

APPENDIX 1: ED Directors' Responses to Survey of Emergency Department Information Systems

		Responded "yes" n (%)
Electronic EDIS		57 (39)
EDIS		
	iSoft (HASS)	12 (21)
	SIURGE	11 (19)
	Cerner	9 (16)
	MEDITECH	10 (18)
	other	12 (21)
Triage scoring system		146 (99)
Triage system		
	CTAS	138 (95)
	Manchester	2 (1)
	Other	4 (3)
Electronic triage system		28 (19)

CTAS=Canadian Triage and Acuity Scale; EDIS=Emergency Department Information System

APPENDIX 2: EDIS Vendor Responses to Survey

Company	Canadian Use	Tracking	Triage	eTriage	POE
iSoft/HASS	yes	yes	CTAS Manchester	yes	yes
SIURGE	yes	yes	non-CTAS	yes	no
Cerner	yes	yes	CTAS Manchester ESI	yes	yes
MEDITECH	yes	yes	CTAS and others	yes	yes
McKesson	yes	yes	CTAS	yes	yes
Eclypsis	yes	yes	CTAS	yes	yes
Wellsoft	yes	yes	Other	yes	yes
Amelior Patient Care Solutions	no	yes	CTAS	yes	yes
T-systems	no	yes	customized	yes	no
GE	no	yes	other	no	yes
PICIS	no	yes	customized	yes	yes
Totals	7 (64%)	11 (100%)	8 CTAS (73%)	10 (91%)	9 (82%)

Company	eCharts	Map	Discharge Instructions	Other Features
iSoft/HASS	add-on	yes	add-on	yes
SIURGE	no	yes	no	no
Cerner	add-on	yes	add-on	no
MEDITECH	yes	yes	add-on	no
McKesson	add-on	yes	yes	no
Eclypsis	yes	yes	yes	yes
Wellsoft	yes	yes	yes	yes
Amelior Patient Care Solutions	add-on	yes	add-on	yes
T-systems	yes	yes	yes	yes
GE	add-on	yes	add-on	yes
PICIS	add-on	yes	yes	yes
Totals	4 (36%)	11 (100%)	5 (45%)	7 (64%)

eTriage=electronic triage; CTAS=Canadian Triage and Acuity Scale; POE=physician order entry; eCharts=electronic charts; add-on=not part of main software package

APPENDIX 3: Responses of Provincial Ministries of Health to Administrative Databases Survey

	Specific ED Information	Source of Data	ED Report	NACRS Contribution	CTAS Triage Scores	Change Expected
Province or Territory						
British Columbia	no	N/A	no	partial (3 facilities)	no	no response
Alberta	yes	MRN	no	No	incomplete	yes
Saskatchewan	no	N/A	no	No	no	yes
Manitoba	partial (Winnipeg only)	proprietary EDIS + e-triage	no	No	incomplete (Winnipeg only)	unsure
Ontario	yes	MRN	yes	Yes	yes	no
Québec	yes	MRN and PBD	yes	No	incomplete	yes
New Brunswick	yes	other	no	No	yes	yes
Nova Scotia	yes	PBD	no	partial (5 facilities)	no	unsure
Prince Edward Island	yes	MRN	no	partial (1 facility)	yes	yes
Newfoundland and Labrador	unsure	N/A	no	no	unsure	unsure
Yukon Territory	yes	MRN	unsure	yes	yes	unsure
Northwest Territories	yes	MRN and PBD	no	no	no	unsure
Nunavut	yes	MRN	yes	no	yes	yes
National						
NACRS	yes	MRN	yes	N/A	yes	no
Totals	9 (69%) ED Information	7 (54%) MRN	3 (23%) have ED report	3 (23%) partial	4 (31%) full 2 (15%) incomplete CTAS	6 (46%) expect change

ED=emergency department; MRN=medical records nosologists; PBD=physician billing data; incomplete=not all hospitals report triage or acuity levels; N/A=not applicable.

APPENDIX 4: Data Available to Determine Extent of ED Overcrowding in Provinces in Canada

Can province provide following information?	Yes (n)	%	Other Notes
Overall ED volumes for province?	13	100	
Volumes for individual hospitals' EDs across province?	12	92	
Outcomes (e.g., admission or discharge)?	9	69	1 no response
Deaths occurring in ED?	8+1 partial	69	
Overall length of stay for patients in ED awaiting admission (time from bed request to time of admission to ward)?	8	62	1 unsure
Percentage of patients who LWBS in province?	6	46	
Overall length of stay per patient for discharged patients?	5+1 partial	46	
Percentage of patients who LAMA in province?	5	38	
Episodes of ambulance diversion at each hospital?	3+1 partial	31	2 unsure
Waiting times in ED (e.g., time from triage or registration to being seen by physician)?	2+1 partial	23	
Patient presenting complaints (e.g., chest pain)?	3	23	
A reason for visit code (e.g., referred, first visit, scheduled follow-up)?	2	15	

partial=approximately 30 EDs in Québec

APPENDIX 5: EDIS Survey



UNIVERSITY OF
ALBERTA

**University of Alberta/Capital Health Authority
Evidence-based Practice Center**

Aberhart Centre One, 11402 University Avenue
Edmonton, Alberta, Canada T6G 2J3

www.ualberta.ca

Tel: (780) 407-8252
Fax: (780) 407-6435

Dear collaborator,

RE: ED information system (EDIS) programs

The following brief questionnaire is designed to determine the extent of your company's involvement in emergency department data collection. We have selected a clinician with knowledge of EDIS programs for emergency departments and potentially interested corporate representatives to provide input into this short questionnaire. This project is a component of the Emergency Department Overcrowding project funded by the Canadian Coordinating Office for Health Technology Assessment (CCHOTA), which is being completed by the Evidence-based Practice Center at the University of Alberta and Capital Health in Edmonton, Alberta. The goal of the project is to examine the indicators of emergency department overcrowding, the determinants of emergency department overcrowding, and the interventions used to reduce or control emergency department overcrowding. This questionnaire will provide us with important information regarding the documentation of ED information - the ability of various information systems to capture and store emergency department encounter information.

We ask that you, or someone from your company, complete the attached questionnaire and return it to the project coordinator, Ken Bond (kenneth.bond@ualberta.ca). If you have any questions, please do not hesitate to contact me, Dr. Brian Rowe, the principal investigator.

On behalf of our collaborators on this project (the Evidence-Based Practice Center, CCOHTA, the research team, and the Canadian Association of Emergency Physicians), we thank you in advance for your attention to this matter.

Sincerely,

A handwritten signature in cursive script that reads 'Brian H. Rowe'.

Dr. Brian H. Rowe, MD, MSc, CCFP(EM), FCCP
Co-Director, Capital Health Authority Evidence-based Practice Center
Canada Research Chair in Emergency Airway Diseases
Professor and Research Director, Division of Emergency Medicine
University of Alberta

Please mark your answer to the questions using the check box or text box provided.

Company

Informant

	Yes	No	N/A
1. Does your company supply an electronic emergency department (ED) patient tracking system that is employed in EDs to document patient encounters and help manage patient flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. If yes, has your ED Information System (EDIS) been bought by any Canadians? Yes <input type="checkbox"/> No <input type="checkbox"/> b. If yes, please provide hospital names			
2. Does your EDIS routinely collect triage or acuity information using an electronic decision support tool?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. If yes, what triage system is used? (Please mark all that apply.) <input type="checkbox"/> five-level Canadian Triage and Acuity Scale (CTAS) <input type="checkbox"/> five-level Manchester <input type="checkbox"/> Emergency Severity Index (ESI) <input type="checkbox"/> other (explain):			
3. Does your EDIS have integrated physician order entry capabilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Does your EDIS have integrated electronic charting (eCharts, T-system) capabilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. If yes, is this an additional module or is it incorporated into the main program? <input type="checkbox"/> additional module <input type="checkbox"/> component of regular EDIS			
5. Is your EDIS able to interface with other systems such as enterprise laboratory/DI order entry/results applications, physiologic monitoring systems (HP, Siemens), in-house or proprietary decision support tools (importing raw data or data views), or institutional paging systems to enable automatic paging on consultation request in EDIS?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. If yes, have you already done so? Please indicate type of interfacing <input type="checkbox"/> enterprise ordering system <input type="checkbox"/> physiologic monitoring system <input type="checkbox"/> decision support application <input type="checkbox"/> automatic paging with consultation request in EDIS			
6. Does your EDIS provide a status board or map of the department that allows you to determine the occupancy of the ED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Does your EDIS provide electronic discharge instructions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. If yes, is this a component of the standard package, or does this need to be purchased? <input type="checkbox"/> additional module <input type="checkbox"/> component of regular EDIS			
8. Other features considered unique to your EDIS (please describe)			

N/A=not applicable.

APPENDIX 6: National, Provincial, Territorial ED Record Collection Survey



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Dear collaborator,

RE: ED information recorded nationally or provincially

The following brief questionnaire is designed to determine the extent of emergency department record collection in your province. We have invited a clinician who has knowledge of your provincial emergency department record keeping system, and members of the Provincial Ministry of Health, to complete this questionnaire. This project is a component of the Emergency Department Overcrowding project funded by the Canadian Coordinating Office for Health Technology Assessment (CCOHTA), which is being completed by the Evidence-based Practice Center at the University of Alberta and Capital Health in Edmonton, Alberta. The purpose of the project is to examine the indicators and measures of emergency department overcrowding and the interventions used to address emergency department overcrowding. The data collected with this questionnaire will give us important information regarding the capabilities of each province to collect, store, and share emergency department information.

We ask that you complete the attached questionnaire and return it to the project coordinator, Ken Bond (kenneth.bond@ualberta.ca). If you have any questions, please do not hesitate to contact me, Dr. Brian Rowe, the principal investigator.

On behalf of our collaborators on this project (the Evidence-based Practice Center, CCOHTA, the research team, and the Canadian Association of Emergency Physicians), we thank you in advance for your attention to this matter.

Sincerely,

A handwritten signature in black ink that reads "Brian H. Rowe".

Dr. Brian H. Rowe, MD, MSc, CCFP(EM), FCCP
Co-Director, Capital Health Authority Evidence-based Practice Center
Canada Research Chair in Emergency Airway Diseases
Professor and Research Director, Department of Emergency Medicine
University of Alberta

Please answer the questions using the check boxes or text boxes as indicated.

Province

Informant

	Yes	No	Not Sure
1. Does your province collect specific emergency department (ED) data on all patient encounters?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. If yes, what information source does your province use to collect this information? (Check the one that applies best.) <input type="checkbox"/> billing data <input type="checkbox"/> actual coded charts from the ED <input type="checkbox"/> other source of information (please describe):			
2. Is acuity or triage information collected in your database for every patient presenting to the ED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. If yes, is the triage information collected in your provincial EDs compliant with the Canadian Triage and Acuity Scale (CTAS) developed by the CAEP?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is there an annual ED report produced at the provincial level that summarizes ED health services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are you currently able to provide the following information:			
a. overall ED volumes for the province?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. volumes for individual hospital EDs across the province?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. percentage of patients in the province who leave without being seen (LWBS)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. percentage of patients in the province who leave against medical advice (LAMA)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. episodes of ambulance diversion at each hospital?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. waiting times in the ED (e.g., time from triage or registration to being seen by a physician)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. overall length of stay per patient for discharged patients?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. overall length of stay for patients in the ED awaiting admission (time from bed request to time of admission to the ward)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. reason for visit code (e.g., referred, first visit, scheduled follow-up)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. patient presenting complaints (e.g., chest pain)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. outcomes (e.g., admission, discharge)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. deaths occurring in the ED?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Does your province contribute information to the National Ambulatory Care Reporting System (NACRS) maintained by the CIHI?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Does your province plan to change the way it collects ED information in the next two years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other comments:			