

Introduction

The Ontario Hospital Association (OHA) announced at the 1997 Annual Convention that it would be producing a series of public reports on the performance of Ontario's hospitals. The University of Toronto carried out the research and data analysis required to produce these reports.

The development of evaluative reports is an extremely intricate and complex undertaking. The Hospital Report '98 is the first Ontario hospital system report of its kind and is part of a process of continuous improvement of performance measurement. Our hope is that The Hospital Report '98 will provide an impetus to move forward in the development of evaluative criteria and improve both the quality of reporting and the quality of care in the hospital system.

The Hospital Report '98 is the most comprehensive report on the performance of hospitals to date in Canada. It is the first attempt at a truly global view of hospitals across multiple domains; however, it only analyzes data for a single year. In future years, the indicators and reporting will be refined, and trend data for those indicators will be available.

The Hospital Report '98 Project

The Hospital Report '98 describes four key domains of the hospital system in Ontario. This report does not use hospital names, but analyses aggregate measures of hospital system performance. For all indicators data is shown for each of the five OHA regions (see Appendix 3) and in some cases, by hospital type and for the province as a whole.

OHA plans to issue a report in November 1999 that will provide comparative hospital specific data on key performance measures and an update on hospital system measures.

The Hospital Report '98 focuses on developing core measures in four domains: measures of clinical utilization and outcomes, patient perceptions of Ontario hospitals, measures of financial performance and condition, and system integration and change. As part of the University of Toronto initiative, a review of the specific measures developed in a wide range of reports in both the U.S. and Canada was undertaken to develop a "library" of potential performance indicators. Discussions on those indicators was held with a series of advisory panels comprised of members from the OHA, community providers and other key organizations such as the Canadian Council on Health Services Accreditation (CCHSA), and the Canadian Institute of Health Information (CIHI).

Why Develop The Hospital Report '98?

There are three general trends that make evaluative reports both possible and desirable. These three trends are: an increasing demand for accountability from the public, government and other stakeholders; the development of information which enables the capture of detailed information; and the development of valid reliable measures of complex and multidimensional phenomena such as quality of care and patient satisfaction.

These trends have resulted in the development of evaluative reports in many public and private sectors. The Hospital Report '98 project stems from OHA's decision to take a leading role in the development of a valid and reliable evaluative report for hospitals. The hospital system in Ontario is experiencing dramatic changes. A report to monitor the quality of care, customer satisfaction, financial viability and organizational learning and change of hospital care during this tumultuous time will help ensure that the high quality of care experienced by Ontario residents is maintained.

What Performance Measures are Included?

Considerable variation exists in the specific measures included in various performance measurement systems. However, there is some level of agreement about what types of measures are needed. Performance measurement systems for health care organizations typically include financial and utilization measures, clinical and functional status outcome measures, and patient satisfaction measures. The Hospital Report '98 also analyses information about the ability of organizations to learn and change.

Key Criteria for Selection of Indicators

There are three key criteria that were considered in selecting performance measures:

1. **Relevance.** Is the measure important? Does it refer to a priority resource allocation area? Will the measure facilitate action?
2. **Scientific soundness.** Is the measure reliable (repeated measures produce the same result?) Is it valid (does it reflect the characteristic it purports to measure?) Can it be adjusted by other factors to yield a score that can be compared to other providers?
3. **Feasibility.** Are the activities or events frequent enough to warrant meaningful comparisons? Can the information be collected at a reasonable cost? How much burden will there be on those who have to provide the information?

In selecting the set of measures to be used there were trade-offs between comprehensiveness and parsimony. Comprehensiveness means that the total set of measures covers all the core activities of the organization, the key patient or client groups, and different perspectives (patient, staff, managers.) Parsimony demands that the number of performance measures be limited, both because such measurement adds costs, and, just as importantly, because scorecards with large numbers of measures are difficult to interpret. Measuring too many things means that no measure receives adequate attention.

Are There Other Measures of Hospital Quality?

There have been and are other measures of Ontario hospital quality. One such measure is the voluntary hospital accreditation process overseen by the Canadian Council on Health Services Accreditation, (CCHSA). Hospitals are accredited, on average, every three years. This process provides hospitals with detailed information regarding the hospitals ability to demonstrate certain processes. This process is changing to include outcome measurement and indicators. In 1997 there were 167 hospitals in Ontario that were accredited. The only public information available from the accreditation process is whether a hospital is accredited or not. Accreditation is built on the assessment of hospitals (and other health care organizations) by peer experts. The University team has worked closely with the CCHSA to minimize any duplication between The Hospital Report '98 and the accreditation program.

In addition to the external accreditation of hospitals, most hospitals have extensive internal quality evaluation and improvement programs. However, The Hospital Report '98 is the only publication that evaluates the hospital system across the four domains.

Neither this document, nor the comparative hospital report proposed for next year will replace these internal performance measurement systems. By creating a set of relevant, feasible and scientifically sound measures we believe that The Hospital Report '98 creates a platform for more detailed local initiatives designed to measure hospital performance. These measures provide a baseline for aiming and measuring efforts for further improvement in hospital care in Ontario.

The Hospital Report '98 Advisory Group

The OHA and The Hospital Report '98 research team would like to thank the following individuals for their invaluable advice:

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Ontario Hospital Association
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Hospital names may not reflect recent changes that have occurred as a result of restructuring.

Measures of Clinical Utilization and Outcomes

Introduction

This report describes the use and outcomes of hospital care across the five Ontario Hospital Association (OHA) regions. A future companion report provides more detail by OHA Region and by hospital peer groups. These reports represent the beginning of a process of evaluation and improvement. The reports use selected measures of utilization and outcomes applied to routinely collected hospital data available for all Ontario hospitals. We selected these measures based on an extensive literature review, consultation with advisory groups, and data analysis. This report contains regional-level results based on these measures. We use these results to comment on the value of the measures and to suggest future steps in their development and application. The release of this report provides an opportunity for comments and advice from clinicians and administrators from across the Province. Future reports that describe hospital-specific use and outcomes will use measures that have been more extensively reviewed, validated, and refined for applicability to Ontario hospitals.

In this report, we focus on common causes and purposes of hospital care that account for a substantial component of acute care hospital activity in Ontario. These causes (diagnoses) and purposes (procedures) define specific patient groups typically cared for by a well-defined group of providers. These providers can use guidelines, scholarly papers, and other resources to link the measures included in this report to their own utilization management and quality improvement work.

Three measures were chosen to provide information on the frequency and intensity of hospital care. The *annual separation rate* measures the number of individuals in a community that have received hospital care in a year. It is a rough indicator of access to care but cannot be used to determine if that care is appropriate. Separation rates may vary across regions for a number of reasons, including differences in health status, the tendency of people to seek care, the availability of care, and the clinical indications used to determine admission to hospital. The *average length of stay (ALOS)* describes the duration of care for patients who enter hospital. It is a rough indicator of the intensity of care for patients who are discharged from hospital. In general, longer lengths of stay indicate higher resource utilization. Some types of surgery can be performed in day surgery units and for these procedures, the *proportion of day surgery* cases provides a better measure of the intensity of resource use. A higher proportion of day surgery means less use of costly inpatient beds.

Quality of care results from the adequacy of the structure within which care is provided and the appropriateness of the process of care. Hospitals with better structures and processes of care should produce better outcomes. Outcomes provide a measure of performance across hospitals. Outcome measures are most useful when positive outcomes can be related to specific structures or processes. A large and active body of research describes health outcomes related to the quality of care. This report provides information on two widely studied outcomes: complications of care during a hospital separation and unplanned readmissions to hospital following an initial separation.

After entering hospital, patients may develop new problems or existing conditions may get worse. These *post-admission comorbidities* result from a range of factors. Some post-admission comorbidity may be avoidable. They are important outcomes because they can increase the risk of long-term impairment and death as well as the amount of resources required to care for the patient. Sometimes post-admission comorbidities are the result of the care provided. This subset of post-admission comorbidities is called *complications of care*. Existing data collection and coding systems in Ontario make it easier to relate complications to procedures. As a result current methods for measuring complications provide a more sensitive and relevant guide for quality improvement in surgical care than in non-surgical care. We provide information on the proportion of patients who develop post-admission comorbidities and break these down into *complications* and *other post-admission comorbidities*.

After leaving hospital, patients may also have to return unexpectedly for further care. Unplanned readmissions may result from the care initially provided in hospital, inadequate discharge planning, or poor community care, as well as from community and patient-specific factors beyond the control of the hospital. Condition-specific readmissions are a subset of all readmissions that are for the same diagnosis or for similar procedures as on the first (index) separation. These readmissions may be more related to the initial hospital care than other unplanned readmissions. Quality improvement efforts to reduce all types of readmissions may emphasize discharge planning and integration or coordination of care with resources in the community. We provide information on the proportion of patients who had unplanned readmissions with 30 days of discharge and break these down into *condition-specific readmissions* and other *unplanned readmissions*.

This report describes the rate of post-admission comorbidities, complications, 30-day readmissions, and 30-day condition-specific readmissions across Ontario. It does not provide information on the proportion of patients who die in hospital or shortly after discharge. Death is an important and commonly cited outcome measure, but current data do not support the complex adjustments necessary to fairly compare mortality rates for different groups of patients across regions.

Information on hospital use and outcomes should stimulate and support quality improvement and utilization management activities across Ontario acute care hospitals. This report introduces some of the concepts and measures necessary to monitor and evaluate utilization management and quality improvement efforts. The application of the measures at a regional level provides an opportunity to comment on future steps in the development of a report card. We hope this report will stimulate comment and feedback from all stakeholders. Ultimately the report card should provide a comprehensive view of hospital performance that also includes information on patient satisfaction, financial performance and health system integration. This perspective allows providers to compare different initiatives to improve performance and to set priorities.

Methods

A forthcoming companion report includes a review of the literature and describes the methods in greater detail. Hospitals may obtain the algorithms necessary to reproduce the information in this report. Verification of the results using hospitals' information systems is underway.

Hospital Separation Data

We obtained information on all separations in Ontario acute care hospitals from the Canadian Institute for Health Information (CIHI) Discharge Abstract Database (DAD) for the fiscal year 1996/97. It does not include separations from chronic care and psychiatric hospitals. The DAD contains information on all acute care hospital separations by Ontario residents, with the exception of separations from hospitals outside of Ontario, separations from federally funded institutions, and separations from privately funded institutions.

The DAD records the age, sex, county of residence and a unique encrypted identifier for each patient hospitalized. It records up to 16 diagnoses per separation using the International Classification of Diseases, 9th Revision (ICD-9). All diagnoses in the DAD are assigned a code for the type of diagnosis that indicates if the condition developed before or after admission to the hospital. The DAD also records up to 10 surgical procedures per separation using the Canadian Classification of Diagnostic, Therapeutic, and Surgical Procedures (CCP). We used these data elements to identify separations, post-admission comorbidities, complications, readmissions, and condition specific readmissions.

Patient Categories

We measured use and consequences of care provided to 12 patient groups. We used CCP procedure codes to identify patients hospitalized for six procedures: (1) cholecystectomy, (2) hysterectomy, (3) lens extraction, (4) myringotomy with tube insertion, (5) total hip and knee replacement, and (6) transurethral prostatectomy (TURP). We used combinations of the ICD-9 diagnoses and diagnosis type codes to identify patients

admitted for six conditions: (1) acute myocardial infarction, (2) asthma, (3) congestive heart failure, (4) gastrointestinal (GI) bleeding, (5) pneumonia, and (6) stroke. We included patients in each group if the patient's record contained a diagnosis for the condition and the type code indicated that the condition developed before hospital admission and was responsible for a substantial portion of the resources used to treat the patient. We excluded from analysis all patients with a diagnosis of malignant, potentially malignant, or in situ cancer.

Measures of utilization

We defined separation rates as the frequency of hospital separations for each of the 12 patient groups for residents of each region in fiscal year 1996-1997. We defined a separation as a discharge from an acute care institution and we counted a patient transferred from one acute care institution to another as a separation. We used the 1996 Census to calculate the total population of each region. We standardized separation rates in each region to account for differences in the age and sex composition of the different regions.

We defined average length of stay (ALOS) as the total number of days spent in acute care beds divided by the total number of separations. We did not include separations that involved transfers in the calculation of ALOS. We standardized estimates of ALOS in each region to account for differences in the age and sex composition of the people hospitalized in each region. We identified day surgery cases for myringotomy, cataract surgery and TURP if the procedure was performed in a designated day surgery unit. We then calculated the proportion of all cases that were performed in these designated units. We calculated the proportion of cholecystectomies performed using the traditional open technique, the laparoscopic technique and converted from the laparoscopic to open technique on the basis of CCP codes.

Measures of outcome

We defined post-admission comorbidities as any diagnosis that had been assigned by the hospital with a type code indicating that the condition developed after admission and influenced the length of stay or treatment of the patient. We defined complications as a subset of post-admission comorbidities in which the identified post-admission comorbidity diagnosis explicitly defined a complication of the care provided (ICD-9 codes 996 to 999). We standardized the proportion of patients with post-admission comorbidities and complications to account for differences in the age and sex composition of people hospitalized in each region.

We defined unplanned 30-day readmissions as any readmission that was not designated by the hospital as elective. We defined condition-specific readmissions as any unplanned 30-day readmission for the same diagnosis for the diagnostically defined groups and for the surgically defined groups as readmission for a procedure on the same organ system, or for a complication of care (ICD-9 996 to 999). We standardized the proportions of readmissions to account for differences in the age and sex composition of people hospitalized in each region.

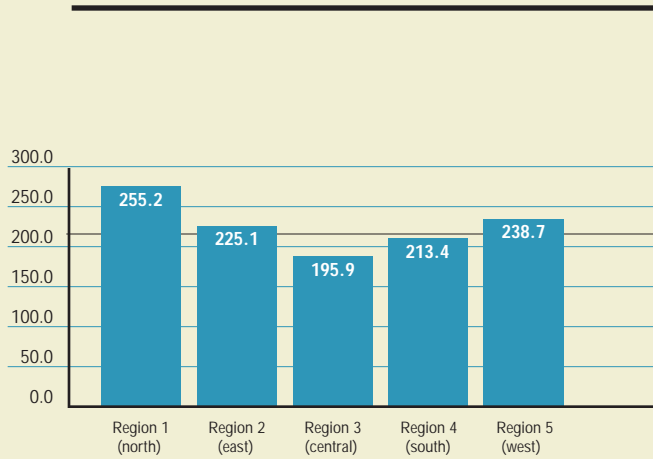
Acute Myocardial Infarction (AMI)

Background: Acute myocardial infarction (ICD-9 code 410), or heart attack, is an acute and frequently fatal condition resulting from decreased or blocked blood flow to the heart. The codes for AMI are distinct from those for old myocardial infarction (412), intermediate coronary syndrome (411.1), and post-myocardial infarction syndrome (411.0). Common treatment for AMI includes drug therapy with thrombolytic drugs to break down blood clots causing the AMI and surgical treatments such as coronary artery bypass surgery or percutaneous transluminal coronary angioplasty to increase the supply of blood to the heart. In most cases, patients with AMI are admitted through the emergency room and will receive care in special care units that include a range of providers. Patients who survive AMI benefit from long term drug and rehabilitation therapy that can reduce the risk of recurrence and readmission.

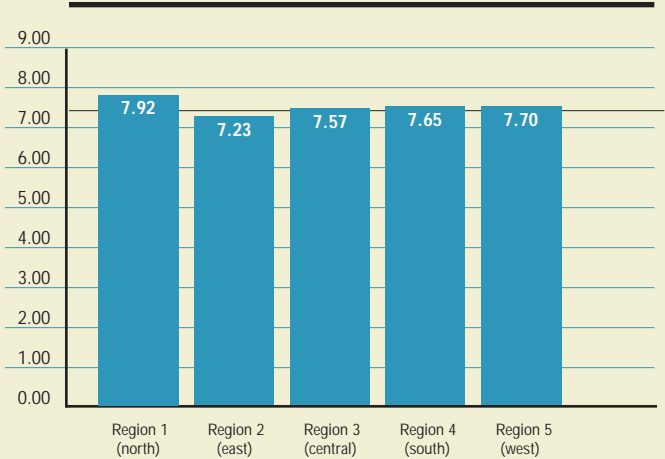
Findings: Acute myocardial infarction accounted for 1.2% of all separations in 1996. Standardized separation rates are lowest in Region 3 (central) and highest in Region 1 (north). There was little variation in ALOS. Thirty-day-readmission rates were consistently around 14% to 16%. Three-quarters of these readmissions were for care related to the initial AMI. On average, about one-in-six patients had a post-admission comorbidity but few had coded complications of care.

Comment: We found that separation rates were higher in Region 1 (north) but little variation in ALOS across regions. Although many patients had post-admission comorbidities, the low rate of complications across regions suggests that more sensitive measures of quality of care will be required. Many had unplanned readmissions within 30 days of discharge. Most were related to the initial AMI. Quality improvement efforts can rely on a large and growing literature describing successful programs for improving post-AMI outcomes by reducing time to thrombolytic therapy, increasing use of long-term drug therapy, and increasing use of cardiac rehabilitation.

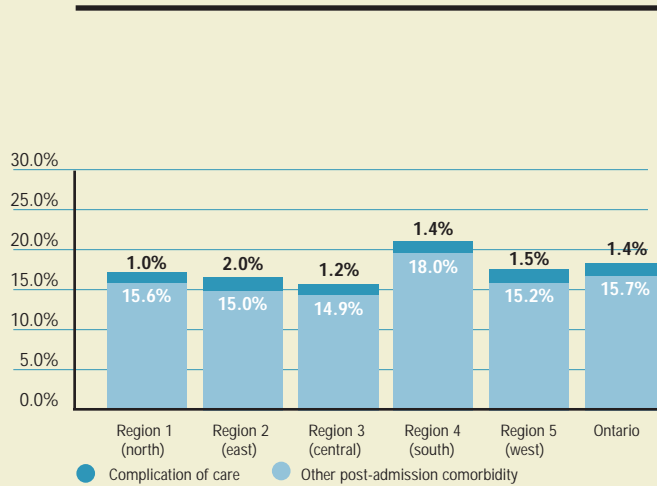
Acute Myocardial Infarction:
Standardized Separation Rate (per 100,000 population)



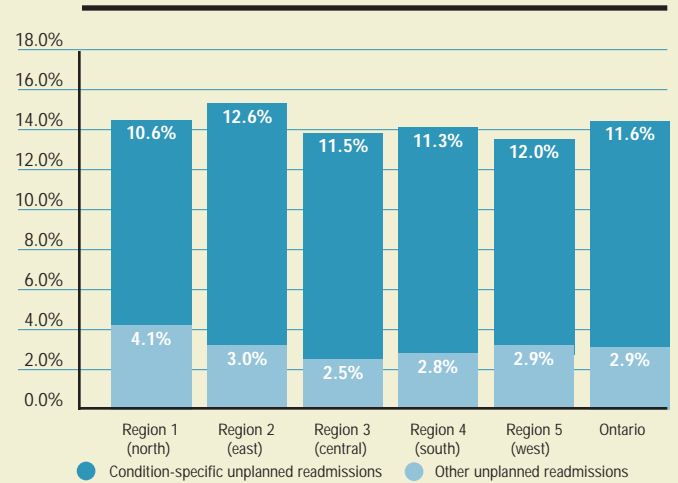
Acute Myocardial Infarction:
Standardized Average Length of Stay



Acute Myocardial Infarction:
Post-admission Comorbidity and Complication Rates



Acute Myocardial Infarction:
Unplanned Readmission Rates



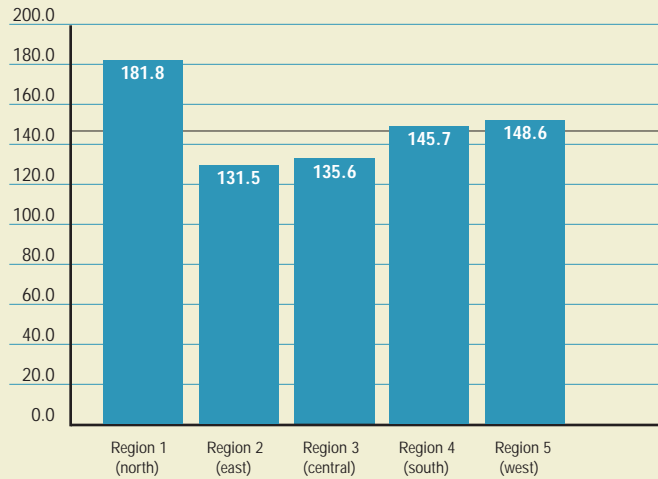
Asthma

Background: Asthma (ICD-9 code 493) is a disease that results in widespread and potentially reversible inflammation and narrowing of the peripheral airways in the lung due to allergic responses (493.0) and intrinsic causes (493.1). Patients with acute asthma usually present with coughing, wheezing, and difficulty breathing. Severe attacks may result in death. Treatment for asthma includes a number of drugs that are frequently aerosolized to increase their uptake in the lungs. Treatment may be administered in the emergency room or in hospital. In extreme cases, asthmatic patients may require mechanical ventilation and intubation to maintain lung function. Hospitalization also provides the opportunity to reduce recurrence through patient education and the initiation or modification of drug therapy.

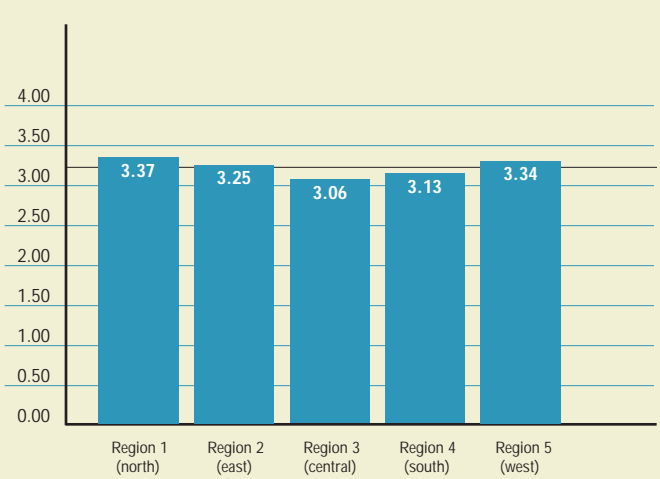
Findings: Asthma separations accounted for 0.7% to 0.8% of all separations in each region but standardized separation rates were highest in Region 1 (north). About half the separations are for children less than 15 years old. ALOS varied little across regions. On average 8% of asthma discharges were followed by a readmission within 30-days. Condition specific readmissions accounted for about 3/4 of all readmissions in each region but varied little across regions. Post-admission comorbidities were rare in all regions. Coded complications of care were virtually non-existent; all but one region had 5 or fewer separations with a complication.

Comment: We found higher separation rates for asthma in Region 1 (north). Hospitalization for asthma is related to both environmental factors and access to primary care. Region 1 has unique characteristics in relation to both of these. Hospital readmission is an important feature of asthma and there are ways to improve and coordinate asthma care so that readmissions are minimized. This could provide a focus for quality of care efforts. Complications of care are too rare to serve as a sensitive indicator of quality of care across hospitals.

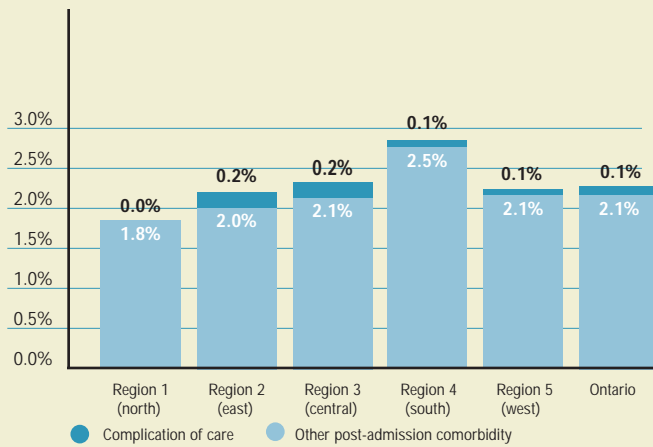
Asthma:
Standardized Separation Rate (per 100,00 population)



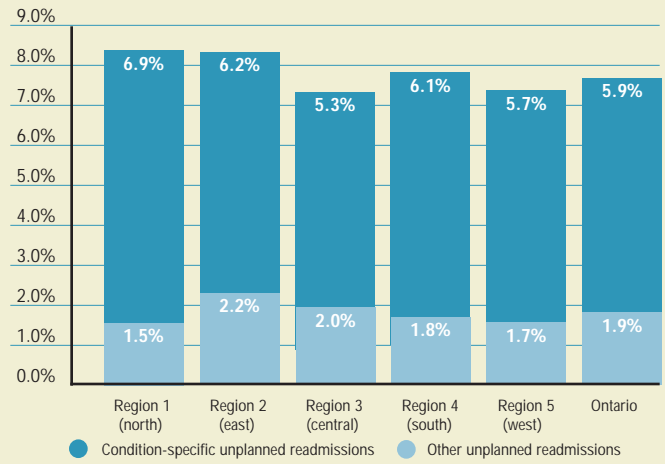
Asthma:
Standardized Average Length of Stay



Asthma:
Post-admission Comorbidity and Complication Rates



Asthma:
Unplanned Readmission Rates



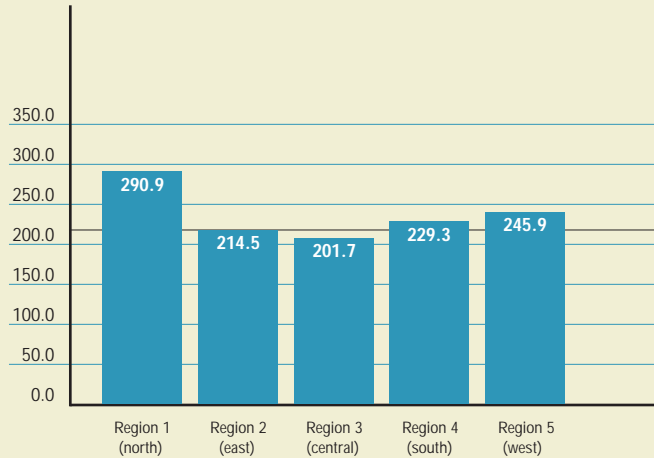
Congestive Heart Failure (CHF)

Background: Congestive Heart Failure CHF (ICD-9 code 428) describes the inability of the heart to pump a sufficient supply of oxygenated blood. Patients with CHF often suffer from angina and shortness of breath. CHF follows a progressive course, often causing death. Although CHF may result from several causes, it usually results from damage to the heart from previous heart attacks. Hospitalization for CHF involves drug therapy to reduce symptoms and comorbid conditions and to prevent future exacerbation. Appropriate therapy may reduce the risk of mortality and readmission.

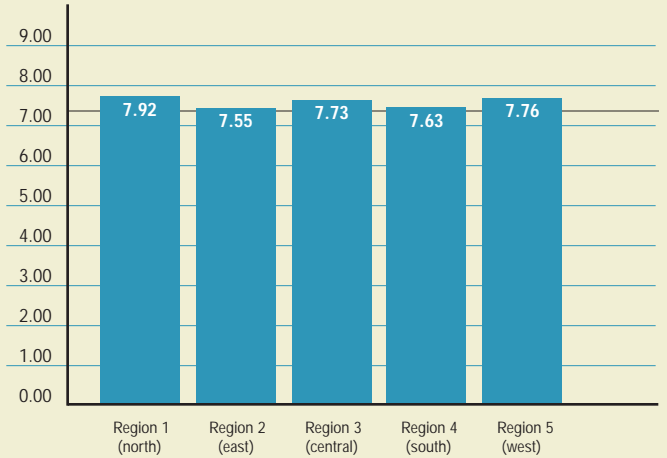
Findings: CHF accounted for 1.2% of all separations. Standardized separation rates and ALOS were highest in Region 1 (north). Between 18% and 20% of patients are readmitted within 30 days of discharge; two-thirds for conditions related to their initial CHF admission. Between 8% and 11% of patients develop post-admission comorbidities.

Comment: The higher separation rate in Region 1 (north) may be related to its higher AMI separation rate and both rates deserve more detailed analysis. Because CHF is a chronic disease, providers may regularly admit and discharge patients as part of appropriate therapy, particularly in the later stages of disease. Readmission rates need to be adjusted for patient severity to provide a better indicator of quality of care. Post-admission comorbidities could also provide a better indicator of quality of care if it were possible to identify comorbidities that could be avoided through appropriate therapy. CHF is a common disease with high mortality and high morbidity. It is an important topic for quality assurance efforts.

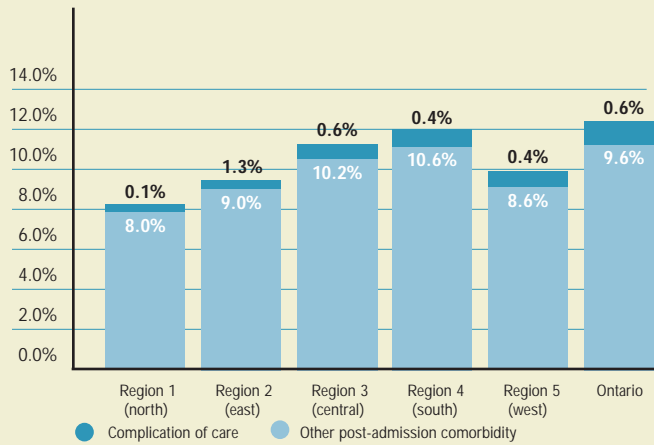
Congestive Heart Failure: Standardized Separation Rates (per 100,00 population)



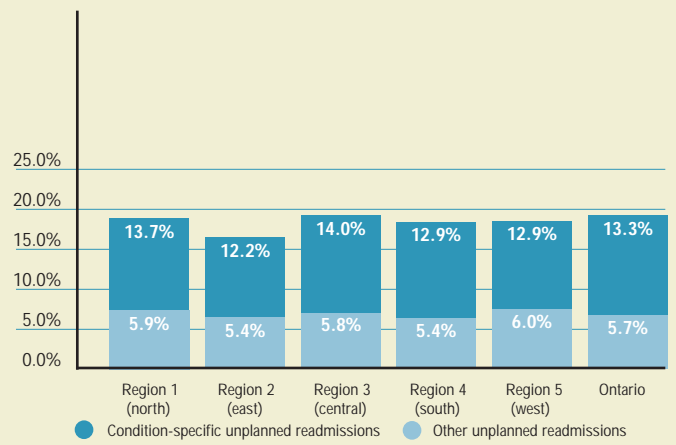
Congestive Heart Failure: Standardized Average Length of Stay



Congestive Heart Failure: Post-admission Comorbidity and Complication Rates



Congestive Heart Failure: Unplanned Readmission rates



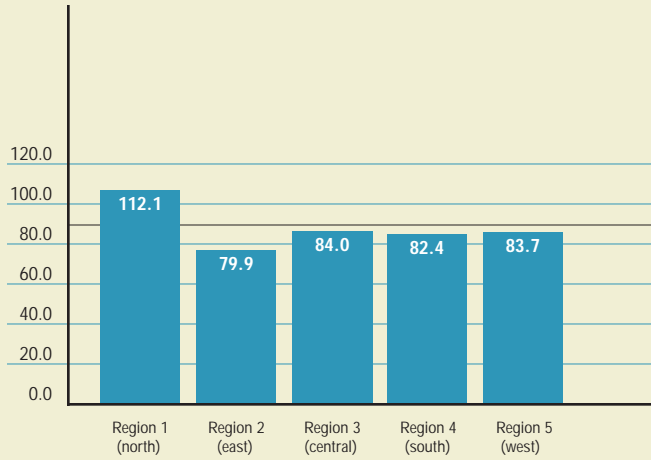
Gastrointestinal bleeding (GI bleed).

Background: Gastrointestinal bleeding GI bleeds (ICD-9 codes 578, 531.0, 531.2, 531.4, 531.6, 532.0, 532.2, 532.4, 532.6, 533.0, 533.2, 533.4, 533.6, 534.0, 534.2, 534.4, and 534.6) are hemorrhages into any part of the digestive system. GI bleeds may be acute or chronic and may arise from a number of causes including bleeding ulcers and esophageal varices. With acute GI bleeds, the first goal of therapy is to halt bleeding and replace the blood loss, if necessary, through transfusion. After controlling acute GI bleeds, subsequent care is designed to identify and treat the underlying cause of bleeding. Care may involve surgery, drug therapy, and a range of diagnostic and therapeutic procedures.

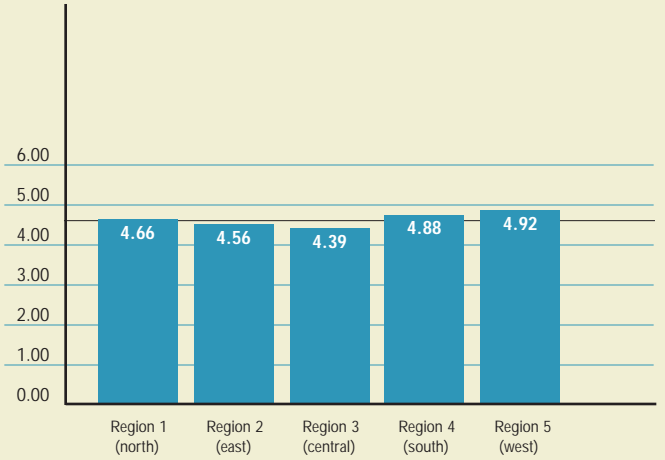
Findings: GI bleeds accounted for 0.5% of all separations in Ontario in 1996. Separation rates are very similar in Region 2 (east), Region 3 (central) Region 4 (south) Region 5 (west) but higher in Region 1 (north). ALOS varies by roughly 10% across regions. About one-in-ten patients are readmitted and about half of these are for causes related to the initial GI bleed. Fewer patients (6% to 7%) developed a post-admission comorbidity and over one-fifth of these were coded as complications.

Comment: Better understanding of variations in separation rates and hospital stays will require a clearer definition of the underlying causes of GI bleeds. Comparison of quality of care should also be linked to more detailed analysis of treatment strategies. For example, hospitals may consider implementing guidelines on the management of acute gastrointestinal bleeding, particularly for bleeding unrelated to ulcers.

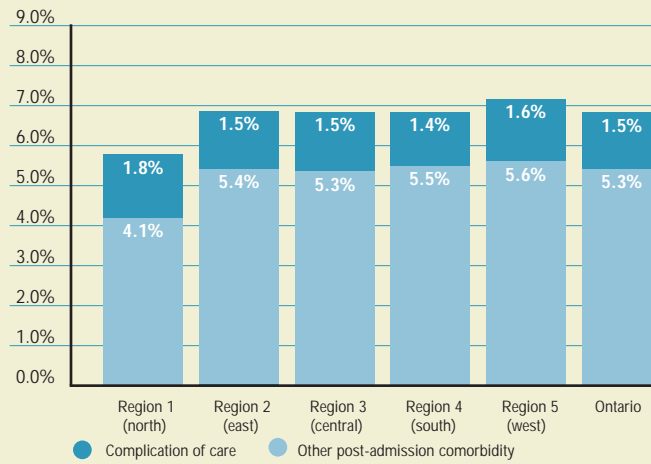
GI Bleed:
Standardized Separation Rate (per 100,00 population)



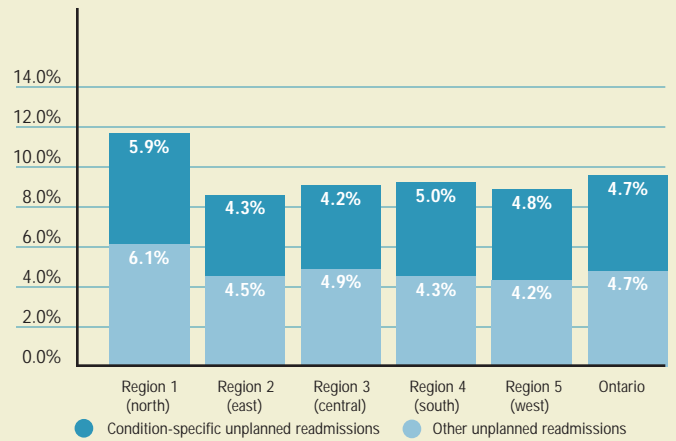
GI Bleed:
Standardized Average Length of Stay



GI Bleed:
Post-admission Comorbidity and Complication Rates



GI Bleed:
Unplanned Readmission Rates



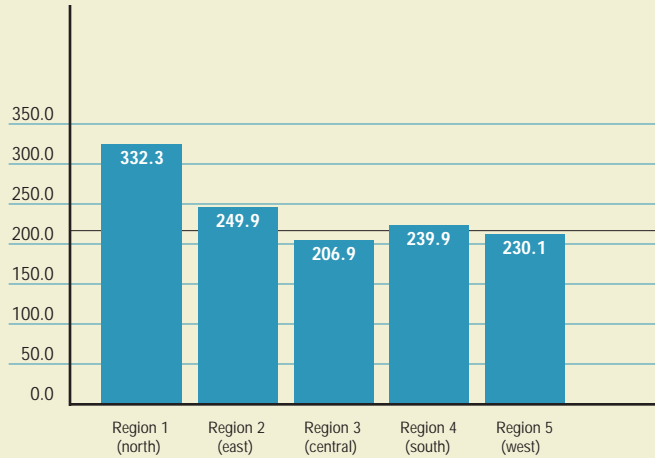
Pneumonia

Background: Pneumonia (ICD-9 codes 481, 482, 483, 484, 485, and 486) is an infection of the lungs with bacteria, viruses, or other micro-organisms. We tried to identify community-acquired pneumonia, that is, pneumonia that is present on admission to hospital and not pneumonia that is a complication of care provided in hospital. Community-acquired pneumonia is usually the result of bacterial infection. Unfortunately, the cause of infection is not regularly identified so that the most common coded diagnosis is pneumonia due to an unspecified organism (ICD-9 code 486). Hospitalization for bacterial pneumonia typically involves stabilization of the patient and treatment with antibiotics.

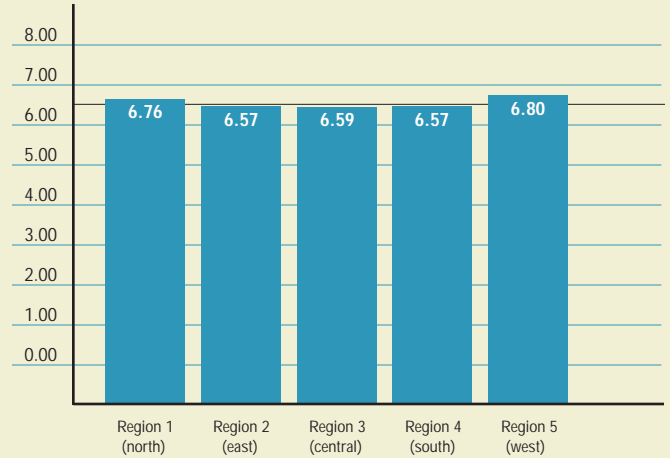
Findings: Non-viral pneumonia accounted for 1.3% of all separations in 1996. About 20% of separations were for children less than 15 years old. Standardized separation rates were more than 50% higher in Region 1 (north) – highest rate, than in Region 3 (central) – lowest rate. In contrast, ALOS varied by less than 5%. Post-admission comorbidities varied little across the regions and coded complications of care were very rare in all regions. About one-in-ten patients were readmitted within 30 days of discharge and around half of these were likely related to the initial case of pneumonia.

Comment: Separation rates for pneumonia varied substantially across regions but are difficult to interpret without better definitions of the type of pneumonia being treated. Post-admission comorbidity and readmissions are common in each region. Future evaluations should more clearly identify community-acquired disease in patients without compromised immune systems. Guidelines now document appropriate processes of care for patients with community-acquired disease that can improve outcomes.

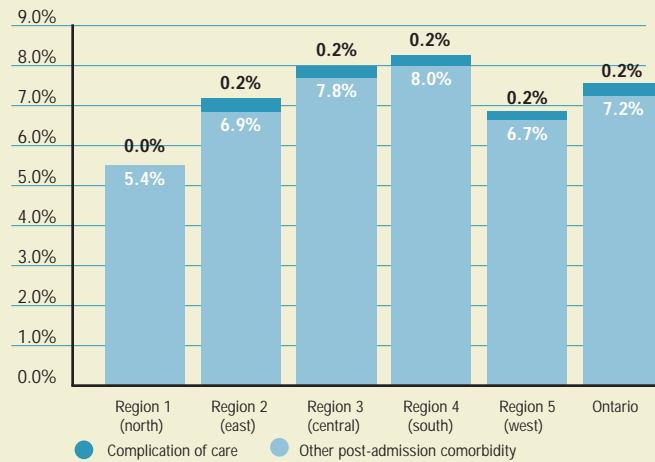
Pneumonia:
Standardized Separation Rate (per 100,000 population)



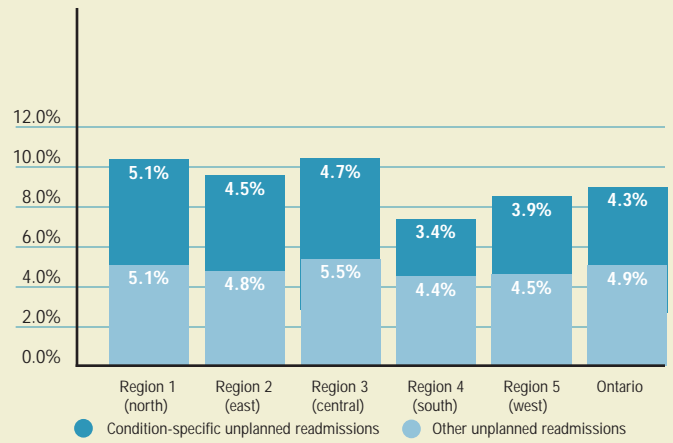
Pneumonia:
Standardized Average Length of Stay



Pneumonia:
Post-admission Comorbidity and Complication Rates



Pneumonia:
Unplanned Readmission Rates



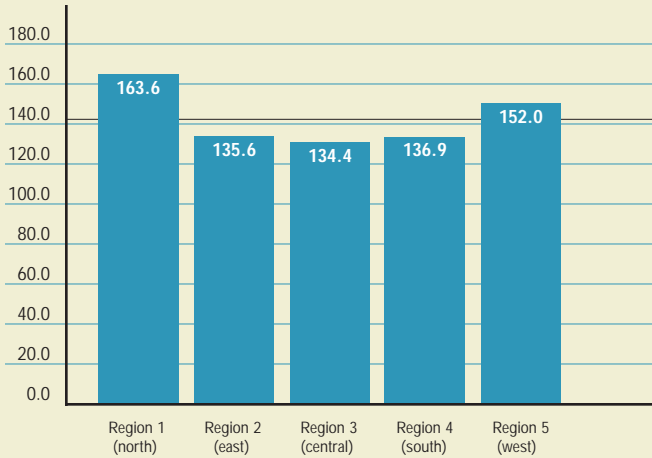
Stroke

Background: Stroke, cerebrovascular accident, or brain attack (ICD-9 codes 430, 434, 436, and 437) results from decreased blood supply to the brain. Symptoms of stroke include localizing neurological impairment, changes in the level of consciousness, and seizures. Strokes may result in lasting impairment or death. Patients with stroke typically present as an emergency but may present to hospital after the stroke with problems of physical, cognitive, or language impairment. Historically, there were limited treatment options for stroke patients, but the emergence of thrombolytic therapy has changed treatment in an increasing number of cases. Patients with completed strokes may benefit from medical therapy to reduce the risk of further strokes and from a rehabilitation program to reduce the impact of any disabilities.

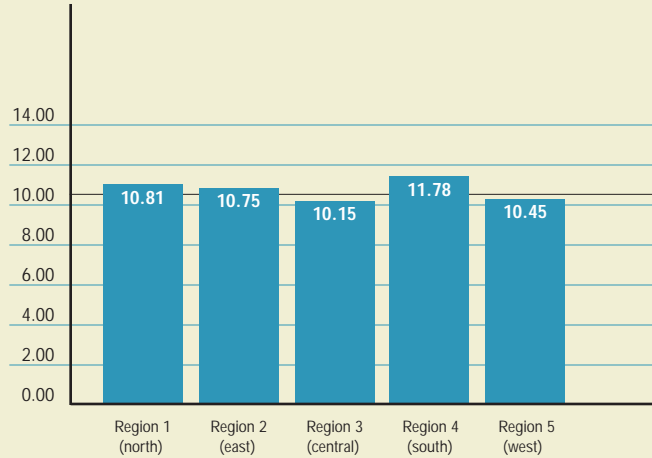
Findings: Stroke accounted for 0.8% of all separations across Ontario in 1996. Variation in standardized separation rates is smaller than other conditions and ALOS is quite similar across regions. Overall, about one-in-seven stroke patients has a post-admission comorbidity. Region 1 (north) has a lower incidence of post-admission comorbidities than other regions. Readmission rates are about 7% with about half of these related to the initial stroke.

Comment: The relatively consistent separation rates and ALOS indicate similar admission and discharge criteria. However, the recent introduction of thrombolytic therapy may alter treatment and outcome patterns and deserves detailed analysis. The risk of repeat stroke may be prevented with appropriate medical and surgical therapy and rehabilitation can reduce morbidity. Stroke care may be a useful target for future quality assurance efforts.

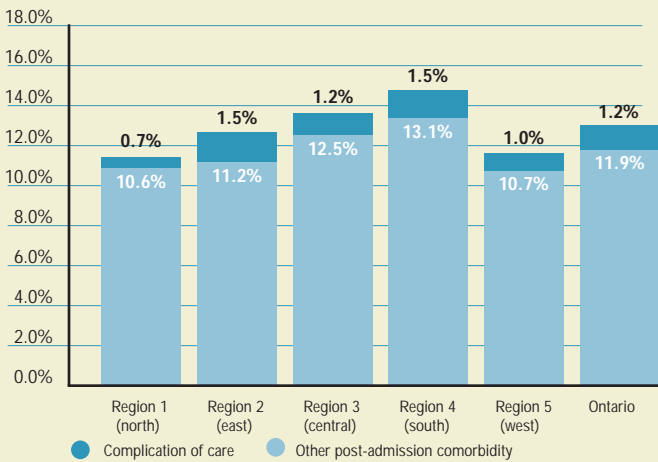
Stroke:
Standardized Separation Rate (per 100,00 population)



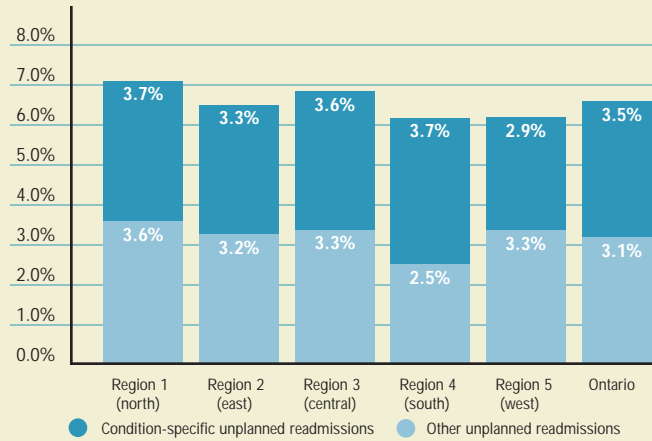
Stroke:
Standardized Average Length of Stay



Stroke:
Post-admission Comorbidity and Complication Rates



Stroke:
Unplanned Readmission Rates



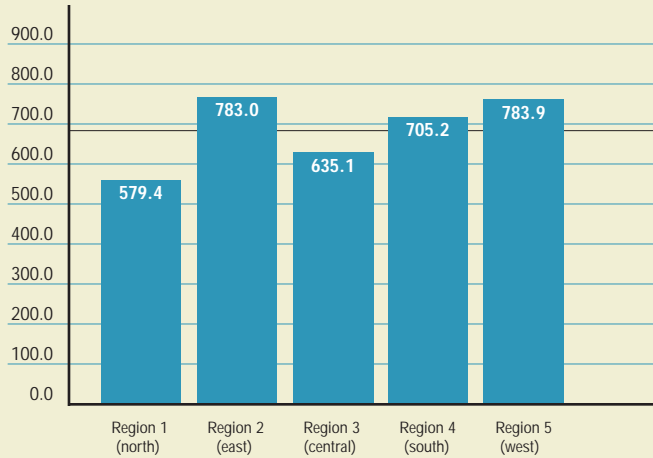
Cataract Extraction Surgery

Background: Cataract extraction surgery involves the removal of an opaque or damaged lens from the eye, including intracapsular removal (CCP code 27.4), extracapsular removal (CCP code 27.5) and other methods (CCP code 27.6). In most cases the lens extraction is accompanied by the insertion of an artificial lens. Cataract surgery is generally performed on older patients who have developed age-related cataracts, although it may be performed on younger patients who have developed cataracts due to trauma or disease. Ophthalmologists usually perform the procedure on a day surgery basis.

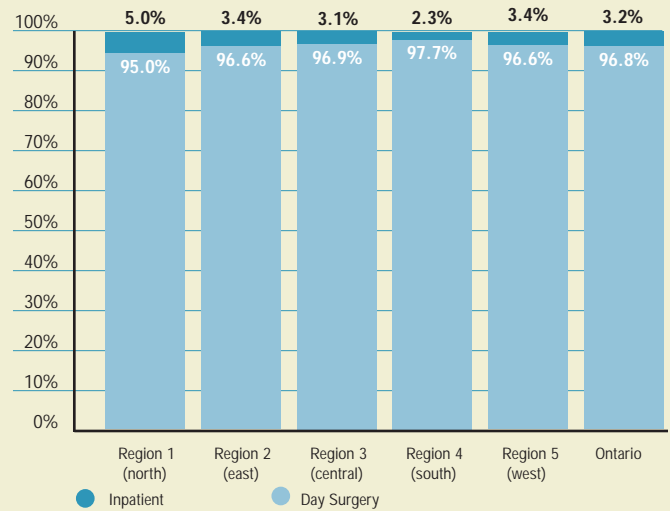
Findings: Cataract surgery accounted for approximately 6% of all surgical separations in Ontario. There was some variation in rates of cataract surgery across the regions. Over 80% of the procedures are performed on people who are 65 years of age and older and more than half on patients who are 75 years of age and older. The surgery is done as day surgery in the vast majority of cases across the province. The overall risk of complications and readmission was about 1 and 2% respectively.

Comment: We found substantial variation in surgical rates across regions. Analysis of variations in indications for cataract surgery, for example the degree of visual impairment and the age of patients, may help identify reasons for variations in separation rates. Complication and readmission rates were consistently low and may not provide a sensitive measure of quality of care.

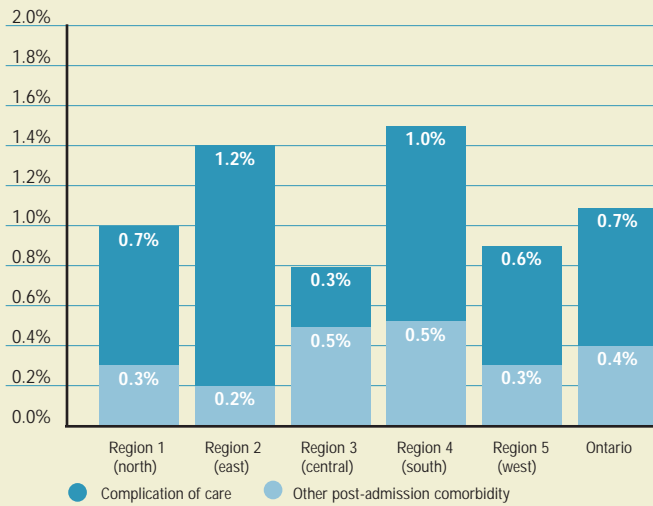
Cataract Surgery:
Standardized Separation Rate (per 100,000 population)



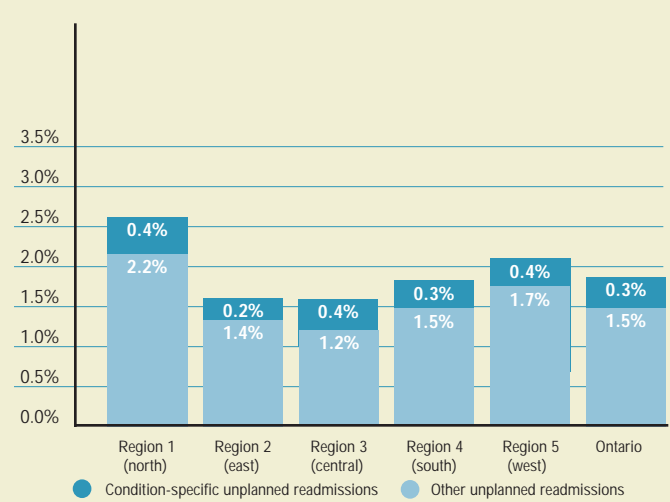
Cataract Surgery:
Proportion Day and Inpatient Surgery



Cataract Surgery:
Post-admission Comorbidity and Complication Rates



Cataract Surgery:
Unplanned Readmission Rates



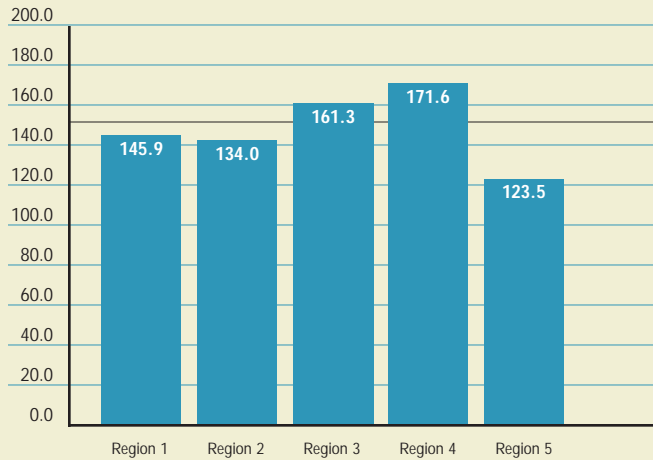
Transurethral Resection of the Prostate (TURP)

Background: Transurethral Resection of the Prostate (TURP) involves the removal of at least a portion of the prostate using a device inserted through the urethra (CCP 72.1). In most cases TURP is performed for benign prostatic hypertrophy (BPH), a condition that results in urinary retention and symptoms of nocturia, frequency, and hesitancy. Physicians and patients may delay treatment for BPH under a strategy of “watchful waiting,” or opt for treatment of symptoms using drugs or other procedures such as balloon dilatation and microwave thermotherapy. General surgeons and urologists may perform TURP on a day surgery or in-patient basis.

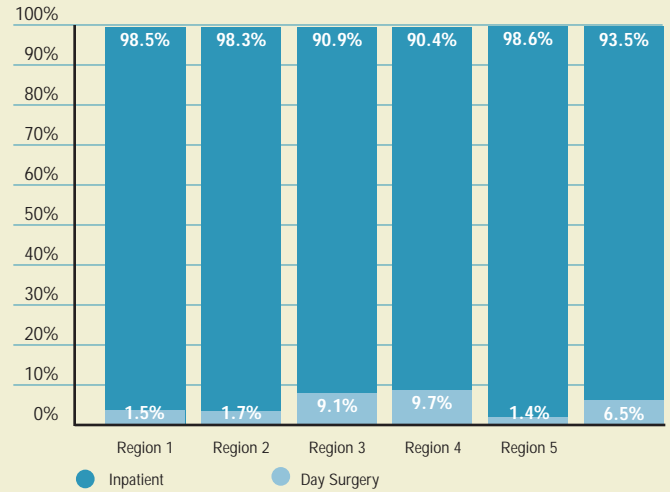
Findings: We found variation in separation rates across regions. In two regions almost 10% of TURP are done on a day surgery basis, a higher proportion than in the rest of Ontario. These two regions also have the highest rates of TURP. About 6% of men are readmitted to hospital within 30 days after the surgery and over one-third of these are for reasons that are probably related to the surgery. There are variations in readmission rates across regions. Overall, about 10% of cases develop some post-admission comorbidity and about 4% have a coded complication of care and there is variation in both of these across regions.

Comment: Rates of TURP in Ontario have decreased in recent years; variations in TURP rates may reflect the uneven progress of this decline across Ontario as well as variations in the use of alternatives to TURP. About one-in-ten men who have a TURP experience a post-admission comorbidity and TURP has the highest 30-day readmission rate of the 6 types of surgery we studied. There is variation in complications and readmissions across regions. We need to validate the data but both complications and readmissions may be useful quality of care measures. The use of day surgery procedures and their relationship to outcomes and overall surgical rates warrants further analysis.

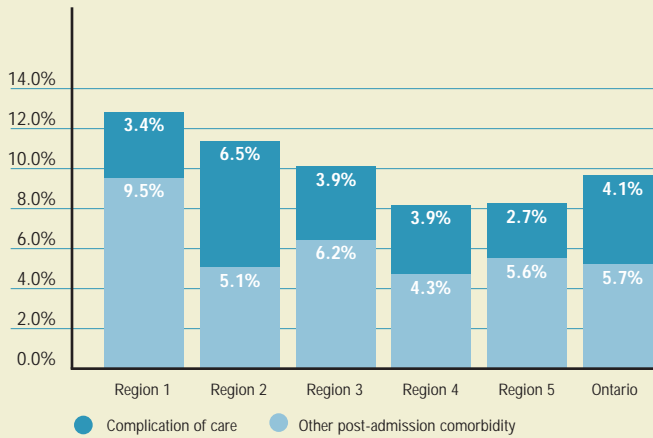
Transurethral Resection of the Prostate Standardized Separation Rate (per 100,000 men)



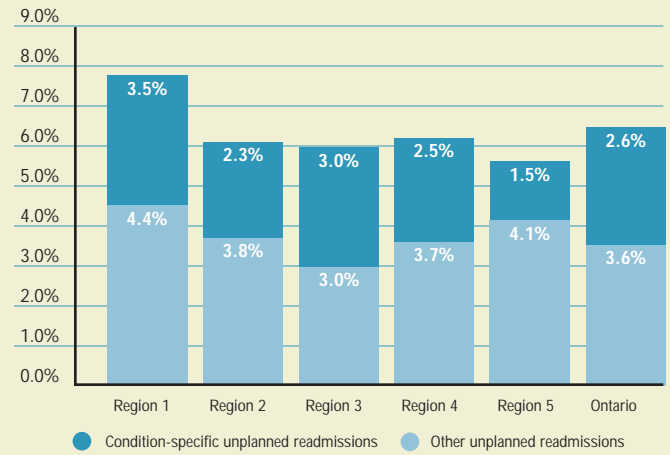
Transurethral Resection of the Prostate: Proportion Day and Inpatient Surgery



Transurethral Resection of the Prostate: Post-admission Comorbidity and Complication Rates



Transurethral Resection of the Prostate: Unplanned Readmission Rates



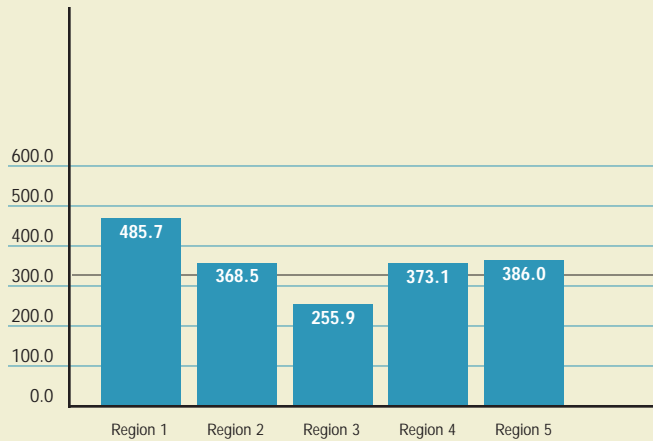
Hysterectomy

Background: This procedure involves the removal of the uterus and may include the removal of the ovaries and fallopian tubes. The procedures included in the analysis were performed using different techniques including vaginal (CCP 80.4, 80.6) and abdominal hysterectomies (CCP 80.2, 80.3, 80.5 and 80.7). We excluded patients with cancer but included cases for a range of indications including endometriosis, bleeding, fibroids, and uterine prolapse. Hormone therapy and less invasive procedures such as endometrial ablation may replace surgery for some indications. Hysterectomy rates in Ontario have decreased in recent years. Gynecologists and some general surgeons perform hysterectomies.

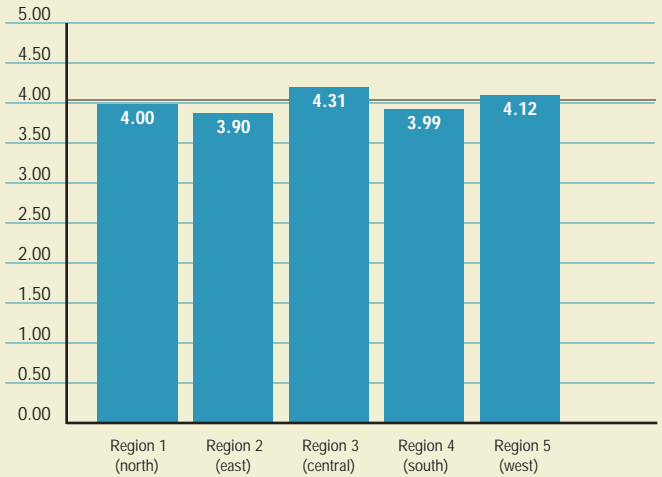
Findings: We found variations in the age-adjusted hysterectomy rates across the province. Average lengths of stay were similar in each region. Readmission rates are around 3% and about two thirds were related to the initial surgery. Overall, 11.5% of women who had hysterectomies developed a post-admission comorbidity; 60% of these were coded as complications of care.

Comments: Variations in hysterectomy rates will be easier to interpret with better data on specific indications, the availability of alternatives, and patient preferences. Over 10% of women who have hysterectomies develop problems after the surgery and most of these are coded by hospitals as being related to the procedure. Over three-quarters of the surgery was performed on women less than 45 years of age and they are unlikely to have chronic conditions that could lead to post-admission comorbidities. We need to validate coding processes but if our results are accurate then complications may be a useful tool in guiding efforts aimed at reducing the risks associated with this procedure.

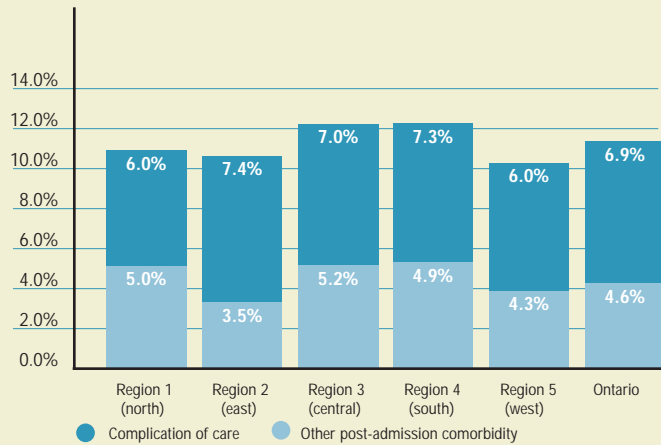
Hysterectomy:
Standardized Separation Rate (per 100,000 women)



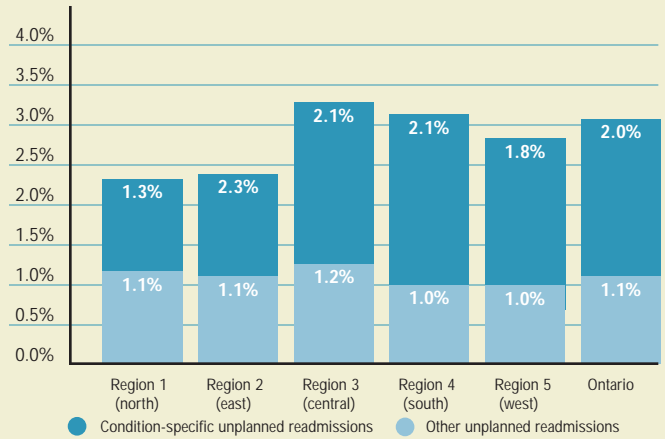
Hysterectomy:
Standardized Average Length of Stay



Hysterectomy:
Post-admission Comorbidity and Complication Rates



Hysterectomy:
Unplanned Readmission Rates



Myringotomy

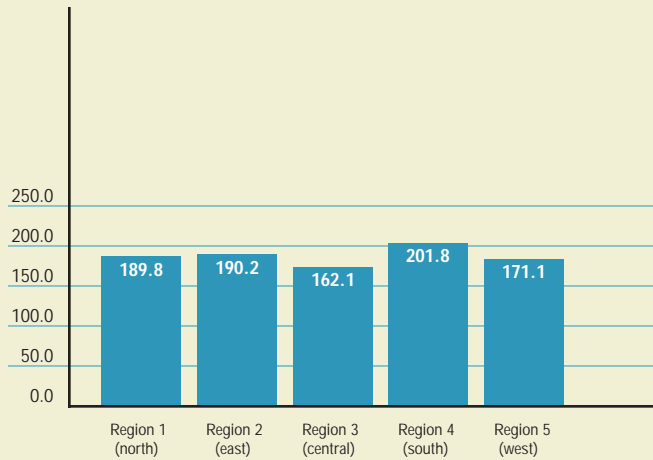
Background: Myringotomy with insertion of a tube (CCP code 32.01) is a procedure that involves cutting a small hole in the eardrum and inserting a tube or grommet in that hole. The analysis treats each separation as one case and does not distinguish between cases that had unilateral or bilateral myringotomy performed during the same admission. Myringotomy is used to treat and prevent recurrent middle ear infections (otitis media) in children. Middle ear infections are a common reason for physician visits in children and account for a major component of health care costs in children. Alternatives to myringotomy include the use of decongestants and antibiotics. Myringotomies are performed by ear, nose and throat surgeons.

Findings: Compared to the other procedures examined in this report there is little variation in myringotomy rates across the OHA Regions. However, there is more than a twofold variation in the proportion of cases performed on an inpatient basis across regions. Post-admission comorbidities, complications, and readmission rates are generally less than 1%.

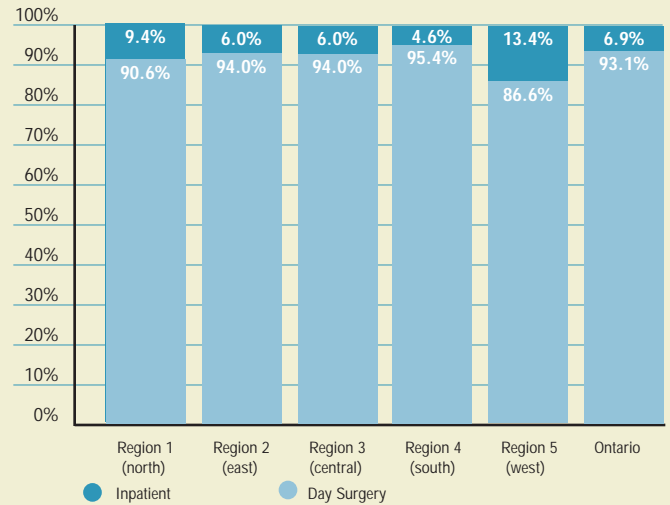
Comment: Readmissions and complications are very rare and are not likely to be useful as indicators in variation in quality of care. The procedure is one of the most common performed on children and we need to develop other approaches to assessing outcomes. Most procedures are performed as day surgery but differences in the proportion of day surgery cases across regions warrant further analysis that examines both outcomes and resource use.



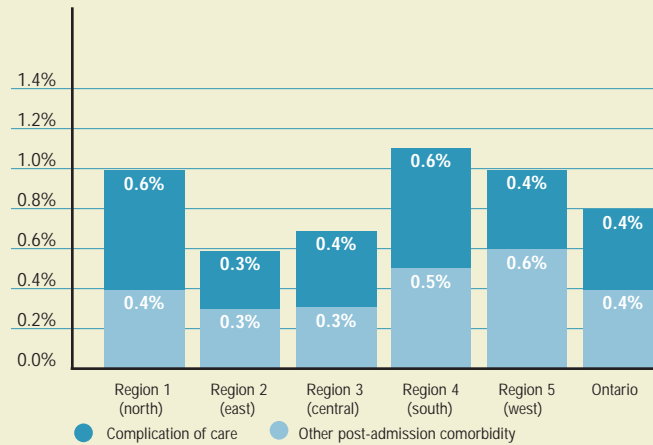
Myringotomy:
Standardized Separation Rate (per 100,000 population)



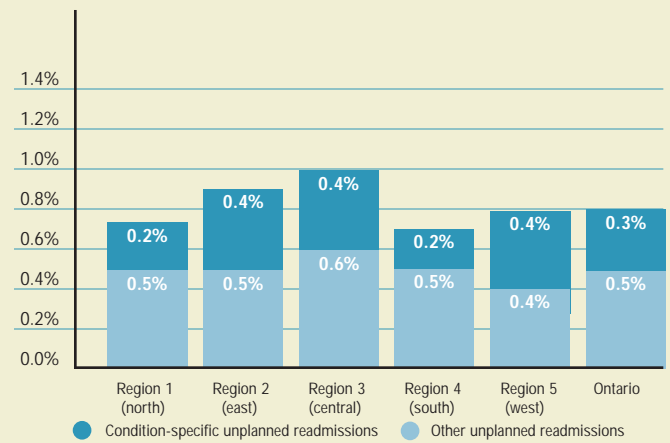
Myringotomy:
Proportion Day and Inpatient Surgery



Myringotomy:
Post-admission Comorbidity and Complication Rates



Myringotomy:
Unplanned Readmission Rates



Cholecystectomy

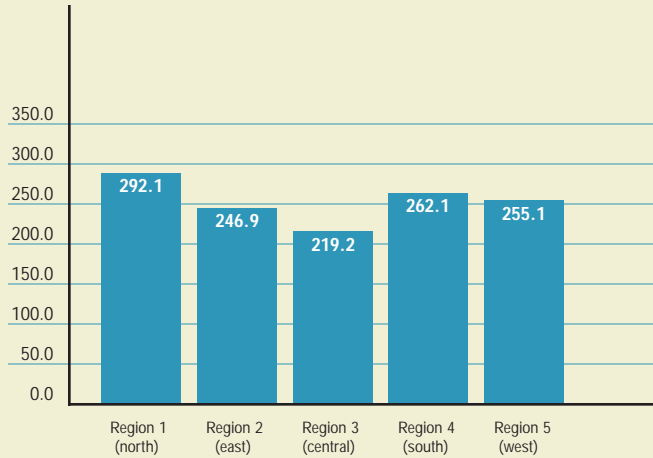
Background: This procedure involves the removal of the gall bladder.

The gall bladder is usually removed because of the presence of gallstones (cholelithiasis) causing chronic or acute episodes of pain and other symptoms. Cholecystectomy was traditionally performed using an open operative approach (CCP 63.12). Recently the procedure has been most frequently performed using a minimally invasive (laparoscopic) technique (CCP 63.14). In some cases, the surgeon may start a laparoscopic procedure but convert to an open procedure to have better access to the operative site (CCP 63.14 with a suffix 8 indicating a cancellation of that procedure plus 63.12 indicating a completed open procedure on the same record). General surgeons typically perform cholecystectomies.

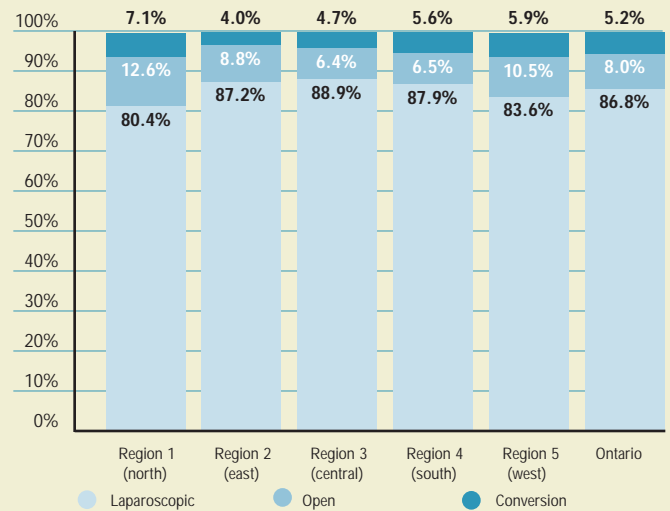
Findings: There is some variation in cholecystectomy rates across regions. About three quarters of the patients are under 65 years of age. There is some variation in the proportion of laparoscopic procedures and conversions across regions. Overall 30-day readmission rates are about 4% and about half are probably related to the initial surgery. Overall, almost 7% of cholecystectomies are associated with post-admission comorbidities and about half of those are coded as complications of care. The coded complication rate and readmission rate is much higher for converted procedures than for laparoscopic surgery.

Comment: Laparoscopic surgery offers benefits in terms of reduced pain and decreased lengths of stay. Although complication rates are lowest for laparoscopic procedures, there are complications associated with all types of cholecystectomies. We need to do more work on clarifying the coding of complications including determining the extent to which the higher rate of complications associated with converted procedures is a reflection of complications of the initial laparoscopic surgery. If coding is valid, complications may be a useful measure of performance and a guide to quality assurance efforts.

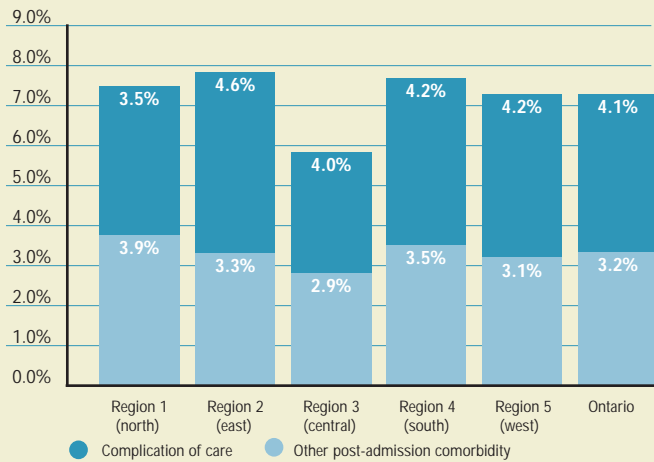
Cholecystectomy:
Standardized Separation Rate (per 100,00 population)



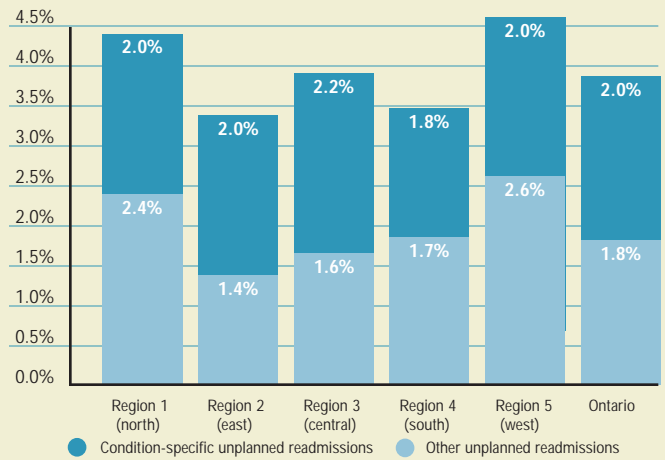
Cholecystectomy:
Proportion of Laparoscopic, Open and Converted Surgery



Cholecystectomy:
Post-admission Comorbidity and Complication Rates



Cholecystectomy:
Unplanned Readmission Rates



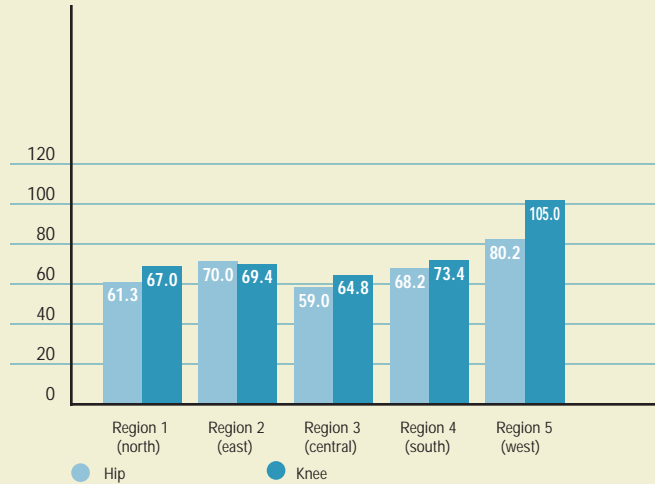
Knee and Hip Replacement Surgery

Background: Both of these procedures involve the removal of damaged joints and their replacement with an artificial joint. These procedures are usually performed to repair joints that have been damaged by arthritis or trauma. Separations included in the analysis include patients who have either total hip replacement (CCP 93.51 or 93.59) or total knee replacement (CCP 93.41). The analysis is based on a count of total cases with replacements rather than total procedures. Bilateral knee replacements performed during the same admission count as one case. Orthopedic surgeons perform joint replacement surgery.

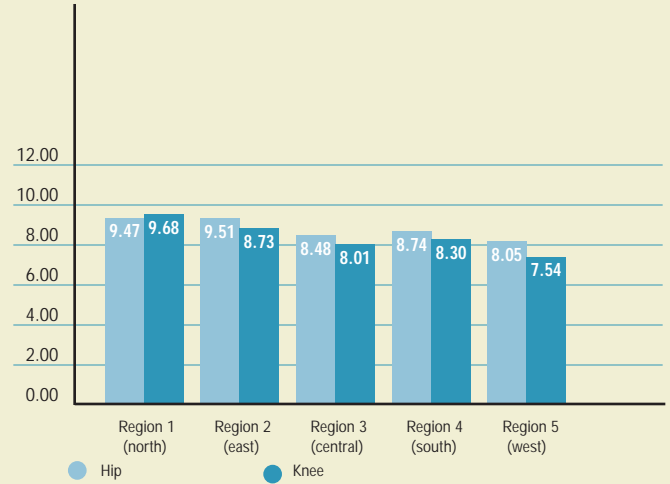
Findings: Together, separations for hip and knee replacement account for about 1.3% of all surgical separations in Ontario. Rates are highest for both procedures in Region 5 (west). There is some variation in length of stay. Readmissions occur in about 4% of cases and about half are directly related to the initial surgery. About one-in-five patients have a post-admission comorbidity and about half of these (one-in-twelve patients) have a complication of care. There is variation in both post-admission comorbidities and readmission rates.

Comment: The variation in separation rates and length of stay warrant further analysis. Post-admission comorbidity is a common event in joint replacement surgery and once we have been able to validate coding practices it may serve as a useful marker for quality of care. Post-admission comorbidity is associated with longer lengths of stay and reducing complications could improve outcomes while also reducing resource use.

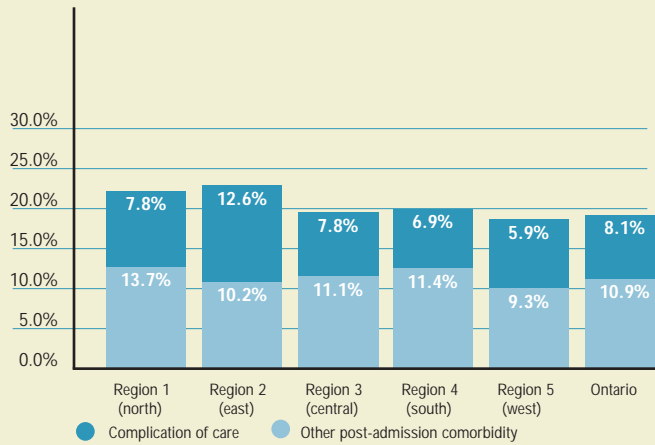
Knee and Hip Replacement: Standardized Separation Rate (per 100,000 population)



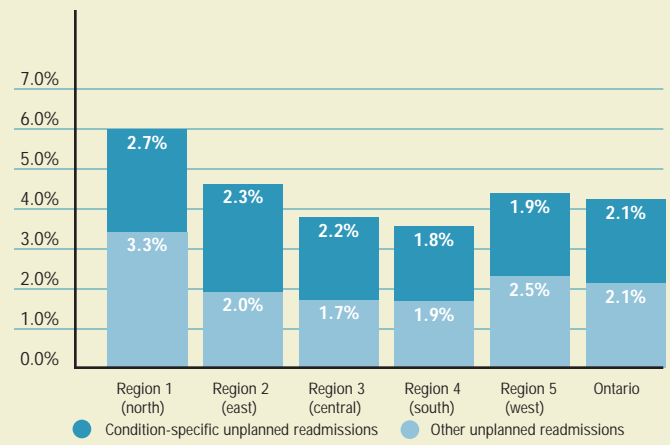
Knee and Hip Replacement: Standardized Average Length of Stay



Knee and Hip Replacement: Post-admission Comorbidity and Complication Rates



Knee and Hip Replacement: Unplanned Readmission Rates



Discussion

This report provides some information on the use and outcomes of hospital care across OHA Regions in the fiscal year 1996/1997. It builds on existing research and available databases. It is part of a continuing process to develop useful information. It is a foundation for the evaluation of the quality of hospital care across Ontario; it is neither a definitive nor a final assessment.

We identified six conditions and six procedures that accounted for more than 10% of all acute care separations. Well-defined codes for surgical procedures made the identification of surgical patient groups relatively straightforward. It was more difficult to identify consistent patient groups by diagnosis, despite efforts to group patients according to characteristics of their stay in hospital, such as length of stay and accompanying diagnoses.

Without consistency, it will be difficult to link performance measures to evidence on methods to improve the quality and appropriateness of care for each patient group. On average, patients receive nearly three diagnoses for each separation and even overlapping groups of diagnoses may describe very different conditions. We identified pneumonia and gastrointestinal bleeding as two conditions that require more work on their definition. We identified hysterectomy as a procedure where more work defining indications for surgery will be necessary.



Despite problems with identifying patient groups, our analysis demonstrated long-recognized patterns of variations in separation rates with consistently higher separation rates for a range of conditions in Region 1 (north). Any comparison of hospital performance must take the unique characteristics of this region into account, particularly the health status of the population and differences in the availability of care. The report also supports frequently documented variation in surgical rates. Some regions have relatively high rates of some types of surgery but low rates of other types of surgery. Given constraints on hospital funding, the challenge is to combine data on the availability of care and the need for care to improve access and equity. Further studies will adjust for a larger range of population and patient characteristics across hospitals and identify measures that are better indicators of the appropriateness of care.

We observed very little variation in ALOS within patient groups despite a steady decline in ALOS over the last decade. We standardized ALOS for age and sex differences of patient populations. We also excluded patients transferred between hospitals from our calculations, yet found little difference in ALOS. Some regions relied more on day surgery than others did. Differences across regions tended to be small. Although even small variations in the duration or intensity of care deserve further analysis, there is little indication that patients across the province experience major differences in the duration or intensity of care for similar conditions. Further reductions in length of stay should be based on careful consideration of appropriate treatment patterns and on patients' characteristics to prevent unnecessary readmissions and complications. More complex measures of the intensity of resource use developed by CIHI may be useful in future analyses.

In contrast to measures of utilization, which are both commonly used and well validated in Ontario, measures of outcomes are relatively new and less well understood. Accurate measurement of outcomes is very sensitive to the accuracy and reliability of the data collected from hospitals.

The diagnosis type codes developed by CIHI provided an opportunity to separate diagnoses present on admission from those that manifest in hospital. We found that post-admission comorbidity rates varied more across patient groups, than within patient groups. This suggests that the current coding of post-admission comorbidities and complications capture some of the underlying difference in the risk of adverse events inherent in different diagnoses and procedures. The definition of post-admission comorbidity developed by CIHI explicitly links the post-admission comorbidity to increased length of stay or a change in patient treatment. If post-admission comorbidities were being coded accurately we would expect to see longer lengths of stay in these patients. Our analysis shows that post-admission comorbidities were in fact associated with longer lengths of stay in all the conditions we examined.

Despite the promising features of post-admission comorbidities and complications as outcome measures in Ontario, any future work on complications will require more extensive validation and consistent application of coding. This should include improved risk-adjustment strategies. In particular, there is a need to begin to better understand and measure potentially avoidable complications of medical care. Our analysis suggests that further work on existing CIHI complication measures is justified for cholecystectomy, joint replacement surgery, hysterectomy and TURP. Despite the current difficulties in identifying avoidable complications of medical care, the high rates of post-admission comorbidity for stroke, AMI and CHF identify these conditions as targets for further developmental work. In parallel with these efforts to better measure complications we need to develop interventions that can be used to minimize the occurrence of complications.

We were able to identify readmissions to acute care hospitals in Ontario because of unique patient identifiers attached to each record of hospital separation. Nevertheless, not all readmissions are an indication of problems in the quality of hospital care. Many factors outside the control of hospitals, such as patients' health behaviours and access to community-based care can affect readmission rates. We attempted to use a subset of condition specific readmissions to more closely link readmission to the initial hospital care. As with complications, this method requires further work to validate readmissions as a consistent measure of quality of care across hospitals.

Readmission rates may be particularly valuable in measuring quality where readmission is common and where there is evidence of specific processes that can reduce readmission rates. Our analysis shows high readmission rates for asthma, stroke, AMI and CHF. Secondary prevention for all these conditions may delay and reduce readmissions to hospital. However, a complete picture of the quality of care provided in these patient groups will require a balanced perspective that includes data on complications in hospital, readmissions to hospital, and mortality during and following hospitalization.

Our analysis suggests that complications and readmissions are not likely to be useful tools when looking at ways to improve cataract surgery or myringotomy. We need to develop more sensitive tools for measuring the quality of care provided to these patient groups. More work is also required to identify consistent categories of pneumonia and gastrointestinal bleeding cases before it is worthwhile linking patient groups to outcomes. In summary, we believe that complications and readmissions may be useful for looking at the other eight conditions reviewed in this report.

The release of this report marks an early step in the development of a system of hospital performance measures. This development will require extensive and continuing cooperation between researchers, physicians, administrators, and other caregivers from across the province. This sort of cooperation underlies the current report. Advisory groups have already provided valuable direction for the development of the indicators used in this report. A recent conference discussed methods of responding to the clinical component of this report. Further work will validate, refine, and expand case definitions and measures using condition specific advisory panels and extensive peer review processes. These efforts will help ensure that hospital resources are used efficiently in the pursuit of the highest possible quality of care.

Advisory Group

The OHA and the Hospital Report '98 research team would like to thank the following individuals for their invaluable advice:

D. J. Anastakis
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Chatham-Kent Health Alliance

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Barb LeBlanc
Ontario Medical Association

Carol Mulder
The Toronto Hospital

Vicki McKenna
London Health Sciences Centre

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London Health Sciences Centre

Paul Walker
The Toronto Hospital

John G. Wegener
Hamilton Health Sciences Corporation

Janet Young
Cambridge Memorial Hospital

Jennifer Zelmer
CIHI

Hospital names may not reflect recent changes that have occurred as a result of restructuring.



Measures of Patient Perceptions of Hospitals

Introduction

No look at Ontario hospitals would be complete without some understanding of how hospitals' primary customers—their patients—feel about the quality of hospitals today. "Quality of hospitals" from the patient's perspective covers a variety of dimensions. People may think about the care and service they received during a particular encounter. They might also be concerned with the availability of access to different types of hospital care, or about the quality of care given by hospitals generally. In this chapter we will present data on 11 indicators of hospital quality from the patient's perspective.

In keeping with the goal of The Hospital Report '98 project, that is, to look at the hospital system as a whole, we conducted a telephone survey in which we asked former patients of Ontario hospitals to evaluate hospital care and the hospital system along a number of quality dimensions. In this chapter we will provide some background to this part of the study, briefly describe the methods we used to collect data, describe our sample, and present data on 11 indicators developed from the survey.

Background and Literature

At the beginning of our study we conducted an extensive literature review to determine what types of questionnaires have been used to assess hospital quality from the patient's perspective, and which of them might be available to us. We found few relevant studies. This section describes the types of survey activities that are being used now.

Although many Ontario hospitals conduct patient satisfaction surveys, usually they are concerned with a detailed understanding of a particular inpatient encounter. Little surveying is done to find out how users of other hospital services such as the emergency room, outpatient visits, and clinic visits, for example, evaluate their experience.

In many hospital performance reports, hospital discharge survey results are included. In the United States, for example, two such projects are the Cleveland Health Quality Choice Program and the Southeast Michigan Hospital Performance Profile. Since the aim of our project is to evaluate Ontario hospitals as a system, we are not just interested in the types of questions about the quality of care and discharge that are typically asked in these hospital-specific surveys. We are also interested in general questions about access to hospitals and overall confidence in hospital's quality, and in surveying patients with a range of different hospital experiences, including inpatient, outpatient, emergency, and chronic care.

In the United States, many managed care organizations are involved in surveying their plan members to assess and monitor levels of satisfaction with various components of the health plan and with the quality of the health services they received. The results of these surveys are often released to the public, and are used to provide consumers and purchasers with information that allows them to make informed decisions when evaluating, comparing, and choosing among the different health plans. These surveys, however, are



concerned with evaluating satisfaction with specific components of the health plan, such as health plan enrolment, coverage, and paperwork, and with access to health care services in general. Typically, they include only a few questions pertaining to the dimensions of quality of hospital care that we are interested in.

Public opinion polls assessing the public's perception of health care quality are also done in North America and Europe. For example, Great Britain routinely conducts surveys that allow them to evaluate and track changes in public opinion towards the National Health Service (NHS). However, surveys such as the British Social Attitudes Survey usually have only a few general questions pertaining to the NHS and fewer still pertaining to hospitals specifically. Similarly, in Canada and the United States, public opinion polls on health care are abundant, but usually only a few if any include questions pertaining to hospital quality. Many of them include questions assessing public response to government cutbacks, rising costs, restructuring or change in health care and hospitals.

The Population Research Laboratory at the University of Alberta did a study that is most similar in method to our research. They conducted telephone interviews with 4000 Albertans (not necessarily with experience of hospital care), and asked a variety of questions about self-reported health status and needs, care experiences, and satisfaction with the health care services. However, in more than 100 questions, many of them addressing issues of satisfaction with health care, none asked directly about hospitals.

Given that there is little research like our project, and no questionnaire available for us to use, we needed to develop our own set of indicators and questions. The substantial number of hospital-based surveys we reviewed show that there is a core set of things that are found to be important to patients in many studies, including perceptions of hospital staff compassion, skill, communication, and discharge planning. In discussions about integrated delivery systems of care, hospitals are being viewed as part of the broader

continuum of care and co-ordination with caregivers outside the hospital is increasingly important. Patients are being discharged from hospitals faster and sicker, and need more care after their hospital stay than ever before. The public has broader issues than just about the care people receive when they have contact with hospitals. People want to know that care is available when needed, so questions of access to different types of hospital services are particularly relevant right now. Finally, it is useful to assess people's feelings about their local community hospital and the Ontario hospital system; these represent reputation or confidence measures in a general sense.

The goal of the community survey, therefore, was to provide us with feedback from actual users of Ontario hospitals on five general dimensions: quality of care, follow-up care¹, access to hospital care, opinions about local hospitals, and opinions about Ontario hospitals in general. From our survey results we have chosen five specific survey items and created six scale scores from items to report as 11 indicators of hospital system performance as "viewed by the patient."

¹ The questions from the follow-up care section are reported in the System Integration and Change section.

Methods

Overview

Almost 2000 residents of Ontario who had experience with Ontario hospitals were selected by a random telephone number technique; they were interviewed by phone in late August and early September 1998 using a questionnaire that we developed specifically for this project. The study was co-ordinated by Smaller World Communications, Inc. of Ontario (SWC); and the fieldwork was done by professional interviewers employed by Stratégie Organisation et Méthode, Inc., (SOM) Montreal, PQ. The fieldwork was done from Montreal and Quebec City using a "computer assisted telephone interviewing" system.

Questionnaire

We designed the questionnaire so that it would be brief, use a common answer style, was about general perceptions rather than factual reports, and covered the five general dimensions of care described earlier.

- Section one asked questions related to people's ratings of the quality of care provided by hospital staff during a particular experience with an Ontario hospital. This included questions about the skill and sensitivity of hospital staff, the availability of hospital staff, the understanding staff had of people's cultural needs, and people's feelings about the extent to which the hospital actually helped them.
- Section two asked questions related to people's ratings of the information about follow-up care at a hospital or arranged by a hospital. This section included questions about the adequacy of discharge information, arranging needed follow-up care in the community, and the adequacy of information provided to people's family doctor.
- Section three asked a series of questions about people's ratings of the access people "in their neighbourhood" have to various types of hospital care, e.g., emergency care, basic care, and chronic care.
- Section four asked two questions about people's ratings of their 'local' hospital.
- Section five asked two questions about people's ratings of Ontario hospitals in general.

All but two of the main questions in the questionnaire used a five-point response scale with answers, "Excellent, Very Good, Good, Fair, and Poor".

We drew on a variety of sources for the style of the questionnaire, and went through many iterations of wording and design during the questionnaire's development. Our advisory panel, other investigators, SWC and SOM, and a variety of other people provided useful guidance and comments. The questionnaire was reviewed by the Clear Language and Design Company to ensure that the language was easily understood. The questionnaire was also translated into French, for use in 56 French-language interviews.

For many of the questions in this survey, we used as a reference respondents "household or neighbourhood." For example, prior to questions about access to care we had the following statement. *"Now, I would like to ask you a few questions about the availability of care in Ontario hospitals to people who live near you. This includes your household and your neighbourhood."*

Sampling

Our goal was to obtain information from Ontario residents with experience with hospitals. Since we did not know in advance what households to call, we had to sample households across the province. SWC drew a stratified random sample of actual telephone numbers distributed equally across the seven Ontario Ministry of Health regions, and, to be sure to get new and unlisted numbers, they randomized the last digit of the number. Telephone calls were then made to the majority of these numbers to determine whether they were working household numbers. We reached over 10,000 working household numbers. We then asked whether someone had experience with a hospital; only 2178 households (21%) responded that someone had. From these, interviews were completed with 1978 persons.



Our sampling strategy involved a number of steps and places where people could refuse to participate. We estimate that the 1978 completed interviews that form our sample represents 74% of all potentially eligible persons who might have answered if we could have asked them. In fact, only 10% of the people we did ask to answer the questionnaire refused to do so. Our response rate is 74% because we were not always able to talk with everyone we should have, either because they or someone in their household refused to talk with us, or because we were never able to reach them (despite making up to eight calls).

² Although the sample was drawn from the seven Ministry of Health regions in the province, for consistency with other work we present our analyses for the regions used by the Ontario Hospital Association.

Table 1 provides a description of our sample. It shows relatively small differences across the five OHA regions used in our analyses².

Table 1:
Descriptive information on Respondents

	Ontario	Region 1 (north)	Region 2 (east)	Region 3 (central)	Region 4 (south)	Region 5 (west)
Number of Respondents						
N of Cases (Unweighted)	1978	290	351	518	523	296
N of cases (Weighted*)	1978	164	342	756	441	275
Age of Respondent						
% Respondents < 35	34.3	34.3	31.5	36.2	33.5	36.6
% Respondents 35 - 64	51.8	53.2	53.9	51.8	50.2	49.5
% Respondents > 64	13.9	12.5	14.6	12.0	16.3	13.9
Gender						
% Female Respondents	65.3	64.0	64.0	66.4	64.9	65.6
% Male Respondents	34.7	36.0	36.0	33.6	35.1	34.4
Household Composition						
# people/household (Mean)	3.1	3.0	3.0	3.2	3.1	3.2
% Couples with children	47.0	47.9	42.7	47.0	48.6	52.2
Self-Rated Health						
Mean Score on scale from 1=Poor to 5=Excellent	3.4	3.3	3.4	3.4	3.5	3.5

* These numbers reflect the relative sample sizes for each region if we had taken a random sample of households for the province as a whole.

Respondents' Experience with Hospitals

Our goal in selecting respondents was to talk to people who had some recent experience as a patient in an Ontario hospital. We defined 'recent' to be within six months. People self-selected themselves as being 'experienced' if they said they were after hearing the following introduction:

We are interested in speaking with people who have had some experience with an Ontario hospital. This could have been when they were a patient, for such things as an overnight stay at a hospital, going to the emergency, or a visit to a clinic or doctor's office at a hospital.

We recognized that people could have experience with hospitals through someone else's experience, for example, the experience parents have with children as patients. So we also interviewed people who were parents of children who had been patients, or had been the family member of someone who was a resident of chronic care in the preceding six months.

Of the 1978 respondents in our study, 283 were chosen because they were a parent (they reported no contact as a patient), and 8 persons were chosen because they had a relative in a chronic care hospital.



In Table 2 we show the types of experience our respondents had. They could have a number of these, so the numbers in any column **do not** add up to 100%.

Table 2:
Respondents' Experience with Hospitals

Hospital Experience	Ontario	Region 1 (north)	Region 2 (east)	Region 3 (central)	Region 4 (south)	Region 5 (west)
ED without admission %	32.1	36.2	33.6	29.5	33.5	32.4
ED with admission %	20.6	21.7	19.1	21.0	18.9	23.0
Inpatient stay %	26.9	24.8	21.7	28.0	28.5	29.4
Day Surgery / Tests %	37.9	35.2	38.5	37.5	40.0	36.8
Doctor's Office /Clinic %	40.7	40.3	42.5	38.8	41.9	42.2
Relative in chronic care %	11.7	15.2	10.8	11.6	11.3	11.5
Selected because of Child's Experience %	14.3	12.8	16.8	14.7	11.7	15.2

Indicators and Analysis

There were 42 questions in the questionnaire. Depending upon a respondent's answers, some questions were skipped. There were 25 questions that used the "poor to excellent" rating scale. We did a number of analyses to understand how these items related to each other. We selected five items as indicators on their own. We also combined some questions into scales where they were related conceptually and statistically; these contributed the remaining six indicators.

In the following section we present data from scales and individual items. We include the text of questions for each of our 11 indicators. Data are reported in stacked bar graphs that show the percentage of all answers that were rated "excellent," the percentage "very good and good," and the percentage "fair and poor."

Responses are shown for the province as a whole, and for each of the five OHA regions. The provincial figures are weighted to reflect the actual population distribution across Ontario. We had planned to survey approximately the same number of people in each of the seven Ministry of Health regions, but ended up not being able to do so. We did not take the same percentage of cases from each region; we took a higher percentage of respondents in the Region 1 (north) given its population, for example, than we did in Region 3 (central). Weighting 'corrects' for our sampling strategy and these numbers reflect the relative sample size as if we had taken a random sample of households for the province as a whole.

Analyses

With a sample as large as ours, the figures we report for the province are very precise. Percentages at the provincial level have a 95% confidence interval of between $\pm 1.5\%$ and 3% . Individual regions have sample sizes that vary between 290 and 523; these numbers result in differing levels of precision from $\pm 4\%$ to $\pm 6\%$ for figures around 50%. So, for example, a figure of 50% in Region 1 (north) (n=290) has a confidence interval of approximately 44% to 56%, or $\pm 6\%$. In Region 4 (south) (n=523), the interval around 50% would be approximately 46% to 54%, or $\pm 4\%$. For the province as a whole, the interval would be approximately 47% to 53%, or $\pm 3\%$.

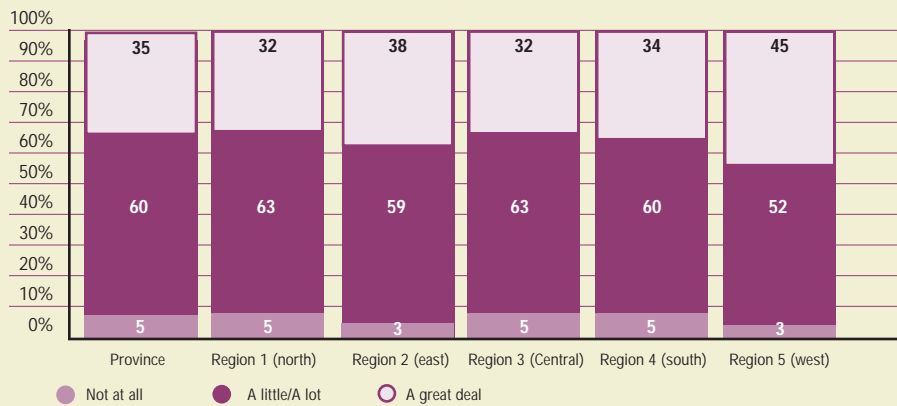
In the discussion for each indicator we report statistically significant differences between individual regions and the provincial total. The amount of difference needed to be significant varies from 4% to 8% depending on the actual percentage observed and the sample size for each region. In interpreting differences among regions, a conservative guideline of 10% points difference should be used. In the remainder of this chapter, an observation that a region has "more or less" than the province means "a statistically significant amount at $p=.05$ more or less."



Results and Discussion

Perceived Outcome of Hospital Stay

Figure 1:
Distribution of Ratings of Extent to Which Patients Reported being Helped by Hospital Stay



Questionnaire Items

Wording for respondent answering about themselves:

How much were you helped by the care and services you received at the hospital?

Wording for respondent answering about child under 16:

How much was he or she helped by the care received at the hospital?

Wording for respondent answering about family member in chronic care:

How much is he or she helped by that care?

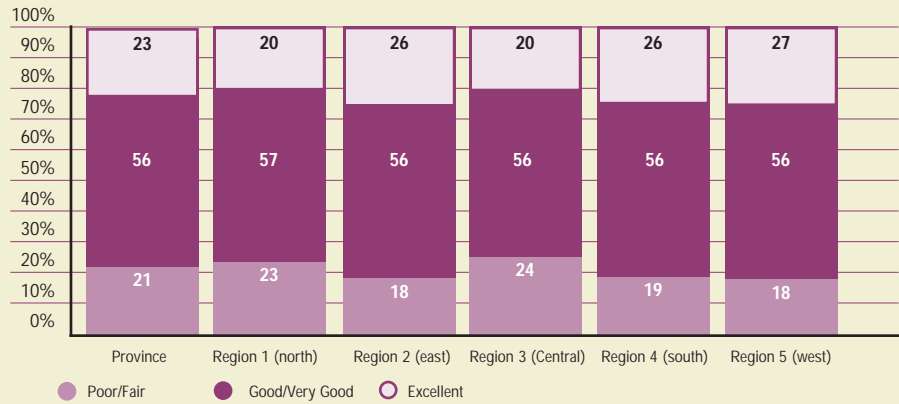
Discussion

Helping people is the goal of hospital care, and over a third of all respondents thought that they were helped "a great deal" by their hospital stay. Only a very few thought they were not helped "at all." People in the OHA Region 5 (west) gave more "a great deal" ratings than the province and most other regions.



Perceived Quality of Hospital Staff Performance

Figure 2:
Distribution of "Quality of Hospital Staff Performance" Index Scores



Questionnaire Items

How would you rate hospital staff in terms of their knowledge and skill; do they seem to know what they are doing?

How would you rate hospital staff at being courteous, sensitive, and compassionate?

How would you rate hospital staff at providing patients with information they need about their medical condition, hospital care, or medications?

Discussion

The main business of hospital staff is caring for patients, and 79% of respondents in our study rate staff as doing an “excellent, very good, or good” job of it. However, 21% of respondents say staff do a “fair or poor” job. This latter number is higher than might be expected on an inpatient survey. This survey focuses on a wide range of hospital experiences, including outpatients and emergency room visits. Patient satisfaction reports for these areas are not usually as positive as those of inpatients. There are no significant differences among regions in ratings of staff performance.

Perceived Hospital Staff's Understanding of People's Cultural Needs

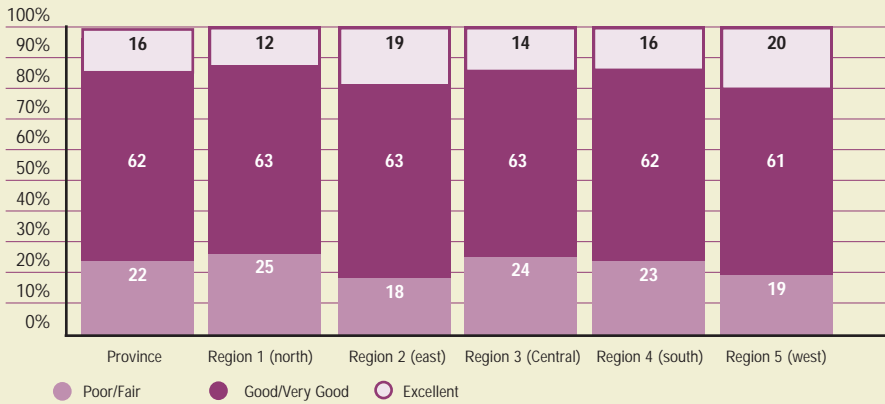


Figure 3:
Distribution of Ratings
of Hospital Staff's
Understanding of
People's Cultural Needs

Questionnaire Item

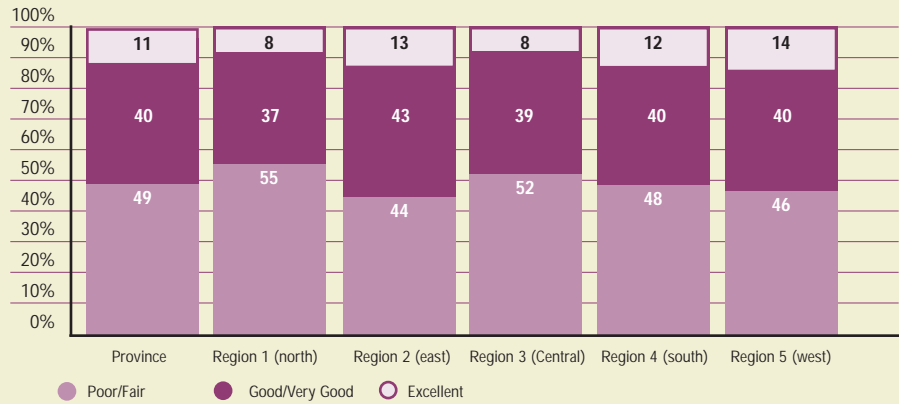
How would you rate hospital staff at understanding people's cultural needs?

Discussion

Approximately 28% of our respondents chose not to answer this question (either because they thought it not relevant to them, or were confused by it). Of those who did, 78% rated staff's understanding of cultural needs as "excellent, very good, or good" and 22% rated it as "fair or poor." The number of 'excellent' ratings was lower than for "Quality of Hospital Staff Performance", ratings of staff performance in general.

Perceived Staffing Adequacy

Figure 4:
Distribution of "Staffing Adequacy" Index Scores



Questionnaire Items

How would you rate the hospital at making sure enough staff are available?

How would you rate hospital staff at making sure things are done within a reasonable time, with little waiting around for patients?

Discussion

Virtually all respondents rated these questions. Almost the same number of people rated these areas as "fair or poor" as "excellent, very good, or good." Only 11% of our respondents thought hospitals and staff were 'excellent' in this regard. People in the OHA Region 1 (north) report more "fair and poor" ratings on this indicator than does the Province as a whole.

Perceived Reputation of Local Hospital

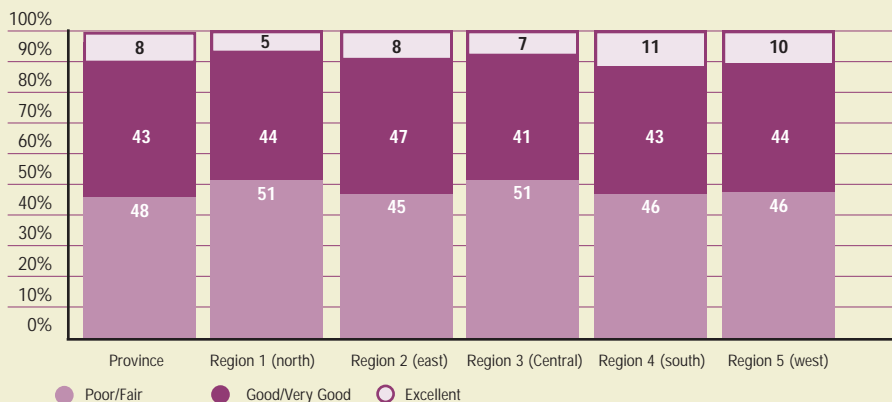


Figure 5:
Distribution of
"Reputation of Local
Hospital" Index Scores

Questionnaire Items

How would you rate your local hospital in communicating with the people in your community, through things like flyers, newsletters, open houses, speakers, or by having advisory groups?

What do you think most people in your neighbourhood would say about the quality of care and services of your local hospital?

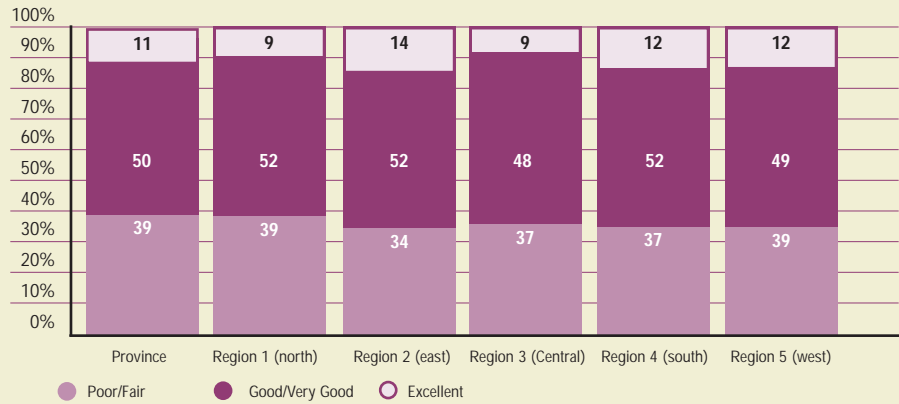
Discussion

When giving ratings about a care experience, most people (79%) answered about the care they received at their local hospital; and most respondents reported having a local hospital 'nearby.' However, about 10% of our respondents chose not to answer these questions.

Slightly more than half the people who answered thought that the local hospital did a "fair or poor" job of communicating with the people in their community, and 46% of respondents thought that people in their community would rate the quality of care and services at the local hospital as "fair or poor." The index score shows that 52% of people have "excellent, very good, or good" ratings to these questions.

Perceived Access to Emergency Medical Care in Hospitals

Figure 6:
Distribution of "Access to
Emergency Medical Care in
Hospitals" Index Scores



Questionnaire Items

How would you rate the availability of hospital based emergency medical care to people in your neighbourhood for life-threatening problems?

How would you rate the availability of hospital care to people in your neighbourhood for emergencies that are not life threatening, such as broken bones, migraines, or bad cuts?

Discussion

Eleven percent of respondents thought access to emergency care in Ontario is 'excellent' while almost 40% thought it "fair or poor." This did not vary appreciably by region. Over 40% of respondents had had some contact with an emergency department in the previous six months.

Perceived Access to "Basic" Hospital Services

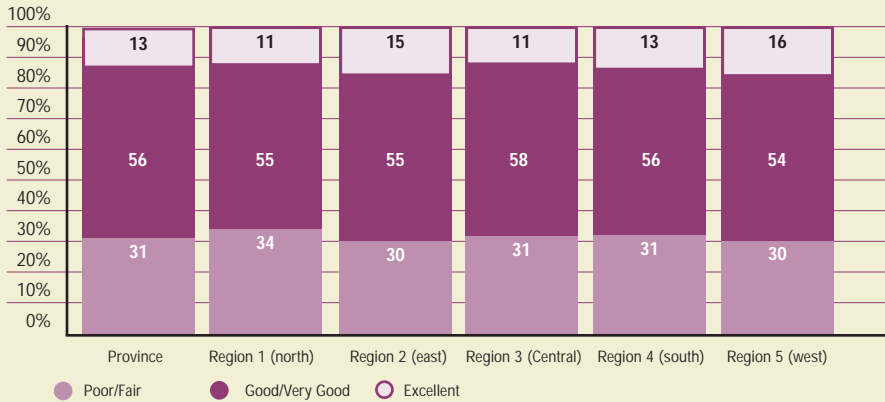


Figure 7:
Distribution of "Access
to Basic Hospital
Services" Index Scores

Questionnaire Items

How would you rate the availability of hospital care for people in your neighbourhood for a planned surgery, like a child's tonsil removal, cataract surgery, or a hernia repair?

How would you rate the availability of hospital care for people in your neighbourhood for chronic or ongoing medical conditions such as asthma, diabetes, or heart problems?

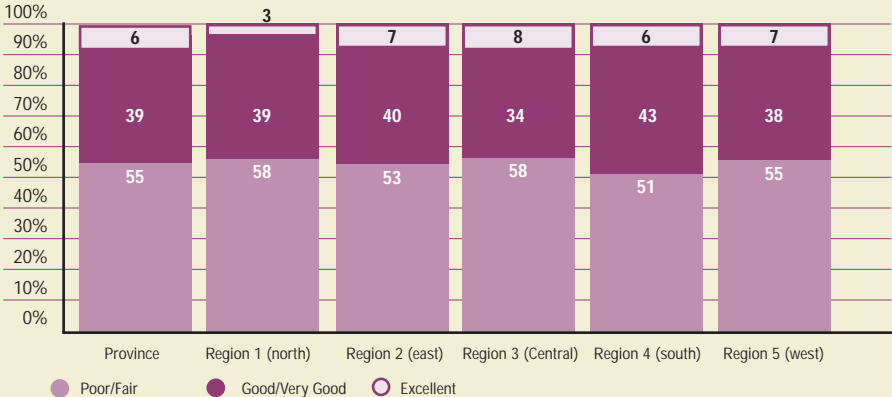
How would you rate the availability of hospital care and services for women having a baby?

Discussion

The three questions in this index reflect activities that are common to most hospitals, including small community hospitals. Almost a third of respondents gave access to basic care "fair to poor" ratings; this does not vary substantially by region. There are fewer "fair or poor" ratings for access to this type of care than there is for access to emergency care.

Perceived Access to Mental Health Care in Hospitals

Figure 8: Distribution of Ratings of Access to Mental Health Care in Hospitals



Questionnaire Item

How would you rate the availability of hospital care and services for people with mental health problems, like depression, schizophrenia, or eating disorders?

Discussion

Seventy percent of all respondents answered this question. Fifty-five percent of them rated access to mental health care as "fair or poor."

Perceived Access to Chronic Care

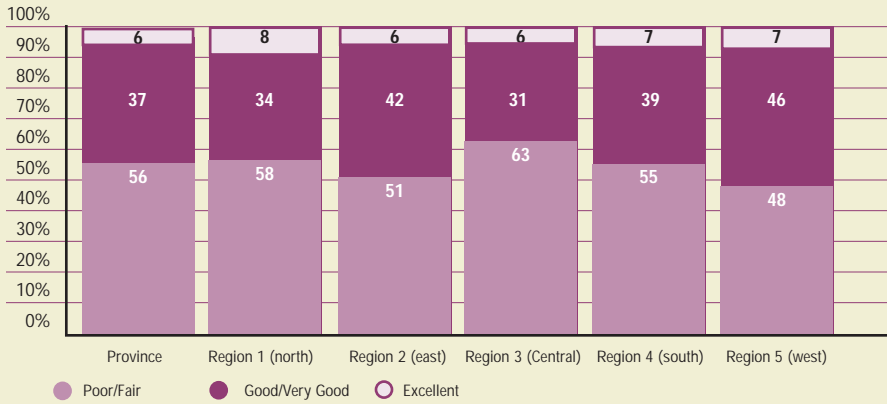


Figure 9:
Distribution of Ratings
of Access to Chronic
Care in Hospitals

Questionnaire Item

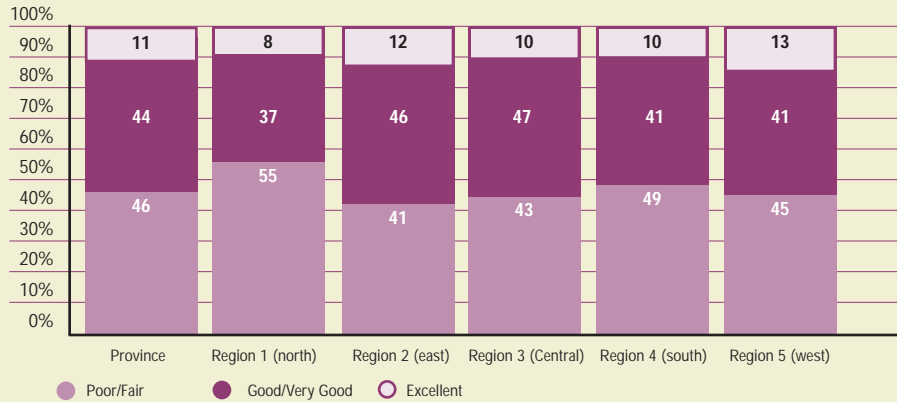
How would you rate the availability of care to people who need to live in a hospital because they cannot care for themselves?

Discussion

Seventy-five of respondents answered this question. Over 56% of them rated access to chronic care as "fair or poor." Region 3 (central) respondents gave more "fair or poor" ratings to this question than the province as a whole, and the Region 5 (west) gave fewer "fair or poor" ratings.

Perceived Access to Specialized Hospital Services

Figure 10:
Ratings of Access to Specialized Hospital Services



Questionnaire Item

How would you rate the availability of hospital care for people in your neighbourhood for specialized hospital services such as cancer treatment, heart surgery, or a transplant?

Discussion

Seventy-five percent of respondents answered this question. Of these people, 54% gave "excellent, very good or good " ratings; 46% gave "fair or poor" ratings. People in the Region 1 (north) gave more "fair and poor" ratings than the province as a whole.

Perceived Reputation for Quality of Care of Ontario Hospitals

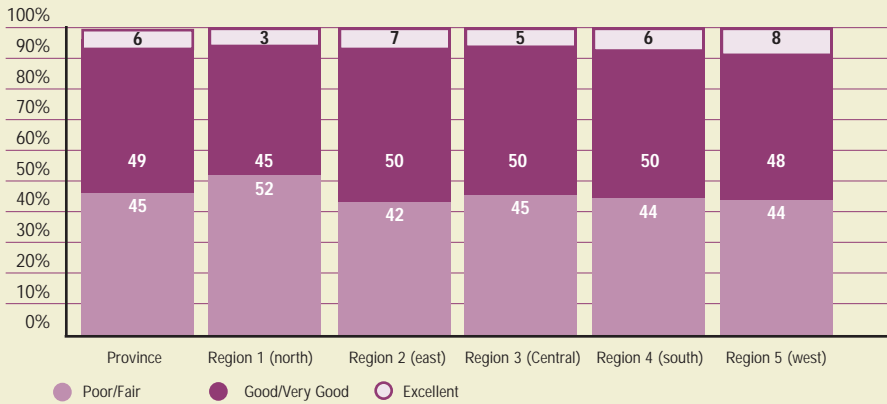


Figure 11:
Distribution of
"Reputation for Quality
of Care of Ontario
Hospitals" Index Scores

Questionnaire Items

*The next two questions ask about your opinion of Ontario hospitals in general.
How would you rate the overall quality of care and services provided by
Ontario hospitals?*

*What do you think most people in Ontario would say about the quality of care
and services provided by Ontario hospitals?*

Discussion

Most respondents answered these questions; 55% of ratings to these questions were "excellent, very good or good." For the individual items, 37% of people gave "fair or poor" ratings to Ontario hospitals overall, while 54% thought others would rate them as "fair or poor."

Advisory Group

The OHA and the Hospital Report '98 research team would like to thank the following individuals for their invaluable advice:

Bernie Blais
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Willa McCaughan
Peel Memorial Hospital

Mark Nenadovic
Providence Centre

Shirley Pilon
Ottawa Civic Hospital

Sharon Rogers
The Toronto Hospital

Cathy Steele
Bloorview MacMillan Centre

Hospital names may not reflect recent changes that have occurred as a result of restructuring.

Next Steps

Although the data we have collected are useful in tracking the community's ratings of hospitals (community as defined by recent users of hospital services), these data are not useful to individual hospitals hoping to improve. Hospitals need a set of instruments to assess their own patients' responses to different specific experiences (e.g. emergency, inpatient, and psychiatry) with an adequate comparison database to help understand their data. If a large number of Ontario hospitals were to conduct the same surveys in a consistent fashion, they would be able to compare their data to other similar hospitals in the province and to better understand their performance in the eyes of their patients.

Surveys like ours will be useful in tracking the public's ratings of hospital care across time; such data will enable us to comment on trends and changes. Surveys should be done over the next few years to track people's experience as the health care system continues to respond to changes.

Measures of Financial Performance and Condition

Introduction

Measures of financial performance and condition provide stakeholders with valuable insights into how hospitals deploy and manage the financial and human resources under their care. Financial indicators act as useful tools when examined in conjunction with measures of clinical utilization and outcome, patient satisfaction, and system integration.

They can be used both to validate successful management practices, and also to identify areas worthy of closer study and possible remedial action.

As with all dimensions of performance presented in this report, a guiding principle was to focus on a small set of indicators found by the advisory panels to be relevant, scientifically valid, and feasible to calculate. This section of The Hospital Report '98 achieves this goal by introducing measures of financial performance and condition of interest to Ontario hospital stakeholders. Although only a small number of measures are included in this report, the indicators presented reflect a variety of important attributes of financial performance and condition.

This section begins with a description of the hospitals included in the financial component of The Hospital Report '98. Information about total revenues, inpatient admissions, total assets, and number of full-time equivalent employees is provided. The methods section describes how the ten financial indicators reported in this document were identified or developed. (Comprehensive details of the methods used for data collection and indicator calculation can be found in Volume 2 of The Hospital Report '98.)

The results and discussion section presents indicator data for all measures, together with a description of the measure (definition, interpretation, and data quality), and a short discussion of the results. At the end of the results and discussion section, findings are summarized. The next steps section describes the review and feedback process that will follow the release of The Hospital Report '98 and the process of developing indicators of financial performance and condition that are hospital specific.

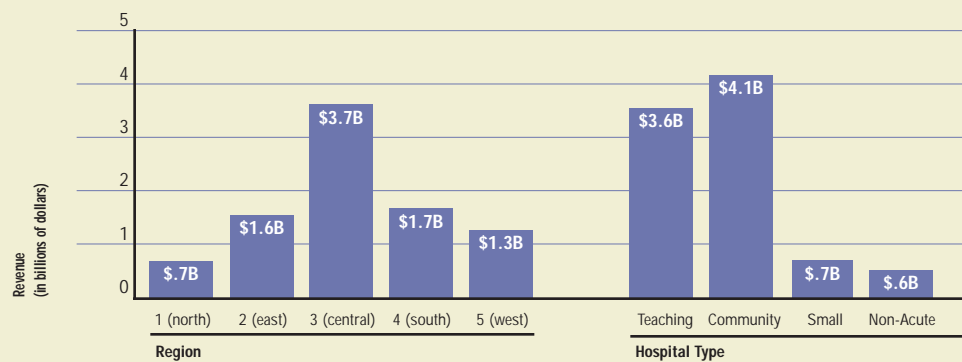
Hospitals Included in this Component of The Hospital Report '98

This report on financial performance and condition includes data for 205 of the 207 hospitals in the Province of Ontario providing services on March 31, 1997 (the year end date for the 1996/97 fiscal year).

	Region					Hospital Type				Total
	Region 1 (north)	Region 2 (east)	Region 3 (central)	Region 4 (south)	Region 5 (west)	Teaching	Community	Small	Non-acute	
# hospitals included	40	41	48	38	38	20	81	81	23	205
# of hospitals not included	2	0	0	0	0	0	1	0	1	2
Total Ontario hospitals	42	41	48	38	38	20	82	81	24	207

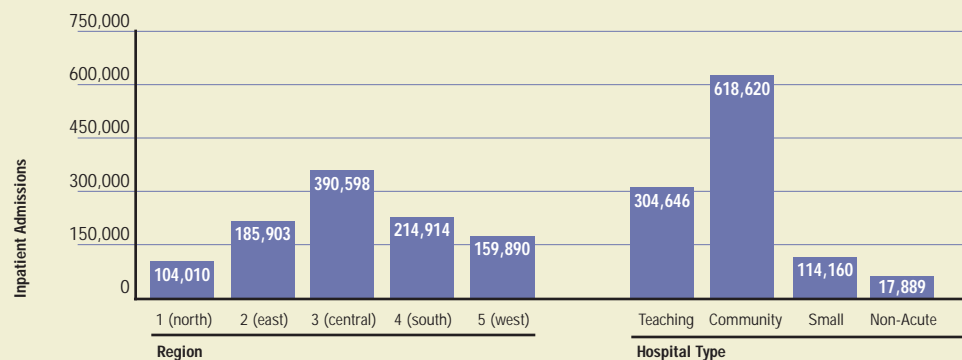
Ontario hospitals represent a large segment of the provincial economy. Ontario hospitals managed a total revenue stream of over \$9 billion in 1996/97, with most of this revenue stream being managed by hospitals in Region 3 (central). Although teaching hospitals, on an individual basis, generally represented the largest hospitals in the province, Figure 12 shows that community hospitals, in aggregate, managed the largest revenue stream.

Figure 12
Total Revenues



In 1996/97, over one million inpatients were admitted to Ontario hospitals. Ninety-eight percent of these admissions were for acute care. As was seen for revenues, the largest number of inpatient admissions occurred in Region 3 (central). Eighty-one community hospitals collectively managed about 619,000 inpatient admissions, or 58% of the provincial total. The 20 teaching hospitals managed about 305,000 inpatient admissions or 29% of the provincial total, while the 81 small hospitals managed about 114,000 inpatient admissions, or 11% of inpatient admissions in Ontario.

Figure 13
Inpatient Admissions



The net book value of assets managed by Ontario hospitals at March 31, 1997 exceeded seven billion dollars. The capital-intensive nature of the services provided by teaching hospitals is reflected in Figure 14 where it can be seen that 10% of the hospitals in the province managed 42% of total hospital assets. Conversely, small hospitals (20% of the hospitals) managed only 8% of total hospital assets.

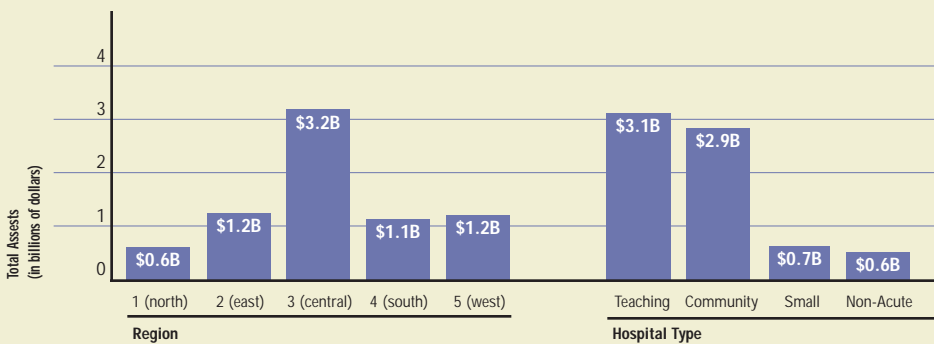


Figure 14
Total Assets

Providing health care is also a highly labour intensive activity. Ontario hospitals employed about 118,000 full-time equivalent (FTE) employees. Figure 15 illustrates the distribution of hospital staff across the province. Community hospitals employed about half of the total FTEs. The distribution of hospital workers was similar across the Region 2 (east), Region 4 (south) and Region 5 (west), with a larger proportion of health care workers situated in Region 3 (central), which includes the Greater Toronto area.

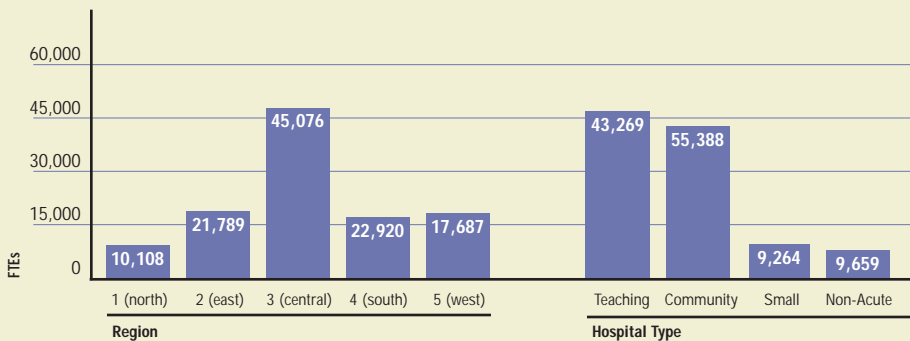


Figure 15
Full-Time
Equivalent
Employees

These aggregated data demonstrate the scale and scope of hospital services in Ontario when viewed from a financial perspective. The aggregated data, while useful for describing the hospitals included in The Hospital Report '98 as a whole, provide few insights into specific dimensions of financial performance and condition. Therefore, it was necessary to develop a framework, and a method for collecting and calculating indicator values for this purpose. The methods that were used to define these indicators are described in the following section.

Methods

Preparation of this part of The Hospital Report '98 required two related, but separate, research activities. The first dealt with the process of identifying appropriate financial and statistical indicators to include in The Hospital Report '98. The second dealt with collecting, organizing and validating the data needed to calculate values for the indicators.

Identifying Indicators to Include in The Hospital Report '98

An iterative evaluation process was used to identify the ten financial indicators presented in this report. The process began with a comprehensive literature review to identify financial indicators commonly used in the health care field. Almost 200 such indicators were identified. This list was edited to remove indicators calculated similarly, but named differently, and to remove indicators not relevant in a Canadian setting. A panel of experienced health care executives (referred to in this study as The Finance Advisory Group) was then engaged, with the academic team, in a process of discussion, review, and evaluation to select the indicators presented here. The Finance Advisory Group sought to identify financial indicators that were relevant, scientifically valid, and feasible, which were the same criteria used by the other advisory panels for selecting measures in the four quadrants of The Hospital Report '98. Briefing documents, pro-forma indicator

values and descriptive statistical measures for indicators under consideration were provided to the Finance Advisory Group to assist them with this task.

Although ten measures cannot capture all of the information content available in the collective financial results of the 205 hospitals included in this report, research has shown that a carefully selected subset of indicators is adequate to provide valuable insights into overall financial performance and condition. However, such a set should not include indicators that are correlated. No correlations of concern were identified in this study.

The Finance Advisory Group decided not to make any attempt to exclude restructuring costs because variation in hospital reporting practices makes consistent estimation of these costs difficult.

Based on this method, The Finance Advisory Group selected the following attributes and indicators of financial performance and condition:

Financial Viability

Defined as positive financial outcomes that ensure long term financial health.

Indicator(s) selected:

1. Ministry of Health Revenue as a Percent of Total Revenues
2. Total Margin (Before Facility Depreciation)

Productivity

Defined as a comparison of hospital output with a measure of the labour inputs required to produce the output.

Indicator selected:

3. Worked Salaries and Wages as a Percent of Total Salaries and Wages

Efficiency

Defined as a comparison of hospital output with the cost of the inputs required to produce the output.

Indicators selected:

4. Percent Above/(Below) Expected Cost Per Weighted Case
Percent Above/(Below) Expected Cost Per Equivalent Weighted Case
5. Nursing Compensation per Weighted Case
6. Ambulatory Care Expense as a Percent of Direct Patient Care Expenses
7. Salaries and Benefits Expense as a Percent of Total Expenses
8. Administration and Support Services Expense as a Percent of Operating Expenses

Liquidity

Defined as the management of current assets and liabilities. The inability to meet short-term obligations can hinder the delivery of quality patient care services.

Indicators selected:

9. Current Ratio

Capital

Defined as the acquisition and management of long term assets such as major equipment. Capital measures often provide signals about the degree of flexibility an organization would have in raising capital.

Indicators selected:

10. Long Term Debt as a Percent of Ministry of Health Global Funding

Collecting, Organizing and Validating the Data Used

The Ontario Ministry of Health requires hospitals to submit financial and statistical data annually in an electronic form using a coding structure outlined in the Ontario Hospital Reporting System (OHRS) and national reporting standards known as The MIS Guidelines (MIS). The OHRS provides a framework for organizing over 2,000 data elements. These data elements include the balances of all general ledger accounts, as well as a wide variety of statistical data such as hours worked, ambulatory care visits, and the number of newborns delivered.

The Ministry applies various edit checks to the annual submission, and provides hospitals with verification reports. Hospitals 'sign off' on their verification report indicating concurrence with the data submission. Each Ontario hospital was requested to provide a copy of their final edited and verified annual electronic submission. This section of The Hospital Report '98 is based on data contained in these submissions for the 1996/97 fiscal year.

The annual submissions were compiled in a database and initial checks were performed to ensure the data had been captured accurately, were in compliance with OHRS reporting requirements, and appeared reasonable. Data concerns were investigated with the hospital involved and corrections were made to the data. The financial data for each hospital were then summarized in financial statement format and the statistical data were summarized for hours, inpatient and outpatient activity. Each hospital was faxed a copy of this summary for review and verification.

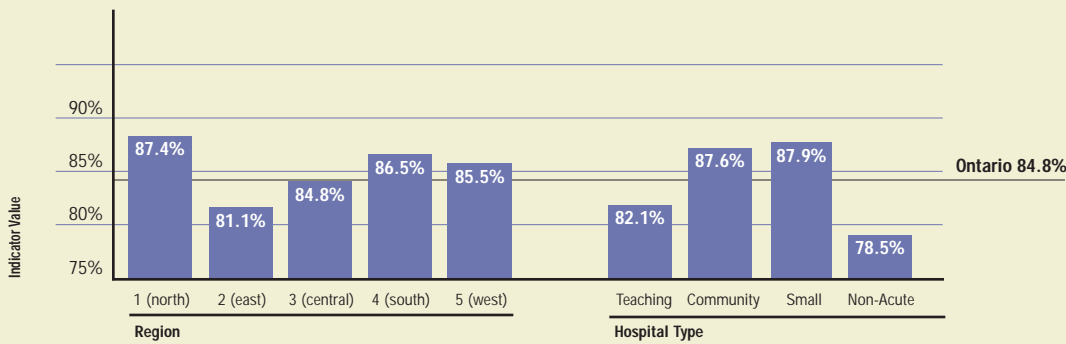
Seventy-three hospitals responded to this secondary confirmation loop. Of these, twenty-seven requested minor corrections, such as account classification changes or statistical data corrections. Forty-six hospitals called to confirm the accuracy of their submission. Given that all hospitals forwarded a copy of their validated Ministry of Health annual submission on which they had previously 'signed off', there were no concerns about hospitals that chose not to call and again confirm their trial balance submission.

Draft indicator values were matched against other data sources available to the research team to act as a further check for reasonableness in the data set. These other sources included data available from the Joint Policy and Planning Committee (JPPC), the Institute for Clinical Evaluative Sciences, the 1997/98 Change Foundation/CIBC Financial Review of Ontario Hospitals and a report on indicators developed for the Toronto Academic Health Science Council. Finance Advisory Group members were also involved in assessing the validity of indicators chosen for this report.

Data on actual and expected cost per weighted case for large hospitals, actual and expected cost per equivalent weighted case for small hospitals, and inpatient and day surgery weighted cases for all hospitals were obtained from Joint Policy and Planning Committee publications.

Results and Discussion

Ministry of Health Revenue as a Percent of Total Revenues



Measure

$$\frac{\text{Ministry of Health Revenue}}{\text{Total Revenues}} \times 100$$

Definition: This indicator shows the percent of total revenue that is provided by the Ministry of Health. The numerator includes Ministry of Health global funding and one time funding but does not include Ministry of Health Other Votes and OHIP flow through. The denominator includes all revenues except Ministry of Health Other Votes, OHIP flow through, grants, donations, and externally funded research projects.

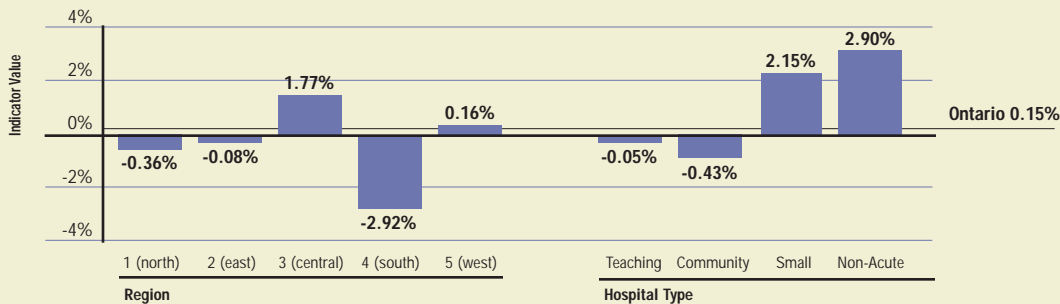
Interpretation: A lower percent indicates greater revenue diversification and less dependence on a single source of revenue (the Ministry of Health), which may allow a hospital to reduce susceptibility to service disruption induced by significant changes to individual sources of revenue. A higher percent indicates less revenue diversification and greater dependence on Ministry of Health funding. The ability of a hospital to diversify its sources of revenues is influenced by Ministry of Health policies, local economic conditions, hospital service mix, third party payer rates, and other factors.

Data quality: There were no significant data quality issues relating to this indicator.

Discussion

The Ministry of Health provided 84.8% of Total Revenues, showing that Ontario hospitals are highly dependent on the Ministry of Health. Region 1 (north) and small hospitals were most dependent on the Ministry of Health and Region 2 (east) and non-acute hospitals, the least dependent. Region 1 (north) and small hospitals may have fewer opportunities to generate non-governmental revenue because of local economic conditions. For example, parking revenue available to urban hospitals may be unrealizable by small hospitals if street parking is readily available. Some Region 2 (east) hospitals obtain revenue from the Province of Quebec to pay for their residents who obtain care in Ontario. Some non-acute hospitals, particularly complex continuing care hospitals, receive co-payment revenue from patients or third party payers.

Total Margin (Before Facility Depreciation)



Measure

$$\frac{(\text{Total Revenues} - \text{Total Expenses}) + \text{Facility Depreciation}}{\text{Total Revenues}} \times 100$$

Definition: This measure indicates the percent by which total revenues exceed total expenses before facility depreciation. The numerator includes the excess of revenues over expenses, not including facility depreciation (land, building and building service equipment). The denominator includes all revenues except Ministry of Health Other Votes, OHIP flow through, grants, donations, and externally funded research projects.

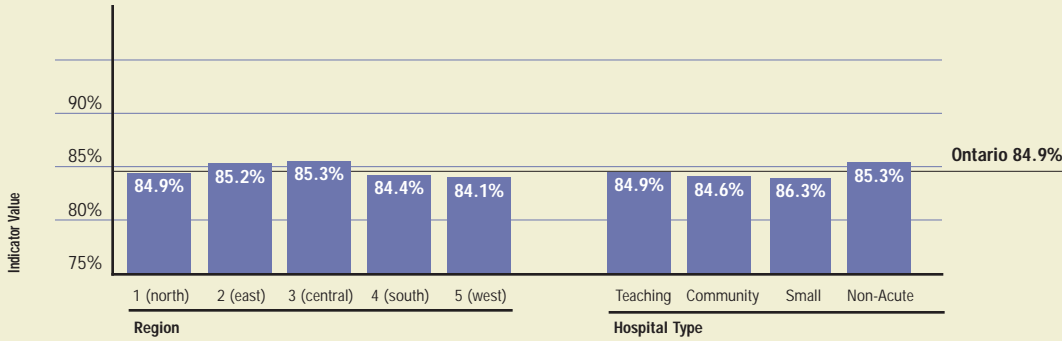
Interpretation: A larger positive value indicates a greater ability to meet future financial requirements. A larger negative value indicates a lesser ability. The ability of a hospital to generate a positive total margin is influenced by patient volume, local prices, diversification of revenue, and other factors.

Data quality: Some hospitals report all of their assets in their own financial statements, while others report certain assets in the financial statements of their Foundations that purchased the asset on behalf of the hospital. This indicator excludes facility depreciation which, if included, would reduce the operating margin.

Discussion

For 1996/97, the Total Margin before facility depreciation was 0.15%, showing that Ontario hospitals had a small positive total margin, suggesting a very limited ability to retire existing debt and to meet future financial requirements. Region 3 (central) and non-acute hospitals produced the largest positive margins and Region 4 (south) and community hospitals produced the largest negative margins. Changes in Ministry of Health funding can affect Total Margin. The 1996/97 funding reduction for small and non-acute hospitals was less than that applied to other hospital types, which may account for higher Total Margins among these hospitals.

Worked Salaries and Wages as a Percent of Total Salaries and Wages



Measure

$$\frac{\text{Worked Salaries and Wages (\$)}}{\text{Total Salaries and Wages (\$)}} \times 100$$

Definition: This measure indicates the percent of total salaries and wages that were paid for hours actually worked. The numerator includes worked salaries and wages of all hospital staff (excluding medical compensation and externally funded research project salaries) and purchased services. The denominator includes total salaries and wages of all hospital staff (excluding medical compensation and externally funded research project salaries) and purchased services. Medical compensation was excluded because of hospital variations in physician payment arrangements. Percent of worked hours to total hours is a conceptually preferable measure but could not be calculated because hours for purchased services are not consistently reported.

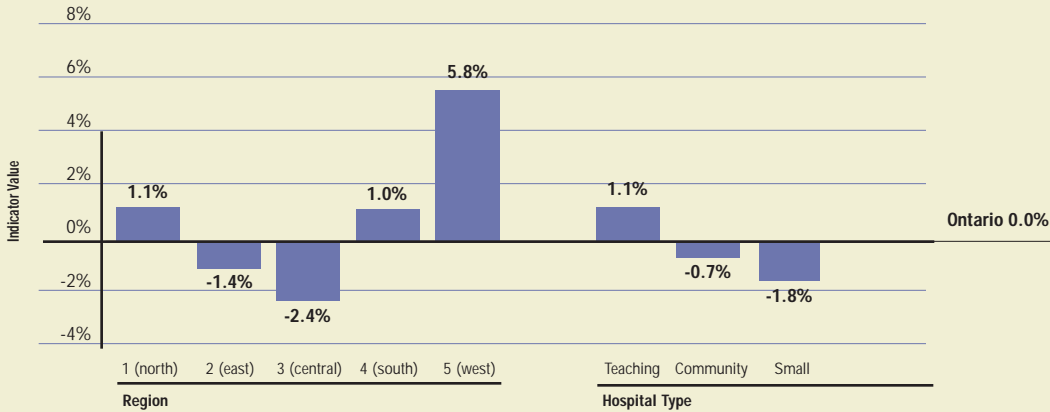
Interpretation: A higher percent indicates that less salaries and wages were paid for holidays, sick time, maternity leave, educational time, and other non-worked activities. A lower percent indicates that more salaries and wages were paid for non-worked activities. The ability of a hospital to increase the percent of salaries and wages for worked activities is influenced by collective agreements, the supply of labour, and other factors.

Data quality: There are variations in the method of allocating worked and benefit hours and costs.

Discussion

84.9% of total salaries and wages was for worked time, showing that Ontario hospitals paid about 15% of total salaries and wages for holidays, sick time, maternity leave, educational time, and other non-worked activities. Region 3 (central) and small hospitals had the highest percent of worked time and Region 4 (south) and community, the lowest; however, there was little variation among regions or hospital types. This finding may be due to common collective agreements and labour practices among nearly all Ontario hospitals.

Percent Above/(Below) Expected Cost per Weighted Case - Large Acute Hospital Funding Formula



Measure

$$\frac{\text{Actual Cost per Weighted Case} - \text{Expected Cost per Weighted Case}}{\text{Expected Cost per Weighted Case}} \times 100$$

Definition: This indicator measures the percent by which expected cost per weighted case differs from the actual cost per weighted case (after adjusting for teaching, adult tertiary, and neonatal tertiary activity) as calculated by the JPPC large acute hospital funding formula. The Ministry large acute hospital funding formula is used for 108 hospitals including all teaching hospitals, all community hospitals, and 14 hospitals classified as small hospitals by the OHA. This indicator cannot be calculated for non-acute hospitals because weighted cases do not exist for them.

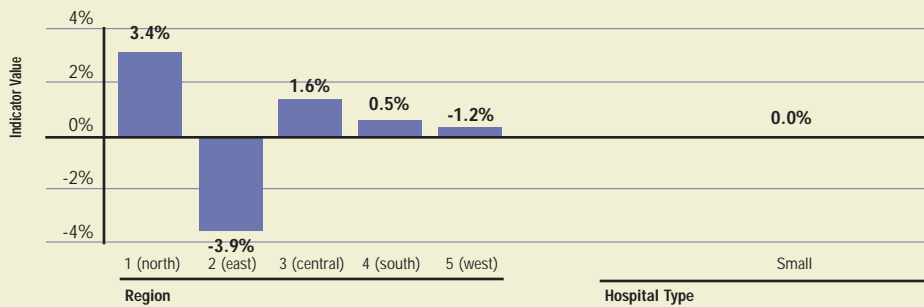
Interpretation: A larger negative value indicates greater efficiency and a larger positive value indicates lesser efficiency. The ability of a hospital to achieve greater efficiency is influenced by staff mix, productivity, local prices, fixed and variable cost structures, management structure, information systems, community linkages, and other factors.

Data quality: There are variations in the reporting of costs by hospitals that affect calculation of total acute inpatient, newborn and qualifying day surgery expense. There are also variations in reporting of patient data by hospitals that affect calculation of inpatient and day surgery weighted cases, the multi-year adjustment, and day surgery incentive. Resource Intensity Weights used to calculate weighted cases may under- or over-estimate actual resource use.

Discussion

Because this indicator is produced from a regression equation, the average value for all hospitals is 0.0%; however, values may vary among subgroups of regions and hospital types. Region 3 (central) and small hospitals (included in the large acute funding formula) were the most efficient and Region 5 (west) and teaching, the least efficient.

Percent Above/(Below) Expected Cost per Equivalent Weighted Case - Small Acute Hospital Funding Formula



Measure

$$\frac{(\text{Actual Cost per Equiv. Weighted Case}) - (\text{Expected Cost per Equiv. Weighted Case})}{\text{Expected Cost per Equivalent Weighted Case}} \times 100$$

Definition: This indicator measures the percent by which expected cost per equivalent weighted case differs from the actual cost per equivalent weighted case as calculated by the Ministry of Health small acute hospital funding formula. The Ministry small acute hospital funding formula is used for 66 of the 81 hospitals classified as small hospitals by the OHA. This indicator cannot be calculated for non-acute hospitals because equivalent weighted cases do not exist for them.

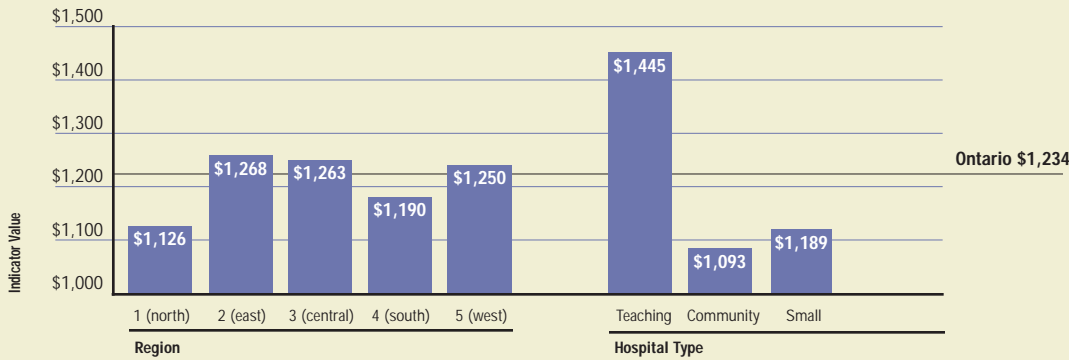
Interpretation: A larger negative value indicates greater efficiency and a larger positive value indicates lesser efficiency. The ability of a hospital to achieve greater efficiency is influenced by staff mix, productivity, local prices, fixed and variable cost structures, management structure, information systems, community linkages, and other factors.

Data quality: There are variations in the reporting of costs by hospitals that affect calculation of Total Expense. There are also variations in reporting of patient data by hospitals that affect calculation of equivalent weighted cases. Resource Intensity Weights used to calculate equivalent weighted cases may under- or over-estimate actual resource use.

Discussion

Because this indicator is produced from a regression equation, the average value for all hospitals is 0.0%; however, values may vary among subgroups of regions. Small hospitals in the Region 2 (east) were the most efficient and small hospitals in the Region 1 (north), the least efficient.

Nursing Compensation per Weighted Case



Measure

Acute Inpatient and Surgical Day/Night Nursing Compensation Inpatient and Day Surgery Weighted Cases

Definition: This indicator measures the average nursing compensation per inpatient and day surgery weighted case for 171 acute hospitals. This indicator cannot be calculated for non-acute hospitals because weighted cases do not apply to these types of hospitals. The numerator includes compensation for nursing and other staff (excluding medical compensation) who provide acute inpatient care, and the surgical day/night portion of ambulatory care. The denominator is the JPPC calculation of total inpatient and day surgery weighted cases. Unlike expected cost per weighted case, no adjustment has been made to the indicator for the level of teaching, adult tertiary, and neonatal tertiary activity. Nursing and therapy compensation per weighted case is a conceptually preferable measure but could not be calculated due to the inability to separate inpatient and ambulatory care therapy compensation.

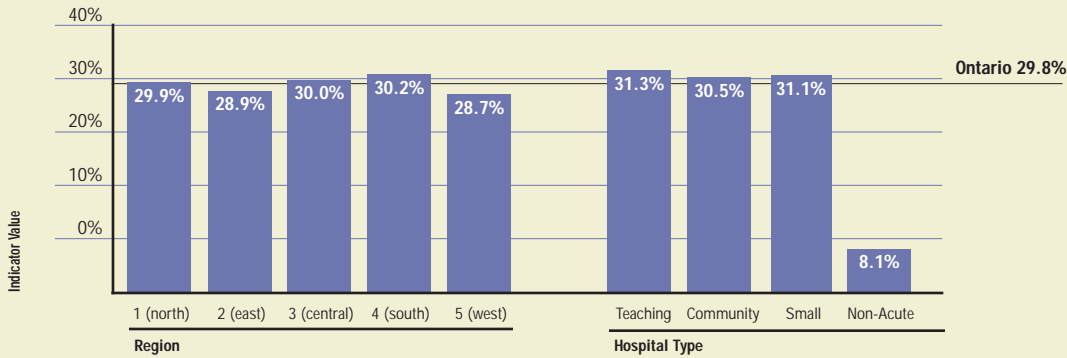
Interpretation: A lower value may indicate more efficient use of nurses or a greater proportion of nurses at lower seniority levels. A higher value may indicate less efficiency or a lower proportion of nurses at lower seniority levels. This indicator only reflects efficiency with respect to inpatient and day surgery services. The ability of a hospital to achieve nursing efficiencies is influenced by collective agreements, the supply of nurses, the mix of care providers, and other factors.

Data quality: This indicator is overstated because the numerator includes the cost of staff who provided non-qualifying day surgery, but the denominator excludes any corresponding weighted cases because they do not exist for non-qualifying day surgery. Non-qualifying day surgery includes clinic visits, medical daycare, most diagnostic procedures, some endoscopic procedures, and some minor procedures.

Discussion

Nursing compensation per weighted case was \$1,234. Region 2 (east) and teaching hospitals incurred the highest nursing compensation expense and Region 1 (north) and community hospitals incurred the lowest expense. Teaching hospitals treat more complex patients who require higher levels of nursing care and other resources.

Ambulatory Care Expense as a Percent of Direct Patient Care Expenses (Excluding Therapies)



Measure

$$\frac{\text{Ambulatory Care + Outpatient Portion of Clinical Lab and Diagnostic Imaging Expenses}}{\text{Inpatient Nursing + Ambulatory Care + Clinical Lab + Diagnostic Imaging + Pharmacy Expenses}} \times 100$$

Definition: This indicator measures the percent of direct patient care (excluding therapies) that were incurred for ambulatory care and the outpatient portion of clinical lab and diagnostic imaging, excluding medical compensation and depreciation expense. The denominator includes inpatient nursing, ambulatory care, total clinical laboratory and diagnostic imaging expense, and pharmacy, excluding medical compensation and depreciation expense. Including therapies expense in this indicator is conceptually preferable but could not be calculated because it is not possible to separate inpatient and ambulatory care therapy expenses.

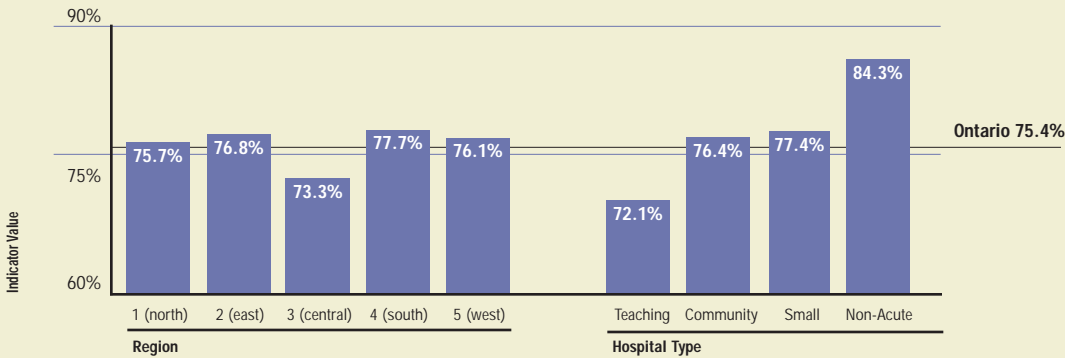
Interpretation: A higher percent indicates a greater proportion of hospital activity that is provided on an ambulatory basis. A lower percent indicates a lower proportion. The ability of a hospital to provide services on an ambulatory basis is influenced by physician practice, availability of technology, the physical plant, and other factors.

Data quality: There are variations in assignment of workload units to procedures that are used to calculate the outpatient portion of clinical laboratory and diagnostic imaging.

Discussion

29.8% of direct patient care expenses were incurred for ambulatory care, showing Ontario hospitals provide a substantial amount of their patient services in an ambulatory care setting. Region 4 (south) and teaching hospitals had the highest percent of ambulatory care and Region 5 (west) and non-acute had the lowest percent; however, there was little variation among regions or hospital types, except for the non-acute hospitals which had much less ambulatory care. Among the non-acute hospitals, the complex continuing care hospitals provide almost all of their services on an inpatient basis and refer patients to acute institutions for many ambulatory care services.

Salaries and Benefits Expense as a Percent of Total Expenses



Measure

$$\frac{\text{Salaries + Benefits Expense}}{\text{Total Expenses}} \times 100$$

Definition: This indicator measures the percent of total expense paid for staff salaries and benefits. The numerator includes the total salaries, wages and benefits of all hospital staff (excluding medical compensation and externally funded research project salaries) and purchased services. The denominator includes all expenses but excludes medical compensation and externally funded research project expenses.

Interpretation: A lower percent indicates a lesser proportion of hospital spending for labour and a greater proportion for non-labour expenses such as supplies, interest expense and depreciation. A higher percent indicates a



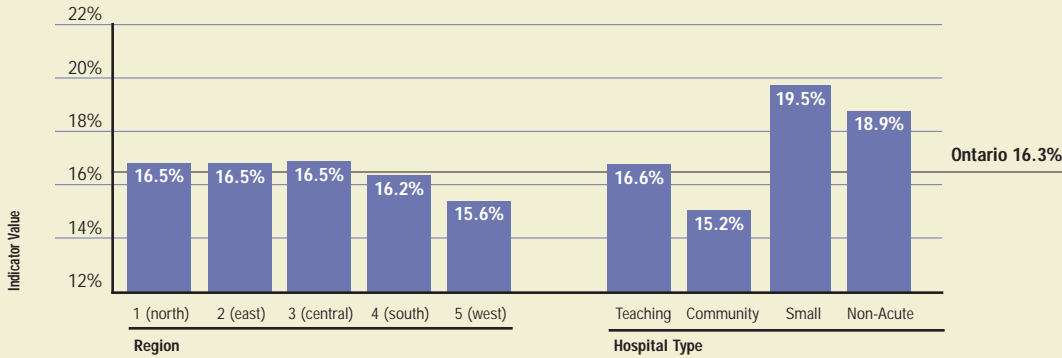
greater proportion of spending for labour. The ability of a hospital to change the percent spent on salary and benefits is influenced by revenue diversification, margin, physician and staff skill mix, and other factors.

Data quality: There were no significant data quality issues relating to this indicator.

Discussion

75.4% of total expenses were accounted for by salaries and benefits, showing that Ontario hospitals are a labour intensive industry. Region 4 (south) and non-acute hospitals had the highest percent of salaries and benefits and Region 3 (central) and teaching had the lowest percent. The low percent for teaching hospitals reflects the relatively high level of expenses for diagnostic and other technology. Conversely, the high percent for non-acute hospitals reflects the relatively low level of expenses for technology and provision of more labour intensive care.

Administration and Support Services Expense as a Percent of Operating Expenses



Measure

$$\frac{\text{Administration Services Expenses} + \text{Functional Centre Support Services Expense}}{\text{Operating Expenses}} \times 100$$

Definition: The MIS Guidelines classify administrative expenses into one of three categories: administrative services (general administration, finance, human resources, systems support, and communications), functional centre support services (materials management, volunteer services, and plant administration, operation, security and maintenance), and service recipient-support services (housekeeping, laundry & linen, bio-medical engineering, admitting, health records, patient food services, and patient/resident/client transport). This indicator measures the percent of operating expense accounted for by administrative and functional centre support services only, because service recipient support services are patient related and are not considered to be overhead. The numerator includes administration expenses and functional centre support services, excluding cash discounts and depreciation expense because of variations in reporting of these amounts. The denominator includes Operating Expenses, excluding depreciation expense and medical compensation.

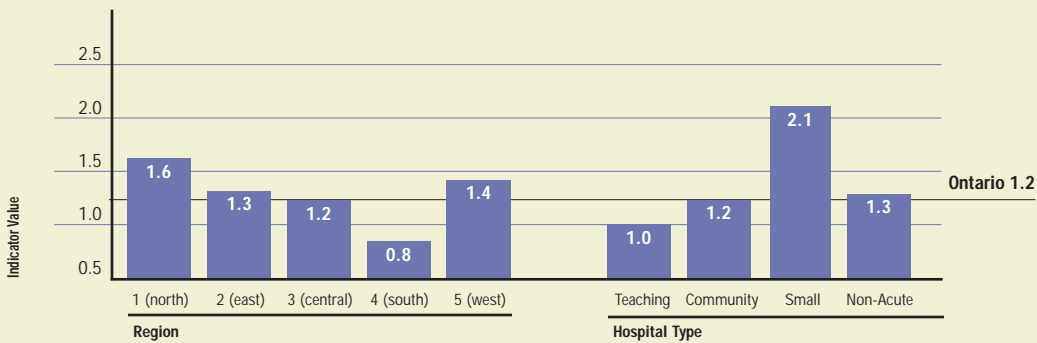
Interpretation: A lower percent may indicate more efficient operation of overhead. The ability of a hospital to spend as little as possible on overhead is influenced by the age of the plant and equipment, hospital service mix, staff mix, productivity, and other factors.

Data quality: There are variations in reporting of administration and support services staff costs. For example, in some hospitals, the cost of system support staff on nursing units are assigned to a nursing functional centre, while in other hospitals these same staff are assigned to administrative services. In addition, hospitals with program management may report administrative and support expenses in program management functional centres.

Discussion

Administration and support services accounted for 16.3% of operating expenses, showing that Ontario hospitals spent the vast majority of their resources on direct patient care. Region 1 (north), Region 2 (east), and Region 3 (central) and small hospitals had the highest levels of overhead and Region 5 (west) and community hospitals had the lowest levels; however, there was very little variation among regions. Small and non-acute hospitals have different cost structures.

Current Ratio



Measure

$$\frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Definition: This indicator measures the number of times short-term obligations can be met from short-term assets. The numerator includes all assets that can be liquidated within one year. The denominator includes all liabilities that must be paid within one year.

Interpretation: The current ratio indicates the extent to which a hospital has sufficient current assets to meet current obligations due within one year. The lower the value, the greater the risk of insolvency. Very high values often indicate under-investment in longer term assets which usually yield greater returns.

Data Quality: There were no significant data quality issues related to this indicator; however, further work is needed to reconcile differing approaches to, and methods of, calculating the current ratio, as discussed below.

Discussion

The current ratio of 1.2 suggests that, at the end of fiscal year 1996/97, hospitals had sufficient assets to meet their immediate obligations. Region 1 (north) and small hospitals were the most solvent and Region 4 (south) and teaching hospitals were the least solvent.

A recent Canadian Imperial Bank of Commerce/Change Foundation (CIBC/CF) study calculated a current ratio for Ontario hospitals of 0.92 at the end of fiscal year 1996/97. This ratio was calculated based on audited financial statements for 194 Ontario hospitals. A value of 0.92 suggests that hospitals did not have sufficient assets to meet their immediate obligations.

Possible reasons for the differences between the information presented in this report and that presented in the CIBC/CF study include:

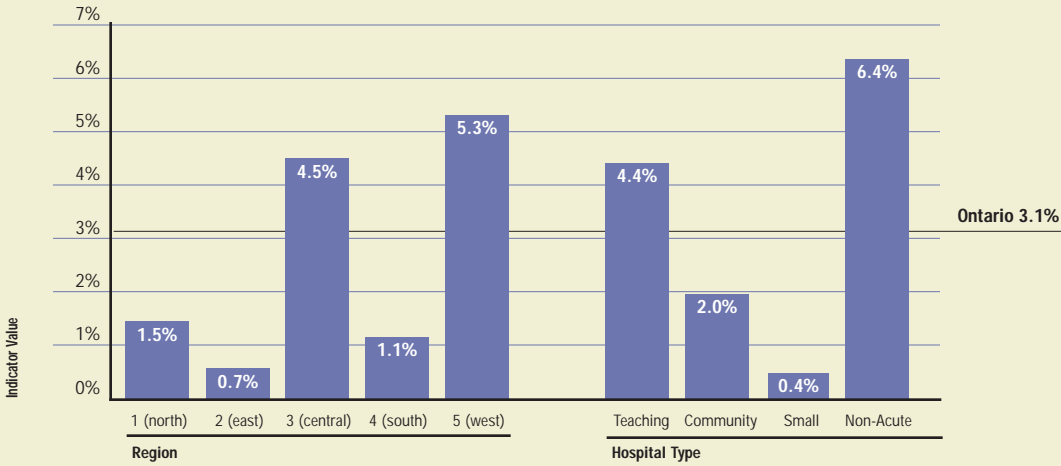
The number of hospitals in each study differed.

Data were collected from different sources.

The studies used different methods of analysis.

For fiscal year 1997/98, the CIBC/CF study reported a current ratio of 0.82, which indicates that the ability of hospitals to meet their immediate obligations has been further impaired since 1996/97.

Long Term Debt as a Percent of Ministry of Health Global Funding



Measure

$$\frac{\text{Long-term debt}}{\text{Ministry of Health Global Funding}} \times 100$$

Definition: This indicator measures long term debt as a percent of a hospital's annual funding from its primary funding source, the Ministry of Health. The numerator includes long term borrowings and obligations under capital lease. The numerator excludes sick leave benefits, other accrued benefits payable, other long-term liabilities (operating), and deferred revenues. The denominator includes Ministry of Health global funding. Only 50 hospitals reported any long-term debt, as defined above; therefore, the indicator data are for these hospitals only.

Interpretation: A higher percent indicates a greater debt burden. A lower percent indicates a lesser debt burden. The ability of a hospital to borrow is influenced by hospital cash flow, assets, other debt obligations, credit record, and other factors.

Data quality: There were no significant data quality issues relating to this indicator.

Discussion

Long-term debt was 3.1% of Ministry of Health global funding, showing that Ontario hospitals have found sources of capital other than bank borrowing, although less than 1/4 of Ontario hospitals reported long-term debt. Region 5 (west) and non-acute hospitals had the highest debt burden and Region 2 (east) and small hospitals had the lowest debt burden.

Next Steps

This report represents the first published effort to provide Ontario hospital stakeholders with a set of system-wide measures of financial performance and condition. When used in combination with the indicators found in other components of this report, these financial indicators are a valuable tool that can be used by a variety of users including hospital administrators, board members, and care providers.

One of the benefits of publishing measures of financial performance and condition is that the process of quantifying attributes of performance often challenges users to think more critically about the process of measuring and reporting results. The research team looks forward to benefitting from this critical thinking by users of The Hospital Report '98.

To stimulate the process, Ontario hospitals will be asked to forward their 1997/98 validated Ministry of Health annual submission to the research team within the next month. The 1997/98 data will be loaded into the research database and combined with the existing 1996/97 data. Values for each of the ten indicators reported in this component of The Hospital Report '98 will then be calculated for both fiscal years. Hospitals will receive a report of their indicator values that can then be used in conjunction with the information presented in this report.

Feedback from hospitals (both directly from hospitals and through the Finance Advisory Group) will be captured and used to prepare for a proposed second phase of this project. In this process, some of the indicators reported in this document may be eliminated from The Hospital Report '98 and replaced with other indicators considered to have more utility. For example, Finance Advisory Group members have already expressed an interest in including some indicators that reflect trends (i.e., annual changes). This was not possible in the first year of the report, but could be accommodated after two years of data are available. Also, there may be a need to collect additional data directly from hospitals. Finally, the issue of restructuring costs may be considered important to investigate.

Advisory Group

The OHA and the Hospital Report '98 research team would like to thank the following individuals for their invaluable advice:

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Hôpital Montfort

Debbie Lanktree
Ontario Hospital Association

Jane Perry
St. Thomas Elgin General Hospital

Martin Stein
North York General Hospital

John Sutherland
Alexandra Marine & General Hospital

Donna Thomson
Mount Sinai Hospital

Mary Lou Toop
Markham Stouffville Hospital

Hospital names may not reflect recent changes that have occurred as a result of restructuring.

Measures of Hospital System Integration and Change

Introduction

Measures of system integration and change include indicators of three important performance areas: system integration, capacity building and innovative practices. System integration refers to the extent that Ontario hospitals are moving toward greater coordination of their activities with other parts of the health care system. Capacity building indicates the degree that hospitals are investing in learning and information resources. Innovative practices reflect the extent that hospitals are engaged in new activities that will improve their financial and clinical performance and patient perceptions of their experiences.

System Integration. Recent studies suggest that the increased integration of hospitals with other providers will contribute to improved health care outcomes and further efficiencies in care delivery. System integration can occur in three ways: through functional integration, physician integration and clinical integration. Functional integration refers to the coordination of support functions and activities such as information management, financial management and strategic planning across different organizations. Physician integration includes efforts to increase the involvement of physicians more closely in the planning and management of hospitals and other health care organizations. Clinical integration involves the coordination of patient care across the entire course of illness regardless of the setting so that there is little or no duplication of effort or fragmentation of services.

Much of the recent functional integration of care providers in Ontario has been mandated through the directions of the Health Services Restructuring Commission. Still many hospitals across Ontario have improved efficiency through new partnerships with other hospitals, other health care agencies and private enterprise. Physician integration into management is in early stages in Ontario hospitals. Many hospitals have sought to increase the involvement of physicians in hospital committees and hospital management, and to improve the communication between hospitals and medical staffs. Efforts to improve clinical integration have been initiated by a number of organizations. For example, hospitals have recognized the benefits of earlier transfer of stroke patients from acute care to rehabilitative, nursing home or community settings.

Capacity Building. Recent financial restraints have limited the efforts of hospitals to invest in learning and information. Health care is a knowledge intensive industry, heavily dependent on individual and team skills. Ideas for improving health care delivery and reducing costs must come not only from top leadership, but also from staff who are closest to the patients and who understand how care is delivered. Thus organizations must invest in their knowledge infrastructure, their people, and information systems and procedures, if they are to improve performance. Recent efforts by the OHA to advance knowledge organizations will aid this process. Measures for assessing such aspects of "human capital" are not well developed; better accounting of the information and knowledge used by organizations to achieve their goals is needed.

Innovative Practices. Ontario hospitals have adopted a variety of new initiatives and methods to improve service delivery and reduce costs. These innovations include new technologies for information use, such as telemedicine linkages between hospitals; new practices such as "same day admission" policies that reduce the length of stay for elective surgery patients; and new methods such as clinical care pathways and protocols that define the services needed by patients.

The Hospital Environment

The need for system integration and change is heightened by the rapid changes in hospital environments. Among the important aspects of this environment are financial pressures, technological advances, growing and aging population, and the changing role of health care practitioners.

Financial Pressures. Financial conditions continue to challenge hospitals in the late 1990s. While the 1980s were a period of growth for hospitals in Ontario, real funding for hospitals has decreased in the last five years. Financial constraints were initiated in 1992/93 with a \$200 million decrease in hospital base funding. This was followed by two years of zero increases in funding. In 1996/97 the first of three years of planned reductions in funding occurred with a \$365 million reduction in hospital base funding. This was followed by a reduction of \$435 million in 1997/98. During this period the Ministry of Health reinvested \$375.7 million much of which related to one-time funding for restructuring or funding for population growth. Provincial Estimates reveal that transfer payments to the operation of hospitals (excluding restructuring) declined by \$550 million between 1995/96 and 1997/98. After adjusting for inflation, the real cuts to hospitals totalled approximately \$800 million or 11%.

Largely as a result of changes mandated by the Health Services Restructuring Commission, over sixty hospitals have merged with other hospitals or closed (In most cases, the original facilities remain open as separate sites). In total, over 22 new organizational structures have been created, and more are expected. This rate of change is unprecedented in the Ontario hospital system. These changes have required extensive capital investment and intensive efforts to create new service delivery networks and to merge previously independent services.

Technological Advances. The Ministry of Health largely controls the allocation of new technology in the Ontario health care system. For example permission and funding from the Ministry of Health is required in order to

acquire Magnetic Resonance Imaging (MRI) equipment. The decline of Ministry funding for hospital budgets also has limited the acquisition of costly new technologies. These restrictions on the funding of new technologies mean that less current technology is still in use in some areas.

Growing and Aging Population. Between 1991 and 1996 the population of Ontario increased from 10,084,880 to 10,753,590, a 6.6% increase. The two segments of the population that are experiencing the highest population increase over the past five years are the 45-49 and over 65 year olds. The increase in the 45-49 age group was 30.9%, while the increase in all categories over 65 was greater than 10%. The 45-49 age group is the leading edge of the baby boom generation. Members of this generation are believed to want more information about the health services they need and greater participation in decision-making. As the baby boom continues to age, not only will the demands for services increase, but the models of care are also likely to change.

Changing Role of Health Care Practitioners. The roles and mix of health care practitioners who practice in Ontario hospitals is changing. In 1997 there were 56,157 active physicians in Canada, or 1.85 physicians per 1000 population. The relative numbers of physicians in the population is likely to remain fairly stable. However, the mix of physicians has changed and is predicted to continue to change. Important changes have resulted from the increasing participation of women in medicine, from the licensing of midwives and other practitioners, and from the increase of independent practice by nurses, rehabilitation practitioners and others.

Many hospitals are changing organizational structures and processes in an effort to increase the level of participation among physicians in hospitals' management decisions. For the most part, physicians are not employees of hospitals, but are independent practitioners who have privileges to work in a hospital. Some hospitals have increased the involvement of physician in hospital strategic planning, utilization management and change management efforts. Traditionally physicians are not paid for these services, and time spent on these activities is time not spent on direct patient care.

Methods

Identifying Indicators for The Hospital Report '98

An Advisory Group of experts worked with the research team to identify the indicators in this section of the report. We began by compiling a comprehensive review of the literature on the measurement of systems integration and change. The panel considered desired activities and outcomes related to systems integration, capacity building and innovative practices.

A list of indicators or proxies that might measure those activities and outcomes and possible sources of data was then created. An iterative process with the advisory panel was used to refine the desired outcomes into readily available and measurable indicators. All indicators were assessed on three criteria: relevance, feasibility, and scientific soundness. Data were gathered from the CIHI database and OHRS database. Questions for the Patient Perceptions of Ontario Hospitals survey were developed and a survey for hospitals was developed. The survey data were collected and analysed. Data on 20 possible indicators were analysed. The data quality and usefulness was assessed and the indicators presented in this report were agreed upon.

In selecting the set of measures to be used in this report, the research team and advisory panel were faced with dilemmas in finding relevant and useful measures. The timelines for the report precluded developing many new measures. Data in existing administrative databases are often weakened by known variations in coding practices. Several measures were excluded because panel members felt that deficiencies in the data made interpretations difficult. In other cases, we decided to include some measures despite likely biases in reporting. Their inclusion in this report may spur improvements in data collection and coding.

Collecting, Organizing and Validating the Data

Indicators of system change and learning were derived from four sources: the Canadian Institute for Health Information (CIHI), the Ontario Hospital Reporting System (OHRS), data returned from the survey of “Patient Perceptions of Ontario Hospitals”, and data returned from a hospital questionnaire, “Measuring Hospital System Change”. Other indicators were considered that would require different types of information, including surveys of community organizations, surveys and interviews of physicians, interviews of hospital employees, and review of hospital activities. The timelines of this project precluded collecting such information.

Clinical Data

The Canadian Institute for Health Information (CIHI) supplied discharge data from the Discharge Abstract Database (DAD) for all Ontario acute care hospitals in the fiscal year 1996/97. These data were analysed based on the postal code of the patient who received the care and by hospital type. The following two indicators were generated from the CIHI database:

- Percent of Elective Surgical Cases Done on Day of Admission
- Percent of Total Days as "Awaiting Alternate Level of Care"

Financial and Measurement Information Systems Data

The Ontario Ministry of Health requires hospitals to submit financial and statistical data annually in an electronic form using a coding structure outlined in the Ontario Hospital Reporting System (OHRS) and national reporting standards known as The MIS Guidelines (MIS). For further discussion on this data, please refer to the section "Measures of Financial Performance and Condition". The following indicator was generated from the OHRS and MIS databases:

- Percent of Expenditures on Education, Training and Development.

Patient Perceptions Survey Data

A survey, "Patient Perceptions of Ontario Hospitals", was carried out with almost 2000 residents of Ontario who had experience with Ontario hospitals. These residents were selected by random digit dialing. For more information on the methodology of the survey, please refer to the description of the survey in the section of the report on Patient Perceptions of Ontario Hospitals. The following two indicators were generated from this data:

- Patients' Perceptions of Discharge Information
- Patients' Perceptions on Hospitals' Arrangements with Other Services

Additional Hospital Integration and Change Data

The System Integration and Change research team developed an eight-page survey that was distributed to all Ontario hospital chief executive officers in early September 1998. The survey focussed on six aspects of integration and change:

- Prevalence and Use of Clinical Pathways
- Physician Participation in Hospital Management
- Use of Information Technology
- Partnership Arrangements with Other Hospitals or Private Sector
- Staff Surveys
- Team Based Quality Improvement

Measuring System Integration and Change Survey: Response Rate

187 surveys were faxed to hospital CEOs on September 8, 1998. As of October 1, 1998, 138 responses had been received. Four of the survey responses were from multi-site organizations that received a single survey and submitted responses from multiple sites. Ten multi-site institutions were faxed multiple copies, one to each site, and either returned a single copy, or did not respond. All responses that were received were coded and counted in the survey. The graph below shows the total response rate by region and hospital type.

Total Response Rate

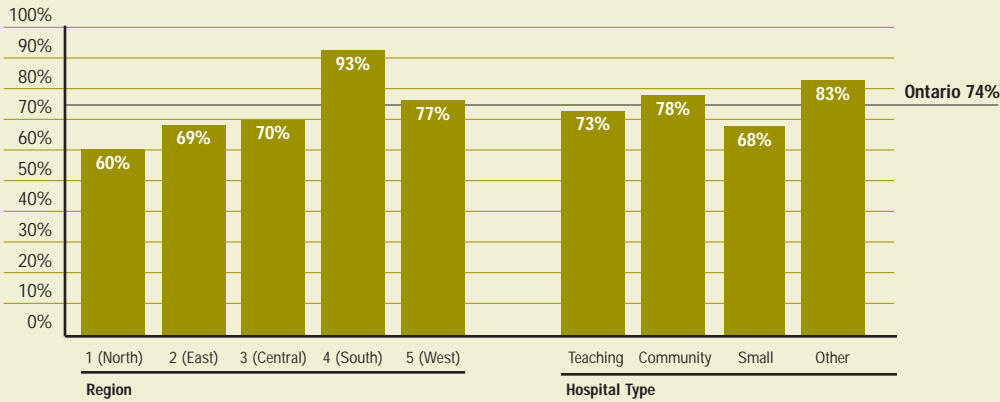


Figure 16:
Response rate (in percent)
to hospital questionnaire,
"Measuring Hospital
System Change".
(N=138)

Indicators by Performance Dimension

System Integration

- Patients' Perceptions of Discharge Information
- Patients' Perceptions on Hospitals' Arrangements with Other Services
- Physicians Participating in Hospital Management
- Partnership Arrangements with Other Hospitals or Private Sector

Capacity Building

- Percent of Expenditures on Education, Training and Development
- Staff Surveys
- Use of Information Technology

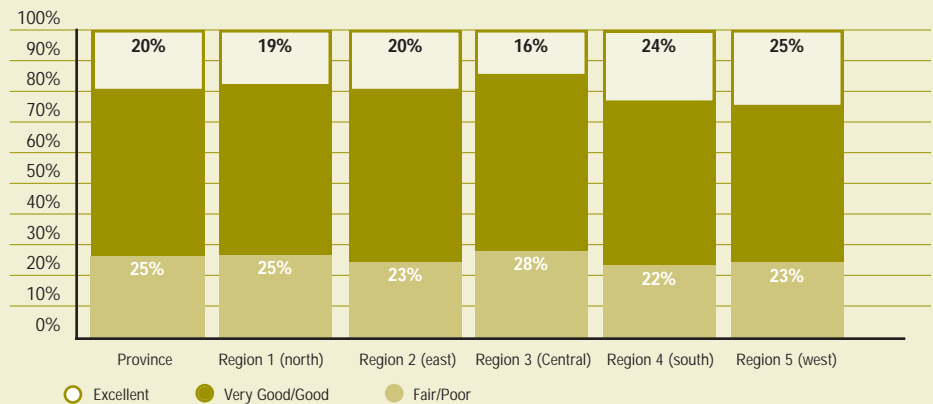
Innovative Practices

- Prevalence and Use of Clinical Pathways
- Percent of Total Days as "Awaiting Alternate Level of Care"
- Percent of Elective Surgical Cases Done on Day of Admission
- Team Based Quality Improvement

Results and Discussion

Patients' Perceptions of Discharge Information

Figure 17:
How would you rate hospital staff at providing information about what to expect and what to do after leaving the hospital? (N=1852)



Measure

Definition: These data were collected through a random telephone survey of 2000 residents of Ontario who had a hospital experience in the past six months. For more information on the methodology of the survey, please refer to the methodology section of the Patient Perceptions of Ontario Hospitals chapter.

Respondents were asked: "How would you rate hospital staff at providing information about what to expect and what to do after leaving the hospital? Would you say it was poor, fair, good, very good or excellent?"

Interpretation: This measure assesses patients' perceptions of the quality of communication of hospital staff with patients. The information about what to do and expect after discharge is usually communicated to a patient by a nurse or physician. This measure is based on patients' perceptions of the adequacy of the information provided in preparing patients for discharge.

Discussion

On average approximately 20% of people discharged from Ontario hospitals rated hospital staff as "excellent" in providing information about what to expect after leaving the hospital. 55% reported this level of communication as being either good or very good while 25% rated hospital staff poor or fair. No significant differences are noted among levels of dissatisfaction between regions.

Patients' Perceptions on Hospitals' Arrangements with Other Services

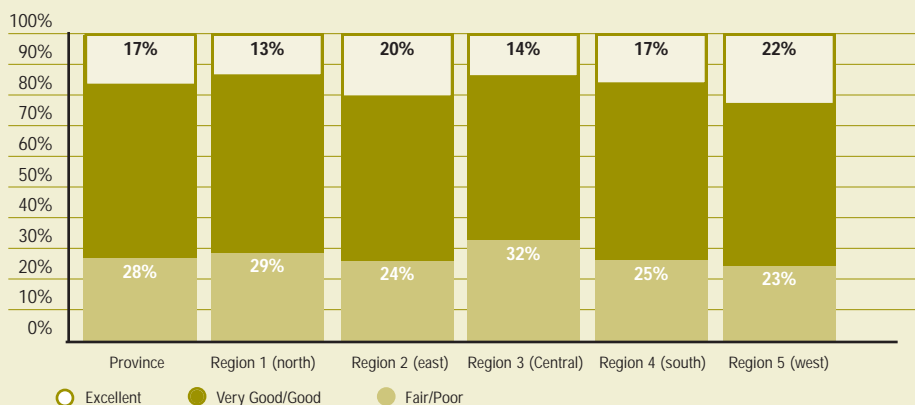


Figure 18:
How would you rate hospital staff at making sure that arrangements were made with other services or agencies that were needed after leaving the hospital? (N=1402)

Measure

Definition: These data were collected through a random telephone survey of 2000 residents of Ontario who had a hospital experience in the past six months. For more information on the methodology of the survey, please refer to the methodology section of the Patient Perceptions of Ontario Hospitals chapter. Respondents were asked: "How would you rate hospital staff at making sure that arrangements were made with other services or agencies that were needed after leaving the hospital? Would you say it was poor, fair, good, very good or excellent?"

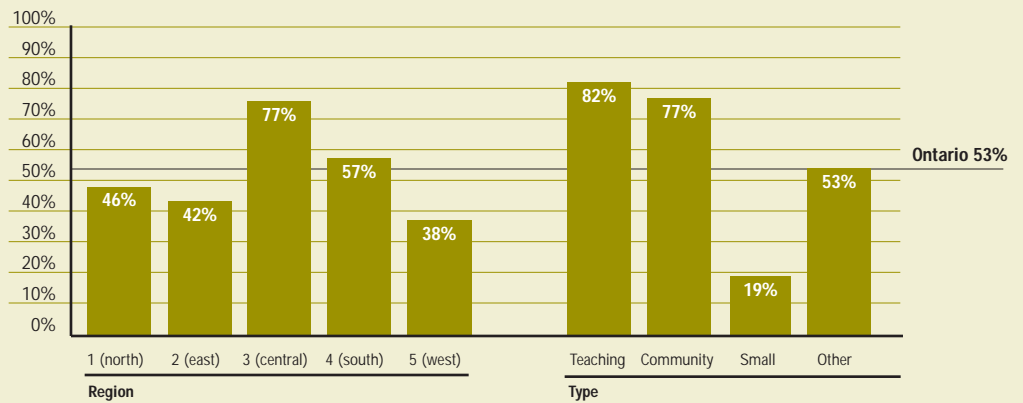
Interpretation: Making arrangements with other services or agencies requires communication between patients' caregivers and outside agencies. This measure reports patients' perceptions of the adequacy and effectiveness of communication processes upon discharge from hospital. A low rating on this score could indicate a less effective communication between the hospital and other organizations. The availability of services in different regions also affects hospitals' abilities to make arrangements with other organizations. These limitations may influence patients' perceptions.

Discussion

An average of 17% of Ontario residents reported that staff did an excellent job at making sure that arrangements were made with other services or agencies that were needed after leaving the hospital. Fifty-five percent reported that staff did either a good or very good job, and 28% rated hospital staff as doing a fair or poor job. Differences between regions are not significant.

Physicians Participating in Hospital Management

Figure 19:
Percent of hospitals that
report one or more physicians in
management positions. (N=135)



Measure

$\frac{\text{Hospitals that report one or more physicians in management positions}}{\text{Total number of hospitals responding to Measuring Hospital System Change Survey}} \times 100$

Definition: This indicator is based on the following question from a survey sent to all Ontario hospitals: "How many physicians are in management positions at your hospital (not including chiefs of service or positions in the medical staff organization)?"

Interpretation: In Ontario most physicians are not employees of the hospital and are not paid by the hospital. Physicians exercise substantial control over hospital resources. One method for improving use of hospital resources is to increase active physician participation in hospital planning and operations. The extent to which physicians are in hospital management positions is used as a proxy for physician involvement in hospital management activities.

Data Quality: Some variation in responses may be due to differing interpretation of the question.

Discussion

Overall 53% of Ontario hospitals reported one or more physicians in management positions. Region 3 (central) reported the greatest percentage of physicians in management positions, at 77%. Region 5 (west) had the fewest hospitals reporting physician participation in management with 38%. Teaching and community hospitals reported significantly more physicians in management positions than small hospitals.

Partnership Arrangements with Other Hospitals or Private Sector

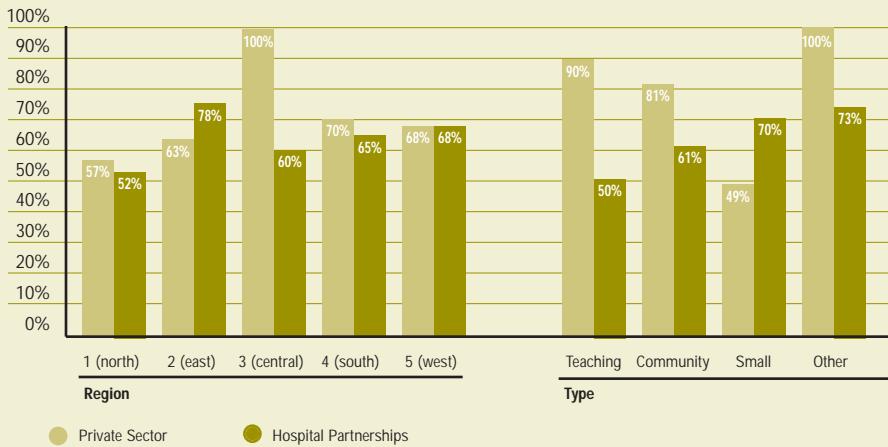


Figure 20:
Percent of hospitals reporting partnership arrangements with other hospitals or private sector companies. (N=137)

Measure

$$\frac{\text{Hospitals that report developing Partnership Arrangements}}{\text{Total number of hospitals responding to Measuring Hospital System Change Survey}} \times 100$$

Definition: This indicator is based on a survey sent to all Ontario hospitals. Included in this indicator are the hospitals who reported partnership arrangements for one or more of the following support services: in-patient food services; diagnostic laboratory testing; pharmacy; laundry; housekeeping; physical plant; security; and information systems. The left bar shows the number of hospitals who are in a partnership with a private sector provider (including contracting out arrangements). The right bar shows the number of hospitals who are in a partnership arrangement with one or more other hospitals for the above mentioned services.

Interpretation: The development of partnerships with other hospitals illustrates the development of alliances. The development of partnerships with private sector providers is an indicator of efficient and innovative business practices. In each case, factors such as hospital size and location may limit opportunities for partnering.

Data Quality: There is no standardized definition of the term "partnership". Partnerships could range from informal arrangements to contractual obligations. There is also no indication of the number of partnerships experienced. The threshold for this indicator is at least one partnership.

Discussion

A higher percentage of hospitals report forming partnerships with private sector organizations than with other hospitals. Hospitals in Region 3 (central) report the most partnerships with private companies. Small hospitals are less likely than all other hospital types to report partnerships with private companies. Hospitals in Region 2 (east) report the most partnerships with other hospitals. Teaching hospitals are less likely to report partnerships with other hospitals than are other types of hospitals.

Percent of Expenditures on Education, Training, and Development

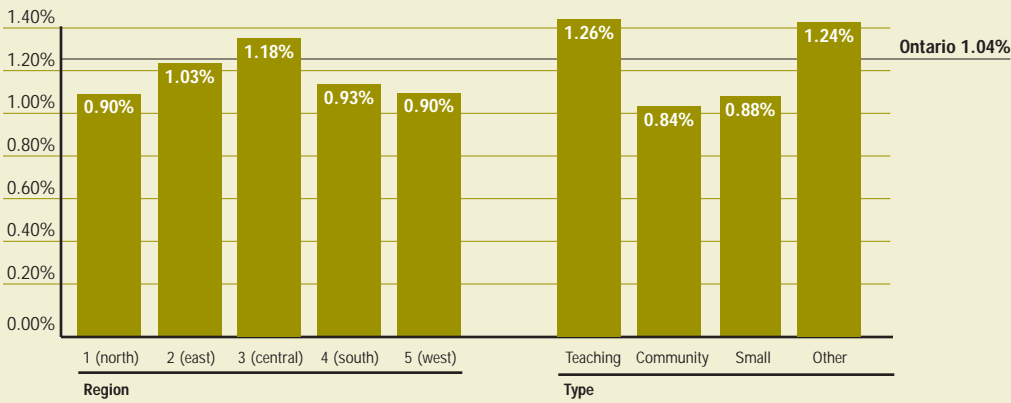


Figure 21:
Percent of expenditures
on education, training
and development.

Measure

$$\frac{\text{Education Functional Centres} + \text{Other Education Expenses}}{\text{Total Hospital Expenses}} \times 100$$

Definition: These data come from the Ontario Hospital Reporting System. This indicator measures the percent of the total budget that a hospital spends on educating and developing staff, as reported in the MIS trial balance.

Interpretation: Spending on education is one measure of learning in the organization. Rates of expenditure reflect the level of investment in the knowledge of hospital workers.

Data Quality: The expenses in the Education functional centres represent only the expenses allocated to the education department. Some education, training and development (and associated) expenses are recorded by other departments. Special funding for teaching hospitals may have an effect on

this indicator. Staff meetings, grand rounds, in-service sessions, and conference reports are not captured in this indicator. Nor does this indicator capture expenses related to costs associated with replacing staff who are attending an educational session.

Discussion

The percent of hospital budgets spent on education ranged from an average of 0.9% in Region 5 (west) and Region 1 (north) to 1.18% in Region 3 (central). Teaching and other hospitals report a higher proportion of spending on education and training than other types of hospitals.

Staff Surveys

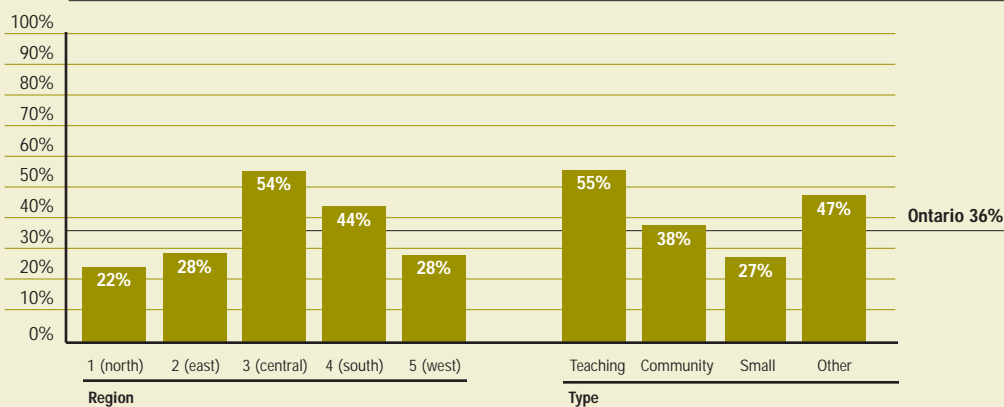


Figure 22:
Percent of hospitals that have completed at least 2 staff surveys in past five years.
(N=133)

Measure

Definition:

$$\frac{\text{Number of hospitals that have completed at least 2 staff surveys in past five years}}{\text{Total number of hospitals responding to Measuring Hospital System Change Survey}} \times 100$$

Interpretation: This indicator measures the extent that a hospital assesses the views of their staffs. Information from staff may identify issues and guide change initiatives in hospitals.

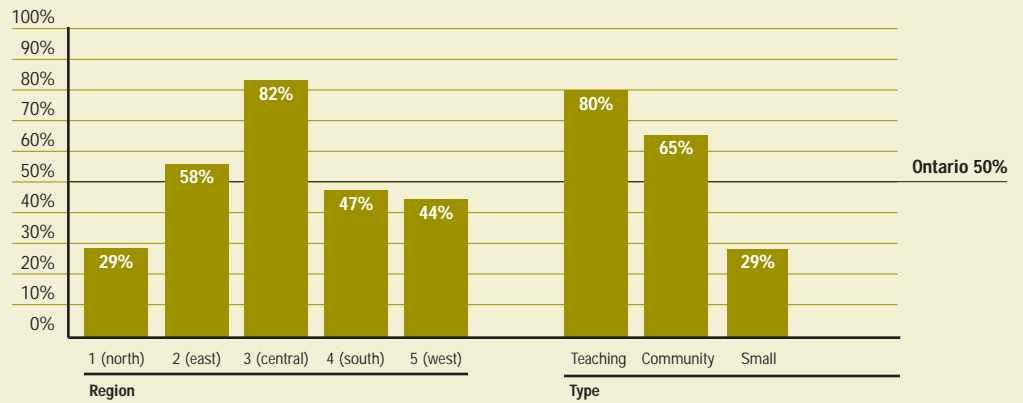
Data Quality: The survey question did not define what was meant by "quantitatively measure the satisfaction of staff with their work and work environment". Some hospitals may have included unstructured methods for obtaining feedback from staff, such as suggestion boxes, in their responses.

Discussion

Over 55% of teaching hospitals report measuring staff satisfaction at least two times in the past five years, compared with 27% of small hospitals. Fifty-four percent of hospitals in Region 3 (central) report completing staff surveys at least twice in the past five years.

Use of Information Technology

Figure 23:
Percent of hospitals reporting current availability of electronic records and data at least partially throughout the hospital in 3 out of 4 clinical categories. (N=119)



Measure

Hospitals reporting current availability of electronic records and data at least partially throughout the hospital in 3 out of 4 clinical categories $\times 100$
 Total number of hospitals responding to Measuring Hospital System Change Survey

Definition: Hospitals were asked to indicate "the extent to which electronic records and data are currently available throughout your hospital," along a five point scale, ranging from all paper records (1), to electronic records/data accessible throughout and outside the hospital (5). The following four clinical areas are reported here: patient registration & ADT system; diagnostic imaging results; diagnostic laboratory results; and transcribed reports online. Hospitals with electronic records and data at least partially accessible throughout the hospital in three out of those four areas were counted. Non-acute care hospitals have been excluded from this indicator.

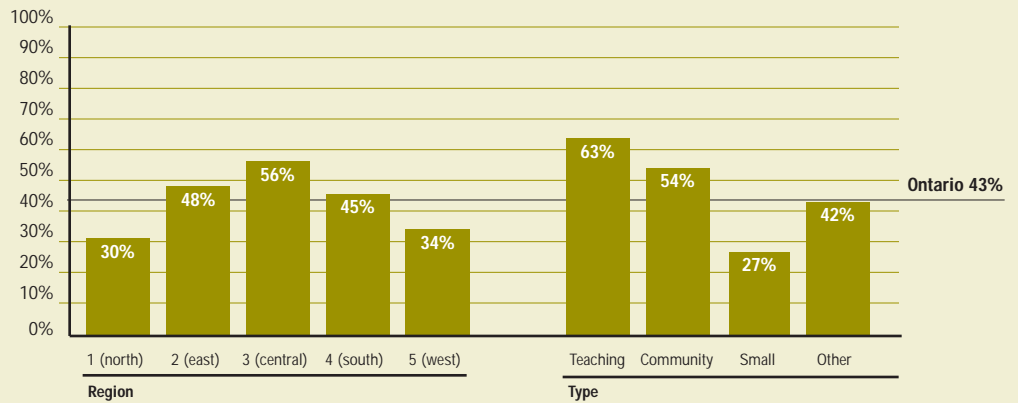
Interpretation: These four clinical areas are often the first areas of a hospital to be automated. This indicator is a proxy measure for the development of hospital clinical information systems.

Discussion

Hospitals report moderate to high levels of electronic records and data use in clinical areas. Roughly 50% of all hospitals reported that electronic records in these clinical areas are at least partially accessible throughout the hospital. 80% of teaching hospitals reported that electronic records are at least partially accessible, compared with 65% of community hospitals and 29% of small hospitals. Reported use of electronic records and data use in clinical areas was highest at 82% in the Region 3 (central), compared with 29% in Region 1 (north).

Extent to which Electronic Records/Data are available

Figure 24:
Percentage of defined areas in which hospitals report electronic records / data are at least partially accessible throughout the organization. (N=137)



Measure

Clinical and administrative areas where hospitals report availability of electronic records / data at least partially throughout the hospital $\times 100$
All defined clinical and administrative areas

Definition: Hospitals were asked to indicate "the extent to which electronic records and data are currently available throughout your hospital." Responses were recorded on a five-point scale, ranging from all paper records (1), to electronic records and data accessible throughout and outside the hospital (5). Eleven clinical and administrative areas were surveyed: patient registration & ADT system, diagnostic imaging results, diagnostic laboratory results, transcribed reports online, workload measurement, automated abstracting and transfer of CIHI reports, case costing, general ledger, automated payroll, on-line management decision support, and on-line library resources. To be included in this indicator, hospitals had to report on at least seven of the eleven clinical and administrative areas listed above. The proportion of areas where information technology was at least partially accessible throughout the hospital was calculated for each organization. The average across hospitals was calculated for each region and hospital type.

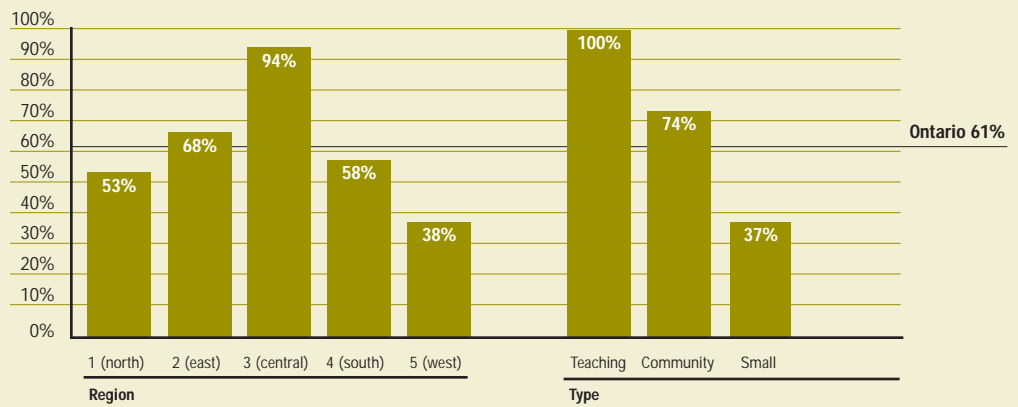
Interpretation: The survey enumerated eleven clinical and administrative areas in which hospitals are increasing levels of automation. Results are reported on this indicator from non-acute care hospitals.

Discussion

On average, Ontario hospitals report that electronic records are at least partially accessible throughout the hospital in 43% of the eleven areas listed above. Teaching hospitals report that electronic records are at least partially accessible in 63% of the defined areas compared with 27% in small hospitals. Hospitals in Region 3 (central) reported use of electronic records and data use in 56% of areas compared with hospitals in Region 1(north) that reported such use in 30% of these defined areas.

Prevalence and Use of Clinical Pathways

Figure 25:
Percent of hospitals that report
developing one or more clinical
pathways. (N=117)



Measure

$$\frac{\text{Hospitals that report developing one or more Clinical Pathways}}{\text{Total number of hospitals responding to Measuring Hospital System Change Survey}} \times 100$$

Definition: Hospitals were surveyed about six conditions (three medical, three surgical) for which clinical pathways are frequently developed: asthma; stroke; acute myocardial infarction; joint replacement surgery; caesarian section; and pneumonia. For each condition, hospitals were asked to check one of five options that most accurately described the extent to which clinical pathways are used. Hospitals could provide answers ranging from "No pathways currently exist for this patient population," "Pathways are developed; few eligible patients are cared for using the pathway," "Some eligible patients are cared for using the pathway," "Most eligible patients are cared for using the pathway" and "All or nearly all patients eligible for the pathway are cared for using the pathway." Hospitals responding that pathways had been developed in at least one of the six conditions are included as positive responses in this indicator. Hospitals that did not provide an answer for all six questions were excluded from this analysis. Non-acute care hospitals have been excluded from this analysis, as many of the surveyed conditions may not be applicable to their patients.

Interpretation: This indicator measures clinical innovation and learning in a team setting. In order for a hospital to develop a standardized care pathway, personnel from multiple disciplines must work together and agree upon procedures, based on current clinical evidence.

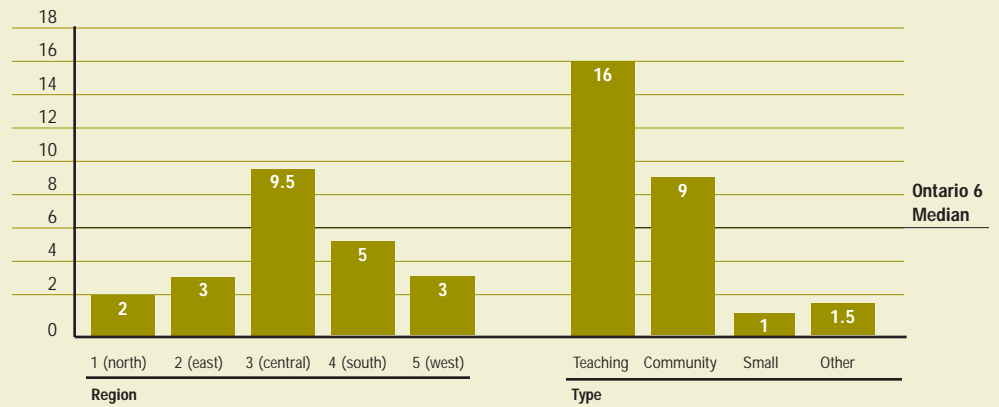
Data Quality: This indicator is based on hospitals' response to a survey and does not reflect the number of pathways in use or the percentage of eligible patients that are cared for using the pathway. The use of other pathways besides the six noted above were also reported by many hospitals.

Discussion

Hospitals in Region 3 (central) are most likely to report developing clinical pathways in at least one of the six clinical areas listed above. Hospitals in Region 5 (west) region are least likely to have developed these pathways. One hundred percent of teaching hospitals report having developed one or more pathways, compared with only 37% of small hospitals. The most common other pathways reported in addition to the six conditions listed were: hip fracture, normal vaginal delivery, Chronic Obstructive Pulmonary Disease (COPD), and gall bladder surgery (cholecystectomy.)

Number of Clinical Pathways used by Hospitals

Figure 26:
Median number of care pathways
approved for use by clinicians.
(N=77)



Measure

Definition: This indicator is based on the following question from a survey sent to all Ontario hospitals: "How many clinical pathways are approved by clinicians for use in your hospital?" This indicator includes only those hospitals reporting one or more care pathways approved for use.

Interpretation: These data include pathways in addition to the six identified in the first measure alone. The graph above shows the median number of pathways approved for use.

Discussion

Significant variation exists across Ontario with respect to the number of care pathways approved for use in hospitals. The graph above shows hospitals in Region 3 (central) report a median of 9.5 pathways developed. The median number of pathways approved for use in teaching hospitals is 16 compared with 1 for small hospitals and 1.5 in other hospitals.

Percent of Total Days as Awaiting "Alternate Level of Care" (ALC)

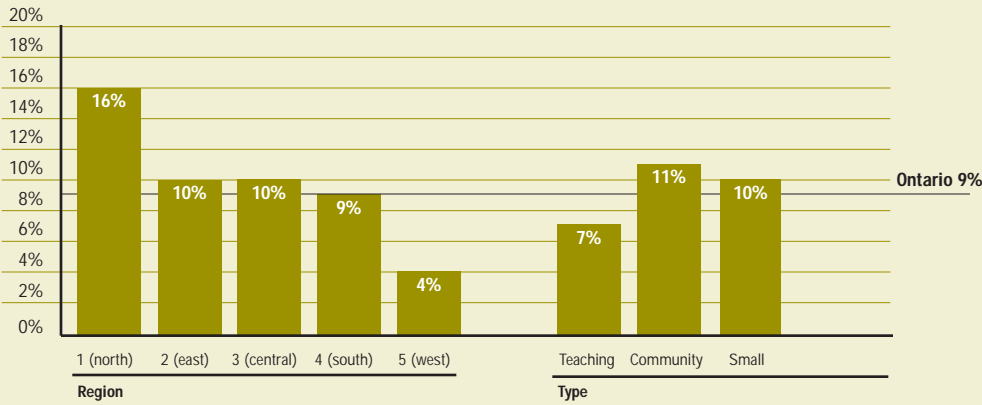


Figure 27:
Percent of total inpatient hospital days recorded as "awaiting alternate level of care" (ALC).

Measure

$$\frac{\text{Total number of days in ALC status}}{\text{Total calculated length of stay}} \times 100$$

Definition: This indicator, derived from the CIHI discharge abstract database, measures the percentage of acute inpatient hospital days in which a patient is waiting for a different level of care, such as Long Term Care, Rehabilitation, Home Care, or placement in a nursing home.

Interpretation: The percent days of care in the hospital that are spent awaiting alternate levels of care is a measure of clinical integration between acute care and non-acute care organizations. A higher percent indicates more non-acute days of care in an acute care bed. With greater integration and sufficient bed capacity in alternate levels of care, patients should be transferred to more appropriate settings. The number of ALC days may reflect the degree of integration in the system. Alternatively, the measure reflects the availability of long-term care, rehabilitation, home care, and nursing home placements in Ontario.

Data Quality: There may be variation in the way hospitals record ALC status on patient records that affects this measure.

Discussion

Region 1 (north) has the highest level of percent ALC days with 16%; Region 5 (west) is the lowest with 4%. Teaching hospitals have a lower ALC rate at 7% than community and small hospitals at 11% and 10%. There are situations beyond the control of hospitals that could account for a high percentage of ALC days including: lack of availability of long term care placements, lack of a home setting, distance from the hospital to the home setting, lack of home supports and lack of specialized hospital services.

Percent of Elective Surgical Cases Done on Day of Admission

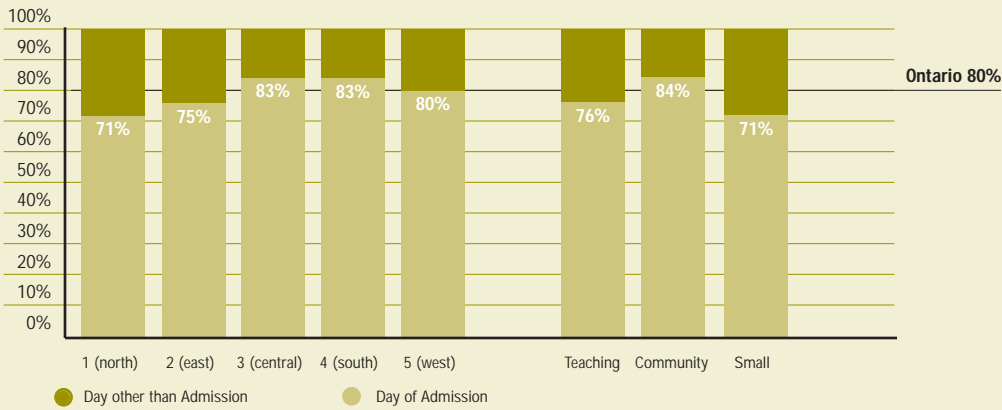


Figure 28:
Percent of elective surgical cases done on day of admission

Measure

$\frac{\text{Elective Surgical Cases Done On Day Of Admission}}{\text{All Elective Surgical Cases}} \times 100$

Definition: This indicator measures the percent of surgical cases performed on the same day that a patient is admitted to hospital. The numerator includes all cases in the CIHI discharge abstract database identified as surgical and elective, where the admission date matches the date of the first surgical procedure. The denominator includes all surgical and elective cases. Regional analyses are based on the region where the patient lives, not the region of the hospital.

Interpretation: This indicator may demonstrate the extent to which hospitals can gather necessary information from patients prior to surgery without requiring overnight stays. Performance in this dimension may reflect improvements to pre-admission, admission, and discharge processes, and effective processes in the operating rooms. The case mix experienced at different hospitals may also influence results of this indicator. Some variation may reflect the distance that some patients must travel that make it more difficult to have surgery completed on day of admission.

Data Quality: Data quality for this indicator is believed to be good, but results are dependent on health records coding practices in Ontario hospitals.

Discussion

Eighty percent of surgical cases are performed on the day of admission in Ontario. Patients in Region 1 (north) are less likely to have surgery done on day of admission – 71%, than patients in Region 4 (south) and Region 3 (central) – 83%. Community hospitals complete the most surgical cases on day of admission at 84%, with small hospitals being the lowest at 71%.

Team Based Quality Improvement

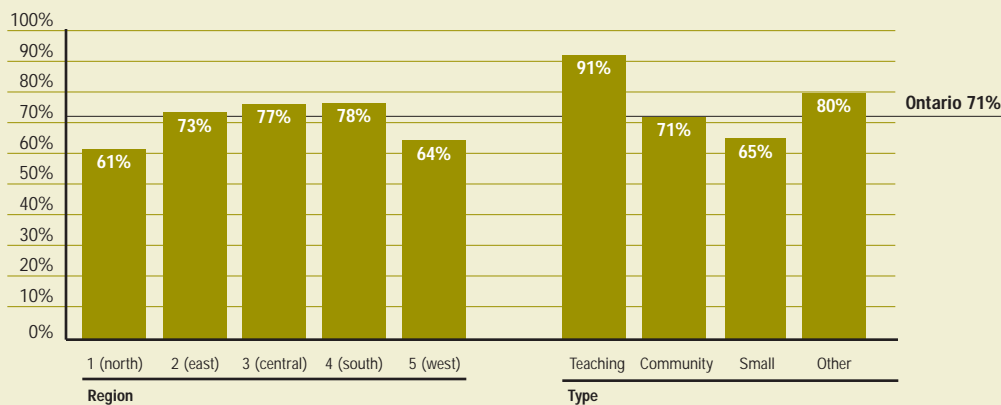


Figure 29:
Percent of hospitals that report team based quality improvement in most or all clinical areas. (N=136)

Measure

Hospitals that report team based quality improvement in most or all clinical areas

$$\frac{\text{Total number of hospitals responding to Measuring Hospital System Change Survey}}{\text{Total number of hospitals responding to Measuring Hospital System Change Survey}} \times 100$$

Definition: Hospitals were surveyed about their quality improvement activities. The question asked hospitals to "describe the extent to which teams in your hospital use quality improvement methods or another structured, problem-solving process to improve clinical outcomes: not at all; used to a limited extent in clinical areas; used in some clinical areas; used in most clinical areas; and used in virtually all clinical areas."

Interpretation: Improvement in clinical outcomes requires changing how care is delivered. Hospitals with higher levels of clinical quality improvement efforts possess tools and methods to improve care outcomes.

Data Quality: There is lack of consensus surrounding the term "team based quality improvement". The question includes a definition of quality improvement as one method for "structured, problem-solving process". Some examples provided by hospitals included the identification of issues or measures and not the improvement of care processes and/or outcomes. These results may overstate the use of quality improvement in Ontario hospitals.

Discussion

71% of Ontario hospitals use team based quality improvement in most or virtually all clinical areas. 91% of teaching hospitals report using team based quality improvement and 80% of "other" hospitals report doing so. Region 3 (central) and Region 4 (south) reported the highest use of team based quality improvement, and Region 1 (north) and Region 5 (west), the lowest.

Next Steps

The measures of System Integration and Change provide a description of different types of hospital activities and several initiatives to improve patient outcomes and hospital efficiency. No small set of measures can encompass the wide range of activities and outcomes included under a broad rubric such as "systems integration and change." The measures reported here were selected as the best available indicators of the changes occurring in the hospital system at the present time. Feedback from the users of this report will be sought to identify whether these measures met the three criteria used to select these indicators: relevance, feasibility and scientific soundness. New measures that reflect other important hospital initiatives will be examined for inclusion in future reports.

Data derived from existing administrative databases are easily accessible, but may be unreliable. Differences in data definitions used across sites, varying practices in data coding and errors in data reporting limit the usefulness of such data. Members of the research team will follow up on those indicators derived from the two administrative databases used in this survey to assess the extent of these sources of bias. Other measures from these databases will also be assessed.

Measures from two surveys were used to generate most of the indicators in this section of the Report. The research team and advisory panel will assess the extent to which these surveys covered key aspects of hospital change strategies and identify other information that may be gathered from hospitals. Some measures used in the hospital survey were more relevant to acute care than to other types of hospitals. New measures that reflect changes in these latter organizations are needed.

System integration also needs to be understood from the perspective of other health care service providers. Additional efforts will be undertaken to collect administrative and survey data from other provider organizations that reflect on the performance of the hospital sector.

Advisory Group

The OHA and The Hospital Report '98 research team would like to thank the following individuals for their invaluable advice:

John Barker

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St. Thomas Elgin General Hospital

Helena Glazer-Axler

The Hospital for Sick Children

Dan Gordon

Sunnybrook Health Science Centre

Melanie Macdonald

Sisters of Charity - Saint Vincent Pavilion

Anu MacIntosh-Murray

The Hospital for Sick Children

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Saint Elizabeth Health Care

Helen Wright

Cambridge Memorial Hospital

Hospital names may not reflect recent changes that have occurred as a result of restructuring.

Bringing it all Together

Measures of Clinical Utilization and Outcomes

	Ontario	Highest Value Region	Lowest Value Region
Separations/100,000 population			
AMI	215.5	Region 1 - 255.2	Region 3 - 195.9
Asthma	142.4	Region 1 - 181.8	Region 2 - 131.5
Congestive Heart Failure	224.1	Region 1 - 290.9	Region 3 - 201.7
GI Bleed	85.3	Region 1 - 112.1	Region 2 - 79.9
Pneumonia	235.4	Region 1 - 332.3	Region 3 - 206.9
Stroke	140.2	Region 1 - 163.6	Region 3 - 134.4
Cataract Surgery	695.9	Region 5 - 783.9	Region 1 - 579.4
Cholecystectomy	243.7	Region 1 - 292.1	Region 3 - 219.2
Knee Replacement	73.5	Region 5 - 105.0	Region 3 - 64.8
Hip Replacement	66.2	Region 5 - 80.2	Region 3 - 59.0
Hysterectomy	333.8	Region 1 - 485.7	Region 3 - 255.9
Myringotomy	179.1	Region 4 - 224.4	Region 3 - 184.8
Prostatectomy	152.1	Region 4 - 171.6	Region 5 - 123.5
ALOS (Days)			
AMI	7.58	Region 1 - 7.92	Region 2 - 7.23
Asthma	3.18	Region 1 - 3.37	Region 3 - 3.06
Congestive Heart Failure	7.70	Region 1 - 7.92	Region 2 - 7.55
GI Bleed	4.63	Region 5 - 4.92	Region 3 - 4.39
Pneumonia	6.63	Region 5 - 6.8	Regions 2, 4 - 6.57
Stroke	10.72	Region 4 - 11.78	Region 3 - 10.15
Cataract Surgery	N/A	Not Applicable	Not Applicable
Cholecystectomy	N/A	Not Applicable	Not Applicable
Knee Replacement	8.22	Region 1 - 9.68	Region 5 - 7.54
Hip Replacement	8.74	Region 2 - 9.51	Region 5 - 8.05
Hysterectomy	4.09	Region 3 - 4.31	Region 2 - 3.90
Myringotomy	N/A	Not Applicable	Not Applicable
Prostatectomy	N/A	Not Applicable	Not Applicable



	Ontario	Highest Value Region	Lowest Value Region
All Post-admission Co-morbidity			
AMI	17.1%	Region 4 - 19.4%	Region 3 - 16.1%
Asthma	2.2%	Region 4 - 2.6%	Region 1 - 1.8%
Congestive Heart Failure	10.2%	Region 4 - 11.0%	Region 1 - 8.1%
GI Bleed	6.8%	Region 5 - 7.2%	Region 1 - 5.9%
Pneumonia	7.4%	Region 4 - 8.2%	Region 1 - 5.4%
Stroke	13.1%	Region 4 - 14.6%	Region 1 - 11.3%
Cataract Surgery	1.1%	Region 4 - 1.5%	Region 3 - 0.8%
Cholecystectomy	7.3%	Region 2 - 7.9%	Region 3 - 6.9%
Knee and Hip	19.0%	Region 2 - 22.8%	Region 5 - 15.2%
Hysterectomy	11.5%	Region 3,4 - 12.2%	Region 5 - 10.3%
Myringotomy	0.8%	Region 4 - 1.1%	Region 2 - 0.6%
Prostatectomy	9.8%	Region 1 - 12.9%	Region 4 - 8.2%
Complications (subset of Post-Admission Co-morbidity)			
AMI	1.4%	Region 2 - 2.0%	Region 1 - 1.0%
Asthma	0.1%	Regions 2, 3 - 0.2%	Region 1 - 0.0%
Congestive Heart Failure	0.6%	Region 2 - 1.3%	Region 1 - 0.1%
GI Bleed	1.5%	Region 1 - 1.8%	Region 4 - 1.4%
Pneumonia	0.2%	Regions 2, 3, 4, 5 - 0.2%	Region 1 - 0.0%
Stroke	1.2%	Region 2, 4 - 1.5%	Region 1 - 0.7%
Cataract Surgery	0.7%	Region 2 - 1.2%	Region 3 - 0.3%
Cholecystectomy	4.1%	Region 2 - 4.6%	Region 1 - 3.5%
Knee and Hip	8.1%	Region 2 - 12.6%	Region 5 - 5.9%
Hysterectomy	6.9%	Region 2 - 7.4%	Regions 1, 5 - 6.0%
Myringotomy	0.4%	Region 1, 4 - 0.6%	Region 2 - 0.3%
Prostatectomy	4.1%	Region 2 - 6.5%	Region 5 - 2.7%
All Unplanned Readmission			
AMI	14.5%	Region 2 - 15.6%	Region 3 - 14.0%
Asthma	7.8%	Region 1, 2 - 8.4%	Region 3 - 7.3%
Congestive Heart Failure	19.0%	Region 3 - 19.8%	Region 2 - 17.6%
GI Bleed	9.4%	Region 1 - 12.0%	Region 2 - 8.8%
Pneumonia	9.2%	Region 1, 3 - 10.2%	Region 4 - 7.8%
Stroke	6.6%	Region 1 - 7.3%	Region 4, 5 - 6.2%
Cataract Surgery	1.8%	Region 1 - 2.6%	Region 2, 3 - 1.6%
Cholecystectomy	3.8%	Region 5 - 4.6%	Region 2 - 3.4%
Knee and Hip	4.2%	Region 1 - 6.0%	Region 4 - 3.7%
Hysterectomy	3.1%	Region 2 - 3.4%	Region 1 - 2.4%
Myringotomy	0.8%	Region 3 - 1.0%	Region 1, 4 - 0.7%
Prostatectomy	6.2%	Region 1 - 7.9%	Region 5 - 5.6%

	Ontario	Highest Value Region	Lowest Value Region
Percent Day Surgery			
Cataract Surgery	96.8%	Region 4 - 97.7%	Region 1 - 95.0%
Myringotomy	93.1%	Region 4 - 95.4%	Region 5 - 86.6%
Prostatectomy	6.5%	Region 4 - 9.7%	Region 5 - 1.4%
Percent of Laparoscopic			
Cholecystectomy	86.8%	Region 3 - 88.9%	Region 1 - 80.4%

Measures of Financial Performance and Condition

	Ontario	Highest Value Region	Lowest Value Region
Ministry of Health Revenue as a Percent of Total Revenues	84.8%	Region 1 - 87.4%	Region 2 - 81.1%
Total Margin (Before Facility Depreciation)	0.15%	Region 3 - 1.77%	Region 4 - (-2.92%)
Worked Salaries and Wages as a Percent of Total Salaries and Wages	84.9%	Region 3 - 85.3%	Region 5 - 84.1%
Percent Above (Below) Expected Cost per Weighted Case - Large Acute Hospital Funding Formula	Not Applicable	Region 5 - 5.8%	Region 3 - (-2.4%)
Percent Above (Below) Expected Cost per Equivalent Weighted Case - Small Acute Hospital Funding Formula	Not Applicable	Region 1 - 3.4%	Region 2 - (-3.9%)
Nursing Compensation per Weighted Case	\$1,234	Region 2 - \$1,268	Region 1 - \$1,126
Ambulatory Care Expense as a Percent of Direct Patient Care Expenses (Excluding Therapies)	29.8%	Region 4 - 30.2%	Region 5 - 28.7%
Salaries and Benefits Expense as a Percent of Total Expenses	75.4%	Region 4 - 77.7%	Region 3 - 73.3%
Administration and Support Services Expense as a Percent of Operating Expenses	16.3%	Region 1, 2, 3 - 16.5%	Region 5 - 15.6%
Current Ratio	1.2	Region 1 - 1.6	Region 4 - 0.8
Long Term Debt as a Percent of Ministry of Health Global Funding	3.1%	Region 5 - 5.3%	Region 2 - 0.7%

Patient Perceptions of Ontario Hospitals

	<i>Ontario Excellent</i>	<i>Ontario Fair/Poor</i>
Outcome of Hospital Stay	35%	5%
Quality of Hospital Staff Performance	23%	21%
Staff's Understanding of People's Cultural Needs	16%	22%
Staffing Adequacy	11%	49%
Reputation of Local Hospital	8%	48%
Access to Emergency Medical Care in Hospitals	11%	39%
Access to "Basic" Hospital Services	13%	31%
Access to Mental Health Care in Hospitals	6%	55%
Access to Chronic Care	6%	56%
Access to Specialized Hospital Services	11%	46%
Reputation for Quality of Care of Ontario Hospitals	6%	45%

System Integration and Change

	Ontario	Highest Value Region	Lowest Value Region
Patients' Perceptions of Discharge Information	Excellent 20% Fair/Poor 25%	Not Applicable	Not Applicable
Patients' Perceptions of Hospitals' Arrangements with Other Services	Excellent 17% Fair/Poor 28%	Not Applicable	Not Applicable
Physicians Participating in Hospital Management	53%	Region 3 - 77%	Region 5 - 38%
Partnership Arrangements with Private Sector	72%	Region 3 - 100%	Region 1 - 57%

Partnership Arrangements with other Hospitals	65%	Region 2 - 78%	Region 1 - 52%
Percent Expenditures on Education, Training and Development	1.04%	Region 3 - 1.18%	Regions 1, 5 - 0.9%
Staff Surveys	36%	Region 3 - 54%	Region 1 - 22%
Use of Information Technology	50%	Region 3 - 82%	Region 1 - 29%
Prevalence and Use of Clinical Pathways	61%	Region 3 - 94%	Region 5 - 38%
Percent of Total days as "ALC"	9%	Region 1 - 16%	Region 5 - 4%
Percent of Elective Surgical cases Done on Day of Admission	80%	Regions 3, 4 - 83%	Region 1 - 71%
Team Based Quality Improvement	71%	Region 4 - 78%	Region 1 - 61%

Next Steps

The Hospital Report '98 reflects the first published effort to provide Ontario hospitals and consumers with a set of measures in four domains which will help increase the quality of care in the Ontario hospital system. This effort represents the start of a process of evaluation and improvement. In this report we have focussed on the issues and activities that are common to almost all hospitals across the province.

The quality of hospital system data has been increasing each year. Yet there are still outstanding issues with respect to common definitions and coding practices. The University of Toronto team will continue to pursue issues related to data quality, coding and definition in the existing CIHI and OHRS databases.

Two surveys were developed to gather additional data: Patient Perceptions of Ontario Hospitals, and Measuring Hospital System Change. The research team will be reviewing and refining those surveys to better reflect the domains being measured. In addition, alternate sources of data, including measures from other health care system providers, will be pursued.

The OHA and the University of Toronto research team look forward to receiving feedback on this report. A hospital technical session will be held in late November 1998 to provide technical assistance to the hospitals and to provide the University of Toronto team with feedback from hospitals directly. This feedback will be analysed and integrated into the process for the development of the 1999 indicators. Hospitals are also encouraged to forward written comments to the University of Toronto research team as indicated at the end of this report.

The University of Toronto research team, with advice from the advisory panels, will be using this feedback to refine the hospital system indicators and develop hospital specific indicators for The Hospital Report '99. These indicators will be shared with each hospital that participates in the report.

OHA Email Address: yourcomments@oha.com

OHA Response Line: 1-888-469-2887

Appendix 1 Ontario Hospital Types

The hospitals were analysed in two different groupings. The first was by five regions as defined by the OHA. The second was by hospital type. The hospital types were defined as:

Teaching:

All acute general, paediatric and orthopaedic teaching institutions in Ontario

Small/Rural:

As defined by the Rural/Northern Health Care Framework

Community:

All other acute hospitals

Other:

All other hospitals, including rehabilitation, complex continuing care, and mental health.

Appendix 2

OHA Regions by County

Region 1	Region 2	Region 3	Region 4	Region 5
Algoma	Timiskaming	Durham	Brant	Bruce
Cochrane	Dundas	Metro Toronto	Dufferin	Elgin
Kenora	Frontenac	Peel	Haldimand-Norfolk	Essex
Muskoka	Glenarry	York	Halton	Grey
Nippising	Grenville		Hamilton-Wentworth	Huron
Perry Sound	Haliburton		Niagara	Kent
Sudbury	Hastings		Simcoe	Lambton
Thunder Bay	Lanark		Waterloo	Middlesex
	Leeds		Wellington	Oxford
	Lennox & Addington			Perth
	Northumberland			
	Ottawa-Carleton			
	Peterborough			
	Prescott & Russell			
	Prince Edward			
	Stormont			
	Victoria			

Appendix 3 Map of OHA Regions

The following is a map of the OHA regions.



Appendix 4

1996/97 OHRS and CIHI Reporting Hospitals

The following is a list of hospitals that reported financial data to the Ministry of Health in 1996/97. Hospitals in the teaching, community and small/rural categories reported data to CIHI in 1996/97.

Hospital	Location	OHA Region	Hospital Type
Anson General Hospital	Iroquois Falls	1	Small/Rural
Atikokan General Hospital	Atikokan	1	Small/Rural
Bingham Memorial Hospital	Matheson	1	Small/Rural
Dryden District General Hospital	Dryden	1	Small/Rural
Englehart & District Hospital	Englehart	1	Small/Rural
Espanola General Hospital	Espanola	1	Small/Rural
Geraldton District Hospital	Geraldton	1	Small/Rural
Hornepayne Community Hospital	Hornepayne	1	Small/Rural
Huntsville District Memorial Hospital	Huntsville	1	Small/Rural
James Bay General Hospital	Moosonee	1	Small/Rural
Kirkland and District Hospital	Kirkland Lake	1	Small/Rural
Lady Minto Hospital, The	Cochrane	1	Small/Rural
Lake of the Woods District Hospital	Kenora	1	Community
Laurentian Hospital	Sudbury	1	Community
Manitoulin Health Centre	Little Current	1	Small/Rural
Manitouwadge General Hospital	Manitouwadge	1	Small/Rural
Mattawa General Hospital	Mattawa	1	Small/Rural
McCausland Hospital	Terrace Bay	1	Small/Rural
Nipigon District Memorial Hospital	Nipigon	1	Small/Rural
North Algoma Health Organization Wawa Lady Dunn	Wawa	1	Small/Rural
North Bay General Hospital	North Bay	1	Community
Notre Dame Hospital	Hearst	1	Small/Rural
Red Lake Margaret Cochenour Memorial Hospital	Red Lake	1	Small/Rural
Riverside Health Care Facilities	Fort Frances	1	Community
Sault Area Hospitals	Sault St. Marie	1	Community
Sensenbrenner Hospital	Kapuskasing	1	Small/Rural

Hospital names may not reflect recent changes that have occurred as a result of restructuring.

Services De Sante De Chapleau	Chapleau	1	Small/Rural
Sioux Lookout District Health Centre	Sioux Lookout	1	Small/Rural
Smooth Rocks Falls Hospital	Smooth Rock Falls	1	Small/Rural
South Muskoka Memorial Hospital	Bracebridge	1	Small/Rural
St. Joseph's General Hospital - Elliot Lake	Elliot Lake	1	Community
St. Joseph's Health Care Group - Thunder Bay	Thunder Bay	1	Community
St. Joseph's Health Centre - Blind River	Blind River	1	Small/Rural
Sudbury Algoma	Sudbury	1	Other
Sudbury General	Sudbury	1	Community
Sudbury Memorial	Sudbury	1	Community
Temiskaming Hospital	New Liskeard	1	Community
Thunder Bay Regional Hospital	Thunder Bay	1	Community
Timmins and District Hospital	Timmins	1	Community
West Nipissing General Hospital	Sturgeon Falls	1	Small/Rural
West Parry Sound Health Centre	Parry Sound	1	Small/Rural
Wilson Memorial General Hospital	Marathon	1	Small/Rural
Almonte General Hospital	Almonte	2	Small/Rural
Arnprior & District Memorial Hospital, The	Arnprior	2	Small/Rural
Belleville General Hospital	Belleville	2	Community
Brockville General Hospital	Brockville	2	Community
Campbellford Memorial Hospital	Campbellford	2	Small/Rural
Carleton Place & District Memorial Hospital	Carleton Place	2	Small/Rural
Children's Hospital of Eastern Ontario	Ottawa	2	Teaching
Cornwall General Hospital	Cornwall	2	Community
Deep River and District Hospital Corp	Deep River	2	Small/Rural
Glengarry Memorial Hospital	Alexandria	2	Small/Rural
Haliburton Highlands Health Services	Minden	2	Small/Rural
Hawksbury and District General Hospital	Hawksbury	2	Small/Rural
Hotel Dieu Hospital - Cornwall	Cornwall	2	Community
Hotel Dieu Hospital - Kingston	Kingston	2	Teaching
Kemptville District Hospital	Kemptville	2	Small/Rural
Kingston General Hospital	Kingston	2	Teaching
Lennox & Addington County General Hospital	Napanee	2	Small/Rural
Montfort Hospital	Ottawa	2	Community
Northumberland Health Corp - Cobourg District General	Cobourg	2	Community
Northumberland Health Corp - Port Hope and District	Port Hope	2	Small/Rural
Ottawa Civic Hospital	Ottawa	2	Teaching
Ottawa General Hospital	Ottawa	2	Teaching

Ottawa Perley	Ottawa	2	Other
Pembroke Civic Hospital	Pembroke	2	Community
Pembroke General Hospital	Pembroke	2	Community
Perth & Smith Falls District Hospital	Smith Falls	2	Community
Peterborough Civic Hospital	Peterborough	2	Community
Prince Edward County Memorial Hospital	Picton	2	Small/Rural
Queensway-Carleton Hospital	Nepean	2	Community
Renfrew Victoria Hospital	Renfrew	2	Small/Rural
Riverside Hospital of Ottawa, The	Ottawa	2	Community
Ross Memorial Hospital	Lindsay	2	Community
Royal Ottawa Health Care Group - Adult Psych	Ottawa	2	Other
Royal Ottawa Health Care Group - Rehab	Ottawa	2	Other
Salvation Army Grace Hospital	Ottawa	2	Community
Sisters of Charity of Ottawa Health Service	Ottawa	2	Other
St. Francis Memorial	Barry's Bay	2	Small/Rural
St. Joseph's Health Centre of Peterborough	Peterborough	2	Community
St. Mary's of the Lake Kingston	Kingston	2	Community
St. Vincent de Paul	Brockville	2	Community
Trenton Memorial Hospital	Trenton	2	Community
Winchester District Memorial Hospital	Winchester	2	Community
York County Hospital	Newmarket	2	Community
Ajax and Pickering Hospital	Ajax	3	Community
Baycrest Centre for Geriatric Care	North York	3	Other
Bloorview MacMillan Centre	Toronto	3	Other
Casey House	Toronto	3	Other
Centenary Health Centre	Scarborough	3	Community
Clarke Institute of Psychiatry	Toronto	3	Other
Credit Valley Hospital	Mississauga	3	Community
Doctors Hospital, The	Toronto	3	Community
Donwood	Toronto	3	Other
Etobicoke General Hospital	Etobicoke	3	Community
Hospital for Sick Children	Toronto	3	Teaching
Humber Memorial Hospital	Toronto York	3	Community
Humber River Regional Hospital - Northwestern Gen.	Weston	3	Community
Lyndhurst Hospital	Toronto	3	Community
Markham Stouffville Hospital	Markham	3	Community
Memorial Hospital - Bomanville	Bomanville	3	Community
Mount Sinai Hospital	Toronto	3	Teaching
North Durham Health Services - Uxbridge Site	Scugog	3	Small/Rural

North Durham Health Services - Port Perry site	Uxbridge	3	Small/Rural
North York Branson Hospital	Willowdale	3	Community
North York General Hospital	North York	3	Community
Orthopaedic and Arthritic Hospital	Toronto	3	Teaching
Oshawa General Hospital	Oshawa	3	Community
Peel Memorial Hospital	Brampton	3	Community
Princess Margaret Hospital	Toronto	3	Teaching
Providence Centre	Scarborough	3	Other
Trillium Hospital - Mississauga General	Mississauga	3	Community
Trillium Hospital - Queensway General	Etobicoke	3	Community
Rehabilitation Institute of Toronto - Hillcrest Site	Toronto	3	Other
Rehabilitation Institute of Toronto - Queen Elizabeth	Toronto	3	Other
Riverdale Hospital, The	Toronto	3	Other
Runnymede Chronic Care Hospital	Toronto	3	Other
Salvation Army Scarborough Grace Hospital, The	Scarborough	3	Community
Scarborough General Hospital	Scarborough	3	Community
St. Bernard's Hospital	Willowdale	3	Other
St. John's Rehabilitation Hospital	Willowdale	3	Other
St. Joseph's Health Centre - Toronto	Toronto	3	Community
St. Michael's Hospital	Toronto	3	Teaching
Sunnybrook Health Science Centre	North York	3	Teaching
Toronto East General & Orthopaedic Hospital	Toronto	3	Community
Toronto Grace	Toronto	3	Other
Toronto Hospital, The	Toronto	3	Teaching
Wellesley Central Hospital, The	Toronto	3	Teaching
West Park Hospital	Toronto	3	Other
Whitby General Hospital	Whitby	3	Small/Rural
Women's College Hospital	Toronto	3	Teaching
York Central Hospital	Richmond Hill	3	Community
York-Finch General Hospital	North York	3	Community
Brantford General Hospital	Brantford	4	Community
Cambridge Memorial Hospital	Cambridge	4	Community
Collingwood General and Marine Hospital	Collingwood	4	Small/Rural
Douglas Memorial Hospital	Fort Erie	4	Small/Rural
Dufferin-Caledon Health Care Corporation	Orangeville	4	Community
Georgetown and District Memorial Hospital	Georgetown	4	Small/Rural
Grand River Hospital Corporation	Kitchener	4	Community
Greater Niagara General Hospital	Niagara Falls	4	Community

Groves Memorial Community Hospital	Fergus	4	Small/Rural
Guelph General Hospital	Guelph	4	Community
Haldimand War Memorial Hospital	Dunnville	4	Small/Rural
Hamilton Health Sciences Corporation - Chedoke McMaster	Hamilton	4	Teaching
Hamilton Health Sciences Corporation - Hamilton Civic Hospital	Hamilton	4	Teaching
Hotel Dieu Hospital - St. Catherines	St. Catherines	4	Community
Huron District Hospital	Midland	4	Community
Joseph Brant Memorial Hospital	Burlington	4	Community
Louise Marshall Hospital	Mount Forest	4	Small/Rural
Milton District Hospital	Milton	4	Small/Rural
Niagara-on-the-Lake General Hospital	Niagara-on-the-Lake	4	Small/Rural
Norfolk General Hospital	Simcoe	4	Community
Oakville-Trafalgar Memorial Hospital	Oakville	4	Community
Orillia Soldiers Memorial Hospital	Orillia	4	Community
Palmerston and District Hospital	Palmerston	4	Small/Rural
Pentanguishene General Hospital	Pentanguishene	4	Small/Rural
Port Colborne General Hospital	Port Colborne	4	Small/Rural
Royal Victoria Hospital	Barrie	4	Community
Shaver Hospital	St. Catherines	4	Other
St. Catherines General Hospital	St. Catherines	4	Community
St. Joseph's Hospital - Brantford	Brantford	4	Community
St. Joseph's Hospital - Hamilton	Hamilton	4	Teaching
St. Joseph's Hospital & Home	Guelph	4	Community
St. Mary's General Hospital - Kitchener	Kitchener	4	Community
St. Peter's Hospital	Hamilton	4	Other
Stevenson Memorial Hospital	Alliston	4	Small/Rural
Welland County General Hospital	Welland	4	Community
West Haldimand General Hospital	Hagersville	4	Small/Rural
West Lincoln Memorial Hospital	Grimsby	4	Small/Rural
Willett Hospital	Paris	4	Small/Rural
Alexandra Hospital	Ingersoll	5	Small/Rural
Alexandra Marine and General Hospital	Goderich	5	Small/Rural
Bruce Peninsula Health Services	Warton	5	Small/Rural
Centre Grey General Hospital	Markdale	5	Small/Rural
Charlotte Eleanor Englehart Hospital	Pertrolia	5	Small/Rural
Chatham Kent Health Alliance - Public	Chatham	5	Community
Chatham Kent Health Alliance - St. Joe's	Chatham	5	Community

Chesley and District Memorial Hospital	Chesley	5	Small/Rural
Clinton Public Hospital	Clinton	5	Small/Rural
County of Bruce General Hospital	Walkerton	5	Small/Rural
Durham Memorial Hospital	Durham	5	Small/Rural
Four Counties General Hospital	Newbury	5	Small/Rural
Grey Bruce Regional Health Centre	Owen Sound	5	Community
Hanover and District Hospital	Hanover	5	Small/Rural
Hotel-Dieu Grace Hospital	Windsor	5	Community
Kincardine and District General Hospital	Kincardine	5	Small/Rural
Leamington District Memorial Hospital	Leamington	5	Community
Listowel Memorial Hospital	Listowel	5	Small/Rural
London Health Sciences Centre - University Hospital	London	5	Teaching
London Health Sciences Centre - Victoria Site	London	5	Teaching
Meaford General Hospital	Meaford	5	Small/Rural
Parkwood Hospital	London	5	Other
Sarnia General Hospital	Sarnia	5	Community
Saugeen Memorial Hospital	Southampton	5	Small/Rural
Seaforth Community Hospital	Seaforth	5	Small/Rural
South Huron Hospital Association	Exeter	5	Small/Rural
St. Joseph's Health Centre of London	London	5	Teaching
St. Joseph's Health Centre of Sarnia	Sarnia	5	Community
St. Mary's	London	5	Other
St. Mary's Memorial Hospital	St. Mary's	5	Small/Rural
St. Thomas Elgin General Hospital	St. Thomas	5	Community
Stratford General Hospital	Stratford	5	Community
Strathroy Middlesex General Hospital	Strathroy	5	Community
Sydenham District Hospital	Wallaceburg	5	Small/Rural
Tillsonburg District Memorial Hospital	Tillsonburg	5	Community
Windsor Regional Hospital	Windsor	5	Community
Wingham & District Hospital	Wingham	5	Small/Rural
Woodstock General Hospital	Woodstock	5	Community

Appendix 5

The Hospital Report '98 Team

Geoff Anderson

Geoff Anderson has a MD from the University of Ottawa as well as a M.Sc. from the University of Toronto and a Ph.D. from the Rand Graduate Institute in California. He has conducted research on hospital care and quality improvement for over a decade. His research has been funded by granting agencies in Canada and the United States and he has published numerous articles in scholarly journals. He has held faculty positions at the University of Ottawa and the University of British Columbia and currently is an associate professor in the Department of Health Administration, Faculty of Medicine, University of Toronto and an adjunct scientist at the Institute for Clinical Evaluative Sciences in Ontario.

G. Ross Baker

G. Ross Baker, Ph.D., is the Acting Chair and an Associate Professor in the Department of Health Administration, Faculty of Medicine, University of Toronto. Ross Baker teaches courses on strategic planning and management in health services organizations, health care quality, and organizational behavior. His current research focuses on the development and use of performance measurement and balanced scorecards in healthcare organizations and on organizational and team factors, which influence successful changes in clinical practice. He is a Fellow of the Institute for Healthcare Improvement (Boston, MA), and a member of the executive committee of the Ontario CQI Network.

Nan E. Brooks

Nan E. Brooks, is The Performance Measurement Project Director in the Department of Health Administration, Faculty of Medicine, University of Toronto. Ms. Brooks holds an LL.B. and an M.H.S.A. from Dalhousie University. Her current research interests are the development and use of performance measurement and balances scorecards in health care organizations. She has worked in government, the hospital sector, the OHA, legal sector and in private consulting on policy issues and the restructuring of health systems. Ms. Brooks is on secondment to the University of Toronto from the Ontario Hospital Association.

Adalsteinn D. Brown

Adalsteinn (Steini) D. Brown is an Instructor in the Department of Family Medicine and an Honourary Lecturer in the Department of Epidemiology and Biostatistics at the University of Western Ontario. Mr. Brown holds an AB honors in Government from Harvard College and is currently completing his Doctor of Philosophy degree in the Faculty of Clinical Medicine at the University of Oxford where he is a Rhodes Scholar. His current research interests include the measurement of access to care and quality of care using administrative databases, small area variations in health care utilization, the health protective behaviors of physicians, and the cost-effectiveness of emerging diagnostic technologies. He has designed and managed multi-site studies of the costs and complications of hospital care in the U.S.

Ian McKillop

Ian McKillop, Ph.D. is an accounting systems professor in the School of Business & Economics at Wilfrid Laurier University. He specializes in the design, implementation and management of advanced financial information systems such as those used in banking and health care settings. At Laurier, Ian leads courses on the audit and control of computerized financial systems, accounting system design, and management controls. Ian's research interests focus on the design and use of financial and managerial accounting systems in hospital settings. Recent projects include developing techniques to determine the consistency and reasonableness of financial data maintained in hospital accounting systems, and a study examining the costing methodologies used by Canadian hospitals. He has served as Vice-Chair of a community hospital Board, and is an Adjunct Scientist with the Institute for Clinical and Evaluative Sciences.

Michael Murray

Michael Murray, Ph.D. is an Assistant Professor in the Dept. of Health Administration, Faculty of Medicine, University of Toronto. His academic background in psychology has aided him in health services research for the past 13 years. He leads courses in Health Services Research, Customer Feedback Techniques. His current research interests include patient evaluations of care and use of such data to improve healthcare organizations, staff satisfaction/morale, and quality improvement methods (especially clinical improvement). He has expertise in survey research, questionnaire design, research design, and statistical analyses, and collaborates in a wide variety of projects.

George H. Pink

George H. Pink, Ph.D. is an Associate Professor in the Department of Health Administration at the University of Toronto and an Adjunct Senior Scientist at the Institute for Clinical Evaluative Sciences. Prior to receiving a Ph.D. in corporate finance, he spent ten years in health services management, planning, and consulting. He teaches courses in health services accounting and finance in the Master of Health Science (Health Administration) program and is involved in several research projects including hospital scorecards and reports, integrated delivery systems, MIS reporting variations and economies of scope and scale in hospital services. George serves on numerous hospital and provincial committees, including the Hospital Funding Committee, the Primary Care Reform Steering Committee, and the Cardiac Care Network.

