Health Quality Ontario

The provincial advisor on the quality of health care in Ontario

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Quality in Primary Care: Setting a foundation for monitoring and reporting in Ontario

Technical Appendix



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1. Introduction

HQO collaborates with organizations across the province that represent patients, primary care clinicians, data holders, researchers, managers and policymakers. This collaboration has resulted in the development of a Primary Care Performance Measurement (PCPM) framework to measure and report on performance.[1] Through a prioritization process, a subset of measures (12 core indicators) at the system level (community, regional, provincial) were selected to give insight into the quality of the primary care system in Ontario. This report looks at nine of these 12 indicators, based on HQO's data access at the time of writing and alignment with HQO's online reporting of primary care indicators. Of note, each indicator has different levels of comparability (e.g., LHIN, household income category) and not all results are included in this report. Only those that were statistically significantly different and/or were contextually meaningful are reported. All levels of comparability can be accessed through our online reporting product.

This technical appendix provides general information on the data source, the analytical methods, and the external review process. Finally, this technical appendix provides detailed information for each indicator presented in the report.

2. Analysis

a) Adjustment

To enable appropriate and fair comparisons of primary care performance, some of the indicators were age- and sex-adjusted to the 1991 Canadian census population. This is the population standard specified by Statistics Canada.[2] The 2011 Canadian census population was used to calculate age-standardized rates for the percentage of people aged 50 to 74 overdue for colorectal cancer screening.[3] For the diabetes complications indicator, the standardized rate was adjusted by age, sex and duration of diabetes using the population of prevalent cases of diabetes in Ontario on April 1, 2013.

Survey data were weighted to reflect the design characteristics of the survey and the population of Ontario. For further details on which indicators were adjusted, which were weighted, and the methodology used, please see the individual indicator templates in section 4, Indicator Templates.

Income analyses provided by Cancer Care Ontario for the percentage of people aged 50 to 74 overdue for colorectal cancer screening are based on residents living in urban areas only.[3] In contrast, income analyses for other indicators include residents of both rural and urban Ontario.

Rural and urban analyses provided by Cancer Care Ontario for the percentage of people aged 50 to 74 overdue for colorectal cancer screening are based on four categories (rural–very remote, rural-remote, rural and urban). In contrast, rural and urban analyses for other indicators are based on two categories only (urban and rural).[3]

b) Significance testing

Confidence intervals around each result were calculated at the 95% confidence level. Confidence intervals were used to compare results by time point, region, rural or urban area, neighbourhood income, language primarily spoken at home and immigration status. The report states an increase/decrease or 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).

c) Limitations

There are certain 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 4, Indicator Templates.

3. Data sources

The indicator results presented in this report were provided to Health Quality Ontario (HQO) by a variety of data providers, including the Ontario Ministry of Health and Long-Term Care (MOHLTC), the Institute for Clinical Evaluative Sciences (ICES) and Cancer Care Ontario (CCO).

The data source(s) for each indicator are listed within the individual templates. More details on the specific data sources that HQO used to produce the indicators are noted below.

Discharge Abstract Database (DAD) – Canadian Institute for Health Information (CIHI)

The DAD is a database of information abstracted from hospital records that captures administrative, clinical and patient's demographic information on all hospital inpatient separations (including discharges, deaths, sign-outs and transfers). CIHI receives data directly from participating facilities or from their respective regional health authorities or the ministry. It includes patient-level data for all acute- and chronic-care hospitals, and rehabilitation hospitals in Ontario. Data are collected, maintained and validated by the Canadian Institute for Health Information (CIHI). The main data elements of the DAD are 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.

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

The HCES is a voluntary telephone survey aimed at Ontarians aged 16 and older, conducted on a quarterly basis. The Health Care Experience Survey 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.

ICES Physician Database (IPDB) – Institute for Clinical Evaluative Sciences (ICES)

The ICES Physician Database (IPDB), which comprises information from the Corporate Provider Database (CPDB), the Ontario Physician Human Resource Data Centre (OPHRDC) database and the OHIP database of physician billings, was used to define health care utilization

by physician specialty. The CPDB contains information about physician demographics, specialty training and certification, and practice location. This information is validated against the OPHRDC database, which is updated through periodic telephone interviews with all physicians practicing in Ontario.

Laboratory Reporting Tool (LRT) – Cancer Care Ontario (CCO)

The Laboratory Reporting Tool (LRT) includes data on the Colon Cancer Check (CCC) program, fecal occult blood testing (FOBT) kit distribution, dispensing, and results from eight CCC-participating laboratories, including a unique physician identifier (the CPSO number) of the ordering physician. Data are available on CCC FOBT kits processed from April 2008 onwards.

Ontario Diabetes Database (ODD) – Institute for Clinical Evaluative Sciences (ICES) derived cohort

The ODD employs a validated algorithm to identify people with diabetes using data on hospitalizations and physician visits. Hospital discharge abstracts, collected by the Canadian Institute for Health Information (CIHI) from April 1988 onwards were used to identify Ontarians with a valid health card number who had been hospitalized with a new or pre-existing diagnosis of diabetes. Physician claim records held by the Ontario Health Insurance Plan (OHIP) from July 1991 onwards were also used to identify individuals with visits to a physician for diabetes. When there was a hospital record with a diagnosis of pregnancy care or delivery close to a diabetic record (i.e., diabetic record date between 120 days before and 180 days after a gestational admission date), the diabetic record was considered to be for gestational diabetes and was excluded. Individuals were considered to have diabetes if they had at least one hospitalization or two physician service claims over a two-year period. People enter the ODD as incident cases when they are defined as having diabetes (i.e., the first of DAD admission date or OHIP service date over the two-year period as incident date). An analysis by Hux and colleagues reported that the current algorithm had a sensitivity of 86% and a specificity of 97% for identifying diabetes in the population. The positive predictive value of the algorithm was 80%.[4]

Ontario Health Insurance Plan (OHIP) – Ministry of Health and Long-Term Care (MOHLTC)

The OHIP claims database covers all reimbursement claims to the Ontario Ministry of Health and Long-Term Care made by fee-for-service physicians, community-based laboratories and radiology facilities. The OHIP database at the Institute for Clinical Evaluative Sciences contains encrypted patient and physician identifiers, codes for services provided, date of service, the associated diagnosis and fee paid. Services which are missing from the OHIP data include: some lab services; services received in provincial psychiatric hospitals; services provided by health service organizations and other alternate providers; diagnostic procedures performed on an inpatient basis and lab services performed at hospitals (both inpatient and same day). Also excluded is remuneration to physicians through alternate funding plans (AFPs). Their concentration in certain specialties or geographic areas could distort analyses.

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.

4. Indicator Templates

HAVING A PRIMARY CARE PROVIDER		
Description	This indicator reports the percentage of adults who have a family doctor, a general practitioner or GP, family physician, nurse practitioner, or family medicine resident that they see for regular check-ups and when they are sick.	
	A higher percentage is better.	
Relevance/Rationale	For most people, primary health care is the first point of contact with the healthcare system.	
	Persons with a regular doctor should have better access to primary care than those without one. Research shows that increased access to a primary health care provider is associated with better health and lower total health care system costs. [5] Having a family doctor is also linked to positive health outcomes, including better preventive care and management of chronic conditions, decreased hospitalization and fewer emergency department visits.[6,7] Patients without family physicians seek care in other services such as walk-in clinics or emergency departments,[8] which may result in poor coordination of care, higher risk for drug interactions and delays in receiving results of lab or diagnostic tests.	
	Among health providers, family physicians (FPs) and general practitioners (GPs) are the health professionals most often contacted at least once by Canadians and play the largest role in providing the care.[9]	
HQO reporting tool	Yearly Report/Common Quality Agenda Primary Care Public Reporting Web Pages Primary Care Performance Measurement Framework Primary Care Theme Report	
Reporting tools external to HQO	 Similar external indicators which do not align: Canadian Institute for Health Information's Your Health System (the data source and population are different (CCHS) therefore the results reported on Your Health System are different from what is reported in <i>Measuring Up</i>, 2015) Commonwealth Fund International Health Policy Survey (The survey has a similar question i.e. regular doctor or place of care, but the population surveyed is different, therefore the results from the Commonwealth Fund Survey differ from what is reported in <i>Measuring Up</i>, 2015. Furthermore, the results from the commonwealth Fund Survey are at the country and provincial level only and there are different populations surveyed depending on the survey cycle year.) 	
Unit of analysis	Percentage	
Calculation	Numerator Number of respondents who answered "yes" to the following question on the Health Care Experience Survey: Do you have a family doctor, a general practitioner or GP, family physician, nurse practitioner, or family medicine resident that you see for regular check- ups, when you are sick and so on? • Yes • No • Don't know • Refused	

	Denominator
	Number of respondents to the survey question
	Exclusions:
	 Respondents who answered "don't know" or refused to answer the
	above question
	Methods
	Numerator/Denominator*100
	Health Care Experience Survey is administered via telephone to randomly
	selected Ontarians aged 16 years or older.
	Adjustment (risk, including age/sex standardization)
	Weighted to account for the design characteristics of the survey and post-
	stratified by age and sex to reflect the Ontario population.
Levels of	Data are compared by: LHIN, age group, sex, rural or urban setting, level of
comparability	education, immigration status, household income category, and language
	spoken most often at home.
Data source	Health Care Experience Survey (HCES) provided by the Ministry of Health
	and Long-Term Care (MOHLTC)
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.
	Respondents who were unable to speak English or French or were not
	healthy enough (physically or mentally) to complete the interview were not
	surveyed.

TIMELY ACCESS TO A	PRIMARY CARE PROVIDER
Description	This indicator reports the percentage of adults who are able to see their primary care provider on the same or next day, when they are sick.
	A higher percentage is better.
Relevance/Rationale	Access to primary care is key to keeping Ontarians healthy, however simply having a family doctor is not enough. About 20% of those with a regular doctor still make use of walk-in clinics, suggesting that it may be related to less timely access from their regular family doctors.[10,11]
	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.[12]
	Timely access also allows patients and providers to better manage exacerbations of chronic diseases like diabetes and to stay up-to-date with preventive care and screenings.[12]
HQO reporting tool	Yearly Report/Common Quality Agenda Primary Care Public Reporting Web Page Primary Care Performance Measurement Framework Quality Improvement Plans (conducted by primary care organization)
Reporting tools external to HQO	 Similar external indicators which do not align: Commonwealth Fund International Health Policy Survey (The survey has a similar question but the population surveyed is different, therefore the results from the Commonwealth Fund Survey differ from what is reported in <i>Measuring Up</i>, 2015. Furthermore, the results from the Commonwealth Fund Survey are at the country and provincial level only and there are different populations surveyed depending on the survey cycle year.)
Unit of analysis	Percentage
Calculation	Numerator Number of respondents who answered "same day" or "next day" to the following question on the Health Care Experience Survey: How many days did it take from when you first tried to see your (name type of provider) to when you actually saw him/her or someone else in their office? • Saw doctor same day • Saw doctor next day
	 2-19 (enter number of days) Twenty or more days Don't know Refused
	 Denominator Number of respondents who answered "yes" to the following question: Not counting yearly check-ups or monitoring of an ongoing health issue, in the last 12 months did you want to see your [name type of provider] because you were sick or were concerned that you had a health problem? Yes No Don't know Refused

	AND
	Respondents who answered "yes saw own doctor", "yes saw someone else in office", or "saw both [fill fd_type] and someone else (and others)" to the following question: Did you actually see your [fill fd_type] or someone else in their office? • Yes saw own doctor • Yes saw someone else in office • Saw both [fill fd_type] and someone else (others) • No • Don't know • Refused
	Exclusions
	 Respondents who answered don't know or refused to answer either of the above questions
	Methods
	Numerator/Denominator*100
	selected Ontarians aged 16 years or older.
	Adjustment (risk, including age/sex standardization) Weighted to account for the design characteristics of the survey and post- stratified by age and sex to reflect the Ontario population.
Levels of comparability	Data are compared by: LHIN, age group, sex, rural or urban setting, level of education, immigration status, household income category, and language spoken most often at home.
Data source	Health Care Experience Survey (HCES) provided by the Ministry of Health and Long-Term Care (MOHLTC)
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.
	Respondents who were unable to speak English or French or were not healthy enough (physically or mentally) to complete the interview were not surveyed.

SAME DAY RESPONSE TO PHONE CALL		
Description	This indicator reports the percentage of adults who are always or often able	
	to reach their primary care provider, or someone in their primary care	
	provider s'onice, or get a can back the same day.	
	A higher percentage is better.	
Relevance/Rationale	Establishing timely and effective patient-provider communication is one of	
	the key components of patient-centered care. It is also a potential	
	Contributing factor to patient engagement. [15]	
	question or concern may help to address health needs, organize care and	
	establish positive patient provider relationship. Having an established	
	physician—patient relationship also contributes to better continuity and	
	improved patient satisfaction.[7,14]	
HQO reporting tool	Primary Care Public Reporting Web Pages	
	Primary Care Theme Report	
Reporting tools		
external to HQO		
Unit of analysis	Percentage	
Calculation	Numerator	
	Number of respondents who answered "always" or "often" to the following	
	question on the Health Care Experience Survey:	
	when you called or get back to you the same day?	
	• Always	
	Often	
	Sometimes	
	• Rarely	
	Never	
	 depends on what they called for Don't know 	
	Refused	
	Denominator	
	Number of respondents who answered "yes" to the following question on the	
	Health Care Experience Survey:	
	Have you called or tried to call your primary care provider's office with a modical question or concern during the day on a Monday to Eriday in the last	
	12 months?	
	• Yes	
	• No	
	Don't know	
	• Refused	
	Exclusions	
	 Respondents who answered "don't know" or refused to answer 	
	either of the above questions	
	Methods	
	Numerator/Denominator*100	
	Health Care Experience Survey is administered via telephone to randomly selected Optarians aged 16 years or older	
	Adjustment (risk, including age/sex standardization)	

	Weighted to account for the design characteristics of the survey and post-
	stratified by age and sex to reflect the Ontario population.
Levels of	Data are compared by: LHIN, age group, sex, rural or urban setting, level of
comparability	education, immigration status, household income category, and language
	spoken most often at home.
Data source	Health Care Experience Survey (HCES) provided by the Ministry of Health
	and Long-Term Care (MOHLTC)
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.
	healthy enough (physically or mentally) to complete the interview were not surveyed.

PATIENT INVOLVEMENT IN DECISIONS ABOUT THEIR CARE AND TREATMENT		
Description	This indicator reports the percentage of adults who state that their primary care provider always or often involves them as much as they want in decisions about their care and treatment.	
	A higher percentage is better.	
Relevance/Rationale	Involving patients in decisions about their care and treatment is a key contributing factor for providing patient centered care and ensuring engagement in their overall care.[13]	
	Patients who are involved in their care [15] have improved recall of information, knowledge and confidence to manage their conditions and adherence to the chosen treatment plan.[16]	
	Patient engagement also improves patient satisfaction. Studies have shown that Canadians who are engaged in their primary care are more likely to rate their recent medical care as excellent. They are also more likely to be very confident about the quality of future care and about their ability to manage their own health.[8]	
	In addition, patients who are engaged in their primary care more often participate in disease prevention, screening, and health promoting activities, such as quitting smoking and have positive feelings of overall health.[17]	
HQO reporting tool	Yearly Report/Common Quality Agenda Primary Care Public Reporting Web Pages Primary Care Performance Measurement Framework Quality Improvement Plans (conducted by each primary care organization)	
Reporting tools external to HQO	Similar external indicators which do not align: Commonwealth Fund International Health Policy Survey (The survey has a similar question but the population surveyed is different, therefore the results from the Commonwealth Fund Survey differ from what is reported in <i>Measuring Up</i> , 2015. Furthermore, the results from the Commonwealth Fund Survey are at the country and provincial level only and there are different populations surveyed depending on the survey cycle year.)	
Unit of analysis	Percentage	
Calculation	Numerator Number of respondents who answered "always" or "often" to the following question on the Health Care Experience Survey: When you see your [fill fd_type] or someone else in their office, how often do they involve you as much as you want to be in decisions about your care and treatment? • Always • Often • Sometimes • Rarely • Never • It depends on who they see and/or what they are there for • Not using/on any treatments/not applicable • Don't know • Refused	

	Denominator
	Number of respondents who state that they have a primary care provider.
	 Exclusions: Respondents who answered any of: "it depends on who they see and/or what they are there for". "did not use/were not on any
	treatments/not applicable", "don't know" or refused to answer the numerator question
	 Respondents who answered "never saw family doctor or anyone in their office" to the first question in the Patient Experience section of the survey (When you see your [fill fd_type] or someone else in their office, how often do they know important information about your medical history?) (this is based on the skip pattern in the survey to exclude patients who didn't see their doctor.)
	Methods
	Numerator/Denominator*100
	Health Care Experience Survey is administered via telephone to randomly
	selected Ontarians aged 16 years or older.
	Adjustment (risk, including age/sex standardization)
	Weighted to account for the design characteristics of the survey and post-
	Stratilied by age and sex to reliect the Ontano population.
comparability	education immigration status, household income category, and language
comparability	spoken most often at home.
Data source	Health Care Experience Survey (HCES) provided by the Ministry of Health and Long-Term Care (MOHLTC)
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.
	Respondents who were unable to speak English or French or were not healthy enough (physically or mentally) to complete the interview were not surveyed.

MEDICATION REVIEW	
Description	This indicator reports the percentage of adults who reviewed or discussed the prescription medication(s) they are using with their primary care provider.
	A higher percentage is better.
Relevance/Rationale	Based on the latest findings from Canadian Health Measures Survey (CHMS) an estimated 41% of 6- to 79-year-olds reported currently taking at least one prescription medication. Approximately 11% of 45- to 64-year-olds and 30% of seniors aged 65 to 79 took at least five prescription medications concurrently.[18]
	However, it is also known that very often drugs are not taken as prescribed and therefore medication review is increasingly recognised as an essential part of medication management to prevent adverse reactions and avoid waste. Involving patients in prescribing decisions and supporting them in taking their medicines is a key part of improving patient safety, health outcomes and satisfaction with care.[19]
	The Institute for Safe Medication Practice (ISMP) have shown that medication reconciliation conducted in primary care clinics in Ontario significantly reduced the proportion of visits with missing medication lists and reduced prescription medication errors by more than half. It also showed that patients who received medication reconciliation within 3 to 7 days post discharge were less likely to be readmitted to hospital at days 7 and 14.[20]
HQO reporting tool	Primary Care Public Reporting Web Pages Primary Care Performance Measurement Framework Primary Care Theme Report
Reporting tools external to HQO	
Unit of analysis	Percentage
Calculation	Numerator Number of respondents who answered "yes" to the following question on the Health Care Experience Survey: In the last 12 months, has your [fill fd_type] reviewed and discussed with you the prescription medicine(s) you are using? • Yes (includes reviewed, discussed or both) • No • Don't know • Refused
	Number of respondents who stated that they take prescription medication by answering "one," "two," "three," or "four" to the following question on the Health Care Experience Survey: How many different prescription medicines are you taking on a regular, or on- going basis? • One • Two
	 Three Four or more Don't know Refused

	 Exclusions Respondents who answered "don't know" or refused to answer either of the above questions
	Methods Numerator/Denominator*100 Health Care Experience Survey is administered via telephone to randomly selected Ontarians aged 16 years or older.
	Adjustment (risk, including age/sex standardization) Weighted to account for the design characteristics of the survey and post- stratified by age and sex to reflect the Ontario population.
Levels of comparability	Data are compared by: LHIN, age group, sex, rural or urban setting, level of education, immigration status, household income category, and language spoken most often at home.
Data source	Health Care Experience Survey (HCES) provided by the Ministry of Health and Long-Term Care (MOHLTC)
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. Respondents who were unable to speak English or French or were not healthy enough (physically or mentally) to complete the interview were not surveyed.
	This indicator does not capture medication review with a pharmacist

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OVERDUE FOR COLORECTAL CANCER SCREENING		
Description	This indicator reports the percentage of Ontarians, 50–74 years of age, who	
	were overdue for colorectal cancer screening in a calendar year.	
Delevence/Detiencle	A lower percentage is better.	
Relevance/Rationale	Colorectal cancer is among the top four most commonly diagnosed cancers	
	in Ontario, and is the second and third leading cancer cause of death in men	
	and women, respectively.[21] If caught early through screening, a person with	
	colorectal cancer has a very high chance of survival—90%.[22] It is	
	recommended that people aged 50 to 74 be screened for colorectal cancer.	
	Pointinose at average fisk for colorectal cancel, a nome test—the Fecal Occult Blood Test (FOBT)—once every two years is recommended. For those at	
	increased risk because of a family history, colonoscopy is advised.[23]	
HQO reporting tool	Yearly Report/Common Quality Agenda	
	Primary Care Public Reporting Web Page	
	Primary Care Performance Measurement Framework	
	Primary Care Theme Report	
	Other HQO indicators in the same family:	
	Quality Improvement Plans provider level data and the inverse is	
	reported, i.e. percentage of patients who are "up to date" in cancer	
	screening and is extracted from EMRs)	
	Primary care practice reports (provider level data and the inverse is	
	reported, i.e. percentage of patients who are "up to date" in cancer	
Descention for the	screening)	
Reporting tools	Cancer Care Ontario Cancer Screening Quality Index	
	Ministry of Health and MOHI TC Health Analytics Branch - Resource	
	for Indicator standards (RIS), MSAA (sector specific for CHCs)	
Unit of analysis	Percentage	
Calculation	Numerator	
	were overdue for colorectal screening by the end of the calendar year as	
	defined by not having any of the following*:	
	Fecal Occult Blood Test (FOBT) in the last 2 years:	
	Program CCC FOBTs were identified in Laboratory Reporting Tool	
	 Non-program FOBTs were identified using fee codes in OHIP: 	
	G004 Lab.med.in office - Occult blood	
	L1/9 ColonCancerCheck Fecal Occult Blood Testing	
	Colonoscopy in the last 10 years	
	Identified using fee codes Z555, Z491A, Z492A, Z493A, Z494A, Z495A,	
	2496A, 2497A, 2498A, and 2499A in OHIP	
	Flexible sigmoidoscopy in the last 5 years	
	Identified using fee code Z580 in OHIP	
	*Multiple claims with the same Health Insurance Number (HIN) service date	
	and fee code were assumed to be a single claim. Each individual was	

	a surfaced a surger surger and the surger of the state surger of the state surger of
	counted once regardless of the number of tests performed.
	Denominator
	Total number of Ontario screen-eligible individuals, 50–74 years old in each
	calendar year
	Exclusions:
	 Individuals with a missing or invalid HIN, date of birth, sex or postal
	code
	 Individuals with an invasive colorectal cancer prior to Jan 1 of the
	calendar year of interest; prior diagnosis of colorectal cancer was
	defined as: ICD-O-3 codes C18.0 C18.2-C18.9 C19.9 C20.9 a
	morphology indicative of colorectal cancer, microscopically confirmed
	with a nath report
	 Individuals with a total collectomy prior to Jap 1 of the calendar year
	of interest. Total coloctomy was defined in OHIP by fee codes \$160
	5170, 5172
	Weinoas
	Numerator/Denominator~100
	Individuals were considered overdue for colorectal screening if they:
	(1) did not return a FOBT kit within the last two years (Jan 1 of the previous
	year to Dec 31st of the calendar year of interest) AND
	(2) did not have a colonoscopy in the last 10 years (Jan 1 nine years prior to
	the calendar year of interest to Dec 31st of the calendar year of interest) AND
	(3) did not have a flexible sigmoidoscopy in the last five years (Jan 1 four
	years prior to the calendar year of interest to Dec 31st of the calendar year of
	interest)
	Adjustment (risk, including age/sex standardization)
	Direct age standardization to the 2011 Canadian population
Levels of	Data are compared: over time, by LHIN, age group, sex, rural or urban
comparability	setting, neighbourhood income quintile (for urban population only)
. ,	Rural or urban residence for this indicator was based on whether
	individuals lived within a census metropolitan area (CMA), census
	agglomeration (CA) or Influenced Zones (MIZ) which takes into
	account population size, distance and commuting flow between rural
	and small towns and larger centres, based on the 2011 Census
	 Urban: CMAs or CAs with a core population of 10 000 or
	more and $50+\%$ of the population commute to a CMA/CA
	\sim Bural: Areas with a core population of <10,000, and 30-40%
	of the nonulation commute to an urban area
	\sim Bural-Remote: Areas with a core population of <10.000 and
	5 20% of the nonulation commute to an urban area
	-2070 of the population continuite to all utball area -2070 of the population continuite to all utball area -2000
	\circ Ruial-Very Remote. Aleas with a core population of <10,000 and 0.4% of the population commute to an urban area. else
	and 0-4 /0 of the population continuite to an urban alea, also
Data course	Colonoscopy Interim Deporting Teel (CIDT) CCC program colonoscopy
Data Source	colonoscopy interim Reporting Tool (CIRT) – CCC program colonoscopy
	Records, Laboratory Reporting Tool (LRT) – CCC FOBTS, Untario Cancer
	Registry (UCR) - Resolved invasive colorectal cancers, Untario Health
	Insurance Plan (UHIP) – Non-UCU FUBT, colonoscopy, flexible
	sigmoidoscopy and colectomy claims, Postal Code Conversion File (PCCF+)
	version 6A - Residence and socio-demographic info, Registered Persons
	Database (RPDB) – Demographics
Limitations / Caveats	Historical RPDB address information is incomplete; therefore, the most recent
	primary address was selected for reporting, even for historical study periods.

FOBTs analyzed in hospital labs could not be captured.
Only FOBT as a primary screening test could be assessed; FOBT is recommended for those at average risk of colorectal cancer, while those at increased risk (1st degree relative with colorectal cancer) were not assessed as they could not be accurately identified.
A small proportion of FOBTs performed as diagnostic tests could not be excluded from the analysis.
OHIP data may include (CCC program) rejected kits.
This indicator does not capture tests performed as part of the Registered Nurse Flexible Sigmoidoscopy Project (represents about 7,192 flexible sigmoidoscopies as of October, 2012).

DIABETES COMPLICA	TION
Description	This indicator reports the rate of serious chronic complications (such as
	nospitalizations for coronary aftery disease, cerebrovascular disease and peripheral vascular disease (amputation), as well as end stage renal disease
	and death) in the last year among people with diabetes aged 20 and older.
	, , , , , , , , , , , , , , , , , , , ,
	A lower rate is better.
Relevance/Rationale	Close to one million Ontarians have diabetes. Diabetes is a leading cause of heart disease, kidney failure resulting in dialysis, and amputation due to narrowing of the blood vessels (arteries and veins) in the limbs, hands and feet.[24] Timely monitoring and management of diabetes by checking blood pressure, blood sugar, and blood lipids as well as encouraging patients to take their medication and maintain a healthy lifestyle can help reduce the likelihood of developing many of these long-term complications of diabetes.
	Based on the United Kingdom Prospective Diabetes Study (UKPDS), blood glucose and blood pressure control lower the risk of microvascular and macrovascular complications in type 2 diabetics. Specifically, a 1% reduction in HbA1c has been associated with a 10% reduction in diabetes-related mortality and a 25% reduction in microvascular end-points.[25] Likewise, blood pressure control is associated with a 32% reduction in risk of mortality from diabetes-associated conditions, two-thirds of which are cardiovascular diseases.[26] Furthermore, blood pressure control is associated with a 34% reduction in the risk of macrovascular disease (including myocardial infarction, sudden death, stroke, and peripheral vascular disease), a 44% reduction in the risk of stroke, and a 37% reduction in the risk of microvascular disease.[26] It is critical that primary care providers monitor and manage the care of patients with diabetes since the majority of care takes place in the primary care setting.[27]
HQO reporting tool	Primary Care Public Reporting Web Pages Primary Care Performance Measurement Framework Primary Care Theme Report
Reporting tools	Similar external indicators which do not align:
external to HQO	Institute for Clinical Evaluative Sciences (ICES) Atlas reported a similar
Unit of analysis	indicator but the numerator includes a slightly different set of complications.
Calculation	Numerator
	 Number of patients with any of the complications listed below: 1. Death (from RPDB) 2. Coronary artery disease hospitalization (i.e. AMI) CIHI-DAD record with DXCODE or INCODE associated with AMI. PTCA.
	 CABG, angina with most responsible diagnosis pre- or post-admission ICD-10 codes: I20, I21, I22, DXTYPE1 = M
	 CCI codes : 1IJ50, 1IJ57, 1IJ76 3. Cerebral vascular disease (CVD) hospitalization (i.e. Stroke) ICD10 codes: I61, I63, I64, G45 DXTYPE1 = M Exclude: G45.4 CCI codes: 1JE57 Peripheral vascular disease (PVD) hospitalization (i.e. Surgeries for peripheral vascular disease including expectations)
	 CCI codes: 1VQ93, 1VC93, 1VG93, 1WA93, 1WE93, 1WI93, 1WJ93,

	 Exclude if one of the following ICD-10 codes, any DXTYPE, appears on the same record: C402, C403, C461, C472, C492, D162, D163, D212, S72 to S79, S82 to S89, S97, S98, T023, T025 to T029, T033 to T039, T043 to T049, T053 to T059, T07, T132 to T139, T142 to T149 Incident end stage renal disease (i.e. requiring dialysis)-see number 4 under denominator exclusions <i>At least two chronic dialysis OHIP fee code G860 to G866</i> Any complication: The first occurrence of any of the above* For patients with more than one complication during the reported year, the first occurrence of the complication is selected for calculation of the overall complication rate. Denominator All cases of diabetes that are prevalent on April 1 of each fiscal year of interest (from 2005/06 to 2013/14) Exclusions: Invalid IKN
	 Invalid IKN Non-Ontario resident Invalid sex or birthdate
	 Death date before April 1st of given year Age < 20 at the time of diagnosis (since we're restricting ourselves to adults for almost all of the indicators). In ODD <1 year prior to April 1 of fiscal year of interest (i.e., were incident in year prior to fiscal year of interest) Two or more OHIP fee codes for hemodialysis G860 to G866 present in previous year
	Methods
	Adjustment (risk, including age/sex standardization)
	Direct standardization using the April 1 2013 diabetes population in Ontario as a standard. Standardized by:
	• Age groups are 20-34, 35-49, 50-64, 65+
	 Sex Duration of diabetes: 0-4, 5-9, 10+ years
Levels of	Data are compared: over time, by LHIN, age group, sex, rural or urban
comparability	setting, neighbourhood income quintile
Data source	Discharge Abstract Database (DAD), Ontario Diabetes Database (ODD),
	(RPDB), provided by Institute for Clinical Evaluative Sciences (ICES)
Limitations / Caveats	The indictor is targeting only serious chronic complications.
	Some of the outcomes/complications may not be directly related to diabetes (such as death).
	The indicator is not adjusted for comorbidities.
	ODD doesn't distinguish type1 and type 2 diabetes.

30-DAY READMISSION	
Description	This indicator reports the rate of hospital readmission within 30 days of discharge, for any of the following conditions: pneumonia, chronic obstructive

	pulmonary disease, congestive heart failure, stroke, gastrointestinal disease, diabetes and cardiac conditions (excluding heart attack) as a rate per 100
	nospital discharges.
	Generally, a lower rate is better.
Relevance/Rationale	The unplanned hospital readmission rate is an important indicator of health system performance [28] and reducing readmissions remains a key strategy area for Ontario.[29] It is a marker of quality of care and integration and shows how well various parts of the health system work together.[30] Reporting the 30-day readmission rate and understanding the contributing factors can inform strategies to reduce unplanned readmission rates. Some readmissions are unavoidable due to specifics of conditions or health decline, however if patients get the care they need when and where they need it, this can help to reduce the number of preventable hospital readmissions.[31]
HQO reporting tool	Primary Care Public Reporting Web Pages Primary Care Performance Measurement Framework Primary Care Theme Report
	Other HQO indicators in the same family: The Yearly Report has 30-day readmission rates for medical and surgical patients Quality Improvement Plans (specific to primary care organization)
	Primary care practice profile reports (specific to primary care organization)
Reporting tools external to HQO	Ministry of Health and Long-Term Care HDB portal, Ministry-LHIN Performance Agreement, Hospital Sector Accountability Agreement, and Quarterly report. Canadian Institute for Health Information Your Health System and Health Indicators Interactive Tool (report overall readmission rates and readmission rates for medical and surgical patients)
Unit of analysis	Rate per 100 hospital discharges
Calculation	Numerator Number of subsequent non-elective readmissions to an acute care hospital within 30 days of discharge (for any cause)
	 Inclusions: Patients with admission category (admcat = 'U')
	 Exclusions: Cases where readmission is coded as an acute transfer by the receiving hospital (unless the readmission was coded as a transfer from the same hospital) Records with missing or invalid data on discharge/admission date Elective hospitalizations
	Denominator
	Acute care discharges from an episode of care in which one of the conditions below (identified by the Case Mix Group (CMG) code) is recorded in the first hospitalization of the episode within each fiscal year (minus last 30 days for follow-up) among all Ontario residents:
	 Cardiac Conditions, excluding heart attack (CMG+ codes 202, 204, 208) for people aged 40 and older only Pneumonia (CMG+ codes 136, 138, 143) all ages Diabetes (CMG+ code 437) all ages Stroke (CMG+ codes 025, 026, 028) for people aged 45 and older

	only
	• Gastrointestinal Disease (CMG+ codes 231, 248, 251, 253, 254, 255,
	256, 257, 258, 285, 286, 287, 288) for all ages
	 CHF (CMG+ code 196) for people aged 45 and older only
	 COPD (CMG + code 139) for people aged 45 and older only
	Methods
	Numerator/Denominator*100
	Adjustment (risk, including age/sex standardization)
	Direct age and sex standardization using 1991 Canadian census population.
	Age groups are: <=18, 19-34, 35-49, 50-64, 65+
Levels of	Data are compared: over time, by LHIN, sex, rural or urban setting,
comparability	neighbourhood income quintile
Data source	Discharge Abstract Database (DAD), Ontario Health Insurance Plan (OHIP),
	Registered Persons Database (RPDB), provided by the Institute for Clinical
-	Evaluative Sciences (ICES)
Limitations / Caveats	Not all readmissions are avoidable and this indicator does not capture which readmissions were avoidable and the underlying reasons (e.g. condition aggravation, poor transition, lack of community support/care). Due to age restrictions for some conditions the results are not reported by age groups
	The indicator captures hospital readmission only and does not capture return visits to the emergency department.

SEVEN DAY FOLLOW-UP AFTER LEAVING HOSPITAL	
Description	This indicator reports the rate of follow-up visit with a primary care doctor within seven days of discharge for any of following conditions: pneumonia, diabetes, stroke, gastrointestinal disease, congestive heart failure, chronic obstructive pulmonary disease, and cardiac conditions (excluding heart attack) as a rate per 100 hospital discharges.
	A higher rate is better.
Relevance/Rationale	The days immediately following discharge from hospital are a vulnerable transition period for patients. Patients without a medical follow-up are at an increased risk of being readmitted within 30 days of discharge. The highest proportion of readmissions fall within the first 10 days after discharge [30] emphasizing the importance of early follow-up visits.
	This is especially important for patients at a high risk of readmissions, for example, those with multiple chronic conditions. Follow-up within seven days was associated with a meaningful reduction in readmissions in this group of patients.[32] A number of studies have also shown that early follow-up has been associated with reduced 30-day readmissions for patients with congestive heart failure and chronic obstructive pulmonary disease.[33] Primary care providers (PCP) have a critical role during this transition period. A study showed that patients lacking timely PCP follow-up were 10 times more likely to be readmitted.[34]
HQO reporting tool	Primary Care Public Reporting Web Pages
	Primary Care Performance Measurement Framework Primary Care Theme Report
	Other HQO indicators in the same family:
	admitted to bospital for beart failure or chronic obstructive pulmonary disease
	Quality Improvement Plans (specific to primary care organization)
Reporting tools	Similar external indicators which do not align:
external to HQO	Ministry of Health and Long-Term Care reports 7-day follow-up by any
	gastrointestinal disease, congestive heart failure, chronic obstructive
	pulmonary disease, and cardiac conditions excluding heart attack)
Unit of analysis	Rate per 100 hospital discharges
Calculation	Numerator Number of discharges where the patient was seen by a primary care physician (OHIP) within 7 days of discharge from hospital for the mentioned conditions.
	Inclusions:
	 Ontario physician visits taking place in office, home, or long-term care (OHIP variable LOCATION = 'O' or 'H' or 'L')
	 Visits to any primary care provider, pediatrician, or geriatrician (IPDB Mainspec = 'GP/FP' or 'F.P./EMERGENCY MEDICINE' or 'PEDIATRICS' or 'GERIATRIC MEDICINE'), (Take the first occurrence of the PCP visit within 7 days. i.e. look at only PCP visits and if there were more than one include only the first one) Physician visits occurring between days 0* to 7 post-discharge (i.e., includes date of discharge) *Follow-up visits on day zero post-discharge were only included if the

	discharge occurred before 8 am on that day
	Exclusions:
	Negated OHIP claims duplicate claims and lab claims
	Records with missing or invalid data on discharge/admission date
	Denominator
	Number of acute care discharges from episode of care in which one of the
	conditions below (identified by the Case Mix Group (CMG) code) is recorded
	in the first hospitalization of the episode within each fiscal year (minus last 30
	days for follow-up) among all Ontario residents.
	Inclusions:
	Cardiac Conditions, excluding heart attack (CMG+ codes 202, 204, 209) for people aread 40 and older only.
	200) for people aged 40 and older only Proumonia (CMC+ codes 126, 138, 142) all ages
	 Prieumonia (CMG+ code 437) all ages Diabetes (CMG+ code 437) all ages
	 Stroke (CMG+ codes 025, 026, 028) for people aged 45 and older
	only
	• Gastrointestinal Disease (CMG+ codes 231, 248, 251, 253, 254, 255,
	256, 257, 258, 285, 286, 287, 288) for all ages
	CHF (CMG+ code 196) for people aged 45 and older only
	 COPD (CMG+ code 139) for people aged 45 and older only
	Exclusions:
	Invalid IKIN Non Ontaria regidente
	Non-Ontario residents Desidente pet eligible for OHID et index dete
	Residents who have not had contact with the Ontario health care
	system (no OHIP records) within the previous 7 years
	Exclude patients under age 40 for cardiac CMGs
	Exclude patients under age 45 for stroke, COPD, and CHF
	Records with missing or invalid data on discharge/admission date,
	death date, age or gender
	 Discharges: Transfers to acute hospital care (dischdisp = 01) and to
	other (palliative care/hospice, addiction treatment centre) (dischdisp
	= 03), deaths (dischdisp = 07), patient sign-outs against medical
	advice (dischdisp = 06), cadavers (dischdisp = 08), and stillbirths
	(dischdisp = 09)
	Cases with no Resource Intensity Weight (RIW) assigned
	Numerator/Denominator*100
	Adjustment (risk, including age/sex standardization)
	Direct age and sex standardization using 1991 Canadian Census population.
	Age groups are: <=18, 19-34, 35-49, 50-64, 65+
Levels of	Data are compared: over time, by LHIN, sex, rural or urban setting,
comparability	neighbourhood income quintile
Data source	Discharge Abstract Database (DAD), ICES Physician Database (IPDB),
	Ontario Health Insurance Plan (OHIP), Registered Persons Database
Limitations / Caveate	Other types of follow-up (e.g. with a specialist or purse practitioner) are not
	captured by this indicator
	Follow-up visit is not condition/discharge-specific and does not necessarily
	have the same reason for visit as the hospitalization. It captures a visit for any
	reason within 7 days and may include visits unrelated to the index

hospitalization.
Due to age restrictions/differences for some conditions the results are not reported by age groups.
HQO uses different definitions to report this indicator in different tools

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