trauma system issues

Can you list any other system-level policy or design issues arising from your trauma system?

In order to identify policy-relevant issues possibly not listed in the previous question, respondents were given an opportunity to cite other issues using freeform text. The following were cited:

- provincial trauma centre funding
- provincial trauma hotline
- provincial centres for quaternary care
- trauma network agreements
- funding allocation
- patient repatriation
- education and training partnerships
- trauma team activation guidelines
- allocation of appropriate resources to remote areas
- dispatch / deployment of EMS resources to pre-hospital trauma "events".
- inter-facility transfer from tertiary to primary facilities (ground vs fixed wing vs rotary wing).
- fixed wing programs for large geographical areas.
- critical phone line for trauma physician to triage trauma from smaller communities
- trauma field guidelines
- national quality indicators
- field trauma triage tool
- trauma level designation
- guaranteed access for trauma
- trauma bypass strategies incorporating all levels of EMS transport modalities
- advocacy for public policy
- evidence-based benchmarks for the prevention and treatment of trauma.
- data linkages for injury surveillance analysis of the economic impact of injuries
- adherence to recommendations around best practice.
- pre-hospital collecting data
- outreach and education for peripheral referring hospitals
- continuous quality improvement system with real time computer program

- rural education
- inter-facility transfers
- advanced skill training/transfer of function for nurses and nurse NP's who work in our remote outposts
- paramedic skill level - limited advanced life support training outside major urban centre
- dependency on access to academic/tertiary level facilities in other health regions.
- human resources funding for trauma (i.e. trauma program managers) at designated trauma centres
- creation of a trauma program budget

4.2.5 Perceptions of decision-making processes for trauma care

Question 14 Factors influencing decision making

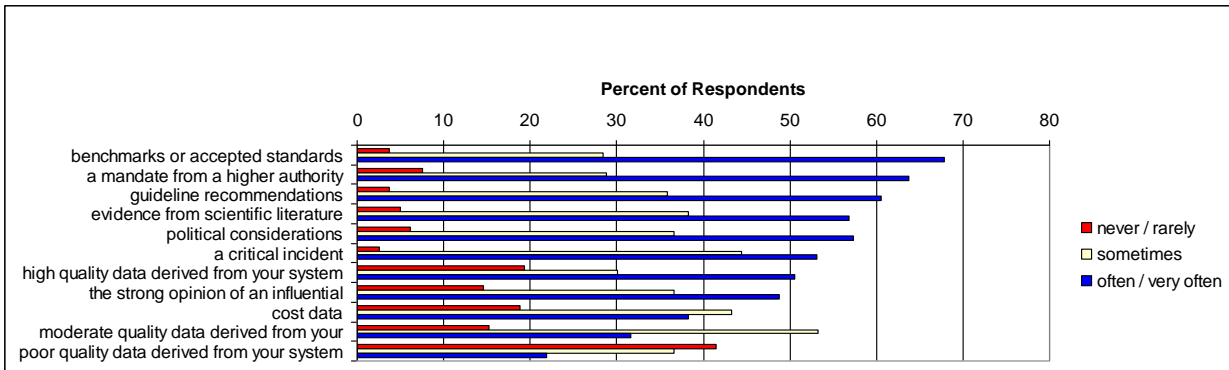
In your experience, how often do each the following factors play a major role in design or policy decision-making for your trauma system?

In order to elucidate the role played by various factors that might be influential in decision-making for trauma system design and policy development, respondents were asked to indicate how often the listed factors had major impact using a 5-point Likert scale. The scale assigned increasing point value (1-5) to the following possible responses: never, rarely, .sometimes, often, vary often. Table 5 presents these results with amalgamation of the 'never' and 'rarely' and 'often' and 'very often' categories to create only three categories.

Table 5 Impact of various factors on trauma system decision making.

Impact of Various factors on Trauma System Decision Making			
	never / rarely	sometimes	often / very often
benchmarks or accepted standards	1	16	39
a mandate from a higher authority	5	17	34
guideline recommendations	2	20	34
evidence from scientific literature	3	22	31
political considerations	3	20	34
a critical incident	1	23	32
high quality data derived from your system	11	18	29
the strong opinion of an influential individual	8	23	26
cost data	13	22	21
moderate quality data derived from your system	7	31	17
poor quality data derived from your system	25	19	13

Figure 21 Impact of various factors on trauma system decision making.

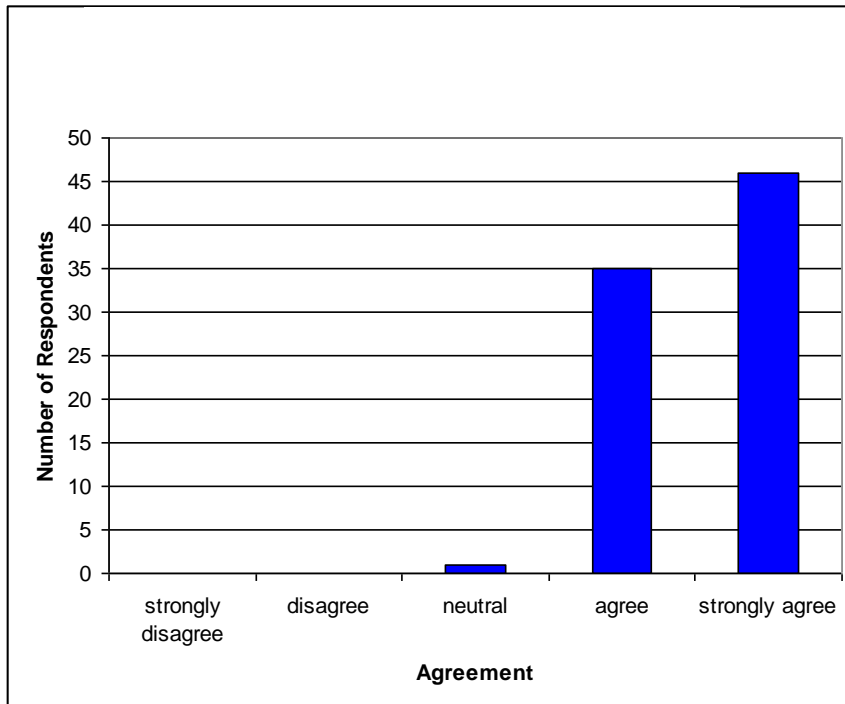


Question 15 Goal of policy

Do you agree that policy, design and system management decisions for organized injury management should maximize overall trauma system effectiveness?

Respondents were asked whether they agreed that design and system management decisions for organized injury management should maximize overall trauma system effectiveness using the following 5-point Likert scale: strongly agree, agree, neutral, disagree, and strongly disagree.

Figure 22 Number of respondents agreeing that trauma system decisions should maximize overall system effectiveness.

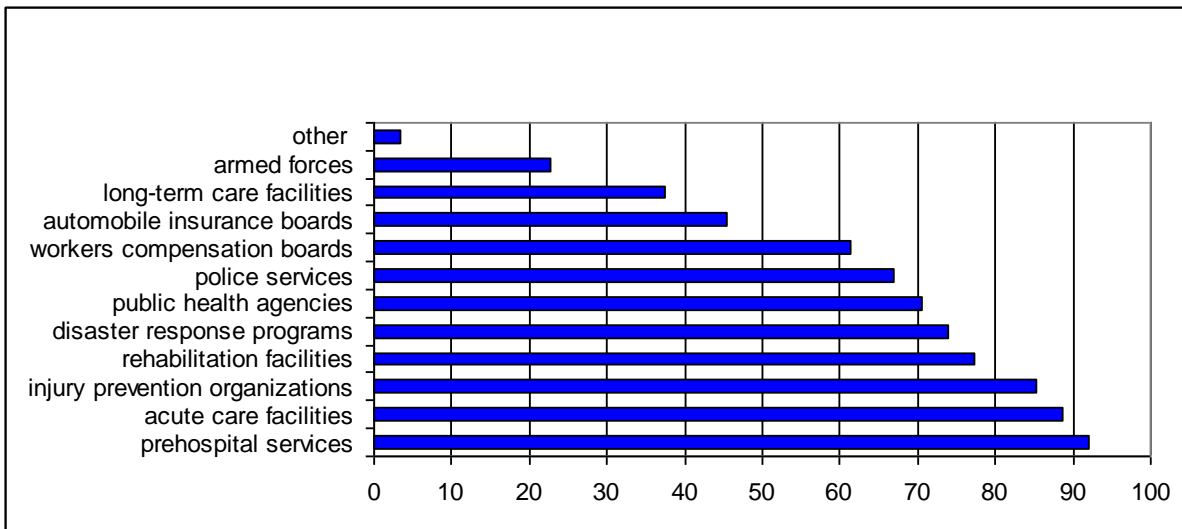


Question 28 Policy contributors

Which of the following organizations do you feel should collaborate in a formally coordinated manner to develop policy for injury control within a regional trauma system?

Respondents were asked to indicate which generic organizations they felt should collaborate in policy development for regional trauma systems from the following: emergency medical services (EMS) / pre-hospital services, acute care facilities, rehabilitation facilities, long-term care facilities, injury prevention organizations, workers compensation boards, automobile insurance boards, public health agencies, police services, disaster response programs, armed forces, other (specify). Over 80% felt acute care facilities, pre-hospital services and injury prevention programs must collaborate. Between 70-80% felt that rehabilitation facilities, public health agencies, police services and disaster response programs should also work together on trauma system policy and design.

Figure 23 Support for collaboration with injury-related organizations to develop a regionalized system of trauma care.



4.2.6 Perceptions of trauma system reporting

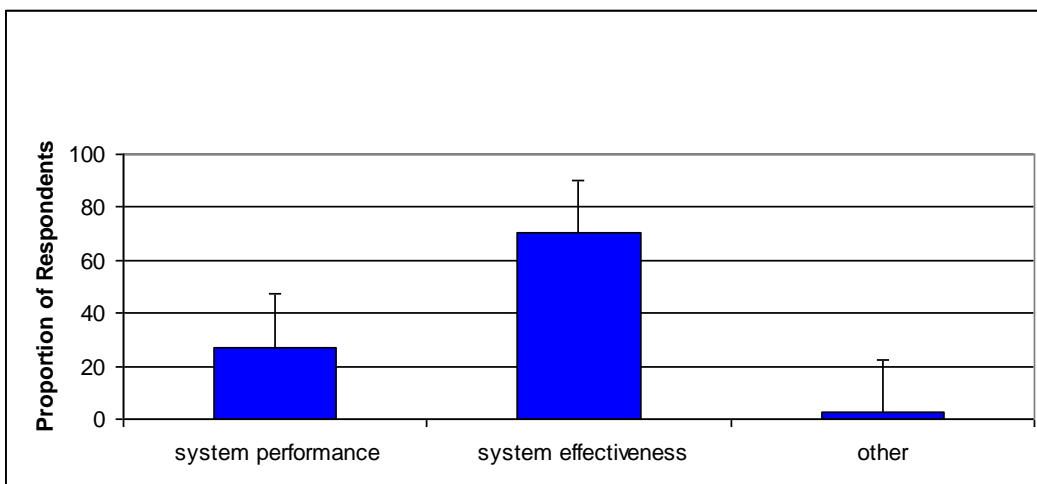
Six questions addressed respondents' perceptions of reporting on trauma systems.

Question 16 Emphasis in system reporting

Given that the association between system processes and desired outcomes is frequently unsubstantiated, where do you feel the emphasis should be placed in trauma system reporting?

Respondents were asked to decide between performance and effectiveness as the preferred aspect for emphasis in trauma system reporting. Respondents were allowed to volunteer a different area for emphasis by selecting 'other', but only 1 of 60 respondents did so without specifying an alternative. 70.4% (65.5, 75.3) of respondents chose effectiveness and 27.2% (22.3, 32.1) chose performance as the main focus of interest in reporting on trauma systems. This difference is statistically significant at the $\alpha = 0.05$ level.

Figure 24 Where emphasis should be placed in trauma system reporting?

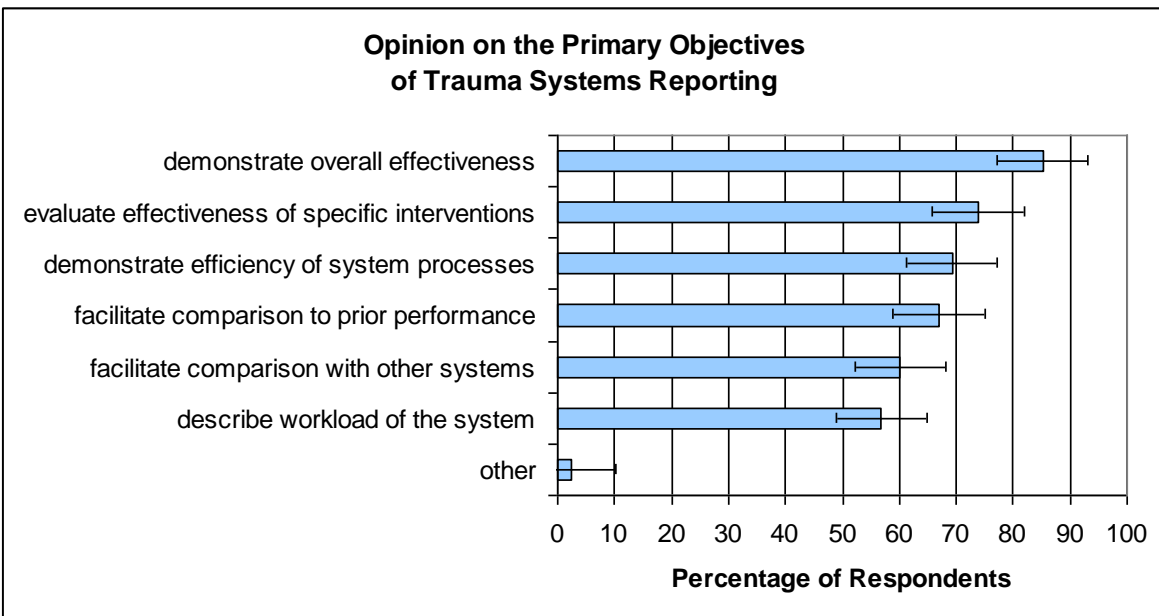


Question 27 Objectives of system reporting

What do you consider to be the objective(s) of performance reporting on your trauma system?

Respondents were asked to identify what they considered to be the objective of performance reporting for trauma systems by selecting all appropriate answers from the following responses: describe workload of the system, demonstrate overall effectiveness, demonstrate efficiency of system processes, evaluate effectiveness of implemented strategies or specific interventions, facilitate comparison to prior performance, facilitate comparison with other systems, other (specify). The majority of respondents (91.5 %) cited demonstration of overall system effectiveness as the primary objective of reporting. There was more than 50% support for all other listed objectives. The single respondent who listed 'other' cited the validation of quality indicators as another reporting objective.

Figure 25 Primary objective of a trauma system.

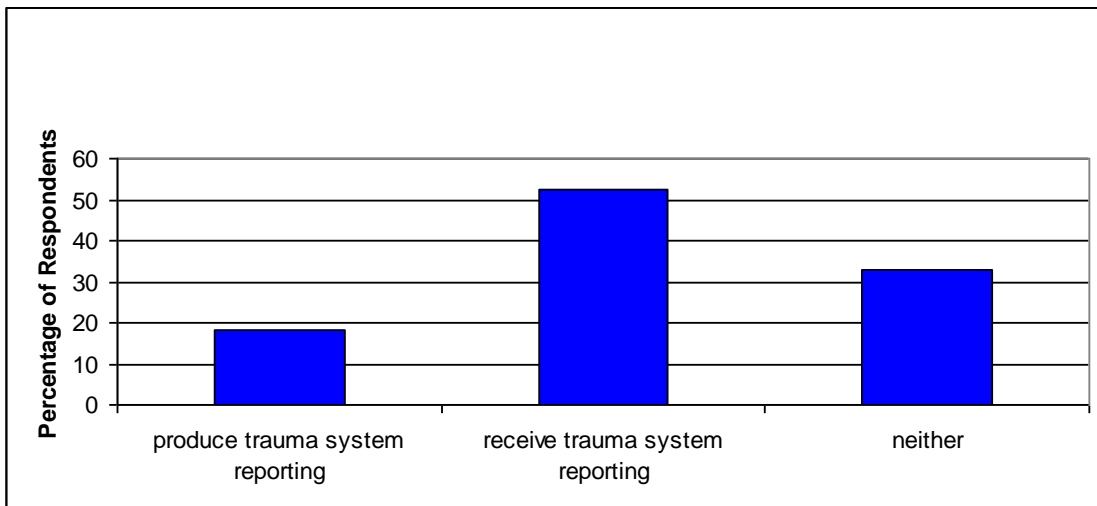


Question 20 Receive or produce reporting

Do you produce and/or receive regular reporting on organized trauma care / injury management?

Respondents were queried about their experience with trauma system reporting by selecting appropriately from the following options: I produce reporting on organized trauma care / injury management, I receive reporting on organized trauma care / injury management, or neither of the above. Approximately half (52%) received reports, 15% produced reports, and 32% neither received nor produced them. Figure 26 displays these results.

Figure 26 Proportion of respondents who produce or receive trauma system reports.

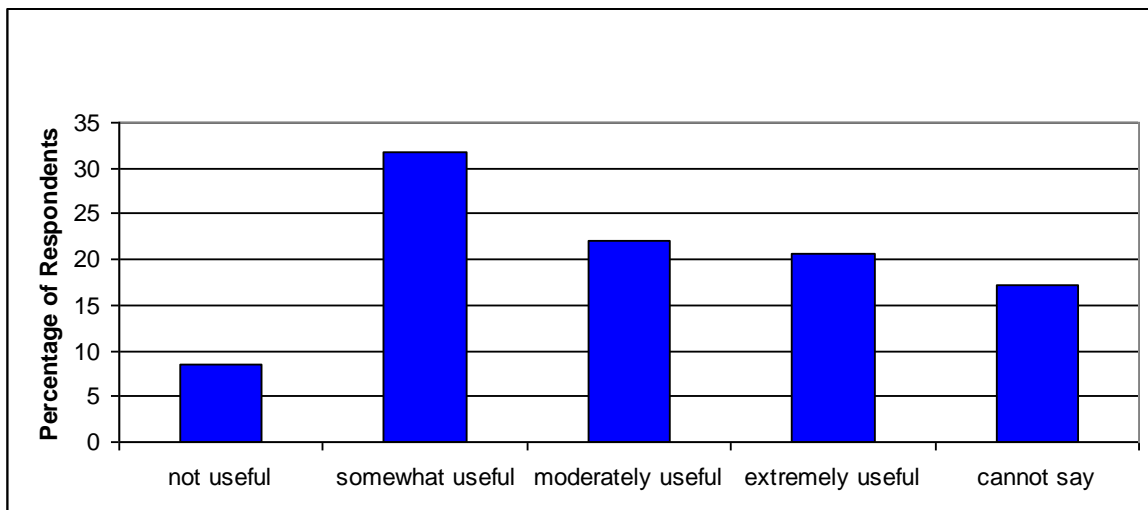


Question 21 Usefulness of reporting

How useful do you consider currently available reporting on your trauma system as an aid for decision making about policy, planning and design within your jurisdiction?

Respondents were asked to judge the usefulness of trauma system reporting as an aid to decision making about policy, planning and design within their jurisdictions using a 4-point Likert scale ranging from 'not useful' to 'extremely useful' with a 'cannot say' option. The majority of respondents claimed reporting was somewhat useful, with a small proportion (8.5%) declaring them 'not useful' and just over one third finding them moderately useful' (20%) or 'extremely useful' (15%). Figure 23 depicts displays these findings. Conservatively reassigning the 14 who replied 'cannot say' to the 'extremely useful category, the proportion that felt reporting was only moderately useful or less was 67.7% (95% CI 58.2, 77.2) versus no ore than 32.3% (95% CI 22.8, 41.8) which is a statistically significant difference suggesting that less than one-third of decision makers consider current reporting on trauma system performance to be extremely useful.

Figure 27 Usefulness of trauma system reporting for decision making.

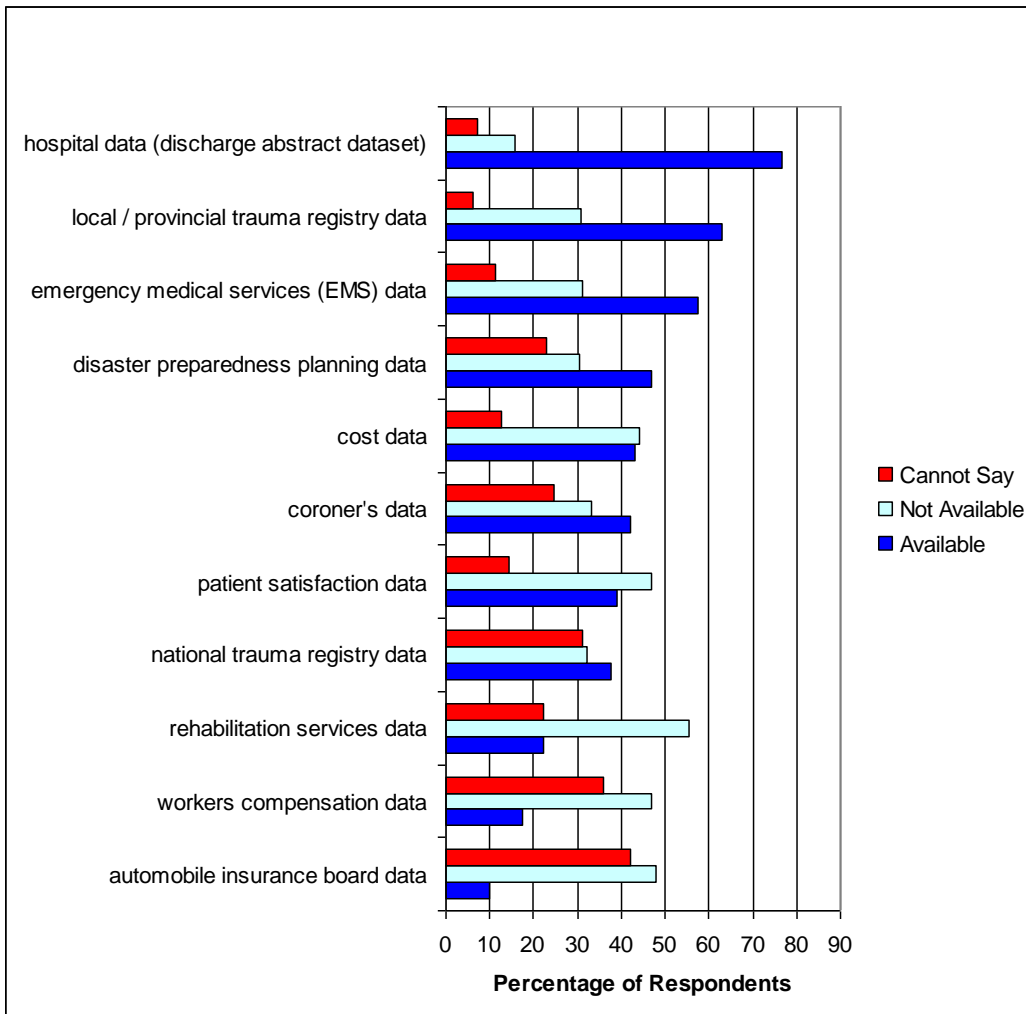


Question 22 Available data

For each type of information relating to injury management listed below, indicate whether it is available to you as part of reporting on your trauma system.

Respondents were asked to provide information on the sources of data used in compiling the trauma system reporting that they encounter. Specifically, they were asked whether or not they knew if the listed data sources were used for reporting on the trauma system in their jurisdiction. Response options were: yes, no, and don't know. At the same time, they were asked to state whether or not they felt the listed data sources should be available for reporting on trauma systems. Results are shown in Figure 28.

Figure 28 Availability of data sources for trauma system reporting.

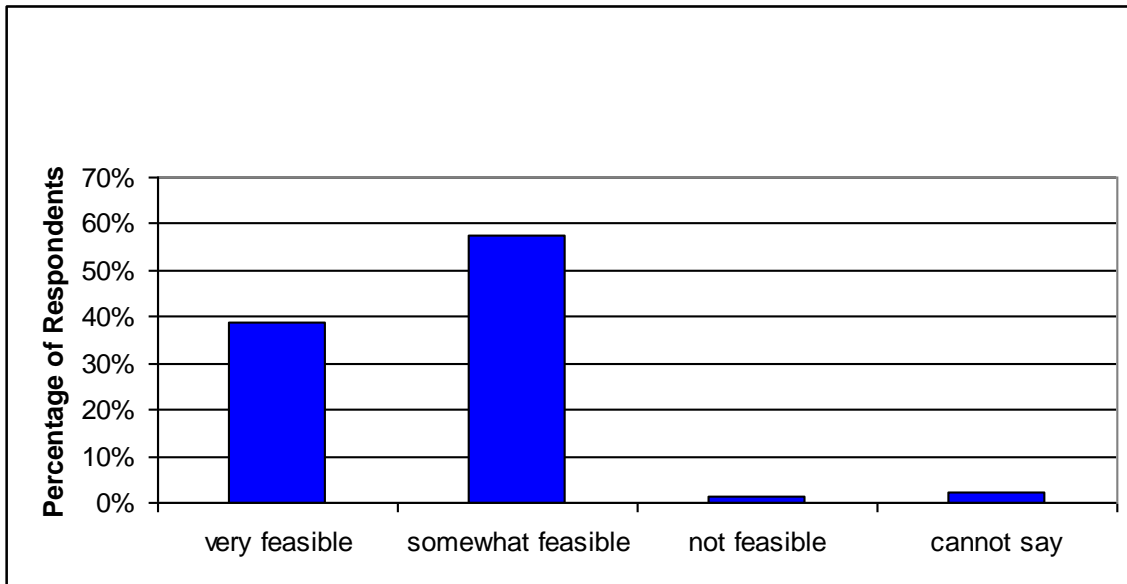


Question 29 Feasibility of improved reporting

How feasible do you think it is to improve the quality of reporting on trauma system performance in your jurisdiction?

Respondents were asked to indicate how feasible they considered improvement of trauma system reporting in their jurisdiction by selecting one of the following responses: very feasible, somewhat feasible, not feasible, cannot say. No respondents felt it was not feasible to improve on trauma system reporting, The majority, 58%, felt it was somewhat feasible, and 38% felt it was very feasible.

Figure 29 Estimation of the feasibility of improving trauma system reporting.



4.2.7 Indicators of trauma system effectiveness

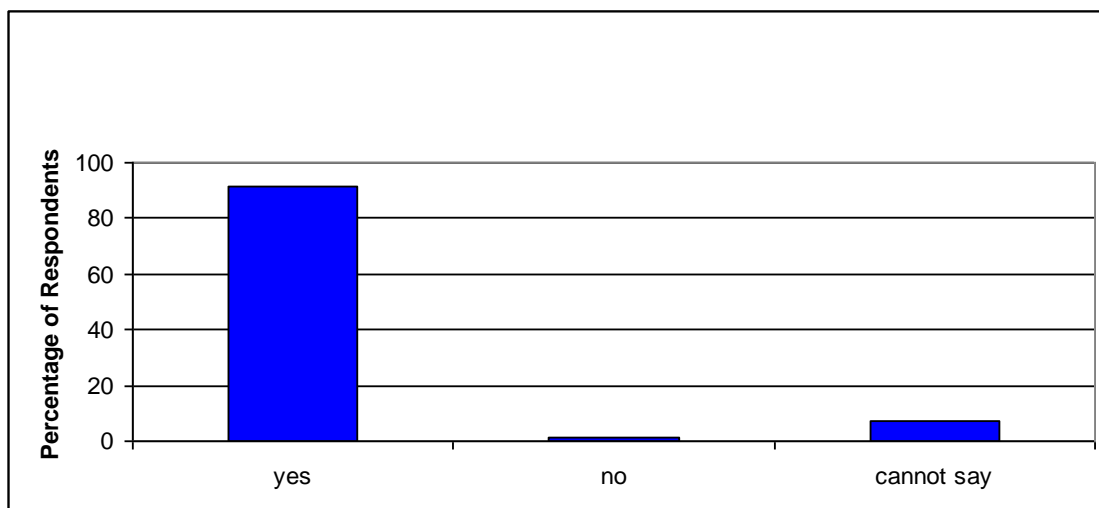
Five questions were asked addressing beliefs about trauma system effectiveness.

Question 25 Comparative indicators

Do you feel that regular performance reporting should use standard indicators and benchmarks to enable inter-system comparisons?

Respondents were asked if regular performance reporting should use standard indicators and benchmarks to enable inter-system comparisons. 91.5% (75/82) answered affirmatively, 1.2% (1/82) did not feel benchmarks should be used and/or that national comparisons should be made, and 7.3% (6/82) could not say. Figure 25 displays these results. If the 6 who were uncertain are dropped from the analysis, then 98.7 (95% CI 96.1, 101.3) support the use of standard indicators to enable inter-system comparisons while only 1.2% (95% CI -1.4, 3.8) do not.

Figure 30 Should standard performance indicators be used to enable inter-system comparisons?

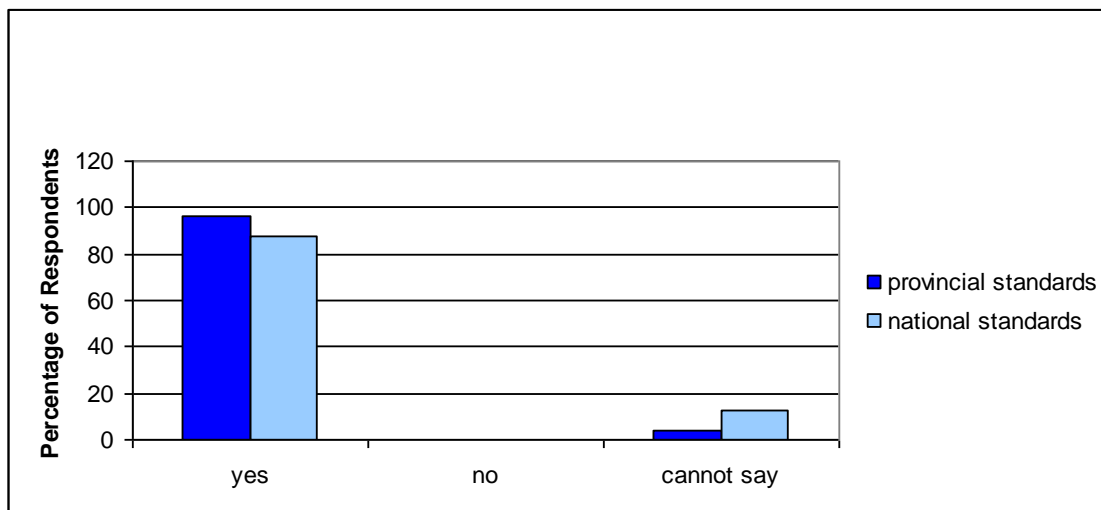


Question 26 Provincial / national standards

Do you feel there should be defined trauma system performance standards at the provincial and/or national level?

Respondents were asked if there should be defined national or provincial performance standards at the provincial and/or national level. Approximately 90% felt that standards were appropriate at both levels: provincial, 94% and national, 88%.

Figure 31 Perception of need for trauma system performance standards.

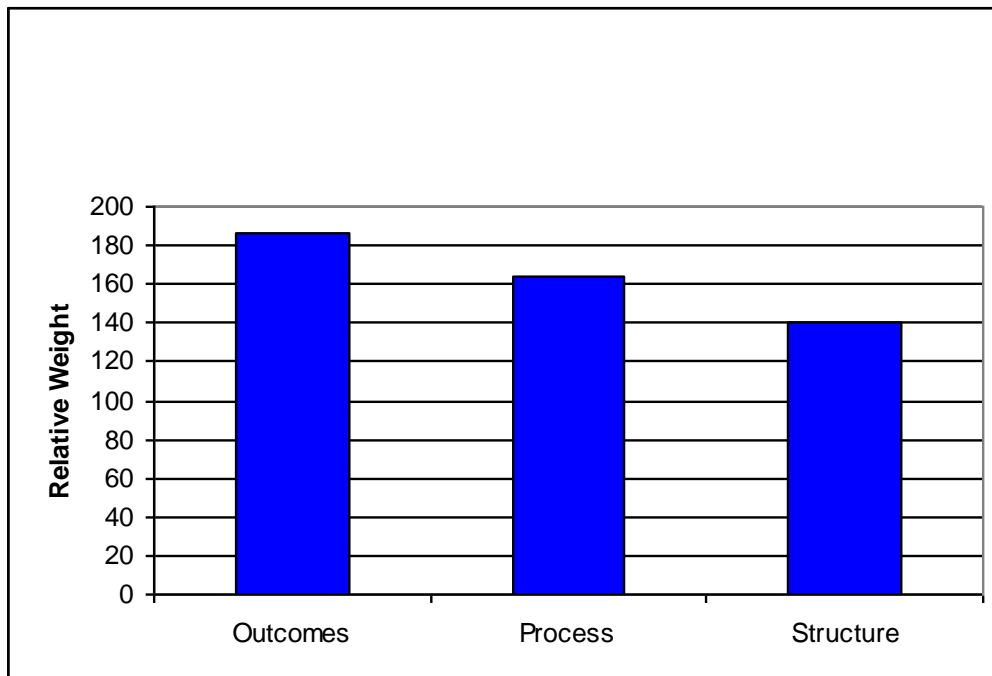


Question 23 Structure, process, outcome

Rank indicators of STRUCTURE (facilities, equipment, human resources), PROCESS clinical protocols, care paths) and OUTCOMES (results of injury management) in order of practical importance to you as markers for trauma system effectiveness.

Respondents were asked to rank structure, process and outcomes in order of importance to them as markers for gauging trauma system effectiveness. Each first position rank was assigned a score of 3, each second position rank a score of 2 and each third position rank a score of 1. The scores were totaled for each type of indicator and the results represented in graph form in Figure 32. Findings indicate a relative prioritization of outcome indicators first, process indicators second, and structure indicators third. The difference in cumulative scoring for all three indicators appears narrow enough, however, to suggest that all three indicator types are valued.

Figure 32 Perceptions of ranked importance of structure, process and outcome indicators to guide trauma system development.



Question 24 Preferred performance indicators

On a scale of 1-5, how valuable do you consider each of the following as measures of trauma system effectiveness?

Using a 5-point Likert scale where 1 = unimportant, 2 = neutral, 3 = important, 4 = very important, and 5 = extremely important, respondents were asked to indicate how valuable they considered each of the listed indices as measures of trauma system effectiveness. A 'cannot say' option was available. For ease of reporting, responses were combined into 4 categories: (1) very important or extremely important (2) important, (3) neutral or unimportant, and (4) cannot say. Results are presented in graph form in Figure 31. Timeliness of care, access to care, severity-adjusted hospital survival and preventable deaths were prominent as preferred indicators of system performance. Self-reported health status was least important. Measures of functional recovery following injury such as Functional Independence Measure (FIM), quality and disability adjusted life years (QALY, DALY) were intermediate in importance.

Figure 33 Decision maker perceptions of the importance of specific performance indices of trauma systems reporting.

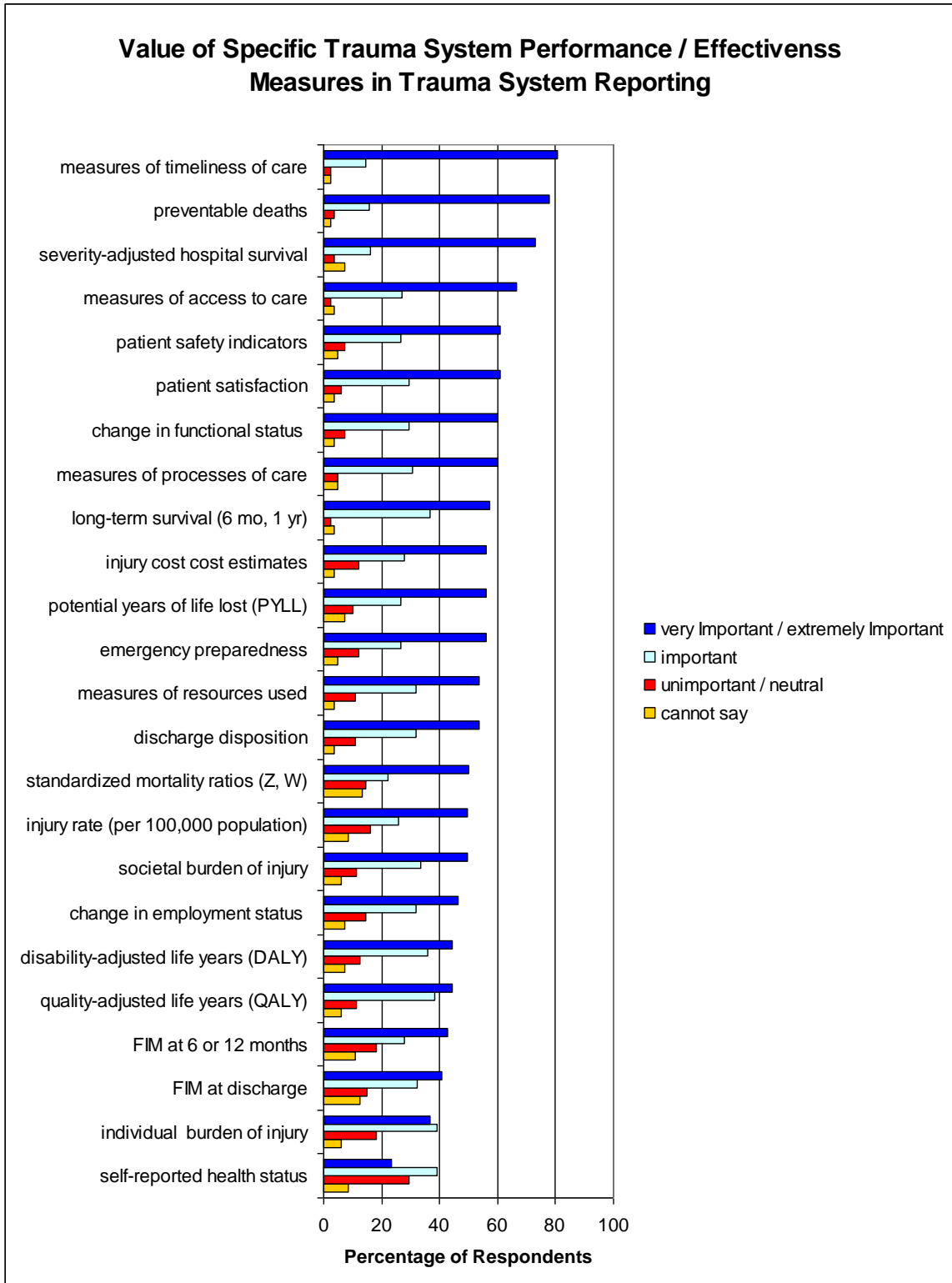


Table 6 Decision maker perceptions of importance of specific indices of trauma system performance.

RANK	INDICATOR	%	95% CI
1	timeliness of care	57.3	46.4, 59.2
2	preventable deaths	57.3	46.4, 59.2
3	severity-adjusted hospital survival	55.6	44.5, 66.7
4	access to care	48.9	37.8, 50.0
5	patient satisfaction	46.3	35.3, 47.4
5	safety indicators	46.3	35.3, 47.3
6	long-term survival	45.1	34.1, 56.1
7	emergency preparedness	42.7	31.8, 53.6
8	processes of care	42.6	31.7, 53.5
9	change in functional status	41.5	30.6, 52.4
10	resources used	39.2	28.4, 50.0
11	potential years of life lost (PYLL)	37.8	27.1, 48.5
11	estimates of cost of injury	37.8	27.1, 48.5
11	societal burden of injury	37.4	26.7, 48.1
12	discharge disposition	35.4	24.8, 46.0
13	standardized mortality ratios (Z and W scores)	35.4	24.8, 46.0
14	injury rate per 100,000 population	33.3	22.8, 43.8
15	change in employment status	32.9	22.5, 43.3
16	quality-adjusted life years (QALY)	30.9	20.6, 41.2
17	disability-adjusted life years (DALY)	29.6	19.4, 39.8
18	functional independence measure (FIM) at 6 or 12 months	29.3	19.2, 39.4
19	individual burden of injury	28.0	18.1, 27.9
20	functional independence measure (FIM) at discharge	25.9	16.1, 35.7
21	self-reported health status	15.9	7.8, 24.0

4.2.8 Respondent feedback on the survey

Question 34 Respondent feedback on survey

*We would greatly appreciate your feedback on this survey. Respond for each item.
(1 = strongly disagree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly agree).*

Using a 5-point Likert scale with 1=strongly agree, 2=agree, 3=neutral, 4=disagree, and 5=strongly disagree, respondents were asked to provide feedback on completing the study by indicating their agreement with 4 statements: (1) The survey addressed relevant issues (2) The survey was easy to answer (3) The questions were clearly expressed, and (4) The survey length was reasonable. Results are presented as percentage of responses in graph form in figures X-Y.

The majority of respondents agreed that the survey addressed relevant issues (57.5% agree, 23.8% strongly agree). Only 2 respondents felt the survey topic was not relevant. Similarly, 65.4% agreed or strongly agreed that the survey questions were easy to answer. 17.3% disagreed or strongly disagreed, and 17.3% were neutral. A similar distribution of responses was obtained regarding clarity of the questions asked (64.2% agreed or strongly agreed). Over 75% considered that the survey was reasonable in length (43.2% agree, 33.3% strongly agree).

Figure 34 Relevance of the survey

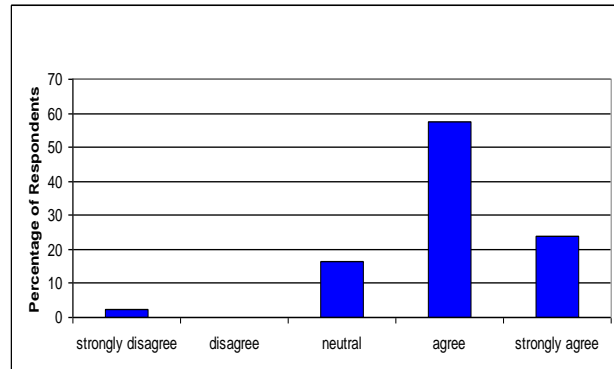


Figure 35 Survey was easy to answer

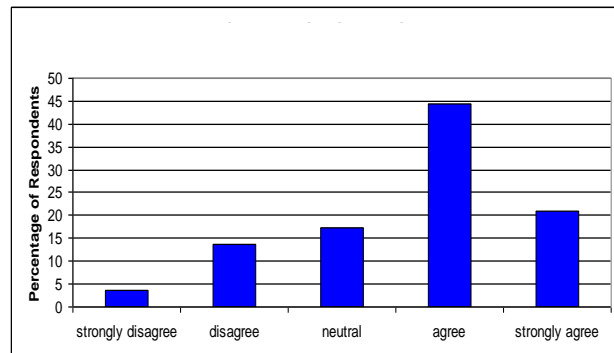


Figure 36 Survey was clear

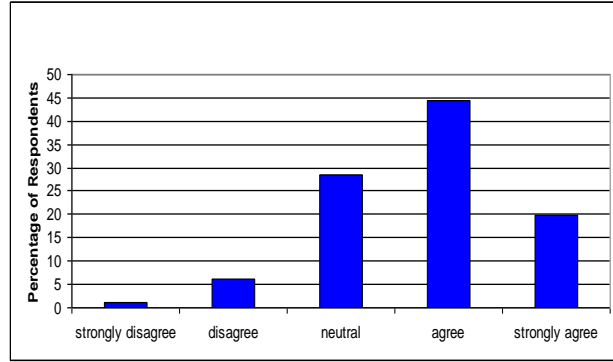
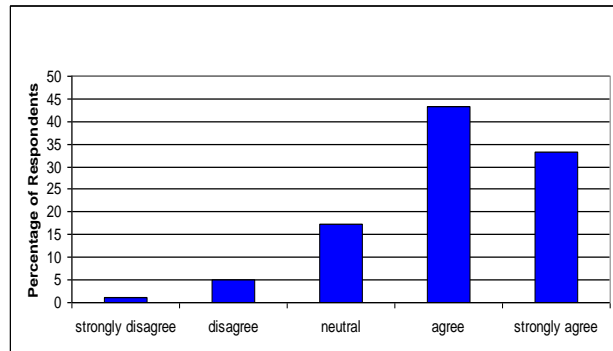


Figure 37 Survey length was reasonable



Question 35 Respondent's comments

Do you wish to add any comments?

Of the 82 respondents, 12 (14.6%) made meaningful comments when provided the opportunity at the conclusion of the survey. These could be separated into those pertinent to the experience of completing the survey and those pertinent to trauma systems in Canada. These are listed below:

Comments by respondents on the survey

- I had to carefully read many of the questions repeatedly.
- Some of the questions did not provide options which are more feasible and/or appropriate for a jurisdiction of 33,000 people
- I was answering on behalf of a small health region in Northern Saskatchewan. The one aspect of the survey that impacts us that didn't seem to be addressed was the inter-regional supportive structures for trauma
- Question 33 asks MY opinion of relative priority, my sense is that trauma is less top of mind for a large segment of the public and therefore for government and politicians
- Would like some room for narrative qualifiers to answers given. Recognize difficulty in collating narratives.
- Survey asks leading questions which will result in significant bias
- bumped off site twice
- Too long
- Opportunity to provide comments while answering questions would have been appreciated, although added burden for data compilation and analysis.

Comments by respondents on trauma systems in Canada

- I would not advocate for a separate agency for trauma. EMS and pre-hospital is already a kingdom of it's own in Ontario, existing in isolation from the rest of the system.
- As a small region we also lack a lot of the resources that other individuals have access to and take for granted (such as rehabilitation services).
- We really don't have a trauma system in Canada. we have a myriad of providers who do there best to provide trauma care at all levels

5. DISCUSSION

This study sought to understand the informational needs of health system administrators responsible for design and policy development of regionalized systems of trauma care in Canada. Specifically, the study aimed to determine if there was broad national agreement on what a trauma system is, what it should do, and how performance of the system should be measured and reported in order to best assist decision makers consider and implement interventions with a high probability of achieving desired goals for the system. Over two-thirds of respondents found the survey to be pertinent, asking clear questions which were easy to answer in a reasonable amount of time.

5.1 Profile of respondents

Overall, the study garnered fairly broad representation from trauma system decision makers across the country. With the exception of the Northwest Territories, Nunavut and, most notably, Quebec, there was fairly proportionate representation from all other provinces and territories. Similarly, there was also a fairly even distribution of functional decision-making roles and training / educational backgrounds among respondents. Approximately half of respondents considered that they had more than 5 years experience as trauma system decision makers or influencers, and a quarter had over 10 years experience. Respondents demonstrated a broad range of responsibilities covering all potential trauma system elements listed in the survey with at least 30% of respondents claiming some degree of authority or influence over most domains. Only rehabilitation medicine and legislation were represented at less than 30% (25% and 15%, respectively). There was also good participation from respondents with influence over both adult and pediatric trauma systems. The majority of those surveyed, over 75%, felt the trauma systems within which they worked were well-defined or extremely well defined. This enhances the validity of the study in that the information collected was largely from a sample frame with practical knowledge of organized trauma care in a region of Canada.

5.2 Canadian decision makers' perceptions of the ideal trauma system

The major aim of this research was to establish the perceptions of an ideal trauma system held by current decision makers responsible for trauma care across Canada. For the purposes of discussion, the term 'trauma system' is used in the broadest sense to mean a regionally organized system of injury management and control.

Although limited in its precision, this research demonstrated important areas of congruency, and also of variance, in the perceptions of decision makers. The specific issues raised for clarification included defining (1) the principal objectives of a trauma system (2) the intended scope of organized trauma care (3) the component elements collaborating to achieve the principal objective, and (4) the preferred overseer of system performance. There is currently an absence of clarity around these basic issues in Canada, as elsewhere, with the important result potentially being effort made at crossed purposes from different levels of organization.

A collectively understood and endorsed notion of the overriding objective of an organized system of injury management is critical because a system may be configured considerably differently depending on how this is defined. In the survey, respondents were forced to choose one overriding objective from a list of four reasonably tenable alternatives for the principal objective of a trauma system. In keeping with reduced wait times and improved access as a first priority of the 2003 First Ministers 10-year plan for improving health care in Canada, a small majority of respondents 43.9% (95% CI 32.9, 54.9) chose 'ensure delivery of rapid appropriate care' as the overarching objective. Nearly as many, 31.7% (95% CI 21.4, 42.0), however, chose 'minimize the individual and societal burden of injury' as the highest priority. Although perhaps superficially congruent, these two objectives, not distinguished in importance statistically, imply considerably different performance metrics. Current systems are presently very much geared to quantifying measurable elements of the timeliness and delivery of care, but nowhere is the burden of injury measured, either individually or societally, in an ongoing manner that informs practical decision making about system design and improvement.

The two other options offered as primary objectives were selected by a significantly lower proportion of respondents. 'Maximize survival after injury' and 'minimize incidence of injury' were both identified equally by 12.2% (95% CI 5.0, 19.4) of respondents. Interestingly, these least preferred options reflect the two comparative indices currently available nationally to compare system performance: survival at hospital discharge collected from hospital discharge abstract datasets (DAD) by the National Trauma Registry (CIHI), and the incidence of major injury gauged by admission for injury to an acute care facility reported by Statistics Canada, also using the DAD. Only one respondent exercised the option to choose 'other' and cited 'all' as the primary objective.

The conclusion is that both processes that assure expedient care AND some qualitative assessment of the outcomes they portend for both individuals and society are both perceived to be important objectives of organized systems of trauma care by respondents to this survey. The

following section on measuring and reporting performance discusses in detail further support from the results for this finding.

Most respondents (69.9%) indicated that minor injury should be included in the planning and design of Canadian trauma systems. Defined as low-level single-system injury not requiring specialized care, minor trauma is generally not addressed in current trauma system planning, and certainly its impact is not routinely measured or managed. Such an enlarged scope would impose a considerably different emphasis on the measurement of trauma system effectiveness than currently exists, as many of these patients do not require hospital admission and are difficult to track.

With the primary objectives framed, the scope and constitution of trauma systems becomes materially important. Asked which agencies and organizations should collaborate to develop trauma system policy, each of the following received the support more than half of respondents: pre-hospital services (92%), acute care facilities (89%), injury prevention organizations (85%), rehabilitation facilities (77%), disaster response programs (74%), public health agencies (71%), police services (67%), and workers compensation boards (61%). The clear message is for a broadly inclusive integrated system working cooperatively towards a shared goal. In reality, however, regional trauma system boards have limited, if any, functional relationship with organizations outside of pre-hospital services and acute care facilities.

The finding of unanimous support for the Trauma Association of Canada definition of a trauma system as '*a preplanned, organized, and coordinated injury control effort in a defined geographic area which (1) is publicly administered, funded and accountable (2) engages in comprehensive injury surveillance and prevention programs (3) delivers the full spectrum of trauma care from the time of injury to recovery (4) engages in research, training and performance improvement and (5) establishes linkages with an all-hazards emergency preparedness program*'⁶⁷ is important. 100% of respondents either agreed or strongly agreed with this definition without awareness of its origin.

The Trauma Association of Canada, much like the American College of Surgeons Committee on Trauma (indeed, the former was arguably borne of the latter), is a self-mandated national advocacy group of clinical experts promoting modern concepts of systematized injury management that has become practically authoritative on trauma care and trauma systems in Canada without formal governmental endorsement. With the exception of Quebec, which was severely underrepresented in this study, no health ministry requires the upholding of predetermined standards in the delivery of organized trauma care.

This study identified very strong support for the role of government oversight of trauma systems in Canada with 79% of respondents agreeing or strongly agreeing that, 'to achieve the objectives of a trauma system, a lead governmental agency authorized to develop policy is required to ensure appropriate system planning, resourcing, implementation, coordination and evaluation' – a viewpoint taken from the TAC accreditation guidelines document. Additionally, 96.3% agreed with the need for provincial standards for trauma systems, and 87.7% agreed with a need for national standards. Consistent with this was the finding that 82.5% agreed or strongly agreed that external accreditation of trauma systems and trauma facilities should be required.

The Public Health Agency of Canada and Health Canada both recognize mandates to control injury at a national level, but support for either in an formal oversight role was not strong (less than 35%) suggesting a need for discussion in the appropriate forum if such a role were to be developed and formalized.

The study's findings in regard to its first objective, the determination of current decision makers' perception of the ideal Canadian trauma system, lead to the following conclusion:

Decision makers responsible for regional trauma systems in Canada believe that the ideal trauma system should coordinate multiple agencies influential in injury management around clear system objectives that address both major and minor trauma, and that government endorsed national standards are needed to ensure efficient and effective processes that reduce the individual and societal burden of injury.

5.3 Defining the information needs of decision makers

The second major objective of this research was to describe the informational needs of Canadian trauma system decision makers. An informal review of available hospital-based and regional trauma program reports found variability in reporting format and content, and unpublished data³⁰ demonstrates that regional trauma systems across Canada are organizationally dissimilar. Given a strong signal from federal and provincial/territorial health ministries for target-driven comparable systems of care across the country, it is critical that policy and design for organized systems of injury management and control be driven by coherent, meaningful and obtainable indices of performance.

Further insight into the nature of data required to support these indices can be obtained by considering the policy-relevant issues identified in this study in terms of the key stakeholders and overriding system objectives.

A principal conclusion of this research is that decision makers at all levels perceive the ideal trauma system to require a number of clearly identified component elements. While trauma system development has always placed a major emphasis on pre-hospital and acute care because of the immediacy of need each addresses, decision makers also communicated strong support for collaboration with organizations representing injury prevention, rehabilitation, disaster response, public health, police services, and workers compensation. Although the study did not investigate the degree of collaboration among these key elements across regions, it did reveal the perception of an absence of data referable to them suggesting that optimally effective system-level collaboration towards unifying goals is improbable. To clinical and academic advocates of organized systems of injury care, the finding that trauma systems should, as promoted by the Trauma Association of Canada, coordinate the activities of essentially all agencies and organizations involved in injury management is not at all surprising. That this concept is also endorsed by decision makers at the health ministry and regional health authority level, however, is extremely important.

Ten survey respondents identified highest functional roles at the health ministry level, and fully 50% confirmed administrative roles at the hospital, regional health authority and ministry level. As most of these individuals would not be directly familiar with the clinical and academic literature on trauma systems, it can be inferred that the need for coordinated intersectorality among all key components to achieve a comprehensive injury management system is recognized and endorsed by health system decision makers responsible at all levels for trauma care across Canada.

5.4 Policy challenges and intersecting domains

Looking at the policy-relevant issues identified by decision makers as pertinent, it is important to note that most intersect with several of the key system elements. Categorizing these themes by system component is helpful in understanding the types of informational support likely to be required by decision makers trying to address them.

5.4.1. Injury control

Most (76%) respondents identified the implementation of injury prevention strategies as an important concern for decision makers. Apart from the need for surveillance strategies and comprehensive information management systems, few of the issues raised voluntarily by respondents were otherwise specific to injury prevention. This may be an issue in itself in that it reveals what may be a relative absence of prevention-focused objectives among trauma system overseers. That decision makers still acknowledge injury prevention as a primary system element, however, provides a starting point for better integration of injury prevention strategies in achieving global system objectives. Clearly, well-developed data gathering and processing strategies will be required to drive interventions targeting injury prevention and, more importantly, confirm their impact on the overarching primary goal of the system as determined by stakeholders. The need for better advocacy for injury control is directly tied to expanded data gathering and feedback of information.

Challenging this further would be an expansion of scope to include minor trauma as most decision makers responding to this survey perceived appropriate. It has been reported that there are approximately 31,000 hospitalizations for injury in British Columbia annually, this on a background of 400,000 injuries² total each year. Understanding burden of injury, however measured but quantified nonetheless, is clearly necessary for decision makers identifying active injury prevention strategies as a key element of trauma systems.

5.4.2. Pre-hospital care

A large number of policy and design challenges intersect with the emergency medical services domain. These include the elaboration and implementation of field triage protocols, communication systems, levels of training for paramedics, decisions about mode of transport and transfer (ground versus air), receiving hospital designation, inter-regional support and transfer agreements, and disaster response planning. Data collection was identified as a policy-level EMS challenge. This resonates across Canada where the demand placed on front-line service providers to record non-clinical data has been problematic. Sophisticated and costly information management systems are required and not widely available. This is particularly an issue in British Columbia at present. The need for resources to support training, certification, and continuing education cited for EMS systems also arises in other domains.

5.4.3. Acute hospital care

In general, acute hospital-based care strategies for major trauma are well developed across Canada, although there are still important regional deficits. Funding challenges at this level were cited by many respondents as an overriding issue. This is a reflection of both the evolving complexity of modern trauma care and health systems management at the acute care level which require considerable structural and human resources support. The subtext here is that cost data meaningfully linked to the processes and outcomes of organized injury care need to become more regularly used in a manner that demonstrates the value of processes to generate desired outcomes. A major theme of the regional health authority annual reports reviewed for this work, as well as national strategic documents, was system sustainability. Nowhere will this consideration exert more pressure for demonstrated value than at the acute care level.

Developing a tiered response to injury management within a defined geographic region is the cornerstone of modern trauma systems, but how the advanced techniques and strategies of multidisciplinary clinical care developing in modern tertiary-level trauma referral centers becomes available to the full network of local, rural, and remote community hospitals that first receive half of all patients that enter the system is at the heart of the sustainability challenge.

This study clearly identified access to care as an issue that decision makers struggle to develop durable policy around, and for which valid and reliable system-level information is truly required. There is no question that access to timely and appropriate care, the primary system objective identified in this study, will challenge decision makers' obligation to assure equity, timeliness of care and sustainability. Policy-relevant information management systems more finely tuned to overarching system outcome goals are clearly required to assist decision makers.

5.4.4. Rehabilitation

While much progress has been made widening the front doors of the tertiary level trauma hospitals and trauma programs that captain Canada's regional trauma systems, much less work has been done on their back doors. The identification of a need for repatriation agreements and enhanced rehabilitative care for patients recovering from major injury exposes the challenge of flow-through faced by all tertiary centers. Once the definable acute medical issues are addressed, it becomes much more difficult to know how best to discharge patients to an appropriately supportive environment that will preserve their hard-fought chance of securing a good outcome after major injury.

5.4.5. Disaster preparedness

The general wisdom about disaster preparedness is that the capacity to use the routine processes and procedures of a system normally in times of excess demand are the best assurance of preparedness for all eventualities. While trauma systems form a key component of any regional disaster preparedness strategy, they are only one of several larger elements involving public health agencies, public security, and infrastructure support services. Nearly 75% of decision makers indicated that emergency preparedness overseers must be involved in shaping trauma system policy and design. How an evolving trauma system will perform under the duress of a number of anticipated disaster situations is not generally a routine part of the process of policy development for trauma systems. If one of the overriding goals of a trauma system is to ensure surge capacity and required redundancies are built in from the outset, then there must be structured and regular input from appropriate organizations, and a metric to gauge the impact of design interventions on the systems preparedness to handle disaster.

5.4.6. Workers compensation

If minimizing the individual and societal burden of injury is an important principle objective of organized injury control, then it is essential that the impact of injury on employment be accounted for. Nearly 62% of decision makers considered that collaboration with workers compensation organizations was required to set policy for a fully functional injury management system. This is consistent with the emphasis respondents placed on controlling minor injury, and it is reflected in the support for change in employment status and longer term functional outcome as important effectiveness measures for system performance. A need for better understanding of functional and economic outcomes after injury, with appropriate indices for each area, was cited as a current issue by some respondents.

5.4.7 Public health

Surprisingly, there appears to be little functional linkage between public health agencies and regionalized trauma systems. Over one-third of respondents felt there should be collaboration with public health agencies in injury surveillance and control. Moreover, a similar proportion suggested that the Public Health Agency of Canada would be the preferred overseer of trauma systems performance in Canada. The need for advocacy in the development of public policy related to injury was raised by one respondent. As evidenced by the recent and ongoing debate in Canada about the value of a National Gun Registry, meaningful feedback about the direct

impact of public policy on injury-related health is absolutely necessary to inform rational legislation when predicated on a health or safety issue.

It is most interesting that the U.S. Department of Health and Human Resources has placed injury management and trauma systems development squarely in the public health domain by tabling a complex strategy entitled 'Model Trauma System Planning and Evaluation' that proposes an elaborate matrix of core functions, benchmarks, indices and scorecards to ensure movement towards optimal effectiveness⁵¹. The potentially comprehensive oversight inherent in a nationally administered and publicly accountable approach to injury management and control would engender a structured approach that looks for value in the linking of specific processes to clear outcomes. The following excerpt underscores how fiscal accountability would be expected to drive system focus in such a setting:

Trauma systems should include all activities that are related to the prevention, education, delivery of care, and rehabilitation of the injured patient. From a financing perspective, it is essential that there be agreement and understanding of the goals and objectives of the entire trauma system. Once this general understanding is achieved, the investments and financial commitments can be matched to the desired strategies⁵¹.

5.4.8. Public security

Police services must be regarded as an agent of both surveillance and intervention that can importantly inform the design of injury management strategies. Two-thirds of decision makers in the survey considered collaboration with police valuable in this regard. As considerable expense can be directed towards enforcement and legislation, it is imperative that policy development for injury control, whether related to reduced speed limits on roadways, traffic control interventions, or strategies to eliminate impaired driving, for example, derive from valid indicators able to capture the desired of an intervention. This connects directly into injury prevention and underscores the potential efficiency of stakeholder integration through collaboration and information sharing with respect to injury control.

5.4.9. What are preferred indicators for trauma system performance?

With perceptions of the ideal trauma system somewhat clarified, the second objective of this study was to identify performance measures meaningful to decision makers as actionable guidance for redesign and policy development trauma management and injury control systems.

The study results suggest that, of 24 listed known indicators, measures of **timeliness of care, preventable deaths, severity-adjusted hospital mortality, safety, satisfaction and access to care** ranked highest, in the order listed, as preferred measures of system performance.

Timeliness of care, preventable deaths, and severity-adjusted hospital mortality appear to cluster apart from the others as significantly more preferred with near 60% support. Self-reported health status, one of two listed nationally identified health system indicators⁵⁰, ranked last with 15% support. The other, potential years of life lost (PYLL) ranked intermediately at 38%.

The notable finding is that indicators that are currently commonly used were more preferred than those that are not regularly reported or used, but nonetheless developed. This likely reflects a recognition bias. Quality and disability-adjusted life-years (QALY, DALY), long term functional independence measures (FIM), and health status which are conceptually complex and difficult to measure, were least favoured, likely because they are not presently used in any practical manner. They are still likely more meaningful than easier to obtain process indicators if system managers truly wish to understand burden of injury as suggested above. Indeed, estimates of cost and societal burden of injury ranked higher, indicating that these sorts of qualitative outcome measures are important at the macro level to system decision makers. Despite the finding that respondents ranked outcomes first, processes second, and structure third as preferred types of performance measures with practical utility in gauging system effectiveness, specific process indicators still seemed to be somewhat more preferred by decision makers than specific outcome indicators. This may reflect public pressure on institutions to demonstrate the efficiency of processes.

5.4.10. How is reporting on trauma systems used?

Closely linked to the selection of preferred system performance indicators is how they are reported so they can be used practicably to guide intervention towards achieving desired system objectives. Less than a quarter of respondents (20.7%) found current reporting they reviewed for trauma system management extremely useful. The majority claimed that it was only somewhat (31.7%) or moderately useful (22.0%), and 96.3% considered that it was somewhat or very feasible to improve the quality of reporting.

In terms of the perceived objectives of trauma system reporting, a significant majority (91.5%; 95% CI 85.30, 97.7) cited measuring system effectiveness as a primary objective of trauma system reporting. Demonstrating the effectiveness of specific interventions and evaluating system processes in general were second and third with 73.9% (95% CI 70.3, 88.3) and 69.3% (95% CI 64.75, 84.05) support, respectively. Describing workload and facilitating comparisons to other

systems and to prior performance within the same system appeared of secondary importance but still supported by 50-60% of respondents. Here again, there is a clear focus on overall system effectiveness, which must be defined in terms of achieving outcomes consistent with the primary system objectives.

When it is clarified which data is likely currently used by decision makers to evaluate trauma system performance, it becomes clear that many types of potentially usable data are not likely available. While many respondents did not know what was available (and one-third claimed neither to formally produce nor receive trauma system reporting), less than half could confirm utilizing data from many of the collaborators they previously identified as essential in a comprehensive trauma system (Figure 28). Data on cost, patient satisfaction, rehabilitation, workmen's compensation, coroner's findings, and disaster preparedness was generally known to be available in only 10-40% of cases. Surprisingly, given a strong signal that inter-regional comparison is desirable, less than 40% knew data from the National Trauma Registry to be available.

5.4.11. How are policy decisions made for trauma systems?

The development of trauma systems is a complex process, in which available information plays a key role, although multiple other factors are certainly crucial. The types of decisions challenging trauma system decision makers, for which useful data are not always available, are considerably broad. Determining the allocation of available structural, human and funding resources to implement strategies of care were identified by perhaps half or respondents as a past or future policy challenge (Table 4). When the process by which these decisions are ultimately made for these sorts of challenges was dissected, it was shown that, as might be expected, multiple factors contribute. It is telling to observe that over 30% of respondents considered that poor-quality data derived from within their own system was sometimes or very often a principal driver of decision making, and 80% felt moderate-quality data was sometimes or very often a critical factor in policy. High quality data was deemed to be often or very often the principal driver of decision making by fewer (51%) respondents. This may not seem surprising, but the findings suggest that many of the decision makers surveyed use locally-generated data of poor or moderate quality to resolve design or policy issues in their trauma systems. Considerable influence was also attributed to benchmarks, guidelines and scientific literature as drivers for system development. Given what little is known about the true value of these aids ³⁷ it is apparent that higher quality information must be generated to assure the sensible development of trauma systems. In the absence of such, it is no surprise that political considerations, critical incidents, and the strong opinions of influential individuals contribute perhaps excessively to design and policy determination. 50-80%

of respondents stated these were sometimes or very often major decision drivers. Taken together, these data support the following conclusion with regard to the study's second objective:

Canadian trauma system decision makers require a number of outcome and process indicators that evaluate the effectiveness of trauma system policy and design decisions.

Table 7 lists the major findings of this research. What is clear is that there is need for better information support anchored squarely to overall system objectives. How influential significantly improved performance measures would be to decision makers remains to be seen. It is recognized that while evidence-informed decision making for policy development requires the best synthesis of pertinent scientific evidence available, it also requires scientific evidence on context and colloquial evidence 71. This investigation helps to move decision makers closer to obtaining better scientific evidence on context for regionally organized systems of injury management and control in Canada, that is, locally-generated system level data that provides meaningful indices about the effectiveness of specific processes within a specific system.

Colloquial evidence refers to the introduction of information linked to locally relevant judgment, values, habits, traditions, and biases that are applied to scientific and contextual evidence. Effective decision making will assimilate all of these elements in a transparent deliberative process that is widely endorsed by all stakeholders.

Table 7 Acquired information about decision makers' perceptions and needs regarding organized systems of trauma care in Canada

Information gap	Finding	Implication
Extent of support for the concept of a trauma system as a multifaceted collaboration of injury-relevant agencies	Strong support for building broadly inclusive systems.	Better functional linkages to partners, and better data linkages needed
Extent of regional support for government oversight. of trauma systems	High level of support	National dialogue on trauma system oversight
Level of support for provincial / national performance standards that would facilitate inter-regional comparisons.	Strong support for national standards and inter-regional comparisons	Inter-regional consensus and collaboration to develop performance standards.
Identification of most policy-relevant system performance indicators	A broad range of process and outcome indicators are of interest.	Need consensus on practical measures of burden of injury
Importance of minor trauma as a concern of trauma systems.	minor trauma considered important	Need more extensive collaboration of uninvolved partners

5.5 Limitations of the study

As with all surveys, this one is accorded several important limitations which must be accounted for in the interpretation of study results.

There is likely important coverage error in the study due to mismatch between the target and frame populations. The target population for the study was all health ministry representatives, hospital or health authority administrators, medical directors, or program managers in any way involved in design, management, or policy development for injury management in Canada. This is likely a large and nebulous group, and it is likely that some who wield significant influence on decision making for trauma care and injury control in Canada may hold none of the positions targeted.

Because decision making influence is difficult to characterize, a practical assumption was necessarily made that health system administrators in titled positions at all levels between local hospital trauma program director or manager and provincial health minister in all jurisdictions across Canada would constitute a reasonable sample frame to inform the questions posed by the study objectives. The total target population for this study can loosely be estimated at perhaps 1,000 individuals. This would be based on a national estimation of 140 health ministry representatives, 360 regional health administrators, 115 lead trauma hospital administrators, and a conservative addition of 400 other unidentifiable individuals with influence over trauma systems across the country.

In more detail, these calculations are based on the following rationale. At the health ministry level, there are 14 provincial and territorial jurisdictions each with an estimated 10 health ministry representatives or adjuncts (health minister and deputy ministers and advisors) responsible for large dossiers that directly pertain to injury management such as EMS, acute care services, injury prevention, rehabilitation, social services, etc. This does not include indirectly related but still relevant representation from finance, public security, transportation, etc. At the regional health authority level, there may be five influential decision makers per region involved in injury management across 72 RHA's. Counting Alberta as one RHA while Saskatchewan is counted as 14 is obviously problematic. At the lead trauma hospital level, five individuals (three hospital administrators, a trauma medical director and a program manager) for each of the identified 23 centres nationally results in an estimate of 115 decision makers at this level. Without research to describe decision making processes for expansive systems like trauma care, there is no better information on which to base these estimates and the opportunity for selection bias in simply delineating the sample frame must be considered.

There is undoubtedly selection bias in the determination of trauma system decision makers. First, many individuals and organizations that hold no formal position within the structure of a regional health system and were not included almost certainly influence decision making either directly or indirectly. This may include political organizations or lobby groups (injury prevention groups, public security (police and military), influential advisory organizations (Health Canada, Canadian Institute of Health Information (CIHI), Statistics Canada, Public Health Agency of Canada, academics and recognized experts, etc).

Second, referral bias is expected in both the respondents motivated enough to respond to the initial invitation to participate, and those who were referred by them. This may, however, work in favour of the study also, as those decision makers knowledgeable enough to be interested in the study subject very possibly have played a role in trauma system development in Canada, understand the issues well, and therefore exert disproportionately greater influence over trauma system design and operation nationally than do others considered equally valuable decision makers by virtue of title.

While it was considered that seeking feedback from all RHA's in Canada would provide geographically complete coverage, this approach would also risk a disproportionate number of responses from rural administrators associated with undeveloped trauma systems and would likely garner inaccurate information about key issues. Consider that Manitoba and Saskatchewan have 26 RHA's between them, while Alberta has, for all intents and purposes, one. The inclusion of 11 respondents from Alberta and 9 from Saskatchewan and Manitoba may have mitigated this effect.

Another source of error is non-response bias. In order to satisfactorily control this, it must be shown that the non-responders are comparable to those who responded in all ways that may influence the interpretation of results. Of 342 identified decision makers initially contacted, nearly half did not respond. It is quite probable that responders and non-responders are quite different in this instance, although there is difficult to verify.

Table 1 and Figures 2 and 3 demonstrate what can be inferred about any differences between the respondents and non-respondents of this study. By examining the titles and positions of all individuals contacted to participate in the survey, and by noting the organizations to which their e-mail addresses were linked (health ministry, health authority or hospital), it was possible to assign a province of work and, in most cases, to infer a functional role. It can be seen from the data that, in most cases, the proportion of respondents to non-respondents, whether measured by home province / territory or functional role was fairly consistent. The only notable exception is a higher

proportion of EMS respondents than non-respondents. While the present data definitely reflect an emphasis on pre-hospital policy-making issues, these certainly did not submerge the issues arising in other important domains. Indeed, the fact that a level of priority is assigned to rehabilitation and injury control by a sample frame possibly over-represented by pre-hospital participants speaks to the pervasive importance of system comprehensiveness to all decision makers.

This was a conceptually challenging survey to those unfamiliar with trauma systems and injury control. Moreover, although there were 35 listed questions, a response to 145 separate items was required, which would likely dissuade the expectedly time-pressed and/or less knowledgeable decision maker. Clearly, most respondents were highly motivated to participate, either due to an inherent interest in the subject of trauma care and/or health system decision making, or an appreciation for the novel challenge of the study as conveyed by the invitation to participate. The evidence for the former is a very favourable item non-response rate of 2.34% (less than 5% is considered acceptable⁶⁹) and the finding that 81% of respondents either agreed or strongly agreed that the survey addressed relevant issues.

The inclusion of only three responses from Quebec, when a number closer to Ontario's 24 would have been expected, is potentially quite problematic. Quebec has taken a somewhat different approach to trauma system development than the other Canadian jurisdictions and the effect this would likely have on the sample data is difficult to gauge. The major difference in Quebec is the existence of a government mandated provincial body authorized to set and enforce provincial standards for trauma care. Quebec has also developed its own trauma accreditation body similar in role to the Trauma Association of Canada in which it plays only a minor role.

Finally, there is opportunity for information bias if the intent of any of the questions was unclear or directive and so elicited unintended response. This is difficult to gauge, although it is reassuring that most respondents found the questions clearly expressed. Only one respondent commented that he/she felt the questions were occasionally leading. Another considered them 'esoteric'. In seeking consensus on very basic assumptions about trauma systems, it was necessary to establish basic premises in order to build an argument for the type of system Canadians should be constructing for injury care.

The statistical methods applied in this research assume a non-probabilistic sample which is unlikely. The application of quantitative analytical methods to qualitative data is inherently problematic. Study findings must still be considered pertinent because a relatively large proportion, perhaps 10%, of the entire target population was sampled. Furthermore, by its design,

the survey very likely captured input from a large proportion of the most influential authorities on trauma system design and evaluation in Canada.

6. CONCLUSIONS

This study identified a strong need for a national consolidation of approaches to regionally organized systems of trauma care and injury control. It further demonstrated informational gaps challenging decision makers currently responsible for trauma systems in Canada and a need for comparable performance indicators useful for evaluating outcomes confirming the effectiveness of policy and design interventions. Foremost among the needed indicators are meaningful metrics for efficient appropriate care, as well as practical measures of functional outcome, cost, and both the individual and societal burden of injury. Standardized performance reporting based on data reflecting processes within and between a broad group of collaborating organizations not currently connected is required to accomplish this. In order to render process performance indicators valuable, their association with meaningful outcomes must be understood.

In many ways, Canada affords the rare opportunity of a large-scale natural experiment to study optimal trauma system design strategies for injury management. Specifically, the universality of health care insurance, the absence of institutional competition and profit motives, the comparability of regionally distinct populations, the availability of usable national data sets, relative homology in clinical practice patterns across the country which are undistorted by exaggerated medico-legal pressures, and a far-reaching spirit of collaboration among academics and health care professionals all combine to make Canada ideal for the study and thoughtful fine-tuning of health systems design for trauma. This study suggests that a national conversation about the composition of our regionalized trauma systems in terms of the agencies and organizations able to share in goal-setting, system building and performance evaluation is needed. Work ahead would involve the creation of responsive metrics by which to gauge performance tailored to objectives that all endorse. Effort will need to be directed to how performance evaluation can be accomplished through usable network linkages. On the background of national enthusiasm for priority setting and the creation of value-driven sustainable health delivery systems, this is likely an opportune time for Canadian trauma system builders and visionaries to exercise leadership.

REFERENCES

1. Statistics Canada. *Table 102-0311 - Potential years of life lost, by selected causes of death and sex, population aged 0 to 74, three-year average, Canada, provinces, territories, health regions and peer groups, occasional, CANSIM.* (http://cansim2.statcan.gc.ca/cgi-win/cnsmcgi.exe?Lang=E&CNSM-Fi=CII/CII_1-eng.htm)
2. Listening for Direction III: National Consultation on Health Services and Policy Issues, 2007-2010 (http://www.chsrf.ca/other_documents/listening/documents/LfDIII-FINAL_ENG.pdf)
3. National Scientific Advisory Committee CIHR; Listening for Direction on Injury: Identifying priorities for research and capacity development in injury as a multi-institute strategic initiative within the Canadian Institutes of Health Research (www.injurypreventionstrategy.ca/downloads/LFDI_FinalReport.pdf; 2004 sxa)
4. Economic of unintentional injury in British Columbia; Smart Risk, 2009.
5. Measuring Injury Matters: Injury Indicators for Children and Youth in Canada – Vol. 1 British Columbia Injury Research and Prevention Unit. 2009; 1-54.
6. Evans DC. From trauma care to injury control: a people's history of the evolution of trauma systems in Canada. *Canadian Journal of Surgery*, 2007; 50(5):364-9.
7. MacKenzie EJ, Rivara FP, Jurkovich GJ, Nathens AB, et al. A national evaluation of the effect of trauma-center care on mortality. *N Engl J Med*. 2006; 354 (4): 1515-22.
8. Mullins RJ, Mann NC. Population-based research assessing the effectiveness of trauma systems, *J Trauma*. 1999; 47(3) Supplement, S59-S66.
9. Celso B, Telas J, Langland-Orban B., et al. A systematic review and meta-analysis comparing outcome of severely injured patients treated in trauma centers following the establishment of trauma systems. *J Trauma*. 2006; 60: 371-378.
10. Rivara FP, Koepsell TD, Wang J, et al., Outcomes of trauma patients after transfer to a level I trauma center. *J Trauma*. 2008;64:1594 -1599.

11. Pasquale M, Outcomes in trauma: Is there and end (result) in sight? *J Trauma*. 2008; 64:60-65.
12. Chua WC, D'Amours SK, Sugrue M, et al. Performance and consistency of care in admitted trauma patients: our next great opportunity in trauma care? *ANZ Journal of Surgery*. 2009; 79(6):443-8.
13. Cudnik MT, Newgard CD., Sayre MR, et al. Level I versus level II trauma centers: an outcomes-based assessment. *J Trauma*. 2009; 66:1321–1326.
14. Di Bartolomeo S, Valent F, Sanson, G, et al. Are the ACSCOT filters associated with outcome? Examining morbidity and mortality in a European setting. *Injury*. 2008; 39 (9):1001-6.
15. Kirkham JJ and Bouamra O. The use of statistical process control for monitoring institutional performance in trauma care. *J Trauma*. 2008; 65:1494 -1501.
16. Peitzman AB. Courcoulas AP. Stinson C. Udekwu AO. Billiar TR. Harbrecht BG. Trauma center maturation: quantification of process and outcome. *Annals of Surgery*. 1999; 230(1):87-94.
17. Simons R. Eliopoulos V. Laflamme D. Brown DR. Impact on process of trauma care delivery 1 year after the introduction of a trauma program in a provincial trauma center. *J Trauma*. 1999; 46(5):811-5.
18. Sampalis JS. Denis R. Lavoie A. Frechette P. Boukas S. Nikolis A. Benoit D. Fleischer D. Brown R. Churchill-Smith M. Mulder D. Trauma care regionalization: a process-outcome evaluation. *J Trauma*. 1999; 46(4):565-79.
19. Cameron CM, Kliewer EV., Purdie DM, et al. Long term health outcomes after injury in working age adults: a systematic review. *J Epidemiol Community Health*. 2006; 60; 341-344.
20. Weninger P. Aldrian S, Koenig F. Functional recovery at a minimum of 2 years after multiple injury - development of an outcome score *J Trauma*. 2008; 65:799 - 808.

21. Ulvik A, Kvale R, Wentzel-Larsen T., et al. Quality of life 2-7 years after major trauma. *Acta Anaesthesiol Scand.* 2008; 52: 195–201.
22. Horwitz DA and Schuerer DJE. Trauma rehabilitation outcome scoring. *Curr Opin Crit Care.* 2008; 14:445–450.
23. Gabbe BJ, Sutherland A, Wolfe R., et al. Can the modified Functional Independence Measure be reliably obtained from the patient medical record by different raters? *J Trauma.* 2007; 63:1374 –1379.
24. Gill M, Steele R, Windemuth R., et al. A comparison of five simplified scales to the out-of-hospital Glasgow Coma Scale for the prediction of traumatic brain injury outcomes. *Academic Emergency Medicine.* 2006; 13 (9):968-73.
25. Willis, Cameron D. Gabbe, Belinda J. Cameron, Peter A. Measuring quality in trauma care. *Injury.* 2007; 38(5):527-37.
26. Kazui T, Osada H, Fujita H. An attempt to analyze the relation between hospital surgical volume and clinical outcome. *General Thoracic & Cardiovascular Surgery.* 2007; 55(12):483-92.
27. National Academy of Sciences-National Research Council (NAS-NRC). Accidental Death and Disability: The Neglected Disease of Modern Society. Division of Medical Sciences, Washington, DC: NAS-NRC; 1966.
28. Cales R, Trunkey D. Preventable Trauma Deaths - A Review of Trauma Care Systems Development *JAMA* 1975; 254 (8) 1059-1063.
29. Trauma System Accreditation Guidelines. Trauma Association of Canada / Association Canadienne de Traumatologie, 3rd Ed. 2007.
30. Simons RK, Taulu T, Hameed SM, Brown DRG. Trauma system implementation in Canada – A tale of haves and have nots. Trauma Program, Department of Surgery, University of British Columbia (in preparation).
31. Natasha Richardson Could she have lived if she had access to a helicopter? *WizBangBlog; ValuesVoters.com*, Mar 22, 2009.

32. Stiell IG. Nesbitt LP. Pickett W. Munkley D. Spaite DW. Banek J. Field B. Luinstra-Toohey L. Maloney J. Dreyer J. Lyver M. Campeau T. Wells GA. OPALS Study Group. The OPALS Major Trauma Study: impact of advanced life-support on survival and morbidity. *CMAJ*. 2008; 178 (9):1141-52.
33. Ehrlich PF. Rockwell S. Kincaid S. Mucha P J. American College of Surgeons, Committee on Trauma verification review: does it really make a difference? *J Trauma*. 2002; 53(5):811-6.
34. Auerbach S. FitzPatrick MK. Garuffe A. Williams B. McMaster J. Stum M. Reilly P. Enhancing data quality through the formation of a trauma registry workgroup. *J Trauma Nursing*. 2002; 9 (2):46-50.
35. Hoyt DB. Coimbra R. Potenza B. Doucet J. Fortlage D. Holingsworth-Fridlund P. Holbrook T. A twelve-year analysis of disease and provider complications on an organized level I trauma service: as good as it gets? *J Trauma*. 2003; 54(1): 26-36.
36. Resources for Optimal Care of the Injured Patient *American College of Surgeons Committee on Trauma*. 2006.
37. Stelfox HT, Bobranska-Artiuch B, Nathens A, Straus SE. Quality indicators for evaluating trauma care: a scoping review. *Arch Surg*. 2010; 145(3):286-95.
38. Bensing JM, Caris-Verhallen WM, Dekker J, Delnoij DM, Groenewegen PP. Doing the right thing and doing it right: toward a framework for assessing the policy relevance of health services research. *International Journal of Technology Assessment in Health Care*. 2003; 19(4):604-12.
39. Brien SE, Lorenzetti, DL, Lewis S, Kennedy J, and Ghali WA. Overview of formal scoping review on health system report card. *Implementation Science*. 2010; 5:2 1-12.
40. Clancy CM, Cronin K. Evidence-based decision making: global evidence, local decisions *Health Affairs* 2005; 24(1):151-162.
41. Collins T. Health policy analysis: a simple tool for policy makers. *Public Health*. 2005; 119, 192-196.

42. Fielding JE. Briss PA. Promoting evidence-based public health policy: can we have better evidence and more action? *Health Affairs*. 2006; 25(4):969-78.
43. Prosono M. Health care policy in theory and practice: a review of the process as a product of rational decision-making. *Journal of Health & Social Policy*. 9(4):83-99, 1998.
44. Lavis JN. Ross SE. Hurley JE. Hohenadel JM. Stoddart GL. Woodward CA. Abelson J. Examining the role of health services research in public policymaking. *Milbank Quarterly*. 2002; 80(1):125-54.
45. Lavis J. Davies H. Oxman A. Denis JL. Golden-Biddle K. Ferlie E. Towards systematic reviews that inform health care management and policy-making. *Journal of Health Services & Research Policy*. 2005; 10 Suppl. 1:35-48.
46. Lavis JN. Keenan SP. Bringing health services research to (and from) critical care. *Journal of Critical Care*. 2001; 16(4):127-32.
47. Lavis J. Ross S. McLeod C. Gildiner A. Measuring the impact of health research. *Journal of Health Services & Research Policy*. 2003; 8(3):165-70.
48. Lomas J. Brown AD. Research and advice giving: a functional view of evidence-informed policy advice in a Canadian Ministry of Health. *Milbank Quarterly*. 2009; 87(4):903-26.
49. Antil T, Desrochers M. Joubert P. Bouchard C. Implementation of an innovative grant programme to build partnerships between researchers, decision-makers and practitioners: the experience of the Quebec Social Research Council. *Journal of Health Services & Research Policy*. 2003; 8 Suppl 2:35-43.
50. First Ministers Accord on Health Care Renewal for Canada. Communiqué: Comparable health and health system performance indicators for Canada, the provinces and territories 2006 (http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=prtwg_2006_eF)
51. Model Trauma System Planning and Evaluation. *Integration of the Public Health and Trauma Care Systems for improved injury outcomes*. U.S. Department of Health and Human Services - Health resources and Services Administration Trauma: EMS Systems Program (Draft). July 2005.

52. First Ministers Accord on Health Care Renewal for Canada. Communiqué: Comparable health and health system performance indicators for Canada, the provinces and territories 2006 (http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=prtwg_2006_eF)
53. Vancouver Coastal Health Regional Trauma Program Annual Report Nov 2005-2006
54. Vancouver Coastal health Regional Trauma Program Annual Report Nov 2006-2006
55. Alberta Health Services Regional Trauma Services Annual Report 2008-2009
56. Ministry of Health Medical Services Branch Annual Statistical Reports.2009-2010. Government of Saskatchewan
57. Saskatoon Regional Health Authority Annual Report 2008-2009
58. Manitoba Health and Healthy Living Annual Statistics.2008-2009
59. Information Management Ontario Health Planning Data Guide.2006 Ministry of Health, Ontario
60. Girotti M. Report of the Trauma Expert Panel Ministry of Health, Ontario 2006
61. Information Management .Ontario Health Planning Data Guide, Ministry of Health, Ontario 2006.
62. Plan d'organisation. Agence de la Sante et des services sociaux de la capitale-nationale. 2010.
63. Rapport annuel de gestion 2008-2009 – Agence de la santé et des services sociaux de Montréal
64. Colchester East Hants Health Authority Annual Report 2008-2009, Nova Scotia
65. Eastern Health Annual Performance Report 2008-2009, Newfoundland.

66. Performance Reporting Principles For the British Columbia Public Sector: Principles Endorsed by Government, the Select Standing Committee on Public Accounts and the Auditor General of British Columbia. Nov. 2003.
67. WorkSafe BC Annual Report and 2010–2012 Service Plan.
68. Brien SE, Lorenzetti, DL, Lewis S, Kennedy J, and Ghali WA. Overview of formal scoping review on health system report card. *Implementation Science*. 2010; 5:2 1-12.
69. Fowler, FJ. Survey Research Methods. (2009). 4th edition, Sage Publications, ISBN 978-1-4129-5841-7.
70. Health Regions: Boundaries and Correspondence with Census Geography (2007 Updates) Statistics Canada 2009.
71. Lomas J, Culyer T, McCutcheon C, McAuley L, Law S. Conceptualizing and combining evidence for health system guidance. Final Report. May 2005. *Canadian Health Services Research Foundation*. 2005.

APPENDIX A

Canadian Regional Health Service Areas

Canadian Regional Health Service Areas

British Columbia
British Columbia Ministry of Health Services
Health Authorities (HA)

6

1. Northern Health
2. Interior Health
3. Vancouver Island Health Authority
4. Vancouver Coastal Health
5. Fraser Health
6. Provincial Health Services Authority

Alberta
Alberta Health and Wellness
Health Regions
(Regional Health Authorities)

1
(9)

1. Chinook Regional Health Authority
2. Palliser Health Authority
3. Calgary Health Region
4. David Thompson Health Region
5. East Central Health
6. Capital Health
7. Aspen Regional Health Authority
8. Peace Country Health
9. Northern Lights Health Region

Saskatchewan
Saskatchewan Health
Health Authorities (HA)

14

1. Regina Qu'Appelle
2. Cypress
3. Sun Country
4. Saskatoon
5. Prairie North
6. Mamawetan Churchill River
7. Kelsey Trail
9. Prince Albert Parkland
10. Five Hills
11. Prince Albert Parkland
12. Heartland
13. Keewatin Yatthé
14. Athabasca Health Authority

Manitoba
Manitoba Health
Health Authorities (HA) 12

1. Assiniboine Regional Health Authority
2. Brandon Regional Health Authority
3. Burntwood Regional Health Authority
4. Central
5. Churchill RHA Inc.
6. Interlake Regional Health Authority
7. NOR-MAN Regional Health Authority
8. North Eastman Health Authority
9. Parkland Regional Health Authority
10. Regional Health Authority - Central Manitoba Inc.
11. South Eastman Health/Sante Sud-Est Inc.
12. Winnipeg Regional Health Authority

Ontario
Ontario Ministry of Health and Long-Term Care
Local Health Integration Network (LIHN) 13

1. Eerie St. Clair
2. SouthWest
3. Waterloo Wellington
4. Hamilton Niagara Haldimand Brant
5. Central West
6. Mississauga Halton
7. Toronto Central
8. Central
9. Central East
10. South East
11. Champlain
12. North Simcoe Muskoka
13. North East
14. North West

Quebec
Ministère de la Santé et des Services sociaux
Régions sociosanitaires (RSS) 18

1. Bas-Saint-Laurent
2. Saguenay - Lac-St-Jean
3. Capitale-Nationale
4. Mauricie et Centre-du-Québec
5. Estrie
6. Montréal
7. Outaouais
8. Abitibi-Témiscamingue
9. Côte-Nord
10. Nord-du-Québec
11. Gaspésie-Iles-de-la-Madeleine
12. Chaudière-Appalaches
13. Laval
14. Lanaudière

15. Laurentides
16. Montérégie
17. Nunavik
18. Terres-Cries-de-la-Baie-James

New Brunswick

Regional Health Authorities (RHA)

2

1. Vitalité Health Network
2. Horizon Health Network

1. Beauséjour (VHN)
1. South East (HHN)
2. Saint John (HHN)
3. Fredericton (HHN)
4. Edmundston (VHN)
5. Campbellton (VHN)
6. Bathurst
7. Miramichi (HHN)

Nova Scotia

Nova Scotia Department of Health

District Health Authorities (DHA)

9

1. Cape Breton Health Authority
2. Guysborough-Antigonish Strait Health Authority
3. Capital health / IWK Health Centre Health Authority
4. South Shore Health Authority
5. SouthWest Health Authority
6. Annapolis Valley Health Authority
7. Cumberalnd Health Authority
8. Colchester East Hants Health Authority
9. Pictou County Health Authority

Prince Edward Island

Prince Edward Island Department of Health and Wellness

Health Regions (HR)

4

1. West Prince
2. East Prince
3. Queens
4. Kings

Newfoundland and Labrador

Department of Health and Community Services

Regional Health Authorities (RHA)

4

1. Eastern Regional Health Authority
2. Central Regional Health Authority
3. Western Regional Health Authority
4. Grenfell Regional Health Authority

Yukon Territory
Yukon Department of Health and Social Services

1. Yukon Territory 1

Northwest Territories
Department of Health and Social Services Authorities
Health and Social Services Authorities (HSSA)

8

1. Beaufort Delta Health and Social Services Authority
2. Dehcho Health and Social Services Authority
3. Fort Smith Health and Social Services Authority
4. Hay River Health and Social Services Authority
5. Sahtu Health and Social Services Authority
6. Stanton Territorial
7. Ticho Community Services Authority
8. Yellowknife Health Services Authority

Nunavut
Nunavut Department of health and Social Services

1. Nunavut 1

Total number of regional health authorities contacted 92

APPENDIX B

Canadian Lead Trauma Hospitals

Canadian Lead Trauma Hospitals

British Columbia

1. Vancouver Vancouver General Hospital
2. Vancouver BC Children's Hospital

Alberta

1. Edmonton University of Alberta Hospital
2. Edmonton Stollery Children's Hospital
3. Calgary Foothills Medical Centre
4. Calgary Alberta Children's Hospital

Saskatchewan

none

Manitoba

1. Winnipeg Winnipeg health Sciences Centre

Ontario

1. Toronto St. Michael's Hospital
2. Toronto Sunnybrook Health Sciences Centre
3. Toronto Toronto Sick Children's Hospital
4. London London Health Sciences Centre
5. Ottawa Ottawa Hospital
6. Ottawa Children's Hospital of Eastern Ontario
7. Kingston Kingston General Hospital
8. Hamilton Hamilton general Hospital

Quebec

1. Montreal Montreal General Hospital
2. Montreal Hôpital de Sacré-Coeur
3. Montreal Montreal Children's Hospital
4. Montreal Hôpital Ste-Justine
5. Quebec City Hôpital de L'Enfant-Jesu

New Brunswick

none

Nova Scotia

1. Halifax Queen Elizabeth II Health Sciences Centre
2. Halifax Izaak Walter Killam (IWK) health Centre

Prince Edward Island

none

Newfoundland

1. St. John's St. John's Health Sciences Centre

Yukon Territory

none

Northwest Territories

none

Nunavut

none

Total number of lead trauma hospitals contacted

23

APPENDIX C

Survey Instrument (English)



Canadian Trauma System Decision Makers Survey

Dear Colleague,

Canadian trauma systems vary in their structure and organization. Development of policy within these systems is challenged by inconsistent measures of effectiveness. You have been identified as influential in system design or policy development of organized trauma care in Canada. In this regard, we would like to solicit your participation in this brief survey.

This research is funded by a grant from the *Partnership in Health Systems Improvement* program of the *Canadian Institutes of Health Research*. The objective is (1) to identify trauma system design policy issues relevant to trauma care in Canada and (2) to ascertain the type of data required to assist decision-makers in definitively addressing them. The ultimate goal is to recommend a policy-relevant reporting strategy to optimally support trauma system design and development.

We are interested in the perspective of

- **health ministry representatives**
- **health authority or hospital administrators**
- **regional or hospital trauma medical directors or managers**

who in any way influence policy development and design of trauma systems in Canada.

If any of the above applies to you, you are eligible to take the survey.

The survey will take about 15 minutes. Completion of the survey will be taken as informed consent for your participation. Your participation is anonymous and confidential. Approval for the conduct of this study has been obtained from the University of British Columbia Research Ethics Board (H10-01491).

If you wish to receive a copy of summary findings of this study in aggregate format, please reply to this e-mail stating: SEND RESULTS.

If you have questions or concerns about study participation, please contact the principal investigator as indicated below. You may also contact the UBC Offices of Research Services Research Subject Information Line at 604-822-8598 or RISL@ors.ubc.ca.

Thank-you for your consideration and valuable assistance.

D.C. Evans, MD

Trauma Services, Vancouver General Hospital
855 12th Ave., W, Vancouver BC V5Z 1M9
tel. 604-875-4559
fax: 604-875-5348
e-mail: david.evans@vch.ca

1) **Are you a health ministry representative, hospital or health authority administrator, medical director, or program manager in any way involved in design, management, or policy development for injury management in Canada?**

MUST CHOOSE ONE

- yes ----- CONTINUE SURVEY
- no ----- PROCEED TO END OF SURVEY and SUBMIT

2) **Describe your role in injury management in your jurisdiction.**

SELECT ALL THAT APPLY

- health ministry official
- regional health authority administrator
- hospital administrator
- regional trauma director
- hospital trauma director
- prehospital services administrator
- other (please specify)

If you selected other, please specify

3) **What is your educational/training background?**

SELECT ALL THAT APPLY

- health administration
- business / management
- nursing
- medicine
- Other (please specify)

If you selected other, please specify

- 4) **Over which of the following domains related to injury management do you have influence or authority?**

SELECT ALL THAT APPLY

- pre-hospital care / emergency medical services
- acute hospital-based care
- rehabilitation services
- injury prevention
- disaster response planning
- educational programs
- research
- legislation
- Other (please specify)

If you selected other, please specify

- 5) **Approximately how long have you been involved with decision making for organized trauma care and/or injury control?**

SELECT ONE

- < 1 year
- 1-5 years
- 6-10 years
- > 10 years

- 6) **How would you best describe your current function with regard to your trauma system?**

SELECT ONE

- operational
- strategic
- both
- neither

- 7) **Does your authority or influence in injury management include adult care, pediatric care, both or neither?**

- adult
- pediatric
- both
- neither

8) Where do you work?

SELECT ONE

- British Columbia
- Alberta
- Saskatchewan
- Manitoba
- Ontario
- Quebec
- Nova Scotia
- New Brunswick
- Prince Edward Island
- Newfoundland and Labrador
- Nunavut
- Northwest Territories
- Yukon Territory
- Other (please specify)

If you selected other, please specify

9) A trauma system has been described as:

a preplanned, organized, and coordinated injury control effort in a defined geographic area which (1) is publicly administered, funded and accountable (2) engages in comprehensive injury surveillance and prevention programs (3) delivers the full spectrum of trauma care from the time of injury to recovery (4) engages in research, training and performance improvement and (5) establishes linkages with an all-hazards emergency preparedness program.

Do you agree with this statement?

SELECT ONE

- strongly agree
- agree
- neutral
- disagree
- strongly disagree

10) Do you consider that a fully developed trauma system should address minor trauma as well as major trauma?

SELECT ONE

- yes
- no
- cannot say

11) Which one of the following do you consider best describes the primary objective of a trauma system?

SELECT ONE

- ensure delivery of appropriate care for trauma as rapidly as possible
- maximize survival following trauma
- minimize the individual and societal burden of injury resulting from trauma
- minimize the incidence of trauma in a population
- cannot say
- Other (please specify)

If you selected other, please specify

12) Indicate whether the feature listed HAS BEEN or LIKELY WILL BE the subject of a policy decision within your trauma system.

RESPOND FOR EACH ITEM

	yes	no	don't know
allocation of EMS resources to support trauma care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
establishment of inter-facility transfer agreements for trauma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
advanced skill training for paramedics (intubation, medications, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
rotor-wing air evacuation program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
designation of a hospital facility to receive major trauma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
allocation of hospital resources for major trauma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
protected surgical resources for trauma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
prioritized ICU admission for trauma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
funding for a trauma-related program or issue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
alternate funding for physicians involved in trauma care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
hiring of clinical staff dedicated to trauma management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
support for a trauma registry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
compliance with external review recommendations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
funding for trauma research or education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
implementation of an injury prevention strategy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
disaster response planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13) Can you list any other system-level policy or design issues arising from your trauma system?

14) In your experience, how often do each the following factors play a major role in design or policy decision-making for your trauma system?

RESPOND FOR EACH ITEM

	never	rarely	sometimes	often	very often
high quality data derived from your system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
moderate quality data derived from your system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
poor quality data derived from your system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
political considerations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
the strong opinion of an influential individual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
a critical incident	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
a mandate from a higher authority	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
cost data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
guideline recommendations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
benchmarks or accepted standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
evidence from scientific literature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15) Do you agree that policy, design and system management decisions for organized injury management should maximize overall trauma system effectiveness?

SELECT ONE

- strongly agree
- agree
- neutral
- disagree
- strongly disagree

- 16) Given that the association between system processes and desired outcomes is frequently unsubstantiated, where do you feel the emphasis should be placed in trauma system reporting?**

SELECT ONE

- system performance
- system effectiveness
- Other (please specify)

If you selected other, please specify

- 17) How adequate do you consider injury management to be in your jurisdiction?**

SELECT ONE

- optimal
- excellent
- very good
- good
- adequate
- inadequate
- extremely inadequate
- cannot say

- 18) How would you describe the scope of the trauma system with which you are involved?**

SELECT ONE

- provincial (>1 health region)
- regional (>1 hospital or organization)
- local (1 hospital or organization)
- no trauma system
- Other (please specify)

If you selected other, please specify

19) How well defined do you consider the trauma system in your jurisdiction to be?

SELECT ONE

- a trauma system exists and is extremely well-defined
- a trauma system exists and is moderately well-defined
- a trauma system exists but is poorly defined
- an organized system of trauma care does not exist
- cannot say

20) Do you produce and/or receive regular reporting on organized trauma care / injury management?

SELECT ALL THAT APPLY

- I produce reporting on organized trauma care / injury management
- I receive reporting on organized trauma care / injury management
- neither of the above

21) How useful do you consider currently available reporting on your trauma system as an aid for decision making about policy, planning and design within your jurisdiction?

SELECT ONE

- extremely useful
- moderately useful
- somewhat useful
- not useful
- cannot say

22) For each type of information relating to injury management listed below, indicate whether it is available to you as part of reporting on your trauma system, and whether you feel it should be.

RESPOND FOR EACH ITEM IN BOTH CATEGORIES

	Is available			Should be available	
	yes	no	don't know	yes	no
hospital data (discharge abstract dataset)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
local/provincial trauma registry data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
national trauma registry data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
rehabilitation services data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
coroner's data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
cost data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
emergency medical services (EMS) data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
workers compensation data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
automobile insurance board data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
disaster preparedness planning data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
patient satisfaction data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23) Rank indicators of **STRUCTURE** (facilities, equipment, human resources), **PROCESS** (clinical protocols, care paths) and **OUTCOMES** (results of injury management) in order of practical importance to you as markers for trauma system effectiveness.

RANK Structure Process Outcomes

1. _____ 2. _____ 3. _____

24) On a scale of 1-5, how valuable do you consider each of the following as measures of trauma system effectiveness?

RESPOND FOR EACH ITEM

1 - unimportant, 2 - neutral, 3 - important, 4 - very important, 5 - extremely important

	cannot say	1	2	3	4	5
injury rate (per 100,000 population)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
severity-adjusted hospital survival	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
standardized mortality ratios (Z and W scores)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
potential years of life lost (PYLL)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
preventable deaths	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
discharge disposition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
long-term survival (6 months, 1 year, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
change in functional status following injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
change in employment status following injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
estimates of cost associated with injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
measures of resources used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
measures of processes of care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
measures of timeliness of care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
self-reported health status	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
measures of access to care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
functional independence measure (FIM) at discharge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
functional independence measure (FIM) at 6 or 12 months	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
quality-adjusted life years (QALY)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
disability-adjusted life years (DALY)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
patient satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
patient safety indicators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
individual measures of burden of injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
societal measures of burden of injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
measures of emergency preparedness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

25) Do you feel that regular performance reporting should use standard indicators and benchmarks to enable inter-system comparisons?

SELECT ONE

- yes
- no
- cannot say

26) Do you feel there should be defined trauma system performance standards at the provincial and/or national level?

	yes	no	cannot say
there should be defined provincial standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
there should be defined national standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

27) What do you consider to be the objective(s) of performance reporting on your trauma system?

SELECT ALL THAT APPLY

- describe workload of the system
- demonstrate overall effectiveness
- demonstrate efficiency of system processes
- evaluate effectiveness of implemented strategies or specific interventions
- facilitate comparison to prior performance
- facilitate comparison with other systems
- Other (please specify)

If you selected other, please specify

- 28) Which of the following organizations do you feel should collaborate in a formally coordinated manner to develop policy for injury control within a regional trauma system?**

SELECT ALL THAT APPLY

- emergency medical services (EMS) / prehospital services
- acute care facilities
- rehabilitation facilities
- long-term care facilities
- injury prevention organizations
- workers compensation boards
- automobile insurance boards
- public health agencies
- police services
- disaster response programs
- armed forces
- Other (please specify)

If you selected other, please specify

- 29) How feasible do you think it is to improve the quality of reporting on trauma system performance in your jurisdiction?**

SELECT ONE

- very feasible
- somewhat feasible
- not feasible
- cannot say

- 30) Do you agree that successful accreditation by a recognized external authority should be required of all trauma systems and all trauma facilities?**

SELECT ONE

- strongly agree
- agree
- neutral
- disagree
- strongly disagree

31) Do you agree with the following statement?

To achieve the objectives of a trauma system, a lead governmental agency authorized to develop policy is required to ensure appropriate system planning, resourcing, implementation, coordination and evaluation.

SELECT ONE

- strongly agree
- agree
- neutral
- disagree
- strongly disagree

32) Given that the prevention and control of injuries and the preparation for and response to public health emergencies are mandates of the Public Health Agency of Canada, do you feel that this or some other government agency should provide oversight for injury control in Canada?

SELECT ONE

- yes - Public Health Agency of Canada
- yes - Health Canada
- yes - other
- no
- cannot say
- Other (please specify)

If you selected other, please specify

33) In your opinion, how much of a priority is injury control as a public health concern compared to all other current concerns (cancer, cardiovascular disease, bone and joint disease, mental illness, etc)?

SELECT ONE

- less of a priority
- equal in priority
- more of a priority
- cannot say

34) We would greatly appreciate your feedback on this survey

RESPOND FOR EACH ITEM (1 = strongly disagree, 5 = strongly agree)

	1	2	3	4	5
The survey addressed relevant issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The survey was easy to answer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The questions were clearly expressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The survey length was reasonable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

35) Do you wish to add any comments?

The survey has been completed. Thank-you for your generous participation.

APPENDIX D

Survey Instrument (French)



Sondage des décideurs des systèmes de traumatologie nationaux

Cher collègue,

Les systèmes de traumatologie nationaux varient tant par leur structure que leur organisation. Dû aux mesures d'efficacité contestables, la gestion de ces systèmes devient un défi. Par votre fonction administrative, vous avez été identifié comme responsable ou influent actuellement dans la conception ou le développement de politique en soins de traumatologie organisés au Canada. A cet effet, nous voudrions solliciter votre participation à ce court sondage.

Cette recherche est subventionnée par le programme de *Partenariat pour l'amélioration du système de santé* de l'*Institut de recherche en santé du Canada*. L'objectif est (1) d'identifier les problèmes de politique dans la conception des systèmes de trauma au Canada et (2) de déterminer le type de données nécessaires pour aider les décideurs à y remédier définitivement. Le but ultime est de recommander une stratégie fonctionnelle pour mesurer la performance du système de contrôle de blessures, et d'évaluer de façon optimale les politiques pertinentes et interventions ciblées pour supporter la conception et développement d'un système de trauma efficace.

Nous sommes intéressés par la perspective des

- **représentants du ministère de la santé**
- **administrateurs des réseaux sociosanitaires**
- **administrateurs hospitaliers**
- **directeurs ou gestionnaires médicaux de trauma hospitalier ou régional**

ceux qui influencent de quelque façon le développement de politique et la conception des systèmes de trauma au Canada.

Si l'un de ces points s'appliquent à vous, vous êtes admissibles à participer au sondage.

Le sondage prendra environ 15 minutes. Remplir ce sondage sera considéré comme ayant obtenu un consentement éclairé pour votre participation. Votre participation est anonyme et confidentielle. L'approbation pour la conduite de cette étude a été obtenue par le Comité d'éthique de la recherche de l'Université de la Colombie-britannique UBC (H10-01491).

Si vous désirez recevoir une copie du résumé des conclusions de cette étude, s'il vous plait répondez à cet email en précisant : ENVOYEZ LES RESULTATS.

Si vous avez des questions au sujet de votre participation à l'étude, veuillez communiquer avec l'enquêteur principal tel qu'indiqué en bas. Vous pouvez également communiquer avec les bureaux des services de recherche de UBC, ligne d'information des sujets de recherche au 604-822-8598 ou RISL@ors.ubc.ca.

Merci pour votre aide précieuse.

D.C. Evans, MD

Trauma Services, Vancouver General Hospital
855 12th Ave., W, Vancouver BC V5Z 1M9
tel. 604-875-4559
fax: 604-875-5348
e-mail: david.evans@vch.ca

- 1) **Êtes-vous un représentant du ministère de la santé, administrateur hospitalier ou d'autorité sociosanitaire, directeur médical, ou gestionnaire de programme impliqué de quelque manière dans la conception, la gestion ou l'élaboration de politiques pour la gestion des blessures au Canada?**

RÉPONSE REQUISE

- oui..... CONTINUEZ LE SONDAGE
 non ALLEZ A LA FIN DU SONDAGE ET SOUMETTEZ

- 2) **Décrivez votre rôle dans la gestion de blessure au sein de votre juridiction.**

COCHEZ TOUS CEUX QUI S'APPLIQUENT

- responsable du ministère de la santé
 administrateur du réseau régional de la santé et des services sociaux
 administrateur hospitalier
 directeur régional de traumatologie
 directeur hospitalier de trauma
 administrateur des services préhospitaliers
 autre

- 3) **Quelle est votre formation scolaire?**

COCHEZ TOUS CEUX QUI S'APPLIQUENT

- administration de la santé
 affaire /gestion
 soins infirmiers
 médecine
 autre

- 4) **Dans quels domaines liés à la gestion des blessures avez-vous de l'influence ou autorité?**

COCHEZ TOUS CEUX QUI S'APPLIQUENT

- soins préhospitaliers / services médicaux d'urgence
- soins aigus en milieu hospitalier
- services de réadaptation
- prévention des blessures
- planification des interventions en cas de désastre
- programmes d'éducation
- recherche
- législation
- autre

- 5) **Depuis combien d'années êtes-vous impliqué dans la prise de décision en traumatologie et / ou la prévention des blessures?**

COCHEZ TOUS CEUX QUI S'APPLIQUENT

- < 1 an
- 1-5 ans
- 6-10 ans
- > 10 ans

- 6) **Comment décririez-vous votre fonction actuelle au sein du système de trauma?**

CHOISISSEZ UNE SEULE REPONSE

- opérationnelle
- stratégique
- les deux
- aucun

- 7) **Est-ce que vous êtes impliqué dans la gestion de trauma adulte, pédiatrique, ou les deux?**

COCHEZ TOUS CEUX QUI S'APPLIQUENT

- adulte
- pédiatrique
- les deux
- ni l'un ni l'autre

8) Où travaillez-vous?

CHOISISSEZ UNE SEULE REPONSE

- Colombie-Britannique
- Alberta
- Saskatchewan
- Manitoba
- Ontario
- Québec
- Nouvelle-Écosse
- Nouveau-Brunswick
- L'Île-du-Prince-Édouard
- Terre-Neuve-et-Labrador
- Nunavut
- Territoires du Nord-Ouest
- Yukon

9) Un système de trauma a été décrit comme :

un effort planifié, organisé et coordonné de la prévention des blessures dans une zone géographique définie qui (1) est administré, financé et responsable devant le secteur public (2) participe à des programmes de prévention et surveillance des blessures (3) offre la gamme complète des soins de trauma de la blessure jusqu'à la guérison (4) s'implique dans la recherche, la formation et l'amélioration du rendement et (5) établit des liens avec un programme de protection civile.

Êtes-vous d'accord avec cette affirmation?

CHOISISSEZ UNE SEULE REPONSE

- fortement d'accord
- d'accord
- indifférent
- désaccord
- fortement en désaccord

- 10) **Estimez-vous qu'un système de trauma entièrement développé devrait traiter les trauma mineurs de même que les trauma majeurs?**

CHOISISSEZ UNE SEULE REPONSE

- oui
- non
- ne peux pas dire

- 11) **D'après vous, quelle affirmation décrit le mieux l'objectif principal d'un système de trauma?**

CHOISISSEZ UNE SEULE REPONSE

- assurer la prestation de soins appropriés pour les trauma aussi rapidement que possible
- maximiser la survie après un traumatisme
- réduire la charge individuelle et sociétale des blessures résultants d'un trauma
- réduire au minimum l'incidence des trauma dans la population
- ne peux pas dire
- autre

Commentaires supplémentaire

- 12) Indiquez si l'énoncé A ÉTÉ ou SERA PROBABLEMENT l'objet d'une décision politique au sein de votre système de trauma.

REPONDEZ POUR CHAQUE ÉNONCÉ

	oui	non	ne sais pas
allocation des ressources préhospitaliers pour appuyer les soins de trauma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
institution d'ententes entre établissements pour les trauma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
formation spécialisée pour les ambulanciers (intubation, médication, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
programme d'évacuation aérienne par hélicoptère	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
désignation d'un établissement hospitalier pour recevoir les trauma majeurs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
allocations des ressources d'un hôpital pour les trauma majeurs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ressources chirurgicales réservées pour les trauma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
priorité d'admission aux soins intensifs pour les trauma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
financement d'un programme ou problème relié aux trauma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
financement alternatif pour les médecins impliqués dans les soins de trauma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
embauche de personnel clinique dédié à la gestion des trauma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
soutien pour un registre des trauma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
action sur recommandations externes d'un groupe-conseil d'accréditation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
financement de la recherche et de la formation en trauma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mise en place d'une stratégie de prévention des blessures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
planification des interventions en cas de désastre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 13) Pouvez-vous nommer d'autres problèmes de conception, gestion ou de politique découlant de votre système de trauma?

- 14) D'après votre expérience, à quelle fréquence les problèmes de conception ou de politique pour votre système de trauma ont été décidés par les facteurs suivants?

RÉPONDEZ POUR CHAQUE ÉNONCÉ

	jamais	rarement	des fois	souvent	très souvent
données de haute qualité provenant de votre système	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données de qualité moyenne provenant de votre système	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mauvaise qualité des données provenant de votre système	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
considérations politiques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
forte opinion d'une personne influente	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
incident critique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mandat d'une autorité supérieure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données sur les coûts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
guides d'exercice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
références ou normes acceptées ("benchmarks")	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
preuves de la littérature scientifique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 15) Croyez-vous que la conception, les décisions de gestion, et politique pour la gestion des blessures devraient surtout maximiser l'efficacité globale du système?

CHOISISSEZ UNE SEULE REPONSE

- fortement d'accord
- d'accord
- indifférent
- désaccord
- fortement désaccord

- 16) **Notant que le lien entre les procédés des systèmes et les résultats désirées ne sont pas souvent confirmées, d'après vous quel aspect du système de trauma devrait être souligné dans les rapports sur la système de trauma?**

CHOISISSEZ UNE SEULE REPONSE

- la performance du système
- l'efficacité du système
- autre

Commentaires supplémentaire

- 17) **Comment estimez-vous la qualité de gestion des blessures graves dans votre juridiction?**

CHOISISSEZ UNE SEULE REPONSE

- optimale
- excellente
- très bonne
- bonne
- adéquate
- inadéquate
- extrêmement inadéquate
- ne peux pas dire

- 18) **Comment décririez-vous l'étendue du système de trauma avec lequel vous êtes impliqué?**

CHOISISSEZ UNE SEULE REPONSE

- provincial (>1 région de santé)
- régional (>1 hôpital ou organisation)
- local (>1 hôpital ou organisation)
- aucun système de trauma
- autre

19) Comment décririez-vous le système de trauma de votre juridiction?

CHOISISSEZ UNE SEULE REPONSE

- un système de trauma existe et est extrêmement bien défini
- un système de trauma existe et est moyennement bien défini
- un système de trauma existe, mais est mal défini
- un système de trauma organisé n'existe pas
- ne peux pas dire

20) Produisez-vous et/ou recevez-vous des rapports sur les soins de trauma organisés/gestion des blessures?

CHOISISSEZ TOUS CEUX QUI S'APPLIQUENT

- je produis des rapports sur les soins de trauma organisé/gestion des blessures
- je reçois des rapports sur les soins de trauma organisé/gestion des blessures
- ni l'un ni l'autre

21) Comment jugez-vous l'utilité des rapports actuellement disponibles sur votre système de trauma en tant qu'aide pour la prise de décision sur la politique, la planification et la conception au sein de votre juridiction?

CHOISISSEZ UNE SEULE REPONSE

- extrêmement utile
- moyennement utile
- peu utile
- inutile
- ne peux pas dire

- 22) Pour chaque type d'information relative à la gestion des blessures énumérée ci-dessous, indiquez si elle est à votre disposition dans votre système de trauma et si vous estimez qu'elle devrait l'être.

RÉPONDEZ POUR CHAQUE ÉNONCÉ DANS LES DEUX CATÉGORIES

	Disponible			Devrait être disponible	
	oui	non	ne sais pas	oui	non
données hospitalières (résumé des données de congé de l'hospitalisation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données locales ou provinciales du registre des trauma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données nationales du registre des trauma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données des services de réadaptation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données du coroner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données des coûts financiers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données des services médicaux d'urgence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données sur l'indemnisation des travailleurs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données de la régie de l'assurance automobile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données relatives à la planification des désastres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
données sur la satisfaction des patients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 23) Mettez en ordre de priorité les indicateurs de **STRUCTURE** (installations, équipement, ressources humaines), **PROCESSUS** (protocoles cliniques, plans de soins) et **RÉSULTATS** (résultats de la gestion des blessures) par ordre d'importance comme marqueurs de performances au niveau du système.

METTEZ EN ORDRE DE PRIORITÉ STRUCTURE, PROCESSUS, RÉSULTATS

1. _____

2. _____

3. _____

24) Sur une échelle de 1-5, comment considérez-vous la valeur de chacun des éléments suivants en tant que mesure de l'efficacité du système de trauma?

RÉPONDEZ POUR CHAQUE ÉLÉMENT

1 - sans importance 2 - neutre 3 - important 4- très important 5 - extrêmement important

	ne peux pas dire	1	2	3	4	5
taux de blessures (par 100 000 habitants)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
survie hospitalière d'après la gravité	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ratios standardisés de mortalité (scores Z et W)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
années potentielles de vie perdues (APVP)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
décès évitables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
dispositions de congé d'hospitalisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
survie à long terme (6 mois, 1 an, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
changement de l'état fonctionnel du patient après une blessure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
changement de statut d'emploi du patient après une blessure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
estimation des coûts associés aux blessures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mesure des ressources utilisées	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mesure des processus de soins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mesure de la rapidité des soins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
état de santé auto-déclaré	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mesure d'accès aux soins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mesure d'indépendance fonctionnelle (FIM) lors du congé hospitalier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mesure d'indépendance fonctionnelle (FIM) à 6 ou 12 mois	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
années de vie ajustées selon la qualité (QALY)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
années de vie ajustées selon l'incapacité (DALY)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
satisfaction des patients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
indicateurs de la sécurité des patients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mesures individuelles de la charge des blessures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mesures sociétales de la charge des blessures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mesures de préparation lors d'urgence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 25) **Croyez-vous que les rapports réguliers de performance devraient utiliser des indicateurs et des critères standardisés pour permettre des comparaisons entre systèmes régionaux de trauma?**

CHOISISSEZ UNE RÉPONSE

- oui
- non
- ne peux pas dire

- 26) **Pensez-vous qu'il devrait y avoir des normes définies de performance de système de trauma à l'échelle provinciale et/ou nationale?**

	oui	non	ne peux pas dire
il devrait y avoir des normes provinciales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
il devrait y avoir des normes nationales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 27) **Que considérez-vous comme étant l'objectif des rapports de rendement de votre système de trauma?**

CHOISISSEZ TOUS CEUX QUI S'APPLIQUENT

- décrire la charge de travail du système
- démontrer l'efficacité
- évaluer l'efficacité des stratégies mises en œuvre ou interventions spécifiques
- faciliter la comparaison de la performance antérieure
- faciliter la comparaison avec d'autres systèmes
- autre

Commentaires supplémentaire

- 28) Parmi les organisations suivantes, lesquelles devraient collaborer de manière formellement coordonnée pour élaborer des politiques pour le contrôle des blessures au sein d'un système de trauma régional?

CHOISISSEZ TOUS CEUX QUI S'APPLIQUENT

- services médicaux d'urgence/services préhospitaliers
- établissements de soins aigus
- établissements de réadaptation
- établissements de soins de longue durée
- organisations de prévention des blessures
- commissions des accidents de travail
- société d'assurance automobile
- agences de santé publique
- services de police
- programmes de réponse en cas de désastre
- forces armées
- autre

Commentaires supplémentaire

- 29) Quelle est la faisabilité d'améliorer la qualité des rapports de performance du système de trauma de votre juridiction?

CHOISISSEZ UNE RÉPONSE

- très faisable
- peu réalisable
- n'est pas faisable
- ne peux pas dire

- 30) **Croyez-vous que l'accréditation d'une autorité externe reconnue devrait être obligatoire pour tous les systèmes de trauma et toutes les institutions de trauma?**

CHOISISSEZ UNE RÉPONSE

- fortement d'accord
- d'accord
- indifférent
- désaccord
- fortement en désaccord

- 31) **Êtes-vous d'accord avec l'énoncé suivant?**

Pour atteindre les objectifs d'un système de trauma, un organisme gouvernemental autorisé à élaborer des politiques est nécessaire pour assurer la planification, les ressources, la mises en œuvre, la coordination et l'évaluation des systèmes.

CHOISISSEZ UNE SEULE REPONSE

- fortement d'accord
- d'accord
- indifférent
- désaccord
- fortement en désaccord

- 32) **Étant donné que la prévention et le contrôle des blessures et la préparation et réponse aux urgences de santé publiques sont des mandats de l'Agence de santé publique du Canada, pensez-vous que cet organisme gouvernemental ou un autre devrait surveiller le contrôle des blessures?**

CHOISISSEZ UNE RÉPONSE

- oui - L'agence de la santé publique du Canada
- oui - Santé Canada
- oui - autre
- non
- ne peut pas dire
- autre

Commentaires supplémentaire

- 33) À votre avis, quelle est la priorité de la prévention des blessures en tant que problème de santé publique par rapport à toutes les autres préoccupations actuelles (cancer, maladies cardio-vasculaires, maladies osseuses et articulaires, maladie mentale, etc)?

CHOISISSEZ UNE RÉPONSE

- moins prioritaire
- également prioritaire
- d'avantage prioritaire
- ne peux pas dire

- 34) Nous vous serions reconnaissants de vos commentaires sur ce sondage.

RÉPONDEZ POUR CHAQUE ÉNONCÉ

1-complètement en désaccord, 5- complètement d'accord

	1	2	3	4	5
le sondage a abordé des questions pertinentes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
le sondage a été facile à compléter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
les questions ont été clairement énoncées	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
la durée de sondage était raisonnable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 35) Avez-vous d'autres commentaires?

Le sondage a été complété. Merci de votre généreuse participation.