OHQC Ontario Health Quality Council

OHQC 2007 YEARLY REPORT — INDICATORS TECHNICAL MANUAL

PRAXIA INFORMATION INTELLIGENCE

HayGroup

OHQC Ontario Health Quality Council

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1 ACCESSIBLE

1.1 Population Aged 12 and Older Who Report Having a Regular Medical Doctor

Definition

Description: Proportion of the population aged 12 and older who report having a regular medical doctor (Statistics Canada, 2004).

Indicator Calculation: (Numerator / Denominator) x 100

Numerator: Weighted number of respondents aged 12 and older who report that they have a regular medical doctor.

Denominator: Weighted total number of respondents aged 12 and older.

Inclusion Criteria: Only individuals 12 and older were eligible for selection.

Exclusion Criteria: Residents of institutions, full-time members of the Canadian Armed Forces, persons living on first-nation reserves and on Crown lands and populations in some remote areas were excluded from the survey.

Comments: Data were stratified by age [12-29, 30-44, 45-64, 65+] and gender.

Rationale: The lack of a regular medical doctor may indicate limited or poor access to preventive primary-care services (Association of Public Health Epidemiologists in Ontario (APHEO), 2004). A high percentage of the population with access to a primary-care physician and primary-care services is optimal and may reflect appropriate access to key services and continuous provision of care. Having a regular source of medical care is a strong determinant of use of recommended preventive-care services (APHEO, 2004). Higher percentages of patients with access to a primary-care physician could decrease the number of emergency room visits, thereby decreasing the strain on the hospital care sector. Access to a regular medical doctor may also improve continuity of care (APHEO, 2004).

Data Quality Issues

Data Source: Canadian Community Health Survey (CCHS), Cycles 1.1 (2000), 2.1 (2003) and 3.1 (2005), Statistics Canada, Ontario Share File, MOHLTC

Accuracy of Data: Data are not formally audited. Data are self-reported.

Coverage Characteristics: Provincial estimates are available.

Potential for Historical Trends: Every two years or more, beginning in 2000. Comparable to 1996/1997 Ontario Health Survey.

List of References

1. Association of Public Health Epidemiologists in Ontario (APHEO). (2004). *Use of Health Services – Regular Medical Doctors*. Found at: http://www.apheo.ca/indicators/index.html, retrieved August 19, 2005.

2. Canadian Institute for Health Information (CIHI). (2004). *Plan for Reporting Comparable Health Indicators, November 2004*. Found at: http://secure.cihi.ca/cihiweb/en/downloads/ACGA_CBN_TO_CDM_ENG.pdf, retrieved May 12, 2005.

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1.2 Population (18+) Reporting Regular Medical Doctor by LHIN

Definition

Description: Percentage of the population who are 18 and older who report that they have a regular family doctor.

Numerator: Respondents who report 'yes' to the above question.

Denominator: Respondents 18 years of age and older.

Methodological Notes: 95 percent confidence intervals are provided. Data are analyzed at the provincial and LHIN level. Populations are weighted by household and geography (LHIN).
All estimates are post stratified to the 2005 Ontario population estimates (by gender and five-year age group).

Exclusions: Respondents who did not report their age are excluded from analyses. **'**Don't know' and 'refused' responses are excluded from analyses.
For visible minorities analysis (provincial-level analyses only): indicator is stratified by ethnicity (white versus non-white). For immigrant analysis (provincial-level analyses only):
For immigrant status, this indicator is stratified by immigrant status (immigrant versus non-immigrant).
For the 'new immigrant' category, respondents are divided into two categories: Immigrated five years ago or more/Non-immigrant = Respondents who immigrated to Canada five years ago or longer and respondents who are non-immigrants and immigrated less than five years ago = Includes only respondents who immigrated to Canada less than five years ago.

Data Quality Issues

Data Sources: Primary Care Access Survey, wave 1, 2 and 3, 2006 Ministry of Health and Long-Term Care Population Estimates, Calendar Years 2005, Ontario Ministry of Health and Long-Term Care, Provincial Health Planning Database Ver 16.13, Extracted November 20/2006.

1.3 90th Percentile Wait Times in the Following Priority Areas (Cancer Surgery, Cardiac Procedures, Joint Replacement, Cataract Surgery, MRI/CT Scan)

Definition

Description: Ninety percent completed within**:** The point at which 90 percent of the patients have completed surgery or have had their exam, and the other 10 percent are still waiting. For surgical procedures, Ontario measures the wait time from when a patient and surgeon decide to

proceed with surgery, until when the actual procedure is completed. For diagnostic scans (MRI and CT), Ontario measures the wait time from when a diagnostic scan is ordered, until when the actual exam is completed. This interval is typically referred to as from 'decision to treat' to 'treatment' (Wait Times Information Office, 2005).

Cancer Surgery

Indicator Calculation: Wait times are measured from the date at which investigations have been completed, diagnosis discussed with patient and decision to operate is made by surgeon and agreed to by the patient (Wait Times Information Office, 2005).

Exclusion Criteria: There are several situations that may result in no information from a particular hospital being available for the given period of time. 'Non-compliant' hospitals were required to report wait-time data for this service, but did not report by the deadline for publication**. '**No volume' means that a hospital, which is required to report, reported that they did not perform this service during the period. 'Not required to report' means that the hospital provides this service, but was not one of the hospitals that received additional funding to provide additional treatments this year, and therefore is not currently required to submit wait-time information. There are also some hospitals that are not required to report their information, but have chosen to do so (Wait Times Information Office, 2005).

Cardiac Procedures

Indicator Calculation: Waiting periods are counted from the date a patient was accepted for angiography, angioplasty or bypass surgery by a cardiologist or cardiac surgeon. Waiting periods do not include time spent investigating heart disease before a patient is accepted for a procedure. For example, the time it takes for a patient to have a heart catheterization procedure before being referred to a heart surgeon is not part of the wait time shown for heart surgery (Wait Times Information Office, 2005).

Inclusion Criteria: Only includes patients who are Ontario residents (Wait Times Information Office, 2005).

Exclusion Criteria: For angiography, wait-time information is shown for those patients whose primary indication is coronary artery disease. Angiographies for other medical reasons are excluded. Emergency cases (a situation where a patent arrives through the emergency department of a hospital and/or requires immediate treatment due to an imminently life-threatening condition) are excluded (Wait Times Information Office, 2005).

Cataract Surgery

Indicator Calculation: Wait times are measured from the date the surgeon decides that a surgical procedure is required and the patient agrees to undergo the procedure and to be placed on a waiting list.

Exclusion Criteria: Emergency cases (a situation where a patient arrives through the emergency department of a hospital and/or requires immediate treatment due to an imminently life-threatening condition) are excluded.

Joint Replacement

Indicator Calculation: Wait times are measured from the date the surgeon decides that a surgical procedure is required and the patient agrees to undergo the procedure and to be placed on a waiting list.

Exclusion Criteria: Emergency cases (a situation where a patient arrives through the emergency department of a hospital and/or requires immediate treatment due to an imminently life-threatening condition) are excluded.

MRI/CT Scan

Indicator Calculation: Wait times are measured from the date the MRI/CT was ordered.

Exclusion Criteria: Emergency cases (a situation where a patient arrives through the emergency department of a hospital and/or requires immediate treatment due to an imminently life-threatening condition) are excluded.

Rationale: A reducing wait time for key health services is a priority of the current provincial government, and is an important part of a greater strategy to transform the province's health system. Wait times are a symptom of a broader problem: the lack of consistent management of how patients get access to care. Ontario's Wait Time Strategy is designed to improve access to health-care services and reduce the time that Ontarians wait for services in five areas by December 2006. The five areas are cancer surgery, selected cardiac procedures, cataract surgery, hip and knee total joint replacements and MRI/CT scans. These areas are associated with a high degree of disease and disability and are of particular concern to Ontarians (Backgrounder: The Wait Times Strategy, 2005).

Under the strategy, wait times will be improved by expanding capacity through targeted volume increases, improved efficiencies and standardizing medical and administrative 'best practices' so that more people can be treated within the same time period. The strategy will help make hospitals accountable for managing access to these services with the development of an information system. Ontario is in the process of developing a Wait Time Information System (WTIS) that will be more comprehensive, precise and timely. By December 2006, this single information system will be established in approximately 50 Ontario hospitals, representing more than 80 percent of the total volume for the five health services funded through the Wait Time Strategy. Eventually, this new system could track wait times for all surgical procedures in Ontario (Backgrounder: The Wait Times Strategy, 2005).

Cancer Surgery

Surgery is a major component of cancer care and is usually needed to determine if a tumor is cancerous or not. Surgery may also be required to evaluate the stage of disease, and as a definitive treatment to remove a malignant growth. Approximately 80 percent of patients with cancer undergo a surgical procedure to diagnose stage or treat cancer. Surgery is the main curative treatment for the majority of cancer patients. Surgery is not most often the first point of entry in the cancer treatment system, waiting for surgery can impact on the entire patient journey (Irish, 2005).

Cardiac Procedures

There is a need for timely and equitable access to cardiac care services in order to meet growing demand in Ontario. Those waiting for advanced cardiac procedures also face the more specific

and serious risks of death and myocardial infarction (such as heart attack or irreversible heart damage). The likelihood of such an event depends on the length of time spent waiting and the particular clinical features of each patient. To fully characterize the burden of waiting for services, a variety of measures are needed, including measures of process (such as the median wait time), measures of system performance (such as percent of procedures completed within the recommended maximum wait times), and measures of outcome (such as mortality or myocardial infarction rate on the wait list) (Cardiac Care Network, 2005, 3).

Cataract Surgery

Cataracts are caused when the lens of the eye becomes clouded, making it difficult for a person to see. Cataracts are the most common cause of reversible vision loss since they develop as part of the aging process. Cataract surgery decreases the functional impairment that happens because of poor vision and increases a person's autonomy and independence. Cataract surgery is a highly successful procedure that costs relatively little compared to major surgeries. Cataract surgery has few complications and excellent functional results, improving visual function in over 95 percent of cases (Hooper, 2005).

Joint Replacement

Surgery to replace a hip or knee joint occurs when disease or injury causes deterioration of the cartilage and/or bones of the hip or knee to the point where non-surgical treatments do not adequately reduce a person's pain or disability. Hip and knee joint-replacement surgery is a highly effective and cost-effective treatment for reducing pain, improving quality of life and restoring the functional ability and mobility. The demand for hip and knee joint replacement is increasing largely due to an aging population that has age-related musculoskeletal diseases. New technologies are also making joint surgery a more viable option for both young and older people (Gross, 2005).

MRI/CT Scan

Magnetic resonance imaging (MRI) and computed tomography (CT) are essential tools for the diagnosis, treatment and follow-up of illness. MRI and CT scans are gradually replacing other imaging procedures. Delays in accessing MRI and CT imaging can lead to delays in timely treatment (Keller, 2005).

Data Quality Issues

Data quality information is not currently available because the Wait Times Information Office has not yet done a full assessment of the interim wait-times database. A comprehensive data quality program is forthcoming and will be available for future iterations of the Ontario Health System Scorecard.

Cancer Surgery

Data Source: Cancer Care Ontario (Wait Times Information Office, 2006).

Cardiac Procedures

Data Source: Cardiac Care Network (Wait Times Information Office, 2006).

Cataract Surgery

Data Source: Wait Times Information Office, 2006.

Joint Replacement (Hip and Knee)

Data Source: Ontario Joint Replacement Registry/Wait Times Information Office (Wait Times Information Office, 2006).

MRI/CT

Data Source: Wait Time Information Office (Wait Times Information Office, 2006).

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7. Ontario Ministry of Health and Long-Term Care. (2005). *Backgrounder: The Wait Time Strategy.* Found at: http://www.health.gov.on.ca/transformation/wait_times/wt_strategy.html, retrieved November 16, 2005.

Note: Inclusion and exclusion criteria are based on information for the Wait Times Information System and Health Results Team – System Integration.

1.4 Use of Telemedicine for Patient Consultations across Ontario

Definition

Description: Count of scheduled clinical telehealth events.

- For a telehealth clinical event, there must be:
    a. An exchange of clinical information; and
    b. A relationship between the patient and the health-care provider; and
    c. Documentation generated in the patient's health record.
- A clinical event consists of 2 components:
    a. A 'referring' site, where the patient is located; and,
    b. A 'consulting' site; where the consulting health-care provider is located.
- Events are counted from the referring (patient) site
- A clinical event can be:
    a. Point-to-point (one consulting site and one referring site); or
    b. Multipoint (multiple consulting sites and/or multiple referring sites).

Inclusion Criteria: All scheduled clinical events.

Exclusion Criteria: All emergent and urgent non-scheduled events, including Telestroke. All continuous or monitoring events such as telehomecare and ICU monitoring.

Data Quality Issues

Data Source: OTN scheduling databases.

Accuracy of Data: Data are audited for accuracy.

Potential for Historical Trends Data collection is ongoing with monthly and quarterly reporting, so continuous/annual tracking is possible as of April 1, 2006.

List of References

none

2 EFFECTIVE

2.1 Percentage of Clinical Cases Being Treated According to Evidence-Based Clinical Practice Guidelines (Stroke, Colorectal and Breast Cancer)

Definition

Stroke

Indicator Statement: All eligible patients who arrive at hospital within 2.5 hours of symptom onset should: a. receive tissue plasminogen activator (tPA); b. receive it within one hour of hospital arrival.

Indicator Calculation: (Numerator / Denominator) X 100.

Numerator: Number of eligible ischemic stroke patients receiving IV thrombolysis in an RSC.

Denominator: Number of ischemic stroke clients presenting in ED who are eligible for tPA and arrive within 2.5 hours of symptom onset.

Rationale: There is level 'B-C' evidence currently available to support the use of acute thrombolysis for ischemic stroke patients. Thrombolytic therapy, administered up to six hours after ischemic stroke, has been reported to significantly reduce the proportion of patients who were dead or dependent (modified ranking 3 to 6) at the end of follow-up at three to six months. This was in spite of a significant increase in the odds of death within the first ten days, the main cause of which was fatal intracranial hemorrhage. For patients treated within three hours of stroke, thrombolytic therapy appeared more effective in reducing death or dependency with no statistically significant adverse effect on death. The most recent Cochrane review (2006) concluded that overall, thrombolytic therapy appears to result in a significant net reduction in the proportion of patients dead or dependent in activities of daily living. The data from trials using intravenous recombinant tissue plasminogen activator, from which there are the most evidence on thrombolytic therapy so far, suggest that it may be associated with less hazard and more benefit.

Breast and Colorectal Cancer

Description: This indicator is designed to measure the extent to which patients in Ontario are being treated according to evidence-based clinical practice guidelines. The following specific recommendations are assessed for which there exists good evidence to support their use in Ontario:

- **Colon cancer:** Percentage of stage 3 colon cancer patients treated with adjuvant systemic therapy within four months of the first visit to a cancer centre according to the clinical practice guideline.

- **Breast cancer:** Percentage of stage 1 breast cancer patients who initiated radiation therapy according to provincial guidelines.

Colon Cancer

Indicator Calculation: (Numerator / Denominator) X 100

Numerator: Number of stage 3 colon cancer patients treated with adjuvant systemic therapy within four months of the first visit to a cancer centre according to the clinical practice guideline.

Denominator: Number of stage 3 colon cancer patients treated with adjuvant systemic therapy at regional cancer centers.

Exclusion Criteria: Excluded from this indicator were stage 3 colon cancer patients who received chemotherapy outside of cancer centers or at Princess Margaret Hospital and patients for whom stage, histology and provincial regimen was not recorded (also excludes Grand River and Durham Regional Cancer Centres).

Comments: Assessment of outpatient chemotherapy administered to patients with colon cancer within four months of the first visit to a cancer centre from 2002 to 2003. The provincial disease site chair reviewed the regimens and determined concordance with the clinical practice guideline.

Breast Cancer

Indicator Calculation: (Numerator / Denominator) X 100

Numerator: Number of stage 1 breast cancer patients, from the denominator, treated with radiation therapy according to the clinical practice guideline, which is defined as 14 or more radiation treatment visits, excluding boosts. This was intended to capture all patients who had the recommended fractionation schedule of either 15 or 25 fractions.

Denominator: Number of stage 1 breast cancer patients treated with radiation therapy.

Inclusion Criteria: Patients recorded as having stage I breast cancer treated with radiation within 10 months of the first visit to the cancer centre. The data set did not allow distinction between patients who received breast-conserving surgery prior to radiation and those who did not.

Exclusion Criteria: Patients with ductal carcinoma in situ; patients who received treatments at Princess Margaret Hospital, as well as patients for whom stage was not reported (Cancer Care Ontario [CCO] & Cancer Quality Council of Ontario, 2005). Princess Margaret Hospital Data is excluded from this measure because the hospital has its own reporting system for cancer patients.

Comments: The number of treatment visits was used as a proxy for the number of fractions.

Data Quality Issues

Data Source: Cancer Care Ontario, Activity Level Reporting for Integrated Cancer Programs.

http://www.cancercare.on.ca/qualityindex2006/evidence/chemo/index.html

http://www.cancercare.on.ca/qualityindex2006/evidence/radiation/index.html

Accuracy of Data: These indicators rely on accurate reporting of patient stage, treatments and participation in clinical trials. The results could be skewed depending on the accuracy with which each centre recorded these items. The accuracy of the data has not yet been audited.

Coverage Characteristics: It is not yet possible to determine if patients receiving care that is not according to guidelines are still getting appropriate care due to specific clinical circumstances, participation in a clinical trial, or other factors. The analyses were limited to the subset of the patients in the province for whom chemotherapy data was available.

Potential for Historical Trends: Historical trending is possible. With respect to these particular guidelines, trending beyond the two reported time periods is not currently available as the analysis is new. Over time, ongoing cancer performance reporting will allow for more trending.

Other Comments: Currently we cannot distinguish those patients completing a full course of treatment. Patients that might have been too sick to continue with treatment, voluntarily stopped treatment, or died would still be included in the dataset. Treatments administered at selected cancer centres (such as Princess Margaret Hospital) were excluded from these results due to data unavailability, but will be included in subsequent reporting. Thus, future interpretations will be more representative of the use of these cancer CPGs across Ontario.

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2.2 Thirty-day Post-Hospital Heart Attack Survival Rate

Definition

Description: Age- and sex-adjusted rate of cases which were admitted to an acute-care facility with AMI as the most responsible diagnosis and alive 30 days following admission per 100 population.

Indicator Calculation: (Numerator / Denominator) x 100

Numerator: All Ontario residents who were admitted to an acute-care facility with AMI as the most responsible diagnosis and were alive 30 days following admission.

Denominator: All Ontario residents who were admitted to an acute-care facility with AMI as the most responsible diagnosis.

Exclusion Criteria: People who live outside of Ontario, who do not have a valid health card number or who are under the age of 20 are excluded. Those who had an AMI admission within one year prior to the date of the index episode, or patients whose records indicate that AMI was coded as a complication or who were discharged less than three days after admission were excluded.

Comment: The AMI survival rate calculated here is not adjusted for risk. This indicator was developed and calculated by the Institute for Clinical and Evaluative Sciences.

Rationale: Acute myocardial infarction (AMI) is one of the leading causes of death in Canada. Changes in post-AMI survival and mortality appear to be important contributors to the decline of cardiovascular disease death rates, to be amenable to treatment, and to be amenable to treatment *improvement*. Effective strategies for treating and preventing AMI exist. A lower risk-adjusted survival rate following AMI can be an indicator of the quality of care being provided (Statistics Canada, 2004). As a result, this indicator offers insight as to the health-care system's long-term success in reducing deaths from AMI (Federal/Provincial/Territorial Performance Indicators Reporting Committee, 2002). Further, the results obtained through the measurement of this indicator may help to prompt the development of useful strategies for further treating and preventing AMI deaths (Statistics Canada, 2004).

Data Quality Issues

Data Source: The CIHI Discharge Abstract Database (DAD) was used to capture admissions to acute-care facilities for AMI. The DAD and the Registered Persons Database were used to capture the fact and date of death. Statistics Canada Postal Code Conversion File was used to provide a geographic link between census data and postal codes.

Accuracy of Data: Data are not formally audited and have minor quality concerns.

Coverage Characteristics: Full coverage of encounters/events. Post-hospital mortality may be undercounted.

Potential for Historical Trends: Data are collected continually so continuous/annual tracking is possible. Data available 1999/2000 to 2005/2006.

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2.3 Thirty-Day Acute Myocardial Infarction In-Hospital Survival for Heart Attack for Canada and Selected Provinces

Definition

Description: The risk-adjusted rate of all causes of in-hospital death occurring within 30 days of first admission to an acute-care hospital with a diagnosis of acute myocardial infarction (AMI).

Numerator: Number of deaths from all causes that occur in-hospital within 30 days of admission for an AMI.

Denominator: Total number of AMI episodes in an 11-month period.

ICD-9/ICD-9-CM
410

ICD-10-CA
I21, I22

Interpretation: A lower risk-adjusted mortality rate following AMI may be related to quality of care or other factors. It has been shown that the 30-day in-hospital mortality rate is highly correlated (r=0.9) with total mortality (death in and out of hospital) following AMI (Tu *et al*., 1999b). Inter-regional variation in 30-day in-hospital mortality rates may be due to jurisdictional and institutional differences in standards of care, as well as other factors that were not included in the adjustment.

Standards/Benchmarks: Benchmarks have not been identified for this indicator.

Comments: These rates should be interpreted with caution due to potential differences in the coding of comorbid conditions across provinces and territories.

The Canada rate does not include Newfoundland and Labrador, Quebec, British Columbia and Nunavut. Rates for British Columbia were calculated by applying the risk-adjusted coefficients from a model using data from PEI, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, the Yukon and Northwest Territories.

Data Quality Issues

Data Source: Discharge Abstract Database (DAD), CIHI Hospital Morbidity Database (HMDB), CIHI.

Availability: Episodes were pooled over a three-year period: April 1, 2001 to March 31, 2004 and April 1, 2002 to March 31, 2005. The reference date for these rates reflects the mid-point of the three-year period.

Comprehensiveness: Rates for Newfoundland and Labrador and Quebec are not available due to differences in coding of AMI (Newfoundland and Labrador) and diagnosis type (Quebec). Rate for Nunavut is not available due to incomplete data submission.

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2.4 Risk-adjusted Rate of Survival for 30 Days after First Admission to an Acute-Care Hospital with a Diagnosis of Stroke

Definition

Description: The in-hospital 30-day mortality rate is defined as the risk-adjusted rate of all causes in hospital death occurring within 30 days of first admission to an acute-care hospital with a diagnosis of stroke.

Numerator: Number of deaths from all causes that occur in-hospital within 30 days of admission for a stroke.

Denominator: Total number of stroke patients admitted during time frame.

Exclusion Criteria: Patients whose stroke occurred during hospital stay for another condition are excluded from this indicator.

Standards/Benchmarks: Benchmarks have not been identified for this indicator.

Findings (i): Current stroke mortality rate is 15.1 percent across Ontario, including all acute-care hospitals.

Findings (ii): There were significant regional variations in mortality rates, and rates were lower for Residual Change Scores (RCSs) compared with other types of hospitals.

Comments: The mortality rates have decreased significantly over the past eight years. Mortality rates are a frequently cited outcome measure, and should be regarded in conjunction with other performance indicators.

Data Quality Issues

Data Source: CIHI Discharge Abstract Database; Registered Persons Database; Registry of the Canadian Stroke Network.

2.5 Risk-adjusted Rate of Survival for 30 Days after First Admission to an Acute-care hospital with a Diagnosis of Stroke, by Province

Definition

Description: The risk-adjusted rate of all cause in-hospital death occurring within 30 days of first admission to an acute-care hospital with a diagnosis of stroke.

Numerator: Number of deaths from all causes that occur in-hospital within 30 days of admission for stroke.

Denominator: Total number of stroke episodes in an 11-month period.

ICD-9
430, 431, 432, 434, 436

ICD-9-CM
430, 431, 432, 434.01, 434.11, 434.91, 436

ICD-10-CA
I60-I62, I63.3-I63.5, I63.8, I63.9, I64

Interpretation: Stroke is a leading cause of death and long-term disability. Adjusted mortality rates following stroke may reflect, for example, the underlying effectiveness of treatment and quality of care. Inter-regional variations in the stroke mortality rates may be due to jurisdictional and institutional differences in standards of care, as well as other factors that are not included in the adjustment.

Standards/Benchmarks: Benchmarks have not been identified for this indicator.

Comments: This indicator is based on the methodology used to calculate the 30-day acute myocardial infarction in-hospital mortality rate. Rates should be interpreted with caution due to potential differences in the coding of comorbid conditions across provinces and territories.

The Canada rate does not include Quebec, British Columbia and Nunavut. Rates for British Columbia were calculated by applying the risk-adjusted coefficients from a model using data from Newfoundland and Labrador, PEI, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, the Yukon and Northwest Territories.

Data Quality Issues

Data Source: Discharge Abstract Database, CIHI Hospital Morbidity Database, CIHI .

Availability: Episodes were pooled over a three-year period: April 1, 2001 to March 31, 2004 and April 1, 2002 to March 31, 2005. The reference date for these rates reflects the mid-point of the three-year period.

Comprehensiveness: Rates for Quebec are not available due to differences in coding of diagnosis type. Rate for Nunavut is not available due to incomplete data submission.

List of References

1. Hosmer DW, Lemeshow S. *Confidence interval estimates of an index of quality performance based on logistic regression models*. Statistics in Medicine 1995; 14:2161-2172.

2.Mayo NE, Goldberg MS, Levy AR, Danys I, Korner-Bitensky N. *Changing rates of stroke in the province of Quebec, Canada: 1981-1988*. Stroke 1991; 22:590-595.

3.Mayo NE, Neville D, Kirkland S, Ostbye T, Mustard CA, Reeder B, *et al*. *Hospitalization and case-fatality rates for stroke in Canada from 1982 through 1991: the Canadian collaborative study group of stroke hospitalizations*. Stroke 1996; 27:1215-20.

4.Weir N, Dennis MS. *Towards a national system for monitoring the quality of hospital-based stroke services*. Stroke 2001; 32:1415-21.

2.6 Five-year Survival Rate for Cancer (Prostate, Breast, Colorectal and Lung)

Definition

Description: Ratio of the survival rate observed among incident cancer patient cases and the survival that would have been expected if these patients had the same mortality rates as the general population. (Excludes patients who did not reside in Ontario at the time of diagnosis, patients of unknown age or unknown county of residence, and individuals only diagnosed at or following death.)

Indicator Calculation: The method used is the 'maximum likelihood method' established by Estève et al (1990). The maximum likelihood method determines the parameters that maximize the probability (likelihood) of the sample data.

Age-standardized rates for a given cancer were calculated by weighting age-specific rates to the age distribution of all eligible patients who were diagnosed with that cancer (Statistics Canada, 2004).

Numerator: Number of people diagnosed with cancer who survived for five years after diagnosis.

Denominator: Number of similar people in the general population who survived for the same period without cancer.

Inclusion Criteria: Survival rates for each of the following cancers: prostate, colorectal and lung cancer cases diagnosed at ages 50 to 79. The survival rate for breast cancer included all cases diagnosed at ages 40 to 79.

Exclusion Criteria: Patients who did not reside in Ontario at the time of diagnosis, patients of unknown age or unknown country of residence, and individuals only diagnosed at or following death are excluded (CCO and the Cancer Quality Council of Ontario, 2005).

Rationale: Survival after a cancer diagnosis is an important measure in assessing the extensive impacts of prevention and early detection methods, such as screening (National Health Performance Committee (NHPC), 2002). This indicator also sheds light on the effectiveness of cancer treatments (CCO and the Cancer Quality Council of Ontario, 2005). Therefore, an improvement in screening may result in increased detection of early, "survivable" tumors, which is when treatments are generally more successful, and would result in improvements in observed survival. Also, if there had not been a significant change in screening, better-observed survival may indicate more effective and successful cancer treatment after diagnosis (Statistics Canada, 2004).

Relative survival is a ratio that compares the likelihood of the survival of cancer patients to the survival of individuals of the population who are the same age and sex, residing in the same region and sharing other similar characteristics who have not been diagnosed with cancer (CCO

and the Cancer Quality Council of Ontario, 2005). Relative survival ratios are widely used to analyze the survival of cancer patients in population studies, as it provides an objective measure of the proportion of patients dying from the direct or indirect consequences of their disease in a given population (Statistics Canada, 2004). For example, a relative survival rate of 100 percent reveals that the cancer had no influence on the survival of the group over a given period of time. A survival rate of less than 100 percent shows that the disease did impact survival of cancer patients in comparison to the population without cancer (NHPC, 2002).

Evidence of improved survival over the past decade from cancers such as female breast cancer, and colorectal cancer, suggest the potential for reducing mortality from these causes at least up to age 75 (CCO, 2003; Richards et al., 2000). Evidence comparing the cancer survival rates of low-income people in Canada and the United States, however, suggests that health care is indeed important. Among residents of low-income areas, adults in Toronto experienced a five-year survival advantage for most cancers, compared to adults in three American cities. Consistent with other Canada/US comparisons, this study's observed pattern of Canadian survival advantage across various cancer sites suggests that more equitable access to preventive and therapeutic health-care services may be responsible for the difference (Gorey et al., 2000). Cancer survival rates are influenced by, and reflect, the effectiveness of a whole chain of activities within the health-care system: prevalence of cancer screening, the quality of early diagnosis of cancer and the efficacy of treatment (Ugnat et al., 2005). Increasing the survival rate among people with cancer, as with cardiovascular disease, is a second route by which to improve population health through improvements in clinical care.

Data Quality Issues

Data Source: Ontario Cancer Registry (OCR), SEER Public Use Database (SEER*Stat), Ontario Population Projections, Verdecchia et al (2002) 'PIAMOD: Prevalence and Incidence Analytic Model.

Accuracy of Data: Data are not formally audited; data cleaning/checking is assumed.

Limitations:

- Stage-specific survival is the gold standard for measuring cancer survival. Ontario is unable to perform analysis of stage-specific survival because it has relatively low rates of stage capture.
- Interpretation of temporal trends must be done with caution due to changes in diagnostic practices and/or rules of coding and registration.

Coverage Characteristics: Full coverage of encounters/events; percentage of missing data unknown.

Potential for Historical Trends: Data are collected continually so continuous/annual tracking is possible.

List of References

1. Cancer Care Ontario. (2003). *Targeting Cancer: An action plan for cancer prevention and detection.* Cancer 2020 Background Report. Found at: http://www.cancercare.on.ca/documents/Cancer2020BackgroundReportMay2003.pdf, retrieved September 22, 2005.

2. Cancer Care Ontario (CCO) and the Cancer Quality Council of Ontario. (2005). *Cancer Quality Index—Surviving Cancer*. Found at: http://www.cancercare.on.ca/qualityindex/outcomes/survival/index.html, retrieved July 12, 2005.

3. Estève, J., Benhamou, E., Croasdale, M., et al. (1990). Relative Survival and the Estimation of Net Survival: Elements for Further Discussion. *Statistics in Medicine*, *9:*529-538.

4. Gorey, K.M., Holowaty, E.J., Fehringer, G., Laukkanen, E., Richter, N.L. and Meyer, C.M. (2000). An international comparison of cancer survival: relatively poor areas of Toronto, Ontario and three US metropolitan areas. *Journal of Public Health Medicine, 22*: 343-348.

5. Health Canada. (2004). *Healthy Canadians – A Federal Report on Comparable Health Indicators 2004*. Found at: http://www.hc-sc.gc.ca/iacb-dgiac/arad-draa/english/datadevelop/health_indicators_e.html, retrieved September 22, 2005.

6. National Health Performance Committee (NHPC). (2002). *National Report on Health*. Found at: http://www.aihw.gov.au/publications/hwi/nrhspi03/nrhspi03-c08.pdf, retrieved July 12, 2005.

7. Richards, M.A., Stockton, D., Babb, P., and Coleman, M.P. (2000). How many deaths have been avoided through improvements in cancer survival?. *British Medical Journal, 320*: 895-898.

8. Statistics Canada. (2004). *Healthy Canadians: Five-year relative survival rate for colorectal cancer.* Found at: http://www.statcan.ca/english/freepub/82-401-XIE/2002000/considerations/hlt/49hlt.htm#1, retrieved July 12, 2005.

9. Ugnat, A-M., Xie, L., Semenciw, R., Waters, C., and Mao, Y. (2005). Survival patterns for the top four cancers in Canada: the effects of age, region and period. *European Journal of Cancer Prevention*, *14*: 91-100.

2.7 Improvements in Five-Year Relative Ontario Cancer Survival[1] by Type of Cancer – Cases Diagnosed 1986 to 1988, versus Cases Diagnosed 1996 to 1998

Definition

Description: Ratio of the survival rate observed among incident cancer patient cases and the survival that would have been expected if these patients had the same mortality rates as the general population.

Exclusion Criteria: Patients who did not reside in Ontario at the time of diagnosis, patients of unknown age or unknown country of residence, and individuals only diagnosed at or following death.

Data Quality Issues

Data Source: Cancer Care Ontario, Ontario Cancer Registry

Limitations:

- Stage-specific survival is the gold standard for measuring cancer survival. Ontario is unable to perform analysis of stage-specific survival because it has relatively low rates of stage capture.
- Interpretation of temporal trends must be done with caution due to changes in diagnostic practices and/or rules of coding and registration.

[1] Ratio of the survival rate observed among incident cancer patient cases and the survival rates of the general population. (Excludes patients who did not reside in Ontario at the time of diagnosis, patients of unknown age or unknown country of residence, and individuals only diagnosed at or following death.)

List of References

1. Canadian Cancer Society/National Cancer Institute of Canada: Canadian Cancer Statistics 2006.

2. Based on a comparison to the SEER Cancer Statistics Review, 1975-2002.

3. Based on a comparison to EUROCARE-3 data on 5-year relative survival for all cancers combined. Roazzi P, Capocaccia M, Santaquilani M, Carrani E and the EUROCARE Working Group. Electronic availability of EUROCARE-3 data: a tool for further analysis. Annals of Oncology 2003; 14 (Supplement 5):v150-v155.

4. Ontario Cancer Research Network. *Supporting Clinical Trials – Clinical Trial infrastructure*. Found at: http://www.ocrn.on.ca/CT_Infrastructure.htm

2.8 Risk-Adjusted Rate of Unplanned Readmission to Hospital within 28 Days of Initial Admission, for Heart Attack Patients, by Province

Definition

Definition: The risk-adjusted rate of all cause in-hospital death occurring within 30 days of first admission to an acute-care hospital with a diagnosis of acute myocardial infarction (AMI) (heart attack).

Numerator: Number of deaths from all causes that occur in-hospital within 30 days of admission for AMI.

Denominator: Total number of AMI episodes in an 11-month period.

ICD-9/ICD-9-CM
410

ICD-10-CA
I21, I22

Interpretation: A lower risk-adjusted mortality rate following AMI may be related to quality of care or other factors. It has been shown that the 30-day in-hospital mortality rate is highly correlated (r=0.9) with total mortality (death in and out of hospital) following AMI (Tu *et al*., 1999b). Inter-regional variation in 30-day in-hospital mortality rates may be due to jurisdictional and institutional differences in standards of care, as well as other factors that were not included in the adjustment.

Standards/Benchmarks: Benchmarks have not been identified for this indicator.

Comments: These rates should be interpreted with caution due to potential differences in the coding of comorbid conditions across provinces and territories. The Canada rate does not include Newfoundland and Labrador, Quebec, British Columbia and Nunavut. Rates for British Columbia were calculated by applying the risk-adjusted coefficients from a model using data from PEI, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, the Yukon and Northwest Territories.

Data Quality Issues

Data Source: Discharge Abstract Database (DAD), CIHI Hospital Morbidity Database (HMDB), CIHI.

Availability: Episodes were pooled over a three-year period: April 1, 2001 to March 31, 2004 and April 1, 2002 to March 31, 2005. The reference date for these rates reflects the mid-point of the three-year period.

Comprehensiveness: Rates for Newfoundland and Labrador and Quebec are not available due to differences in coding of: AMI (Newfoundland and Labrador) and diagnosis type (Quebec). Rate for Nunavut is not available due to incomplete data submission.

List of References

1. Hosmer DW, Lemeshow S. *Confidence interval estimates of an index of quality performance based on logistic regression models*. Statistics in Medicine 1995; 14:2161-2172.

2. Tu JV et al. Acute myocardial infarction outcomes in Ontario. In Naylor CD, Slaughter PM (eds). *Cardiovascular Health & Services in Ontario: An ICES Atlas*. Toronto: Institute for Clinical Evaluative Sciences. 1999; 84-100.

3. Tu JV et al. Acute myocardial infarction outcomes in Ontario (Methods Appendix). In Naylor CD, Slaughter PM (eds). *Cardiovascular Health & Services in Ontario: An ICES Atlas (Technical and methods appendices*). Toronto: Institute for Clinical Evaluative Sciences. 1999.

2.9 Risk-Adjusted Rate of Unplanned Readmission to Hospital for Asthma Patients within 28 Days of Initial Admission, by Province

Definition

Description: Risk-adjusted rate of unplanned readmission following discharge for asthma. A case is counted as a readmission if it is for a relevant diagnosis and occurs within 28 days after the index episode of care. An episode of care refers to all contiguous in-patient hospitalizations and same-day surgery visits.

Relevant diagnoses for assigning readmission cases includes:

- Pneumococcal pneumonia;
- Other bacterial pneumonia;
- Bronchopneumonia, organism unspecified;
- Pneumonia, organism unspecified;
- Asthma;
- Emphysema;
- Pulmonary collapse;
- Respiratory arrest; and
- Respiratory complications during or resulting from a procedure.

Numerator: Number of asthma episodes with a readmission for a given year.

Denominator: Total number of asthma episodes in an 11-month period

Interpretation: Readmission rates provide one measure of the quality of care. Although readmission for medical conditions may involve factors outside the direct control of the hospital, high rates of readmission act as a signal to hospitals to look more carefully at their practices, including the risk of discharging patients too early and the relationship with community physicians and community-based care.

Comments: New "combination" codes for pneumonia in patients with chronic obstructive pulmonary disease (COPD) were introduced with ICD-10-CA and have no equivalents in ICD-9/ICD-9-CM. To enable comparisons across jurisdictions regardless of the coding classification being used, pneumonia cases coded as most responsible in either ICD-10-CA or ICD-9/ICD-9-CM have been removed if COPD is also recorded in any diagnosis position.

The ability to link same-day surgery visits to in-hospital admissions was possible for those provinces submitting day surgery data to the DAD or to the NACRS database. As of April 1, 2003, all hospitals in Ontario and some hospitals outside of Ontario began reporting same-day surgery to the NACRS database. Note that Alberta did not submit any day-surgery data to CIHI over the period of observation.

These rates should be interpreted with caution due to potential differences in the coding of comorbid conditions across provinces and territories.

Data Quality Issues

Data Source: Discharge Abstract Database (DAD), CIHI National Ambulatory Care Reporting System (NACRS), CIHI.

Availability: Episodes were pooled over a three-year period: April 1, 2002 to March 31, 2005. The reference rate for these data is 2003, reflecting the mid-point of this period.

Comprehensiveness: Rates for Quebec and Manitoba are not available due to differences in data collection. The rate for Nunavut is not available due to incomplete data submission.

List of References

1. Brown AD, Anderson GM. *Methods for measuring clinical utilization and outcomes*. In Baker GR, Anderson GM, Brown AD et al (eds). *The Hospital Report 99*. Health Care Performance Measurement Group, University of Toronto, Toronto, 1999.

2. Hosmer DW, Lemeshow S. *Confidence interval estimates of an index of quality performance based on logistic regression models*. Statistics in Medicine 1995; 14:2161-2172.

3. *Hospital Report Acute Care 2001*. Technical notes, Clinical Utilization and Outcomes. Canadian Institute for Health Information and the University of Toronto. A joint initiative of the Ontario Hospital Association and the Government of Ontario, 2001.

3 EFFICIENT

3.1 Percentage of Alternate Level of Care (ALC) Days

Definition

Description: Percentage of inpatient days where a physician (or designated other) has indicated that a patient occupying an acute-care hospital bed was well enough to have been cared for elsewhere.

Indicator Calculation: (Numerator / Denominator) x 100

Numerator: Total number of ALC days per hospital in a given year.

Denominator: Total number of bed days per hospital in a given year.

Inclusion Criteria: Data is retrieved from acute-care hospitals.

Exclusion Criteria: Newborns are not included in this indicator.

Rationale: An alternate level of care (ALC) patient is one who does not require acute-care treatment, but is occupying a bed designated for that type of care (APHEO, 2003). The reporting of ALC cases is a clinical decision and must be indicated on the patient's chart by the attending physician (St. Joseph's Health Care, 2005). The patient remains in an acute-care bed while his or her needs may be better met in an alternative, less-costly setting such as a long-term care facility (St. Joseph's Health Care, 2005). Patients remain in hospital longer than necessary for various reasons, including no available room in residential facilities or a delay in discharge arrangements. Community Care Access Centers do their best to inform clients that they can keep their place on a waiting list even if they take another bed choice, however this is not always sufficient to move clients out of ALC. An increase in ALC days can prevent access to acute care and increase costs because hospitals can charge a per-diem rate for acute-care patients waiting for long-term care placement. A reduction in ALC days results in more acute-care beds being available for those who need acute-care treatment.

This indicator measures the extent to which hospital efficiency is being maximized through the proper use of hospital resources and the ability to make appropriate and timely transfers (Lin, 2004). The number of ALC days spent in a hospital may be a measure of the degree of hospital-community integration since fewer ALC days is suggestive of higher levels of integration allowing for more timely discharge from hospital into appropriate community care.

Data Quality Issues

Data Source: Provincial Health Planning Database, Discharge Abstract Database.

Accuracy of Data: Data are not fully audited for accuracy.

Coverage Characteristics: Full coverage of encounters/events.

Potential for Historical Trends: Data are collected continually so continuous/annual tracking is possible.

List of References

1. Association of Public Health Epidemiologists in Ontario (APHEO). (2003). *Mortality, Morbidity, and Health-Related Quality of Life – Average Length of Stay*. Found at: http://www.apheo.ca/indicators/pages/indicators/ind03n07.html, retrieved May 31, 2005.

2. Lin, E., Durbin, J., Koegl, C., Murray, M., Tucker, T., Daniel, I., Markel, F., McGillis Hall, L., McKillop, I., Pink, G., Layne, C., Prendergast, P., and Goering, P. (2004). *Hospital Report 2004 Mental Health*. Found at: http://www.hospitalreport.ca/downloads/2004/mental_health_2004.html, retrieved May 31, 2005.

3. St. Joseph's Health Care London. (2005). *Estimating Resource Requirements – Alternate Level of Care* Found at: http://www.sjhc.london.on.ca/corp/restruct/lhsrr/err.htm, retrieved June 1, 2005

3.2 Rate of emergency department visits that could be managed elsewhere per 1,000 population

Definition

Description: Age-standardized rate per 1000 population of emergency department visits for conditions that may be treated in alternative care settings.

Indicator Calculation: (Numerator / Denominator) x 1000

Numerator: Total age-standardized number of emergency room department visits for otitis media, cystitis, conjunctivitis, and upper respiratory infections (such as common cold, acute or chronic sinusitis and tonsillitis, acute pharyngitis, laryngitis or tracheitis, and other upper respiratory infections) (Altmayer, 2005).

Denominator: Population aged 1 to 74 years.

Exclusion Criteria: Persons less than one year of age or older than 74 years of age, those admitted to the hospital upon arrival to the emergency room, people with a *Canadian Emergency Department Triage and Acuity Scale* (CTAS) of levels I, II, or III (resuscitation, emergent, or urgent).

Comments: If multiple conditions are diagnosed throughout the emergency department visit, the diagnosis/condition responsible for the greatest resource use is chosen as the most clinically significant reason for the emergency department visit (Altmayer, Ardal, Woodward, and Schull, 2005).

Rationale: It is estimated that at least 50 percent of emergency room visits are non-urgent according to medical guidelines and criteria (Coleman, 2001). Appropriate dissemination of information may decrease the number of emergency room visits that are non-urgent, since it can make patients more aware of the resources available in the community. Rates of emergency department use may reflect health status, as well as the availability, accessibility, and integration of primary health care resources in the community (Chan, 2001). That being said, strategies to divert non-urgent patients from the emergency department may not improve the quality of care received or reduce overall costs and may create an additional strain on the community care aspect of the health system (Altmayer, 2005).

Data Quality Issues

Data Source: Provincial Health Planning Database, National Ambulatory Care Reporting System.

Accuracy of Data: Data are not formally audited and there are concerns about data quality and consistency.

Coverage Characteristics: Historical incomplete coverage of encounters/events.

Potential for Historical Trends: Inconsistent, few years, probably not reliable for trending.

Other Comments: Conditions selected for this indicator are considered common high-volume conditions.

List of References

1. Altmayer, C.A., Ardal, S., Woodward, G.L., and Schull, M.J. (2005). Variation in emergency department visits for conditions that may be treated in alternative primary-care settings. *Canadian Journal of Emergency Medicine, 7* (4): 252-256.

2. Chan, B.T.B., Schull, M.J., and Schultz, S. (2001). *Emergency department services in Ontario 1993-2000*. Toronto: Institute for Clinical Evaluative Sciences.

3. Coleman, P., R. Irons, and J. Nicholl. (2001). Will Alternative Immediate Care Services Reduce Demands for Non-urgent Treatment at Accident and Emergency? *Emergency Medicine Journal, 18*: 482-487

4. Guttman, N., Zimmerman, D.R., and Nelson, M.S. (2003). The Many Faces of Access: Reasons for Medically Non-urgent Emergency Department Visits. *Journal of Health Politics, Policy and Law, 28*(6):1089-1120.

4 APPROPRIATELY RESOURCED

4.1 Annual Total and Ontario Government Health Expenditure, 1975 to 2006

4.2 Distribution of Ontario Government Health Spending, 2006/07, by Use of Funds

The indicators above are based on the CIHI National Health Expenditure report. The full report is available on line at: http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=AR_31_E. It contains extensive technical information on these indicators that we are not able to reproduce here due to space constraints.

Information on research methods can be found at:
http://secure.cihi.ca/cihiweb/products/national_health_expenditure_trends_1975_2006_e.pdf

4.3 Total Provincial Government Health Expenditure as a Proportion of Total Provincial Government Program Spending, by Province, 2006

Definition

Description: Health care spending (Ontario government and private sector) selectively reported: as a percentage of annual program expenses reported by the Ontario government and per capita. Trends in and breakdown of Ontario government health care expenditures by area of spending are also presented.

Inclusion Criteria: Ontario government health care spending includes all expenditures by the Ministry of Health and Long-Term Care, spending on drugs, and residential and support services by the Ministry of Community and Social Services, and spending on occupational health and safety by the Ministry of Labour. Ontario government program spending includes all provincial expenses reported in the annual public accounts, except interest on debt and capital.

Rationale: Given the reality of finite public resources, governments are often faced with difficult resource allocation decisions. Increased investment in particular program areas is likely at the expense of decreased spending in other areas. While it is difficult to determine what the fair share or optimal allocation of resources should be across competing program areas, this indicator provides the public with insight into the priorities of the public sector and the sustainability of rapidly growing program areas. It provides fodder for a discussion on allocation of public funds.

Sustainability is often viewed narrowly in the context of financial measures and indicators such as total investment in health. Such indicators should be used as a starting point to provide context for interpreting other indicators such as changes in human resource supply, productivity, and investment in research and development.

Data Quality Issues

Data Source: CIHI releases an annual report on spending in health care based on data tracked in its National Health Expenditures (NHEX) Database. Spending on health care is reported by province, by source of finance, and by use of funds. The NHEX database was used to calculate the figures reported in this section.

The Ontario Ministry of Finance reports annually on government revenues and expenses, and performance against the goals outlined in the budget through the system of public accounts. The Public accounts report health care expenditures by fiscal year and are used as an input into the CIHI NHEX database.

CIHI NHEX calendar year data were used exclusively for this indicator in order to facilitate comparisons with other provinces and to allow reporting of private-sector health-care expenditures (not reported consistently in any other readily available data source).

Accuracy of Data: The data in the NHEX database are estimates; CIHI evaluates the data and collection mechanisms on an ongoing basis in efforts to improve the quality and accuracy of the database (CIHI, 2005).

Potential for Historical Trends: Data are reported annually so historical trending is possible from 1975 onwards using the NHEX database.

List of References

1. Canadian Institute for Health Information (CIHI). (2005). National Health Expenditure Trends 1975-2005. Ontario: CIHI.

2. Ministry of Finance (MoF). (2005). Public Accounts of Ontario: Annual Report and Consolidated Financial Statements 2003-2004. Ontario: MoF.

4.4 Estimate of Total Provincial Government Health Expenditures, Age and Sex Standardized, by Province, 2004 — Current Dollars

The indicator above is based on the CIHI National Health Expenditure report. The report is available on line at http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=AR_31_E. It contains extensive technical information on these indicators that we are not able to reproduce here due to space constraints.

Information on research methods can be found at:
http://secure.cihi.ca/cihiweb/products/national_health_expenditure_trends_1975_2006_e.pdf .

4.5 Primary-care Practitioner Supply

Definition

Description: Net change in total number of nurse practitioners who have renewed their membership in the College of Nurses of Ontario and in total number of active family physicians over a five-year period.

Indicator Calculation: [Number of family physicians and nurse practitioners in workforce in year X] – [Number of family physicians and nurse practitioners in workforce in year Y]

Rationale: The number of family practice physicians and nurse practitioners is a measure of the orientation of the health system towards primary health care. Research on 13 OECD countries (Starfield & Shi, 2002) has found that countries with strong primary health-care systems had both lower health-care costs per capita as well as higher scores on indicators of health status. The use of primary-care practitioners, considered to be the first point of entry for individuals into the health system, is associated with more appropriate, more effective, and less costly care.

The primary care nurse practitioner program was developed in 2002 to provide increased access to primary-care services in small, rural and under-serviced areas and expand the use of nurse practitioners in new clinical settings. The Ministry currently funds over 400 primary-care nurse practitioner positions through a variety of program initiatives. With additional education and training in the provision of primary health care to individuals and families, it is anticipated that nurse practitioners will relieve some system pressures in under-serviced areas by increasing access to basic primary-care services.

There are some barriers to nurse practitioner recruitment and retainment, such as relocation, lower salaries than expected, and limited implementation of the scope of practice (Joint Provincial Nursing Committee, 2001). Additionally, consultation with physicians and referrals to specialists by a nurse practitioner is not covered under the Ontario Health Insurance Plan (OHIP) billing system. Physicians must take uncompensated time out of their practice to consult and specialists may not accept referrals from NPs. Furthermore, the Public Hospitals Act does not allow autonomous admissions and treatment of appropriate patients by NPs in hospitals. These limitations need to be addressed through focused health human resources planning currently taking place in the Ministry.

Data Quality Issues

Data Source(s): Active Physician Registry. If Full-time Equivalent Physicians (FETs) are used to develop the ratio, then the Claims History Database would also be required in order to determine service levels and FTEs.

Nursing data for registered nurses in the extended class (RN(CE)) — nurse practitioners — was obtained from reports produced by the College of Nurses of Ontario. It is obtained from the Annual Payment Form, which is used by members to renew their membership with the college annually.

Accuracy of Data: The Claims History Database does not include service claim volumes for some physicians who participate in alternate payment plans (for example, at community health centres).

As of 2004, the College of Nurses of Ontario changed how their membership information was reported. The report provides a "point in time" snapshot of members based solely on those nurses who renew before the formal suspension date. Therefore, the reports will not include membership information for new members who join in the calendar year following renewal or for those who reinstate their membership after the suspension period.

Potential for Historical Trends: Physician data is collected continually and can be reported from 2000 (or earlier) forward. Nursing data is collected continually so continuous/annual tracking is possible.

Potential for Comparisons to Targets or Other Jurisdictions: Results can be compared to other jurisdictions to guide interpretation of the indicator.

List of References

1. Starfield B & Shi L (2002). Policy relevant determinants of health: an international perspective. *Health Policy* 60, 201-218.

2. Joint Provincial Nursing Committee (Summer 2001). Good Nursing, Good Health: A Good Investment; Progress Report on the Nursing Task Force Strategy in Ontario.

4.6 Electronic Health Record Readiness

Definition

Description: E-Health readiness is measured through a single progressive scale where functional capability must be acquired before there can be use of the function.

The list below describes the response scale for the level of e-Health readiness for all indicators except inter-organizational data sharing:

- **Not Considered** – Functional requirement has not been considered;
- **Identified** – Functional requirement has been identified and discussed but minimal progress has been made towards planning, procurement or implementation;
- **In Progress** – Functionality is currently being implemented;
- **Pilot/Implemented** – Functionality is either in pilot or production and used by a few intended users;
- **Mostly Implemented** – Functionality is mostly implemented and commonly used by some of the intended users;
- **Fully Implemented** – Functionality is fully implemented and is used by most or all intended users and there is no other usual way to perform this function;
- **N/A** – Functionality is not applicable to your facility; and
- **U/R** – Unable to respond.

To measure the underlying cause for the lack of e-Health functional readiness, an explanation was requested when a response of 'Not Considered', 'Identified' or 'Acquired' was given to better understand why the function has not yet been implemented. E-Health inter-organizational data sharing and interoperability readiness is also measured through a single progressive scale:

- **None** – None or shared using a paper, manual or auto fax processes;
- **Remote Access** – Shared using remote access systems;
- **Shared** – Shared using interoperable systems and is irregularly used or used by a few intended users;
- **Mostly Shared** – Mostly shared using interoperable systems and is typically used or used by some of the intended users; and
- **Fully Shared** – Fully shared using interoperable systems and there is no other usual way to perform the function or the function is used by almost all intended users.

The survey was analyzed at the hospital corporation level. The responses represent the status of the hospital corporation, with aggregated information from multiple sites. Results are presented as scores scaled to 100. The gap between the hospital's score and 100 represents the amount of improvement that an organization needs to attain full e-Health readiness. The response scale assumes that use can only occur after capability has been established. Peer group averages represent the average e-Health readiness score for that peer group. The provincial averages represent the average e-Health readiness score across all hospitals in the province. Hospital identities are anonymous and rank ordered by the size of e-Health readiness scores. Organizations may compare themselves to their peer group average, the provincial average and may view the size of their gap in the rank ordered list.

Data Quality Issues

Data Source: The e-Health Readiness Survey is conducted by OHA.

4.7 Investment in Information Management

Definition

Description: Ratio of total information system and communication net expenses as a proportion of total net expenses. Health information management is about providing the right information to the right people at the right time. It is about capturing and sharing information to make better decisions about health-care practices at the clinical level and about our health-care system in general. Information management encompasses, but is much broader than information technology, which deals with the computer systems and technical architecture used to facilitate the flow of information. This indicator attempts to capture as much of the investment in information management in health care as possible, including information systems spending by providers and other information-management spending by the Ministry of Health and Long-Term Care and other organizations.

Inclusion: All health care sectors/components for which data were available were used in the calculation: hospitals, community care access centres, children's treatment centres, Smart Systems for Health Agency (SSHA), and the Ministry of Health and Long-Term Care's information-management initiatives, including spending on e-Health. Expenses included in this indicator pertain primarily to information technology and related communication expenses.

Exclusion: Other information-management costs (such as those related to decision support, clinical informatics, and training), investments in other sectors (such as long-term care), and government spending by LHIN are not included here due to limited data availability.

Rationale: Investment in information management is a measure of corporate efficiency and innovation. Information management is expected to help achieve a consistent and integrated approach to care, minimize medical errors, improve timeliness and efficiency, and increase accountability through availability of relevant and timely information (IOM, 2000). Successful implementation of information management would lead to cost reduction and avoidance, as a result of downsizing of personnel, fewer readmissions, complications and adverse events in hospitals, and reduced cycle times to complete tasks (Leonard, 1998). All these in turn lead to greater patient and staff satisfaction.

Factors Affecting Investment in Information Management: Investment in information management is often constrained by limited budgets and competing priorities. Information management requires a substantial financial investment in capital, new technology, training of human resources, and long-term management and maintenance (IOM, 2000; Leonard, 1998). Other barriers to investment in information management include a lack of common standards in health care and concerns over patient and provider privacy (Leonard, 2000).

Data Quality Issues

Data Source: The Ontario Healthcare Financial and Statistical System is used to report data on Ontario providers based on Management Information Systems Standards established by CIHI.

Ontario Healthcare Financial and Statistical System data are available for hospitals, CCACs, and child-treatment centres. Smart Systems for Health Agency expenses were obtained from the annual public accounts of the Ontario government and internal Ministry of Health and Long-Term Care information management expenses are obtained from several internal Ministry sources.

Accuracy of Data: Ontario Healthcare Financial and Statistical System data are audited through an annual data blitz conducted by the Finance and Information Branch of the Ministry. Accuracy of data is limited by inconsistent interpretation of data fields and variability in the level of detail provided by individual organizations. Data for the hospital sector have been collected for a longer period of time and have more developed guidelines. As a result, Management Information Systems data for the hospital sector may be of better quality than data for other sectors.

Potential for Historical Trends: Data are available from 1996/97 onwards for the hospital sector so annual tracking is possible. For other sectors, data have been collected for a shorter period of time, limiting the potential for historical trending.

Considerations for Indicator Quality and Comparability: Changes to Management Information Systems Standards in 2003 have led to improved data quality in the hospital sector, through clarification of expenses that fall under "information systems expense" (CIHI, 2004). This may impact trending over years before 2003.

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5 INTEGRATED

5.1 Hospitalization Rate for Ambulatory Care Sensitive Conditions

Definition

Description: Age-standardized acute-care hospitalization rate for conditions where appropriate ambulatory care prevents or reduces the need for admission to hospital, per 100,000 population under age 75 years (Statistics Canada and CIHI, 2006).

Indicator Calculation: (Numerator / Denominator) x 100,000

Numerator: Number of ambulatory care sensitive conditions inpatient separations from acute-care hospitals (discharges and deaths) during the year, standardized by age as per the specific condition. Statistics Canada (2006) uses the following ICD-10-CA/CCI codes for most responsible diagnosis:

- Grand mal status and other epileptic convulsions [G40, G41];
- Chronic obstructive pulmonary disease (COPD) [J41, J42, J43, J44, J47] (acute bronchitis [J20] only when a secondary diagnosis* of COPD [J41, J42, J43, J44, J47] is also present). Pneumonia [J12, J13, J14, J15, J16, J18] only when a secondary diagnosis* of COPD [J41, J42, J43, J44, J47, J20] is also present];
- Asthma [J45];
- Congestive heart failure [I50, J81] [exclude cases with the following surgical procedures (CCI) – codes: 1.IJ.50, 1.HZ.85, 1.IJ.76, I.HB.53, 1.HD.53, 1.HZ.53, 1.HB.55, 1.HD.55, 1.HZ.55, 1.HB.54, 1.HD.541, HA.52.DA, 1.HA.52.QA, 1.HA.72.DA, 1.HA.72.LA, 1.HZ.85.LA-XX-K, 1.HZ.85.LA-ZZ-L, 1.IJ.57];
- Hypertension [I10.0, I10.1, I11] (exclude cases with the following surgical procedures (CCI): 1.IJ.50, 1.HZ.85, 1.IJ.76, I.HB.53, 1.HD.53, 1.HZ.53, 1.HB.55, 1.HD.55, 1.HZ.55, 1.HB.54, 1.HD.541, HA.52.DA, 1.HA.52.QA, 1.HA.72.DA, 1.HA.72.LA, 1.HZ.85.LA-XX-K, 1.HZ.85.LA-ZZ-L, 1.IJ.57);
- Angina [I20, I23.82, I24.0, I24.8, I24.9] (exclude cases with a surgical procedure: any one CCI procedure of 1*, 2*, 5*); and
- Diabetes [E10.1, E10.6, E10.7, R10.9, E11.0, E11.1, E11.6, E11.7, E11.9, E13.0, E13.1, E13.6, E13.7, E13.9, E14.0, E14.1, E14.6, E14.7, E14.9].

Denominator: Population by age and gender categories, either from census or census estimates, for the year (Statistics Canada, 2005).

Inclusion Criteria: All discharges from acute-care hospitals.

Exclusion Criteria: Discharges where patients are aged 75 or older (Statistics Canada, 2006).

Rationale: A hospitalization rate for ambulatory care sensitive conditions is a measure of access to appropriate medical care. While not all admissions for ambulatory care sensitive conditions are avoidable, it is assumed that appropriate prior ambulatory care could prevent the onset of this type of illness or condition, control an acute episodic illness or condition, or manage a chronic disease or condition (Statistics Canada, 2006).

Lower rates of hospitalization for ambulatory care sensitive conditions are desired as they are potentially less costly and more optimal treatment may be available in the community rather than in a hospital setting (CIHI, 2004). If ambulatory care sensitive conditions are treated in a timely fashion with primary care and then managed properly through outpatient care, most general practitioners concur that these conditions should not advance to the point that they require hospitalization (McCall, 2004). Furthermore, benefits such as improvement to patients' health, better overall community health status, and saving money because community-based care usually costs less than hospitalization can also be expected. Optimizing the management and treatment of these conditions will contribute to both improved patient health outcomes and more efficient resource use (Statistics Canada and CIHI, 2005).

While not all hospital admissions for ambulatory care sensitive conditions can be avoided, it is presumed that adequate primary care could prevent the onset of the specific condition, control the occurrence of acute episodes of the specific condition, or manage a specific chronic condition (Statistics Canada and CIHI, 2005).

A disproportionately high rate of hospitalization for ambulatory care sensitive conditions is presumed to reflect problems in obtaining access to primary care. Tracking hospitalization rates for these conditions over time can provide an indicator of the impact of community- and home-based services.

Data Quality Issues

Data Source: Canadian Institute for Health Information, Hospital Morbidity Database, Discharge Abstract Database.

Accuracy of Data: Data are not formally audited.

Coverage Characteristics: Full coverage of encounters/events.

Potential for Historical Trends: Rates are not comparable to those published by CIHI prior to June 2005 due to a change in the definition.

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5.2 Admission to Inpatient Rehabilitation Following Discharge from Hospital Post-Stroke

Definition

Description: Although a precise rate for inpatient rehabilitation is not known, stroke rehabilitation in an inpatient setting has been found to have a strong positive impact on functional status and recovery for stroke patients, and leads to significant cost savings related to a reduction in long-term disabilities (Teasel, 2006). (Level A evidence).

Numerator: All stroke patients admitted to inpatient rehabilitation following an acute-care hospital admission with a primary diagnosis of stroke.

Denominator: All stroke patients discharged alive from an acute-care hospital.

Findings (i): Twenty-five percent of all stroke patients are discharged from acute care directly to an inpatient rehabilitation facility at a regional stroke centre.

Findings (ii): During the 2002/03 provincial audit, 28 percent of all stroke patients were admitted to inpatient rehabilitation beds after discharge from acute care.

Comments: Regional stroke centres appear to have better access to rehabilitation beds for their stroke patients. Approximately 85 percent of all stroke patients who receive stroke rehabilitation in an inpatient setting are transferred to a rehabilitation facility directly from acute care. An additional 10 percent begin their inpatient rehabilitation between 7 days and 30 days following discharge from an acute-care hospital.

Data Quality Issues

Data Source: i) Registry of the Canadian Stroke Network (RCSN) – Ontario Regional Stroke Centers; ii) RCSN – Audit 2002/03.

6 FOCUSED ON POPULATION HEALTH

6.1 Risk Factors for Chronic Disease (Smoking Rates, Obesity Rates, Heavy Drinking Episodes, and Physical Activity)

Definition

Smoking

Description: Percentage of the population aged 12 and older who report daily cigarette smoking (CIHI and Statistics Canada, 2003b).

Indicator Calculation: (Numerator / Denominator) x 100

Numerator: Weighted number of respondents aged 12 and older who are daily cigarette smokers.

Denominator: Weighted total number of respondents aged 12 and older.

Exclusion Criteria: Individuals living on first-nation reserves and on Crown lands, residents of institutions, full-time members of the Canadian Armed Forces, and residents of certain remote regions are excluded.

Comment: This indicator does not take into account the length of time an individual has smoked, the amount or brands smoked, any attempts to quit, or exposure to second-hand smoke (CCO and CQCO, 2005). Results are stratified by age group [12 – 19, 20 – 44, 45 – 64, 65+] and gender (CIHI and Statistics Canada, 2003b).

Obesity

Description: Percentage of the population aged 18 and older with a body mass index in the obese (>=30) category. Body mass index is a method of classifying body weight according to health risk (Statistics Canada, 2005). Body mass index = Weight of the individual in kilograms divided by the height of individual in meters squared. Note: Respondents do not report their body mass index. They report their height and weight and Statistics Canada calculates it.

Indicator Calculation: (Numerator / Denominator) x 100

Numerator: Weighted total population aged 18 and over with a BMI >=30.

Denominator: Weighted total population aged 18 and older.

Inclusion Criteria: Only individuals 12 and older were eligible for selection.

Exclusion Criteria: Persons under the age of 18, pregnant or breastfeeding women, and anyone whose height is under three feet or over seven feet are excluded in the calculation of the body

mass index indicator (Statistics Canada, 2005). Residents of institutions, full-time members of the Canadian Armed Forces, persons living on first-nation reserves and on Crown lands and populations in some remote areas were excluded from the survey.

Comment: Body mass index may be an overestimate for the lean, muscular and fit, may underestimate the risk for seniors, or those who are of certain ethnic or racial groups, and does not take bone density or weight fluctuations into account (CCO and the CQCO, 2005). Results are stratified by age group [18-24, 25-44, 45-64, 65+] and gender.

Physical Activity

Description: Percentage of the population aged 12 and older who are considered physically inactive, moderately physically active, or physically active (Statistics Canada, 2005).

Indicator Calculation: (Numerator / Denominator) x 100

Numerator: Weighted number of respondents aged 12 and older by physical activity index. In order to stratify by physical activity index, respondents are classified as active, moderately active or inactive based on an index of average daily physical activity over the past three months (APHEO, 2005b). For each leisure time physical activity engaged in by the respondent, average daily energy expenditure is calculated: Average daily energy expenditure = (Number of times the activity was performed) x (Average duration of the activity) x [Energy expended (kilocalories per kilogram of body weight per hour) of the activity]. The index is calculated as the sum of the average daily energy expenditures of all activities. Respondents are classified as follows: 3.0 kcal/kg/day or more = physically active; 1.5 - 2.9 kcal/kg/day = moderately active; less than 1.5 kcal per day = inactive (APHEO, 2005b).

Denominator: Weighted total number of respondents aged 12 and older.

Exclusion Criteria: Residents of institutions, full-time members of the Canadian Armed Forces, persons living on first-nation reserves and on Crown lands and populations in some remote areas were excluded from the survey.

Comment: The physical activity index categories are active (average 3.0 +kcal/kg/day of energy), moderate (average 1.5-2.9 kcal/kg/day), and inactive (energy expenditure below 1.5 kcal/kg/day) (Statistics Canada, 2005). Results are stratified by age group [12-19, 20-44, 45-64, 65+].

Heavy Drinking Episodes

Description: Percentage of the population aged 12 and over who are current drinkers and who reported consuming five or more drinks on one or more occasions per month in the past 12 months (CIHI and Statistics Canada, 2003a).

Indicator Calculation: (Numerator / Denominator) x 100

Numerator: Weighted number of individuals aged 12 and over who are current drinkers and who reported consuming five or more drinks on one or more occasions per month in the past 12 months.

Denominator: Weighted total number of respondents aged 12 and older.

Exclusion Criteria: Residents of institutions, full-time members of the Canadian Armed Forces, persons living on first-nation reserves and on Crown lands and populations in some remote areas were excluded from the survey.

Comments: Results are stratified by age group [12-19, 20-44, 45-64, 65+] and gender. Surveys do not differentiate between the effects of alcohol as a function of body size of the individual (APHEO, 2005a).

Rationale:

Smoking

Measuring smoking rates enables the monitoring of changes in smoking behaviour over time as well as assessing the impact of tobacco control programs (CCO and the CQCO, 2005). Tobacco use is a leading cause of stroke, lung cancer and chronic lung disease, and presents an increased risk for developing many other forms of cancer and/or medical disorders (Ministry of Health and Long-Term Care (MOHLTC), 2004c). Health Canada (2005) reports that smoking is responsible for more than 45,000 deaths per year in Canada. Due to the addictive nature of nicotine, smoking in youth is of particular concern (Statistics Canada, 2005). Studies indicate that smokers generally begin smoking in early to middle adolescence, and that adult smoking patterns are usually established between the ages of 15 to 18. Research shows that if individuals have not begun smoking in their adolescent years, they probably will not become smokers (APHEO, 2004). It is important to note that although the smoking rates for both teenagers and adults is decreasing, the rates are still too high (CCO and the CQCO, 2005).

Work conducted through Cancer Care Ontario and the Canadian Cancer Society suggests that meeting proposed targets in reducing smoking, increasing fruit and vegetable intake and increasing physical activity could greatly reduce the expected increase in the cost of cancer care. Estimating an average present cost of approximately $22,000 per cancer case, over $375 million in direct health-care costs could be saved between 2003 and 2020. This does not include the associated drops in heart disease, stroke, lung disease, and diabetes that would be expected to occur (CCO, 2003).

Obesity

Obesity is a major risk factor for numerous chronic illnesses such as heart disease, stroke, diabetes, and some forms of cancer (MOHLTC, 2004a). A body mass index of less than 18.5 falls under the “underweight” category while a body mass index between 18.5 and 24.9 is considered normal, between 25 and 29.9 is overweight, and greater than 30 composes the obese category (MOHLTC, 2004a). Measuring obesity can help to inform and initiate prevention efforts. Unfortunately, obesity rates are high in Canada, and are still on the rise (CCO, 2005).

The prevalence of diseases associated with obesity can vary with the ethnic composition of a population and as a result, comparisons between populations may be skewed.

In 2003, almost half of Ontario adults (18 years and older) were overweight or obese. Men were more likely to be overweight or obese than women. The proportion of the population that was overweight or obese increased gradually from 44 percent in 1990 to 49 percent in 2000, and appears to have remained stable in 2003 at 49 percent. A substantial body of research has linked obesity with major preventable chronic diseases, including type 2 diabetes, cardiovascular diseases, hypertension, stroke, gallbladder disease and some cancers (MOHLTC, 2004d; Patterson, 2004). Already obesity is having an impact on children's health: previously seen only among adults, type 2 diabetes is now increasingly found among obese children, particularly adolescents, who also have a greater occurrence of hypertension and high cholesterol levels, two known risk factors for cardiovascular disease (CIHI, 2004).

Physical Activity

A lack of physical activity increases the risk of a number of diseases such as coronary artery disease, osteoporosis, stroke, hypertension and type 2 diabetes, and breast cancer (MOHLTC, 2004b). Maintaining a level of physical activity is associated with a broad range of health benefits. Studies indicate that regular physical activity has major heart health benefits and a decreased risk of suffering from depression (Statistics Canada, 2005).

Work conducted through Cancer Care Ontario and the Canadian Cancer Society suggests that meeting proposed targets in increasing physical activity, reducing smoking and increasing fruit and vegetable intake could greatly reduce the expected increase in the cost of cancer care. Estimating an average present cost of approximately $22,000 per cancer case, over $375 million in direct health care costs could be saved between 2003 and 2020. This does not include the associated drops in heart disease, stroke, lung disease, and diabetes that would be expected to occur (CCO, 2003).

Heavy Drinking Episodes

Current drinkers who engage in heavy drinking episodes are at a higher risk than others to develop alcohol-related problems (APHEO, 2005a). Adverse health effects that are a result of heavy drinking can include cancer of the digestive and respiratory systems, chronic pancreatitis, cirrhosis of the liver, coronary heart disease, depression, psychoses, and an increased risk of premature death (Simon Fraser Health Region, 2000). For women who are pregnant, alcohol use can result in their children having fetal alcohol syndrome, which is associated with varying degrees of mental and physical retardation as well as other disabilities (Simon Fraser Health Region, 2000).

The largest numbers of alcohol-related deaths result from impaired driving — this indicator is related to potential years of life lost because of the large number of young people that are lost in these accidents (APHEO, 2005a). Further social effects of heavy drinking can include family violence, homicides, suicides, traffic accidents and workplace problems (Simon Fraser Health Region, 2000).

Data Quality Issues

Data Source: Canadian Community Health Survey (CCHS)

Accuracy of Data: Data are not formally audited, though these findings are consistent with literature and other estimates. Data are self-reported.

Coverage Characteristics: Provincial estimates are available.

Potential for Historical Trends: Approximately every two years.

Comments: Will continue to be part of core content in CCHS. The Ontario Ministry of Health Promotion uses the Canadian Tobacco Use Monitoring Survey (CTUMS) to measure tobacco use. However, CTUMS reports 15.6 percent and CCHS reports 15.8 percent on the indicator of smoking status and average number of cigarettes smoked per day, by province, age group and sex, age 15 years and older in Canada, 2005. Based on a review of surveys that provide information on tobacco usage, it was concluded that CTUMS and CCHS are both suitable sources for smoking indicators (The Canadian Tobacco Control Research Initiative, 2006). For heavy drinking episodes, estimates for females aged 65 and over for 2000 and 2003 have a high sampling variability

There are differences in these two surveys that might influence which source is best suited for smoking analyses. While CTUMS has a near-exclusive focus on tobacco use, the CCHS is a broader general health survey that features tobacco-related questions, among others. Where CTUMS distinguishes itself is in the higher report frequency (twice per year)[2], stability of many content areas, and the shortest time lag between the completion of data collection and its

[2] The CCHS is being redesigned so that data collection will be reported every year starting in 2007.

release.[3] CTUMS may be considered the most appropriate choice for provincial-level data, while the large sample size of the CCHS makes it most suitable for examining data at a sub-provincial level. An additional value of the CCHS is the data linkage to health-care records, which could permit examination of the relationships between smoking behaviours and health-care impacts for policy and planning purposes.

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8. Canadian Institute for Health Information (CIHI). (2004). *Improving the Health of Canadians*. Ottawa: Canadian Institute for Health Information.

[3] CTUMS data is generally released less than a year after data collection is completed, while the lag for the CCHS between data collection and public release is generally over a year.

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6.2 Sexually Transmitted Chlamydia Rates

Definition

Description: Rate of chlamydia per 100,000 population per year.

Indicator Calculation: (Numerator / Denominator) x 100,000

Numerator: Number of confirmed cases of Chlamydia reported to the MOHLTC.

Denominator: Population of Ontario.

Inclusion: Inclusive of cases in Ontario residents.

Exclusive: Exclusive of cases from other jurisdictions.

Rationale: Over the past few years, it has become evident that sexually transmitted infections (STIs) are on the rise within specific high-risk populations[4]. The reasons for these increases are complex but include non-compliance with safer-sex messages, increased case finding due to high emphasis on partner notification and positive advances in diagnostic testing. Under the legal authority of the Health Protection and Promotion Act [HPPA] (Queen's Printer for Ontario, 2002) the MOHLTC has set out standards for reducing the incidence of STIs under the Mandatory Health Programs and Services Guidelines (MHPSG) - STD Program (MOHLTC, 1997a). These guidelines include the following key activities for board of health staff:

- Clinical services must be provided for the diagnosis, treatment and management of STDs;
- Medications for the treatment of bacterial reportable STDs are provided at no cost for Ontario residents;
- There must be provision of individual counseling and referral to other agencies as necessary; and
- Case management of STDs is defined by the MOHLTC (1997b) STD Control Protocols.

STIs are as important to personal health and well being as other diseases. The populations at highest risk, such as youth and men who have sex with men, are sometimes reluctant to seek health care from family physicians and it is essential that clinical facilities, which include medications for treatment, are available for this marginalized population. Without appropriate on-site treatment for infected persons and their partners, there is a risk of increasing infection rates and several health complications such as pelvic inflammatory disease, ectopic pregnancy, sterility, and congenital infections including congenital anomalies, neonatal infection of the eye

[4] Although STI is the currently-preferred term, guidelines developed in the past refer to sexually transmitted diseases or STDs. In this Manual, we will use the term STI unless the text refers specifically to a document produced in the past which contains the title or term STD.

and fetal loss. These complications generally require hospitalization, which is an increased cost to the MOHLTC.

The MOHLTC has strategies in place to identify and control STIs. Education regarding STIs is mandatory for all students in Grades 7 to 9 and local health units work closely with boards of education to include this information in school curriculums. Condom distribution for high-risk populations and partner notification are mandated under the MHPSG - STD Control Program (MOHLTC, 1997a). Despite all current efforts, STI rates are increasing in Ontario in a pattern similar to other Canadian jurisdictions.

Comments: Genital Chlamydia is the most commonly reported STI in Ontario, Canada, North America and Europe. Rates of Chlamydia in Ontario have been increasing in the past 10 years in a pattern consistent with other jurisdictions. This increase can be partially explained by improved laboratory testing of urine specimens and increased diligence in partner notification. Rates are always highest in women between the ages of 15 and 24 although the strategies described above are identifying more male cases. Women are screened more frequently than men, particularly in sexual health clinics on presentation for birth control. Genital Chlamydia is often asymptomatic and untreated infections can lead to pelvic inflammatory disease, which can in turn cause infertility as well as increase the chance of ectopic pregnancy.

Data Quality Issues

Data Sources: Reportable Disease Information System.

Accuracy of Data: Disease information is entered into the Reportable Disease Information System at the local health unit level and reports that meet provincial case definitions are transmitted to the Infectious Diseases Branch of the Public Health Division with personal identifiers removed. Data quality measures, based on unique identifiers assigned to each case, are enacted to remove duplicate reports from the database. Ontario is going through transition to an integrated Public Health Information System, which will allow more comprehensive data analysis and avoidance of duplicate reports for all reportable diseases.

Coverage Characteristics: Reports are currently published based on local health unit boundaries and not based on LHIN geographies. Estimates in this regard are possible for future iterations once the integrated Public Health Information System has been fully implemented.

Potential for Historical Trends: Electronic data is available from 1990. There are historical paper records available with abbreviated data for years prior to 1990.

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6.3 Preventive Screening (Pap, Mammography, Fecal Occult Blood Test)

Definition

Pap (Cervical Cancer)

Description: Percentage of the female population aged 18 to 69 who reported having their most recent Pap smear test within the past three years (Statistics Canada, 2005).

Indicator Calculation: (Numerator / Denominator) x 100

Numerator: Weighted number of female respondents aged 18 to 69 who reported having a Pap smear test within the past three years.

Denominator: Weighted total number of female respondents aged 18 to 69.

Exclusion Criteria: Residents of institutions, full-time members of the Canadian Armed Forces, persons living on first-nation reserves and on Crown lands and populations in some remote areas were excluded from the survey. Women who have had a hysterectomy, were younger than 18 and older than 69 were excluded from the question.

Mammography (Breast Cancer)

Description: Percentage of screening-eligible women (ages 50 to 69) receiving a mammogram whether through the Ontario Breast Screening Program or ad hoc in Ontario for each fiscal year (CCO, 2005c).

Indicator Calculation: (Numerator / Denominator) x 100

Numerator: Number of screening-eligible women (ages 50 to 69) who receive a mammogram within the last fiscal year.

Denominator: Number of screening-eligible women (ages 50 to 69).

Fecal Occult Blood Test (Colorectal Cancer)

Description: Percentage of eligible men and women aged 50 to 74 who received a fecal occult blood test (FOBT) (CCO, 2005a).

Indicator Calculation: (Numerator / Denominator) x 100

Numerator: The total number of men and women aged 50 to 74 who received a fecal occult blood test (FOBT).

Denominator: The total number of men and women aged 50 to 74 who were eligible for a fecal occult blood test (FOBT).

Exclusion Criteria: For this question, exclusions included individuals with prior diagnosis of cancer (not including non-melanomatous skin cancer, recent onset of lower gastrointestinal tract symptoms (bleeding, change in bowel habit, abdominal pain, weight loss, bloating, anemia) causing GP attendance in the previous 12 months, significant co-morbidity (American Society of Anesthesiologists class III or greater), previous colonic surgery, and therapeutic anticoagulation (Corbett, 2004). Residents of institutions, full-time members of the Canadian Armed Forces, persons living on first-nation reserves and on Crown lands and populations in some remote areas were excluded from the survey.

Rationale: This indicator reflects access to primary-care services, disease prevention, health promotion, and contributes to a reduction in the burden of illness across the population. Programs for the early detection of cancers of the cervix, breast, and colorectal are effective at reducing mortality and/or incidence, though there must be strong organizational structures in place in order to ensure high coverage and compliance (CCO, 2004). If cancer prevention targets were met in Ontario, thousands of new cancer cases could be avoided. Nonetheless, cancer is and is expected to remain Ontario's leading cause of premature death. Cancer incidence is expected to rise as a result of the aging population (CCO, 2005d), so where it has slipped through the prevention net, the cancer burden may still be reduced through improved health care.

Comments:

Pap: Pap smear tests permit the detection of pre-malignant lesions before cancer of the cervix develops; this allows time for treatment that may avoid a progressive, fatal disease (Statistics Canada, 2005). Cervical cancer affects hundreds of women each year and a Pap smear test allows for early detection and possible treatment of a potentially fatal cancer (CCO, 2005). In Ontario, the Pap is recommended every year for the first three years after sexual activity is initiated. If the first three tests are normal, the test can be repeated every two years until age 70. At age 70, if the last four Pap tests in the past 10 years were normal, screening for cervical cancer can be stopped (Canadian Cancer Society, 2002).

Mammography: Breast cancer is a major cause of morbidity and death for women. Mammography offers an opportunity to detect breast cancer at an early stage and to begin effective treatment (Statistics Canada – Performance Reporting Technical Working Group, 2004). Screening using clinical examination and/or mammography in women aged 50 to 69 showed significant reductions in mortality (Morrison, 1994.). The number of women screened for breast cancer through mammography in Ontario increased by 16 percent from the year 2000 to 2004 (CCO, 2005c).

The US Preventive Services Task Force found significant evidence that mammography screening every 12 to 33 months considerably lessens mortality (by 20 to 40 percent) from breast cancer among women aged 50 and older (National Quality Measures Clearinghouse, 2002; 2004).

Fecal Occult Blood Test: Colorectal cancer is one of the four most common cancers diagnosed in Ontario, and among nonsmokers, is the most common cause of cancer death. Across Ontario, colorectal screening rates are extremely low, with only 9 percent screened in 2003. Studies indicate that if eligible adults are screened once every one or two years, the death rate and rate of

diagnosis for this cancer would be reduced by 15 to 33 percent and 18 percent respectively (CCO, 2005a). Organized screening programs have been shown to lead to better recruitment and better patient outcomes than ad hoc screening (CCO, 2005a). The Canadian Cancer Society (2005) recommends that men and women age 50 and over have a fecal occult blood test at least every two years.

Data Quality Issues

Pap

Data Source: Cancer Care Ontario Cancer System Quality Index 2006

- Cytobase is an Ontario Pap test registry that captures data from participating laboratories (MDS, Gamma Dynacare, Canadian Medical Laboratories, Medical Laboratories of Windsor), and about 85 percent of all Ontario Pap test screening.
- Statistics Canada, Annual Demographic Statistics 2004 (population statistics)
- Canadian Community Health Survey (to correct for hysterectomies)

Accuracy of Data: Data are not formally audited. Data are self-reported.

Coverage Characteristics: Provincial estimates are available.

Potential for Historical Trends: Approximately every two years.

Other Comments: Re: Auditing — Not sure if this is comparable with actual clinical records. Starting in 2007, this will be optional content for the CCHS, which may be problematic for trending unless an alternate data source is identified.

Mammography

Data Source: Cancer Care Ontario Cancer System Quality Index 2006.

- Ontario Health Insurance Plan database
- Statistics Canada population estimates
- Cancer Care Ontario, Ontario Breast Screening Program

Accuracy of Data: Data are not formally audited.

Coverage Characteristics: Estimates are available at provincial and LHIN levels.

Potential for Historical Trends: Data are collected continually so continuous annual tracking is possible.

Fecal Occult Blood Test

Data Source: Cancer Care Ontario Cancer System Quality Index 2006.

- Ontario Health Insurance Plan database (lab codes)
- Registered Persons Database
- Statistics Canada population estimates

Accuracy of Data: Data are not formally audited.

Coverage Characteristics: Estimates are available at provincial and LHIN levels.

Potential for Historical Trends: Data are collected continually so continuous annual tracking is possible.

Comments: The physician billing data does not include any testing that was not billed through the Ontario Health Insurance Plan. In addition, the data does not include tests performed in-hospital. Some of the tests included here may have been done for diagnostic purposes (a patient may already experiencing symptoms) rather than for screening purposes.

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