Health Quality Ontario

The provincial advisor on the quality of health care in Ontario

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Under Pressure: Emergency department performance in Ontario

Technical Appendix



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1. Introduction

The technical appendix provides general information on the data sources, analytical methods, limitations, as well as detailed information for each indicator presented in the *Under Pressure: Emergency department performance in Ontario* specialized report.

2. Data Sources

The health care utilization and length of stay information presented in this report are provided by the Institute for Clinical Evaluative Sciences (ICES) based on analysis of administrative databases. The findings related the general public's use of and satisfaction with emergency department care, are based on select questions from the 2013 Commonwealth Fund International Health Policy Survey of the General Population and the 2014/15 Health Care Experience Survey.

The data source(s) for the population of interest and each indicator are listed within the individual templates. More details on the specific data sources that HQO used to produce the indicators are noted section 5, <u>Indicator Templates</u>.

Commonwealth Fund's (CMWF) International Health Policy (IHP) Survey

As part of its mandate, the Commonwealth Fund (CMWF) has been conducting the International Health Policy Survey in 11 countries (Australia, Canada, France, Germany, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom and United States) for more than a decade. In a triennial cycle, the IHP survey targets different populations, including physicians, older adults, and the general adult population. Data for this report are taken from 2013 survey. The 2013 *Commonwealth Fund International Health Policy Survey of the General Public* is a telephone survey of random sample of adults 18 years and older and focuses on people's experiences with their country's health care system, particularly those related to accessing and affording health care. The survey data were weighted by province, age-bygender, educational attainment, knowledge of official languages and phone status (cell phone only or not) to reflect the demographic composition. Population parameters were derived using the 2006 Canada Census. Phone status was derived from the 2012 Residential Telephone Service Survey (RTSS), for Canada as a whole and for Quebec, Ontario and Alberta.

Health Care Experience Survey (HCES) - Ministry of Health and Long-Term Care (MOHLTC)

The HCES is a voluntary telephone-based survey of adults aged 16 and over conducted on a quarterly basis. Survey data were collected by the Institute for Social Research. The HCES asks randomly selected Ontarians for their views about their health care system, how healthy they are, if they have chronic conditions, if they have a primary care provider (family doctor, nurse practitioner or other health care provider), how long it takes to see their provider, their experience using the health care system, if they have been to an emergency room or a walk-in clinic, and their household and demographic characteristics. People living in institutions, in households without telephones, and those with invalid/missing household addresses in the Registered Persons Database (RPDB) are excluded. The Ministry of Health and Long-Term Care uses the information from the survey to understand the experience of Ontarians with respect to primary care.

National Ambulatory Care Reporting System (NACRS) - Canadian Institute for Health Information (CIHI)

NACRS contains data for all hospital-based and community-based emergency and ambulatory care, including day surgeries, outpatient clinics and emergency departments. Data are collected, maintained and validated by CIHI. CIHI receives Ontario data directly from participating facilities or from their respective

regional health authorities or the Ministry of Health and Long-Term Care. Data are collected, maintained and validated by CIHI. Data elements of the NACRS include patient identifier (e.g. name, health care number), patient demographics (e.g. age, sex, geographic location), clinical information (e.g. diagnoses and procedures), and administrative information.

Registered Persons Data Base (RPDB) – Ministry of Health and Long-Term Care (MOHLTC)

The RPDB provides basic demographic information about anyone who has ever received an Ontario health card number. The RPDB is a historical listing of the unique health numbers issued to each person eligible for Ontario health services. This listing includes corresponding demographic information such as date of birth, sex, address, date of death (where applicable) and changes in eligibility status. Data from the RPDB are enhanced with available information through other administrative data sources at the Institute for Clinical Evaluative Sciences (ICES); however, even the enhanced dataset overestimates the number of people living in Ontario for several reasons, including the source of death information and record linkage issues. Although improvements have been made in recent years, the RPDB still contains a substantial number of individuals who are deceased or no longer living in Ontario. As such, the RPDB will underestimate mortality. To ensure that rates and estimates are correct, a methodology has been developed to adjust the RPDB so that regional population counts by age and sex match estimates from Statistics Canada.

3. Analysis

To better understand how different populations utilize and experience care at emergency departments, utilization and length of stay were examined using select stratifications such as age group, sex, rural/urban location of the patient and hospital, neighbourhood income, immigration status, hospital type and patient group.

Time to physician initial assessment, wait time for an inpatient bed for admitted patients and emergency department length of stay are measured in this report at the 90th percentile – the amount of time within which nine out of 10 patients saw a doctor or completed their visit. The 90th percentile indicator was chosen because it represents the maximum wait to see a doctor or length of stay for the vast majority – 90% – of patients.

For the purposes of the emergency department wait time indicators used in this report, patients are divided into three groups according to Canadian Triage and Acuity Scale (CTAS) scores and visit disposition status as found in the NACRS. The three patient groups are as follows:

- "High-acuity discharged" includes patients with CTAS scores of 1, 2 or 3 and visit disposition of 01, 04-05 or 08-15 (discharged, transferred)
- "Low-acuity discharged" includes patients with CTAS scores of 4 or 5 and visit disposition of 01, 04-05 or 08-15 (discharged, transferred)
- "Admitted" includes patients with any CTAS score (CTAS 1-5), and patients missing a CTAS score, who have a visit disposition of 06 (admitted into the reporting facility as an inpatient to critical care unit or operating room directly from the ambulatory care visit functional centre) or 07 (admitted into the reporting facility as an inpatient to another unit of the reporting facility directly from the ambulatory care visit functional centre)

Significance Testing

Administrative data

Statistical significance was not performed for administrative data.

Commonwealth Fund survey data

Social Sciences Research Solutions conducted statistical analyses to compare responses across countries and provinces within Canada. For provincial comparisons, statistical tests were conducted to compare each province's response to every other province and to Canada as a whole. Ontario's results were also compared to other countries. Significance was assessed based on a P-value of less than 0.05, meaning that there was less than a 5% probability that the difference was due to chance rather than real differences in respondents' experiences.

Health Care Experience survey data

Confidence intervals around each result were calculated at the 95% confidence level. The report states higher/lower result only when the 95% confidence intervals of the results do not overlap (i.e., when the differences in the results are statistically significant).

Limitations

There are limitations of the analysis that should be considered when interpreting the results. Some of the limitations are specific to the data source, the indicator and the methodology used to calculate it. For details on indicator-specific limitations, please see the individual indicator templates in section 5, <u>Indicator Templates</u>.

Emergency Department Utilization	
Description	Emergency department utilization for this report was based on the number of all unscheduled emergency department (ED) visits per fiscal year.
	Note:
	This population serves as the DENOMINATOR for the indicators.
Calculation	ED utilization (i.e., number of ED visits) is calculated by adding all unscheduled, non-duplicate ED visits.
	Exclusions:
	Invalid IKN
	• Age >115
	Non-resident in Ontario
	Missing/invalid sex or birthdate
	Scheduled ED visits
	Note:
	Transfers were counted as separate ED visits

4. Emergency Department Utilization

Data source / data	National Ambulatory Care Reporting System (NACRS), Registered
elements	Persons Data Base (RPDB), provided by the Institute for Clinical
	Evaluative Sciences (ICES)
Levels of	Provincial, age group, patient group, neighbourhood income quintile,
comparability/stratification	urban/rural setting (of patient)
descriptions	
Limitations / Caveats	Scheduled visits to the ED are excluded.

5. Indicator Templates

Emergency Department Length of Stay	
Description	 This indicator measures the maximum amount of time (in hours) that nine out of 10 patients (90th percentile) spent in the emergency department stratified by patient group: Patients with low-acuity conditions and are discharged Patients with high-acuity conditions and are discharged Patients admitted to acute care Length of stay is captured as the time interval from registration date/time or triage date/time (whichever is earlier and valid) in the emergency department to the date/time the patient leaves the emergency department. A lower number is better.
Relevance/Rationale	Time is crucial to the effectiveness and outcome of patient care, especially for emergency patients. In conjunction with other indicators, this can be used to monitor the total length of time patients spend in the ED in an effort to improve the efficiency and, ultimately, the outcome of patient care. ¹ Long ED wait times are inconvenient and, in some cases, negatively affect a patient's health. Spending a long time in the waiting room, or on hallway stretchers waiting for admission, can also compromise comfort and privacy.
HQO reporting tool	Under Pressure: Emergency department performance in Ontario (Specialized Report)
Reporting tools external to HQO	Canadian Institute for Health Information's Your Health System <u>http://yourhealthsystem.cihi.ca/hsp/indepth?lang=en#/</u> Ontario Ministry of Health and Long-Term Care Wait Time Information System <u>http://www.ontariowaittimes.com/er/En/ProvincialSummary.aspx?view=0</u>

¹ Canadian Institute for Health Information. Total time spent in emergency department (hours, percentile). <u>http://indicatorlibrary.cihi.ca/pages/viewpage.action?pageId=6225984</u> (Accessed October 27, 2016).

	Cancer Care Ontario reports (note: stratified by different patient groups)
	Ministry of Health and Long-Term Care Ministry-LHIN Performance Agreement explanatory indicator, Quarterly report, and Hospital Sector Accountability Agreement indicator (<i>note: stratified by different patient</i>)
	groups)
Unit of analysis	Hours
Calculation	Numerator
Calculation	- N/A
	Denominator
	- All unscheduled ED visits*
	- All unscheduled ED visits
	Additional exclusions:
	 Visits where patient has left without being seen by a physician
	during his/her visit classified as either leaving at his/her own risk
	following registration) or leaving at his/her own risk following
	registration and triage.
	0 0
	- Emergency department visits where registration and triage time
	are both missing/unknown.
	- From January 2015 to March 2015 ONLY , cases where the MIS
	functional centre account code includes: 1) Emergency trauma
	(7*31060000); 2) Observation (7*31040000); and 3) Emergency
	Mental Health Services (7*3107000)
	- Emergency department visits where the date/time the patient left
	the emergency department and visit disposition time both are
	missing/unknown.
	 Cases where the emergency department length of stay is either negative or greater than or equal to 100,000 minutes
	Notes:
	- *See the denominator methodology details in the emergency
	department utilization technical template in Section 4 above.
	- Effective, 2009/10, for emergency department visits with a
	designated clinical decision unit, the length of stay in the clinical
	decision unit is subtracted from the emergency department
	length of stay.
	Methods
	Emergency department length of stay (in hours) is calculated as follows:
	Drive to 2000/10:
	Prior to 2009/10:
	Total ED LOS for unplanned ED visits <i>without</i> a designated clinical
	decision unit (CDU):
	= Date/time patient left the emergency department – Registration/Triage
	date/time (whichever is earlier and valid)

	As of 2009/10: Total ED LOS for unplanned ED visits where patient stays in a designated clinical decision unit:
	 CDU LOS = CDU Date/Time Out – CDU date/time in ED LOS = Total ED LOS – CDU LOS
	Adjustment
	None
Data source / data	National Ambulatory Care Reporting System (NACRS) provided by the
elements	Institute for Clinical Evaluative Sciences
Levels of	Provincial, urban/rural setting (of patient), hospital type, patient group
comparability/stratification	
descriptions	
Limitations / Caveats	Scheduled visits to the ED are excluded from this indicator.

Emergency Department Wait	t Time for Physician Initial Assessment
Description	 This indicator measures the amount of time (in hours) nine out of 10 patients (90th percentile) stayed in the emergency department until they were first assessed by a physician (face-to-face), stratified by patient group: Patients with low-acuity conditions and are discharged Patients with high-acuity conditions and are discharged Patients admitted to acute care This time to physician initial physician assessment is captured as the interval between the date/time the patient was first registered or triaged (whichever is earlier and valid) to the date/time the patient was first assessed by a physician (face-to-face) in the emergency department.
Relevance/Rationale	Patients treated in the emergency department should be assessed and treated in a timely fashion. Long waits may adversely affect patient outcomes. Time to physician initial assessment is part of the overall emergency department length of stay and in combination with other measures, can potentially reveal specific care and process issues that may need to be addressed. ¹ Several factors such as triage level, available capacity may influence indicator results.

¹ Canadian Institute for Health Information. Emergency department wait time for physician initial assessment (hours, percentile). <u>http://indicatorlibrary.cihi.ca/pages/viewpage.action?pageId=5111829</u> (Accessed October 27, 2016).

HQO reporting tool	Under Pressure: Emergency department performance in Ontario
Reporting tools external to HQO	(Specialized Report) Canadian Institute for Health Information's Your Health System <u>http://yourhealthsystem.cihi.ca/hsp/indepth?lang=en#/theme/C5001/2/N</u> <u>4lgKgFgpgtIDCAXATgGxALIAYwPatQEMAHAZygBNNQAGGgRkxQFco</u> <u>BfDoA</u> Alberta Health <u>http://www.health.alberta.ca/documents/PMD-ED-Time-Physician-Initial-</u>
	<u>Assessment.pdf</u>
Unit of analysis	Hours
Calculation	 Numerator: N/A Denominator All unscheduled ED visits* Additional exclusions: Visits where patient has left without being seen by a physician during his/her visit classified as either leaving at his/her own risk following registration) or leaving at his/her own risk following registration and triage Emergency department visits where registration and triage time are both missing/unknown From January 2015 to March 2015 ONLY, cases where the MIS functional centre account code includes: 1) Emergency trauma (7*31060000); 2) Observation (7*31040000); and 3) Emergency Mental Health Services (7*3107000) Emergency visits where the physician assessment date/time is missing or unknown Most responsible provider is not a physician Mode of visit is not face-to-face
	 Notes: *See the denominator methodology details in the emergency department utilization technical template in Section 4 above. A calculated time may be negative in instances where the triage or registration times are logged retrospectively during an emergency visit. In this case the calculated time will be reset to zero as representative of the actual wait time to see the physician. In these cases the record is still included. Methods Emergency department wait time for physician initial assessment is calculated as follows:
	= Date/time of physician assessment in the ED – Registration/Triage date/time (whichever is earlier and valid)

	Adjustment
	None
Data source / data	National Ambulatory Care Reporting System (NACRS) provided by the
elements	Institute for Clinical Evaluative Sciences (ICES)
Levels of	Provincial, urban/rural setting (of patient), patient group
comparability/stratification	
descriptions	
Limitations / Caveats	Scheduled visits to the ED are excluded from this indicator.

Emergency Wait Time for In	Emergency Wait Time for Inpatient Bed	
Description	This indicator measures the amount of time (in hours) nine out of 10 patients (90 th percentile) spent waiting to leave the emergency department for admission to an inpatient bed or operating room after a disposition decision was made by their main service provider. This time that patients admitted from the ED wait for an inpatient bed or an operating room was captured as the interval between the Disposition Date/Time (as determined by the main service provider) and the Date/Time Patient Left the emergency department.	
Relevance/Rationale	Time is critical to the effectiveness and outcome of patient care,	
	especially for emergency patients. In combination with other indicators, this can be used to monitor the inpatient bed turnover rate and the total length of time admitted patients spend in the ED in an effort to improve the efficiency and, ultimately, outcomes of patient care. ¹	
HQO reporting tool	Under Pressure: Emergency department performance in Ontario (Specialized Report)	
Reporting tools external to HQO	Canadian Institute for Health Information's Your System Insight (requires login). https://www.cihi.ca/en/health-system-performance/your-health-system- tools	
Unit of analysis	Hours	
Calculation	Numerator N/A Denominator All unscheduled ED visits*	
	Additional Exclusions:	

¹ Canadian Institute for Health Information. Emergency wait time for inpatient bed (hours, percentile). <u>http://indicatorlibrary.cihi.ca/pages/viewpage.action?pageId=6225944</u> (Accessed October 27, 2016)

	 Visits where patient has left without being seen by a physician during his/her visit classified as either leaving at his/her own risk following registration) or leaving at his/her own risk following registration and triage Emergency department visits where registration and triage time are both missing/unknown From January 2015 to March 2015 ONLY, cases where the MIS functional centre account code includes: 1) Emergency trauma (7*31060000); 2) Observation (7*31040000); and 3) Emergency Mental Health Services (7*3107000) Emergency visits where the date/time the patient left the ED is missing or unknown. Visits where the patient left the ED without being admitted
	Notes:
	- *See the denominator methodology details in the emergency
	department utilization technical template in Section 4 above.
	Methods
	Emergency department wait time for inpatient bed is calculated as follows:
	= Date/time patient left the emergency department – Disposition decision date/time
	Adjustment None
Data source / data	National Ambulatory Care Reporting System (NACRS) provided by the
elements	Institute for Clinical Evaluative Sciences (ICES)
Levels of	Provincial
comparability/stratification descriptions	
Limitations / Caveats	This indicator is calculated only for emergency department visits resulting in an inpatient admission of the reporting hospital. There are several factors that can influence the indicator results, including the availability of inpatient beds, the percentage of alternate level of care (ALC) patients and/or the overall patient population and hospital resources.

Percentage of adults who report that the last time they went to the hospital emergency department it was for a condition that they thought could have been treated by the doctors or staff at the place where they usually get medical care if they had been available.	
Description	This indicator measures the percentage of adults who report that the last time they went to the hospital emergency department it was for a condition that they thought could have been treated by the doctors or staff at the place where they usually get medical care if they had been available.

Relevance/Rationale	An emergency department is an essential service to the general population and provides urgent medical and surgical care to patients at a hospital. Often times it provides a pulse of what is occurring in other parts of the system, as when changes in the health system occur, impacts can be observed in the emergency department. ¹ Access to primary care is key to keeping Ontarians healthy, however simply having a family doctor is not enough. ² If people see their own family health care provider when they need to, it can prevent them from getting sicker and requiring costly hospital and emergency room care. It can also help to avoid emergency room visits for conditions that can be
	addressed by a primary care provider. ³
HQO reporting tool	Under Pressure: Emergency department performance in Ontario (Specialized Report)
Reporting tools external to HQO	None
Unit of analysis	Percentage
Calculation	Numerator Number of respondents who answered "Yes" to the following survey question: Survey question "The last time you went to the hospital emergency department/accident and emergency department/emergency room, was it for a condition you thought could have been treated by the doctors or staff at the place where you usually get medical care if they had been available?" Denominator All respondents Exclusions: - Respondents without a regular doctor/place of care and have not used the emergency department in the past two years. - Those that skipped the survey question Methods Numerator/Denominator x100 The percentage is provided by Social Science Research Solutions on behalf of the Commonwealth Fund. No calculation is conducted on-site.

¹ Chan BTB, Schull MJ, Schultz SE. Atlas Report: Emergency department services in Ontario 1993-2000. Toronto: Institute for Clinical Evaluative Sciences, 2001.

² Born K., Laupacis A. Healthy Debate. September 28, 2011. Available from: <u>http://healthydebate.ca/2011/09/topic/community-long-term-care/accessing-primary-care</u>

³ Excellent Care for All—advanced access is timely care. Available from:

http://www.health.gov.on.ca/en/pro/programs/ecfa/action/primary/pri_access.aspx

	Weighted to account for the design characteristics of the survey and post-stratified by age and sex to reflect the Ontario population.
Data source / data	2013 Commonwealth Fund International Health Policy Survey of the
elements	General Public, provided by Social Science Research Solutions (SSRS)
Levels of	Data are compared by province and country.
comparability/stratification	
descriptions	
Limitations / Caveats	 Data are available once every three years.
	 Data are based on self-report whereby responses cannot be validated with respect to context and severity of or reason for
	visiting the emergency department instead of one's care provider nor actual availability of the regular care provider.

Percentage of adults (aged 16 and older) in Ontario who have been to an emergency department because they were sick or had a health-related problem in the last 12 months	
This indicator measures the percentage of Ontarians aged 16 and older who went to the emergency department in the last 12 months because they were sick or had a health-related problem in the last 12 months.	
An emergency department is an essential service to the general population and provides urgent medical and surgical care to patients at a hospital. It is a critical part of the health system and interacts with many different sectors of care including primary care, home care and long-term care, among others. Often times it provides a pulse of what is occurring in other parts of the system, as when changes occur, impacts can be observed in the emergency department. ¹	
Under Pressure: Emergency department performance in Ontario (Specialized Report)	
None	
Percentage	
Numerator Number of respondents who answered "Yes" to the following survey question: Survey question Have you been to an emergency department because you were sick or for a health related problem in the last 12 months? Denominator All respondents	

¹ Chan BTB, Schull MJ, Schultz SE. Atlas Report: Emergency department services in Ontario 1993-2000. Toronto: Institute for Clinical Evaluative Sciences, 2001.

	Exclusions:
	 Respondents who answered "don't know" or "refused" to answer the above question
	Methods
	Numerator/Denominator x 100
	Note:
	 Results are weighted to account for the design characteristics of the survey and post-stratified by age and sex to reflect the Ontario population.
	 The Health Care Experience Survey is administered via telephone to randomly selected Ontarians aged 16 years or older.
	 Urban/rural status is defined using Statistics Canada's Statistical Area Classification.
	Adjustment
	None
Data source / data	Health Care Experience Survey 2014/15 provided by the Ministry of
elements	Health and Long-Term Care
Levels of	Immigration status
comparability/stratification descriptions	
Limitations / Caveats	 Only people aged 16 years and older can complete the survey. People living in institutions, non-residential phone numbers, and people with invalid/missing household addresses in the Registered Persons Database (RPDB) are not captured. The Health Care Experience Survey is a cross-sectional survey, therefore limiting the ability to determine any temporal relationships between factors. Data are based on self-report in which responses cannot be validated against administrative data.

Percentage of adults (aged 16 and older) in Ontario who reported receiving excellent/very good/good care in the emergency department		
Description	This indicator measures the percentage of Ontarians aged 16 and older who went to an emergency department in the last 12 months because they were sick or for a health related problem and said the medical care they received in the emergency department was excellent, very good, or good.	
Relevance/Rationale	Patient satisfaction is an important quality indicator in the health care system. A number of factors may determine how satisfied patients are in the emergency department such as the perceived quality of services received (e.g., interpersonal skills of the emergency department staff, bedside manner), the perceived level of technical skills from the emergency department staff,	

	patient flow and wait time in the emergency department, the level of perceived privacy while being cared for, cleanliness of the emergency department,
	among other factors. ¹
HQO reporting tool	Under Pressure: Emergency department performance in Ontario (Specialized Report)
Reporting tools external to HQO	
Unit of analysis	Percentage
Calculation	Numerator Number of respondents who answered " Excellent, very good or good " to the following survey question:
	Survey question Overall, would you say the medical care that you received in the emergency department was excellent, very good, good, fair, or poor?
	Denominator All respondents
	 Exclusions: Respondents who did not visit the emergency department in the last 12 months because they were sick or had a health-related problem. Respondents who answered "don't know" or refused to answer the above question
	Methods Numerator/Denominator x 100
	 Note: Results are weighted to account for the design characteristics of the survey and post-stratified by age and sex to reflect the Ontario population. The Health Care Experience Survey is administered via telephone to randomly selected Ontarians aged 16 years or older. Urban/rural status is defined using Statistics Canada's Statistical Area Classification.
	Adjustment
	None
Data source / data elements	Health Care Experience Survey 2014/15 provided by the Ministry of Health and Long-Term Care

¹ Ontario Hospital Association. Leading practices in emergency department patient experience. Toronto: Ontario Hospital Association, 2011.

http://www.oha.com/KnowledgeCentre/Library/Documents/Leading%20Practices%20in%20Emergency%20Department%20 Patient%20Experience.pdf

Levels of comparability/stratifi cation descriptions	Provincial, age group
Limitations / Caveats	 Only people aged 16 years and older can complete the survey. People living in institutions, non-residential phone numbers, and people with invalid/missing household addresses in the Registered Persons Database (RPDB) are not captured. The Health Care Experience Survey is a cross-sectional survey, therefore limiting the ability to determine any temporal relationships between factors. Data are based on self-report. Patient satisfaction can be influenced by varying patient standards and expectations, the patient's disposition, time since care and previous experience, none of which can be determined by the survey.