Hospital Report



2002

WOMEN'S HEALTH

An Excerpt of Hospital Report 2002: Acute Care

An initiative of the Ontario Women's Health Council in partnership with the Ontario Hospital Association and the Government of Ontario

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About the Hospital Report Research Collaborative

Since 1997, members of the Department of Health Policy, Management, and Evaluation, Faculty of Medicine at the University of Toronto have led a research collaborative, including faculty from Wilfrid Laurier University and the University of Western Ontario, to develop the balanced scorecard framework and the methodological foundation for the *Hospital Report* series. The research resulted in the development of a comprehensive balanced scorecard on the performance of Ontario's acute care hospitals. In both 2001 and 2002, the same core team of investigators supported The Canadian Institute for Health Information (CIHI) to produce reports based on previously developed methods.

Since 2001, the Department of Health Policy, Management and Evaluation has partnered with experts affiliated with several other organizations to enhance both the scope and methods for the *Hospital Report* project. This year's research collaborative includes the Institute for Clinical Evaluative Sciences (ICES), the Department of Rehabilitation Sciences and the Faculty of Nursing at the University of Toronto, the University Health Network Research Institute, the Toronto Rehabilitation Institute, Wilfrid Laurier University, the University of Western Ontario, the Centre for Addiction and Mental Health, the University of North Carolina at Chapel Hill, and CIHI. In the fall of 2001, the research collaborative produced system-level balanced scorecards for emergency care and complex continuing care, feasibility studies in mental health and rehabilitation, and reports focusing on nursing care, women's health, and population health. The goals of the research collaborative are to support quality improvement efforts, enhance the accountability of Ontario's health system and support original research into the measurement and determinants of hospital performance.

ONTARIO WOMEN'S HEALTH COUNCIL

A Foreword from the Ontario Women's Health Council

All Ontarians want to have timely access to quality health care that meets their needs. It has been clear for some time, however, that there are significant differences in how our health care system delivers care to specific population groups, such as women, and that there is a need to identify and address these differences.

That is why the ground-breaking *Hospital Report* initiative, launched in 1998 by the Ontario Hospital Association (OHA) and the University of Toronto, is so important. The reports make data available publicly and show hospitals where to focus their quality improvement initiatives both to improve patient care and to make hospital management more accountable to all of the publics that are represented in the communities they serve.

In 1999, because of the Ontario Women's Health Council (OWHC) commitment to improve women's health and health care, the Council began to promote the inclusion of data on women's health into the *Hospital Report* project. This led, in 2001, to the Council's sponsorship of a preliminary study of women's health to determine whether it would be feasible to collect and report on women's health data.

The OWHC felt it was important to include a perspective on women's health in the reports because women differ biologically from men and therefore have unique health care needs. Gender differences can result in women and men having different roles and responsibilities in our society (women provide the lion's share of daily health care in their homes, for example, and are the custodians of their own health as well as that of their families – partners, children and aging parents). Differences in perception about needs may also result in women and men having different experiences with the health care system. As such, bias in the health care system itself can sometimes mean that women receive care and treatment that may not adequately address their needs.

For these reasons, the data contained in *Women's Health – An Excerpt of Hospital Report 2002: Acute Care* is extremely valuable. By providing a much-needed, deeper analysis of how women use and benefit from the care and treatment they receive in acute care hospitals and how this differs from that received by men, this excerpt provides an important starting point from which health care providers and managers can begin to identify opportunities for improvement and take appropriate action.

Furthermore, since the issues that women face with the health care system – particularly those of equity and inclusiveness – are subjects that hospitals themselves are working to address, the information in this excerpt will help hospitals improve service delivery not only to women but to the entire community.

There is still much more to be done, as this excerpt shows. Hospitals need to explore further how they can reduce bias and focus their efforts on improving quality of care for women. Hospitals that are performing well in specific areas of women's health should share their policies, protocols and practices with

those who need to improve their performance. And we must continue to improve data collection on women's health in order to help hospitals make a timely and effective transition from performance measurement to performance improvement.

This excerpt will go a long way toward helping hospitals understand why it is imperative that they take women's unique health and health care needs into account. The Ontario Women's Health Council is pleased to have co-sponsored this excerpt.

On behalf of the members of the Council and the women of Ontario, I want to recognize the dedication of those who have worked on this excerpt on women's health – the Hospital Report Research Collaborative, the Ontario Hospital Association, the participating hospitals and their staff and patients, the Ontario government, the researchers, and the many other women and men who have devoted their time and expertise to this project.

Women's Health – An Excerpt of Hospital Report 2002: Acute Care will help achieve a goal we all share – optimal health for all women, their children and their families during all of the stages of their lives.

N. Jane Pepino, C.M., Q.C.
Chair, Ontario Women's Health Council

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The biographies of authors who contributed research expertise and invaluable advice during the writing of the excerpt are provided in Appendix C. This excerpt builds on the foundation established by the researchers involved in developing the first volumes in the *Hospital Report Series*, the methods included in *Hospital Report 2001: Preliminary Study – Volume Two, Exploring Women's Health*, and the analyses conducted and highlighted in *Hospital Report 2002: Acute Care*. Several researchers were instrumental in this founding work in women's health including: GM Anderson, PhD (Dept. of Health Policy, Management & Evaluation, University of Toronto); GR Baker, PhD (Dept. of Health Policy, Management & Evaluation, University of Toronto); AD Brown, D Phil (Dept. of Health Policy, Management & Evaluation, University of Toronto); Al Magistretti (Dept. of Health Policy, Management and Evaluation, University of Toronto); MM Murray, PhD (Dept. of Health Policy, Management & Evaluation, University of Toronto); and DE Stewart (University Health Network; Faculty of Medicine, University of Toronto).

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Finally, at the core of this work is the dedication of the women's health experts and consumers who guided and supported the feasibility of the integration of women's health into the balanced scorecard framework. The names of advisory panel members (from the *Hospital Report 2001: Preliminary Study – Volume Two, Exploring Women's Health*) are listed in Appendix A.

Executive Summary

Women's health provides a critical lens through which to understand health system performance because it deals not only with issues of quality and efficiency, but also with issues of equity and inclusiveness, themes that are central to our notion of the Canadian health care system.

In 2001, the Hospital Report Research Collaborative released a preliminary study on measuring hospital performance in women's health. This report, combined with other work by researchers such as the Ontario Women's Health Status Report[1] and Health Canada's Women's Health Surveillance Action Plan,[2] identified a number of important themes and approaches to describing how women use and benefit from the health care system and how these uses and benefits differ from those experienced by men.

This excerpt further explores these themes and tests their feasibility and usefulness. However, it provides only one step in understanding women's health care performance and only one perspective on hospital performance in women's health. The results presented in this excerpt describe variations in performance at regional and provincial levels, as well as differences across hospitals. In order to take advantage of the information included in these reports, it will be important for hospitals to integrate this information into quality improvement practices. This is consistent with the call by the Canadian Institutes for Health Research[3] to mainstream women's health as an important concern for all parties. It will also be important to begin to connect different measures of hospital management, clinical practices, and patient outcomes so that both hospitals and government can take advantage of the success stories embedded in this work and promulgate successful practices across the province.

Over the next several years, the women's health perspective will become more embedded in the *Hospital Report* project. Subsequent reports will provide measures of hospital-level performance on important aspects of women's health care. To this end, it will be important to integrate additional indicators that reflect important aspects of resource availability, access and use, and outcomes in women's health throughout the continuum of care. Providing a more complete picture of women's health care experiences over time will require collecting more and better data and developing links across indicators and across sectors.

Finally, it will be critical to link evolving measures of performance in women's health care to the policies designed to improve this care. Without more clear links and a continuing strong voice on behalf of the status of women, it is unlikely that many of the reducible differences between women and men – that favour one sex over another – will be addressed.

This report includes information on sex-specific measures of performance, that is, measures that describe the quality of care provided only to women such as hysterectomies and caesarean section deliveries. It also includes sex-sensitive measures of performance, that is, measures that compare the use and outcomes of care between women and men. Finally, it also includes some information on aspects of hospital management that impact significantly on women because of their strong role as caregivers.
The report's key findings include:

Presentation of trends over time and variations across hospitals, regions, and hospital peer groups in common sex-specific and sex-sensitive indicators of performance.

This excerpt suggests that there has been relatively little change over the previous three years on most of these indicators, although variations across hospitals, regions and hospital peer groups persist, and points to opportunities for benchmarking and learning from best practices within our own health care system.

Identification of potentially reducible differences between women and men in common processes and outcomes such as use of specific services, patient satisfaction, readmissions to hospital, and complications of care.

Although many differences in the use and outcomes of care between the sexes result from differences in biology, comparisons across hospitals of how they treat women and men suggest that some hospitals may provide more equitable care. Once again, these variations point to valuable quality improvement opportunities and the chance to integrate women's health issues such as equity directly into traditional quality improvement structures within hospitals.

Analysis of the development of protocols for clinical decision-making and of the relationship between clinical utilization and outcome indicators.

A number of hospitals in Ontario have developed and are using standardized protocols to help guide care for sex-specific and sex-sensitive conditions. There is variation in the extent to which hospitals have implemented and are using these tools. Future analyses should help to highlight more specifically how these innovations are developed, disseminated, and implemented, and how effective they are at improving practice and outcomes in women's health. The data in this study also point to the importance of maintaining a focus on the differences between women and men when developing innovations like clinical decision support tools and of understanding and ensuring appropriate access to valuable resources for care for both sexes.

In addition, a preliminary study of the relationships between clinical indicators suggests that patterns of equitable access and utilization are not strongly linked to patterns of equitable outcomes. Further hospital-specific and patient-level analyses, conducted over a period of time (i.e. longitudinally), are needed to better understand the nature of these relationships.

As with other reports in the *Hospital Report* series, this document reflects an evolving process. We welcome all comments and suggestions.

Introduction

What You Will Find in This Chapter

- An introduction to the women's health perspective in performance measurement, why it is important, and how it has evolved in Ontario
- An overview of the objectives, organization and analyses highlighted in this report

Introduction

Women's Health: A Snapshot

People living in Ontario want to know that they will receive appropriate, timely and quality health care when they need it. Over six million of these individuals are women.[4] Research continues to show that there are key differences in the ways in which women and men interact with the health care system, and the ways in which the system responds to their specific needs.[5,6] For example, women are generally less satisfied with the quality of care they receive,[7,8] have relatively less access to technology, and experience greater complications after being hospitalized for a heart attack.[9,10] However, little empirical evidence is currently available on why such differences exist and what strategies may be most effective in narrowing these gaps. Available studies show that these differences may be explained by a combination of biological and behavioural factors, and bias in the system. Some of these factors are related to sex, which refers to biological maleness or femaleness, and some are related to gender, which refers to the behavioural, cultural, or psychological traits typically associated with one sex.[3] Bias is defined as the implicit or explicit preference of one sex or gender over another, and may be related to such factors as historical patterns and absence of evidence on the differences between women and men. Inequities in health and health care are typically concentrated in health risks (and opportunities to enjoy health), health needs (and access to resources), and responsibility in the health sector.[11]

Women provide the majority of both paid and unpaid health care; these roles have implications for both the health and quality of life of women, and the capacity and sustainability of the health care system.[3,12] Developing a deeper understanding of these emerging issues in women's health – where and why they exist and how they have changed over time – is a critical first step to effectively addressing them. As such, women's health has become an increasingly important focus in health services research and in the evaluation of health system performance.

Performance Measurement: Integrating the Women's Health Perspective

Measuring the performance of the health care system supports three objectives:

- It helps hospitals understand where quality improvement efforts may be most valuable.
- It helps to demonstrate the accountability of the system (i.e. providers, managers) for providing quality care, that is, the right care by the right provider at the right time and place.
- It provides direction for future research in health care and health services, particularly for work on bridging gaps and refining methods in performance measurement.

Several initiatives are currently underway, in Canada and elsewhere, to collect information on performance and variations in access and outcomes in women's health care. For example, US groups such as the Agency for Health

care Research and Quality (AHRQ),[13] and the National Women's Law Centre, have published performance measurement frameworks or report cards on women's health care. In Canada, a national women's health surveillance system has been launched, and provincial and institutional-level programs have begun to integrate women's health indicators into their evaluation frameworks.[3,15] These examples support the feasibility of incorporating typical measures of quality of care and of accommodating new dimensions of performance such as equity in health system evaluation.

How effective is Ontario's health care system in meeting the health care needs of women? Ontario's *Hospital Report* series – a scorecard for the province's hospital system – is helping to shed light on the progress of the province's hospitals in providing responsive and equitable care to women. This framework, which was originally developed in the 1990s, is organized around a set of indicators placed within the balanced scorecard framework. Pioneered by Kaplan and Norton,[16] this framework was adapted for Canadian hospitals and then developed into a series of hospital reports by researchers at the University of Toronto.[17]

Ontario's balanced scorecard uses four different but interconnected perspectives or quadrants to describe hospital performance:

Patient Satisfaction	Clinical Utilization and Outcomes
What patients say about their stay in hospital, including opinions about: • Overall quality of care • Outcomes of care • Care received from doctors, nurses, and other health professionals • Housekeeping and food services in the hospital	How patients fare during and after their hospital stay, for example: • Access to specific medical technologies • How long patients stay in hospital • How often patients have to return unexpectedly to hospital after they leave
Financial Performance and Condition	**System Integration and Change**
What resources Ontario hospitals have and how they are used, including: • Whether hospitals are running surpluses or deficits • How much hospitals spend on computer systems, x-ray machines, and other equipment • How much staff time is spent on patient care	Whether hospitals are keeping pace with change by partnering with community agencies and updating their practices, for example: • How hospitals work with other health care organizations • Whether hospitals are using information technology to support patient care • What patients think about the continuity and coordination of their care while they are in hospital and after they leave

The utility of a framework like the balanced scorecard depends in large part on its ability to capture indicators that are important, relevant, and scientifically sound. The evolution of the women's health perspective in performance measurement in Ontario has gained considerable momentum in the past five years.

- **In 1999:** Few women's health-specific indicators were included in *Acute Care Report 1999*.

- **In 2001:** A preliminary study that included several components such as expert panels, focus groups and a literature review supported and guided the integration of women's health indicators and the measurement of equity in the delivery of hospital care in the *Hospital Report* series. In addition, a separate chapter for women's health was included in *Hospital Report 2001: Acute Care*.

- **In 2002:** Indicators were integrated in quadrants of Acute Care and Emergency Department Hospital Reports.

Building on the progress of the women's health perspective to date, this report is an excerpt expanded from *Hospital Report 2002: Acute Care*, in which quantitative results were presented on a series of women's health-related indicators. These indicators were among those identified by experts and community members, through focus groups, consensus panels and a review of the literature, as:

- Reflecting important aspects of hospital system performance, such as health outcomes, satisfaction, or access;
- Ensuring scientifically sound measurement according to the best standard of evidence available;
- Being relevant and useful to quality improvement and education efforts within hospitals;
- Being feasible, that is, recorded reliably in available sources so that data collection does not impose a burden on providers.

These measures spanned the various quadrants in *Hospital Report 2002: Acute Care* and included indicators that were unique to women (i.e. sex-specific), those that enabled comparisons between women and men (i.e. sex-sensitive), and those that recognized the important role of women as providers of care. Other than two hysterectomy indicators (i.e. length of stay, readmissions) for which hospitals were identified and allocated scores (i.e. number of stars), results for women's health were provided at a province-wide level.

The participation of experts in selecting women's health indicators, and of hospitals in communicating their performance in women's health, represents a commitment to accountability and quality improvement in this area that is uncommon in other jurisdictions. Ontario will remain at the leading edge of measurement and improvement of women's health care by building on this progress to explore data in greater depth, refine indicators and ways that indicators are calculated, and profile hospital-specific data and practices.

Objectives: A Progress Report on Women's Health in Ontario

The objectives of this progress report are to build on the women's health indicators in *Hospital Report 2002: Acute Care* to further explore:

a. How Ontario's hospitals are performing on women-specific practices and outcomes of care

b. How care for women and men in Ontario hospitals compares on measures of equitable access, appropriateness and outcomes of care, and satisfaction and perceptions of quality of care

The analyses presented and discussed in this report are intended to:

a. Identify priorities to help inform local measurement initiatives and improvements in the care provided to women, and policy and research agendas in women's health

b. Highlight current successes, gaps and future directions in the measurement of performance of women's health care in Ontario

Overview: Organization of This Excerpt

This excerpt builds on women's health-related indicators included in *Hospital Report 2002: Acute Care*, as well as key findings from recent studies in the areas of women's health, performance measurement, and quality improvement, to provide an overall picture of the progress of Ontario's hospital system on indicators of performance. Indicators presented in this report include:

SEX-SPECIFIC INDICATORS	SEX-SENSITIVE INDICATORS	OTHER INDICATORS
Caesarean Section (c-section): primary c-section rate, use of c-section protocols **Hysterectomy:** complications, length of stay, readmissions, vaginal/abdominal ratios, use of hysterectomy protocols	**Acute Myocardial Infarction (AMI):** sex-based rates and ratios reflecting access to technology, complications, readmissions, and use of AMI protocols **Cholecystectomy:** sex-based rates and ratios reflecting access to day surgery, complications, and use of cholecystectomy protocols **Pneumonia:** sex-based rates and ratios of complications **Patient satisfaction:** sex-based scores and ratios of scores on ten indicators of satisfaction	**Quality of Worklife Practices for Caregivers:** availability of eldercare and childcare programs in hospitals

Various types of analyses are presented in this report to:

- **Provide a snapshot of trends over time**
  - Examining trends of sex-specific and sex-sensitive rates and ratios over three reported years (1997/1998, 1999/2000, 2000/2001)
- **Compare performance across hospitals**
  - Studying variations in sex-specific and sex-sensitive rates and ratios, and the development of standardized protocols across hospitals province-wide, and in different regions and hospital peer groups
- **Explore relationships between measures**
  - Investigating relationships between sex-specific and sex-sensitive rates and ratios of utilization and outcomes over three reported years (1997/1998, 1999/2000, 2000/2001)
- **Understand the potential causes of differences between women and men**
  - Introducing and applying a methodology to provide a starting point from which to understand the sources of differences in care for women and men (i.e. biology, behaviour, bias), and the potential to reduce bias and achieve greater equity in the system
- **Highlight best practices in women's health and performance measurement in women's health**
  - Synthesizing information about women's health practices and outcomes in other jurisdictions, and other indicators and measurement strategies to help guide next steps for performance measurement in women's health

These analyses are intended to allow researchers to test and refine new indicators and to start to suggest actionable improvements before hospital-specific results are calculated and profiled in future women's health excerpts within the *Hospital Report* series. As the women's health perspective evolves, hospital-specific indicators will be calculated and reported to encourage the sharing of useful information and collaborative benchmarking on women's health performance and practice. This strategy will help to support a quality improvement focus in women's health.

For those wishing additional copies of this excerpt, it is available free of charge for download at www.hospitalreport.ca or www.womenshealthcouncil.com and through links at www.oha.com. and www.health.gov.on.ca. Additional paper copies of the report may be obtained from the Ontario Women's Health Council (see back of the report for contact information). This report is produced for all stakeholders in women's health: patients and families, hospitals and providers, community, government, and researchers. As such, the researchers who worked on this excerpt welcome comments from all stakeholders and may be reached through the *Hospital Report* website.

The five geographic regions that are defined by the Ontario Hospital Association and used in this excerpt are:

Region 1 (North) includes Sudbury, Thunder Bay, and communities from Kenora and Rainy River through to Parry Sound

Region 2 (East) includes Ottawa, Peterborough, and communities from Stormont through to Haliburton

Region 3 (Greater Toronto Area) includes Toronto, Mississauga, and communities in Durham, Peel and York

Region 4 (South Central) includes Hamilton, Kitchener-Waterloo, and communities from Simcoe through to Niagara

Region 5 (South Western) includes London, Windsor, and communities from Grey and Bruce through to Kent counties

The three hospital types featured in this excerpt are:

Teaching hospitals that are acute and paediatric hospitals that belong to the Ontario Council of Teaching Hospitals

Small hospitals that include acute care hospitals that generally admit fewer than 3500 weighted cases per year, have a referral population of fewer than 20,000 people and are the only hospital in their community

Community hospitals that include any acute care hospital that does not fit the definition of a small or teaching hospital

Note: For multi-site organizations, peer group designation is based on the size of the largest single hospital site in the organization

Methodology

What You Will Find in This Chapter

- A brief description of the methods used to develop this report
- A list of key considerations and caveats to help in the interpretation and application of the analyses contained in this report

Methodology

A description of the technical methods used to produce the results presented in this report is available at www.hospitalreport.ca. Some of the most important features of these methods are summarized in this section.

Data Sources and Sample Selection

- The data for the indicators featured in this report come from three different sources, that describe performance in overlapping periods of time:

Indicator	Data Source	Time Period
Clinical Indicators Utilization/Access Complications Readmissions Length of Stay	Discharge abstract database (DAD) for all acute care hospitals that participated in *Hospital Report 2002: Acute Care*	2000/2001 1999/2000 1997/1998 (fiscal years)
Improving Care and Quality of Worklife Indicators Use of Standardized Protocols Availability of Childcare and Eldercare	Survey of hospital executives from hospitals that participated in *Hospital Report 2002: Acute Care*	February 2002 (Survey completed at this time)
Patient Satisfaction Indicators Response Rates Satisfaction Scores and Ratings	Satisfaction survey of patients, rating quality of care on various dimensions for all hospitals that participated in *Hospital Report 2002: Acute Care* and who had > 100 patients completing the survey	August-October 2001 (Respondents discharged from Ontario hospitals during this period of time)

- The population of patients and number of hospitals described by each measure will differ. Some apply only to women giving birth; others are based on a broader population of women. Some apply to both women and men. In addition, some hospitals did not participate in the patient satisfaction and system integration and change surveys. Overall, the hospital-specific data included in *Hospital Report 2002: Acute Care*, and used in this report, represent 98% of acute care hospitalizations in Ontario.
- To help improve comparability of clinical findings across hospitals, patients with very different clinical profiles, such as those diagnosed with cancer, HIV/AIDS or violent trauma, were excluded from the indicator results and ratios.
- Many indicators are based on an "episode of care". Episodes group together contiguous admissions to different hospitals for the same patient.
- Indicators are defined by an explicit set of criteria. Indicator definitions are highlighted throughout this report. A more detailed summary of how indicators are defined and calculated is available at www.hospitalreport.ca. A glossary of technical and clinical terms is also available at the back of this excerpt.

Data Quality

- Hospital-specific complication rates were not included in *Hospital Report 2002: Acute Care* due to variations in hospital coding practices that reduced hospital-level comparability. Complications are reported at aggregate levels (i.e. province-wide, region and peer group) because hospital-specific variations in coding are likely to be diluted, and thus have less impact, when reported at higher levels. Hospital-specific female-to-male ratios for complications are used in the analyses in this report because it is assumed that coding practices within a hospital do not differ by sex. Note that the decision to exclude hospital-level complications in *Hospital Report 2002: Acute Care* was due to inconsistency in coding, not errors in the methodologies used to calculate the indicators.

Data Interpretation

- A number of factors affect the rates of use and outcomes seen across hospitals, regions and peer groups, including the ages and health status of women and men. These factors are outside a hospital's control. To make comparisons as fair as possible, the rates and ratios for indicators across hospitals are risk-adjusted. Risk-adjustment is a method used to adjust scores by removing pre-existing influences such as age and co-morbidities (co-existing conditions) to improve comparability. This was done for indicators of clinical utilization and outcomes, and for patient satisfaction scores included in *Hospital Report 2002: Acute Care*. Risk-adjustment only reduces the effect of differences; it does not eliminate all differences. Note that the clinical utilization and outcome ratios calculated for the province and for regions and hospital peer groups are based on unadjusted raw or observed numerator and denominator values. The large numbers of patients in each region and peer group reduce the importance of adjustments beyond those for age. In addition, by dealing with larger populations (i.e. province, region, peer group) risk-adjustment becomes less necessary and less influential than when single hospitals are compared.
- There may be interactions between factors that risk-adjustment does not account for completely and this may confound results. For instance, the criteria for coding a complication include a hospital stay longer than the provincial median and an event that has an impact on length of stay. Differences in complication rates between women and men may be due in part to the independent effect of differences in length of stay. For instance, more women than men may be coded as having complications because their hospital stay may be longer for reasons that are potentially independent of an actual complication. In future analyses, it will be important to measure differences in length of stay by sex and to more closely assess the link between complications, as they are currently defined, and length of stay.
- The sample size for particular analyses varies because of missing responses in surveys or non-reportable data and because of the varying participation of hospitals in the surveys, and of changes to hospitals (i.e. mergers and closures) over the three-year reporting period (1997/1998, 1999/2000, 2000/2001). Coverage for most indicators is good but not complete. This may lead to underestimates or overestimates in indicator values.

- For several of the indicators included in this excerpt, trends of rates and ratios for the province are presented over a three-year period: 1997/1998, 1999/2000, 2000/2001. These rates and ratios were age-standardized and calculated to accommodate changes in population composition (i.e. age and/or sex) over time.
- Indicator values are only as accurate as the underlying data. The indicators included in this report should be thought of as screening tests, not definitive assessments of quality. The differences across hospitals, regions and peer groups should be viewed with caution. Differences in the health status of patients, quality of data, and other factors may suggest differences when none exist and vice versa. Some hospitals face unique challenges because of where they are situated geographically or because of the types and severity of patients and conditions they see. These findings point to key issues for further research in performance measurement and quality improvement.

Key Findings

What You Will Find in This Chapter

- Highlights of the performance of Ontario hospitals on c-sections and hysterectomies by examining utilization, efficiency, quality of care outcomes, and clinical guideline development
- Next steps to help advance knowledge of how Ontario hospitals are performing in the areas of pregnancy and childbirth and gynaecological care

Key Findings: I. How Hospitals are Doing on Sex-Specific Indicators of Performance

One important part of developing the women's health perspective is to focus on indicators that reflect care processes, practices and outcomes particularly relevant to women. These include indicators related to pregnancy and childbirth and to gynaecologic conditions. As such, this section highlights a traditional focus in women's health.

Performing Caesarean Sections

Introduction

On average, over 400 babies are born in Ontario hospitals every day.[4] Indicators that measure the quality of care provided during pregnancy and childbirth are integral to the evaluation of the health care system in Ontario and elsewhere. The majority of these indicators are related to methods of childbirth or delivery and clinical practices and outcomes associated with these methods.

C-Section Snapshot

During the most recent year for which data were available (2000/2001), the primary c-section rate for Ontario was 16% (16 first-time c-sections per 100 deliveries). This is slightly higher than the provincial rate in 1999/2000 (14.8%). The rate of primary c-sections represents the proportion of first-time c-section deliveries. The overall c-section rate, including both first-time and repeat c-sections, was also on the rise. In 1999/2000 the overall rate was 20.2%, and in 2000/2001 this rate was 21.7%.

Note that after more than two decades of declining rates, the c-section rates in Canada have increased slightly over the past five years.

The argument for and against c-section has been revitalized among experts in clinical obstetrics. Generally, lower c-section rates are considered better because c-sections are associated with a higher risk of maternal morbidity and mortality, and higher health care costs. Experts note that while c-sections are necessary in some cases to reduce the risk of perinatal death or disability, most women can safely deliver vaginally.[18] The World Health Organization (WHO) had proposed a global c-section target rate of 15%. However, at this time, there is no agreement on the "right" or "best" c-section rate in the Canadian context. In fact, experts are increasingly beginning to consider some of the risks associated with lowering c-section rates and to call into question the rationale for lowering c-section rates. Several experts contend that the typical advantages of vaginal delivery over c-section apply only to safe vaginal delivery, and that elective c-sections are associated with more favourable clinical outcomes than emergency c-sections.[19,20] Central to the issue of optimizing maternal and newborn health is the fundamental importance of providing women with the opportunity to discuss the risks and benefits of vaginal and c-section deliveries, and to be involved in informed decision-making.[19] According to experts, patient choice is increasingly being recognized as the decisive factor in c-section utilization.[19,20]

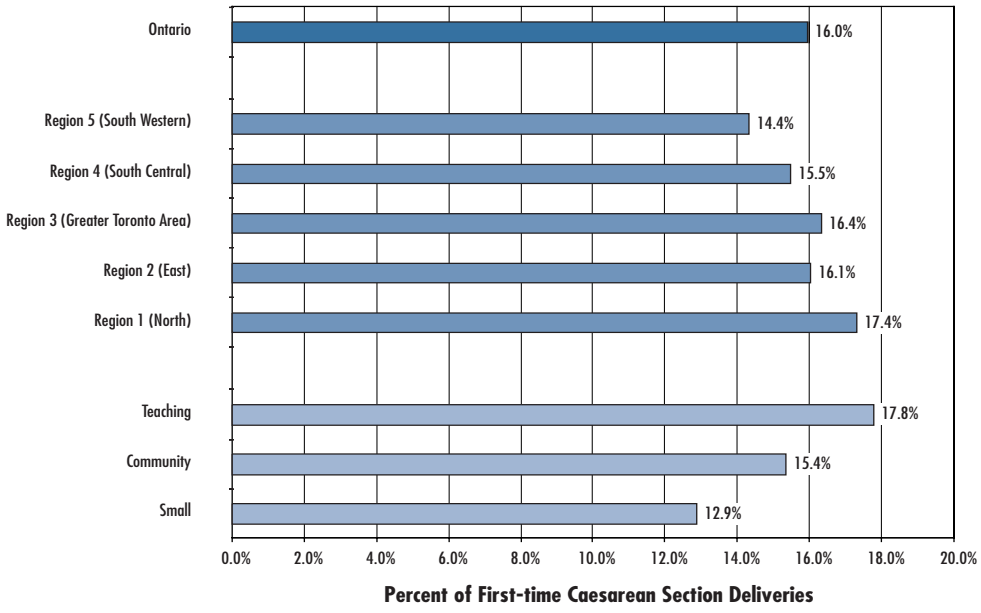
Further patient-level research and sharing of information and practices at the hospital and provider levels are required to develop consensus on indications for c-section to set appropriate and achievable c-section targets, and to measure and understand the role of the patient in clinical decision-making.

Performance Across Regions and Peer Groups

As shown in Figure 1.0, primary c-section rates vary across regions and hospital peer groups in Ontario. Given the absence of an accepted standard, comparisons across regions and peer groups serve as a starting point for assessing appropriateness and identifying areas for further inquiry.

The findings shown in Figure 1.0 are consistent with previous research in Ontario and studies conducted in other provinces that found that the odds of having a c-section birth in a teaching hospital are greater than in community and small hospitals.[21,22] Reasons for this finding may include such factors as patient populations with overall higher obstetrical risk factors in the teaching hospital setting, and differences in maternity care practices or availability of resources across settings. The role of these factors in increasing or decreasing c-section rates has also been the subject of debate among experts.[22,23] Further inquiry into the reasons and implications underlying these variations will also help to identify and promulgate appropriate c-section practices.

FIGURE 1.0: COMPARING PRIMARY C-SECTION RATES (2000/2001)



Region 1 (North) had the highest primary c-section rate (17.4%) while Region 5 (South Western) had the lowest rate (14.4%). In comparison to regional differences, there was greater variation in rates between the different types of hospitals, with teaching hospitals having a higher primary c-section rate (17.8%) than both community hospitals (15.4%) and small hospitals (12.9%).

Improving Care and Outcomes for C-Section

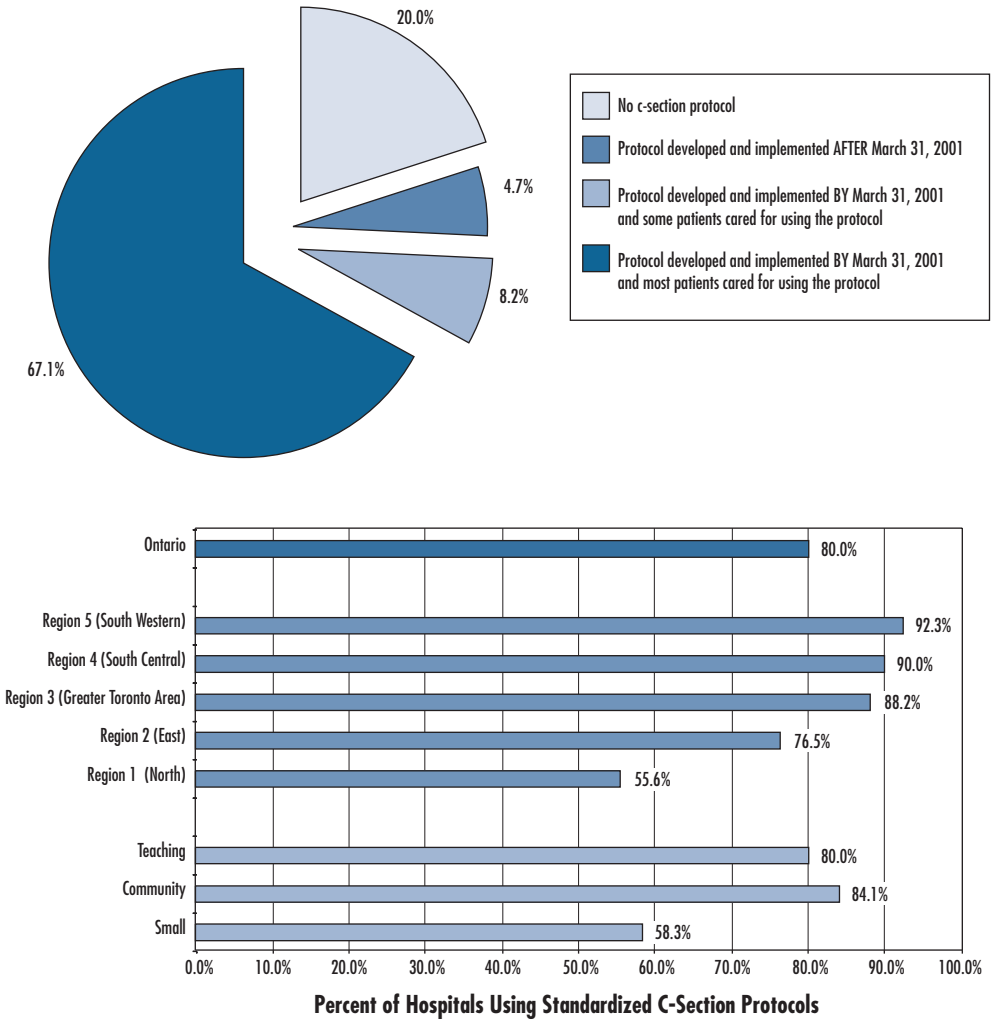
The decision to perform a c-section should be weighed carefully and collaboratively, and be supported by the best available and most comprehensive evidence related to appropriateness and outcomes. Standardized protocols, such as clinical practice guidelines and care pathways, have been developed to help guide care before, during and after birth. The implementation and use of these clinical decision-making tools is the subject of a growing body of reserach.

A survey of obstetricians in Ontario was administered before and after the release of the consensus statement and guidelines recommending decreases in the use of caesarean sections. The results of the survey indicated that although most physicians were aware of guidelines and most reported changing practice because of them, knowledge of the content of recommendations was poor and actual practices changed minimally.[24]

As shown in Figure 1.1, more than two thirds (67.1%) of Ontario hospitals are actively using a protocol for c-section, and this varies by region and type of hospital. Is the information in the guidelines actually converging physician practices to recommended care? Is there a link between use of clinical guidelines for c-section and patient outcomes in Ontario hospitals? While important questions, we know too little at this time, and as such, it is too early to determine and to draw conclusions about these types of relationships.

Clinical decision support tools such as practice guidelines have their greatest impact when they are rigorously developed, suitable and specific to the context in which they are applied, and effectively disseminated and implemented.[25] It has been suggested that the progression from guideline dissemination, implementation and change in practice or behaviour, and impact on measurable patient outcomes is complex and determined by a number of factors.[26] According to the theory of the diffusion of innovations, the process of adoption of guidelines involves a series of stages: becoming informed of guidelines and aware of gaps in one's performance, accepting the need to change, implementing the change in practice, recognizing the consequences of this change, and maintaining it.[27] The path and timing of the diffusion process for guidelines depends on how providers move through these stages and the extent to which incentives for change are provided or disincentives are removed. Strategies such as the use of opinion leaders in education and audit and feedback (to providers) on guideline compliance have been shown to increase the adoption of guidelines into clinical practice, and, in some cases, improve quality of care.[28] Thus, analyses of data collected over time (i.e. longitudinal analyses) that consider these implementation factors will help to shed

FIGURE 1.1: USE OF STANDARDIZED C-SECTION PROTOCOLS



In Ontario, approximately 67% of hospitals reported that they had implemented and used a standardized c-section protocol with most of their eligible patients. By March 2001, 12.9% had just recently developed the protocol and/or were using it on some patients, and the remaining 20.0% did not have a protocol for c-section. Teaching and community hospitals (80.0-84.1%) were more likely to report having guidelines and pathways for c-sections than small hospitals (58.3%).

light on whether the adoption of these tools and initiatives in Ontario hospitals actually leads to improved utilization and outcomes in pregnancy and childbirth. Data should be collected to highlight key issues related to the timing of and extent to which the guidelines and supporting strategies (e.g. education, opinion leaders, incentives) are being implemented, adhered to and are influencing provider practice and patient outcomes.

Next Steps

Although important, the primary c-section rates and use of standardized protocol indicators highlighted in this section tell only part of the story about quality of care in pregnancy and childbirth in Ontario hospitals. Given the shift in perception about the risks and benefits of c-sections (and vaginal birth after c-sections), and the subsequent lack of a clear standard or benchmark, c-section rates are themselves not a measure of quality. Thus, there is a need to track measures of quality that are related to childbirth, including adverse outcomes of both caesareans and trials of labour (i.e. uterine rupture).

In addition to the use of tools such as guidelines, a number of essential best practices and critical success factors have been suggested as key to quality of care during childbirth and pregnancy, including timely access to useful clinical information such as patient clinical history, patient involvement in decision-making, and appropriate use of diagnostic technologies such as fetal heart monitors and ultrasound.[18] Collecting and reporting data on additional measures of access, appropriateness, innovation, and outcomes will help to provide a more complete view of hospital performance in this area and steer valuable improvements in services. Other data sources that may effectively supplement the information included in administrative databases are becoming increasingly available (i.e. antenatal records). Linking and comparing these data across regions and hospitals will help organizations monitor and evaluate their patterns of obstetrical care.

Some examples of key quality indicators identified as relevant by an advisory panel of experts, focus groups with consumers and a resource survey of hospitals include:

- **% of women who deliver without antenatal records completed:**

  Collecting and reporting this indicator may have the potential to enhance comprehensive and appropriate care during delivery by providing screening information on likely problems during pregnancy.

- **Maternal complication and readmission rates, and length of stay:**

  Collecting and reporting these indicators may have the potential to identify quality of care issues and avoid readmission, as well as improve efficiency through adherence to best practices.

- **Availability of resources (i.e. NICU, obstetrician, anaesthesiologist education and decision-making aids for patients):**

  Collecting and reporting this indicator may have the potential to identify linkages between access to and utilization of resources and patient outcomes, and lead to the wider adoption and use of valuable resources by providers.

Highlights

- The primary c-section rate (2000/2001) has increased slightly from the previous year.
- There is no agreement in Canada on the "best" or "right" c-section rate as there has been a shift in perception about the benefits and risks of c-sections and vaginal deliveries.
- Patient choice is now seen as the decisive factor in c-section use.

What is a Readmission?

This is an indicator of clinical quality. An episode of care is counted as having a readmission if the subsequent hospitalization (in either the same or another Ontario acute care hospital) meets all of the following criteria:

1. It is for a diagnosis or procedure associated with the reason for the initial hospital stay.
2. It does not follow a discharge where the patient signed him/herself out (or died).
3. It occurs within a specified time period after the initial discharge.
4. It is an emergent or urgent (not elective) admission.

What is a Complication?

This is an indicator of clinical quality. An episode of care is counted as having a complication if all of the following criteria apply:

1. The discharge abstract for the episode includes a diagnosis that has been defined by an advisory panel as relevant to the quality of care.
2. The hospital coded that diagnosis as occurring after admission to hospital and as having an impact on length of stay or treatment (a type 2 diagnosis).
3. The length of stay for that episode was longer than the provincial median length of stay or the patient died in hospital.

What is Length of Stay?

This is an indicator of clinical efficiency calculated as the number of days from admission to when the patient is discharged, dies, or could be appropriately treated in an alternate level of care (e.g. rehabilitation or long-term care). Length of stay can span more than one acute care hospital if the patient was transferred from one facility to another.

Performing Hysterectomies

Introduction

Hysterectomy, or surgical removal of the uterus, is one of the most common surgical procedures performed on women in Ontario. Canada's overall rate of hysterectomy remains one of the highest in the world. However, since the early 1980s, the overall trend in Ontario has been on decreasing hysterectomies. Measuring and providing useful information on the utilization, appropriateness, outcomes and efficiency of hysterectomy in Ontario hospitals has been a priority for the province's *Hospital Report* series since its inception.

Over the three reported years, there has been little change in the province-wide rates of complications and readmission, and in the average length of stay (in days) for hysterectomies. Complication and readmission rates for hysterectomy have increased slightly; average length of stay (days) for hysterectomy has decreased slightly.

FIGURE 1.2: HYSTERECTOMY COMPLICATION AND READMISSION RATES

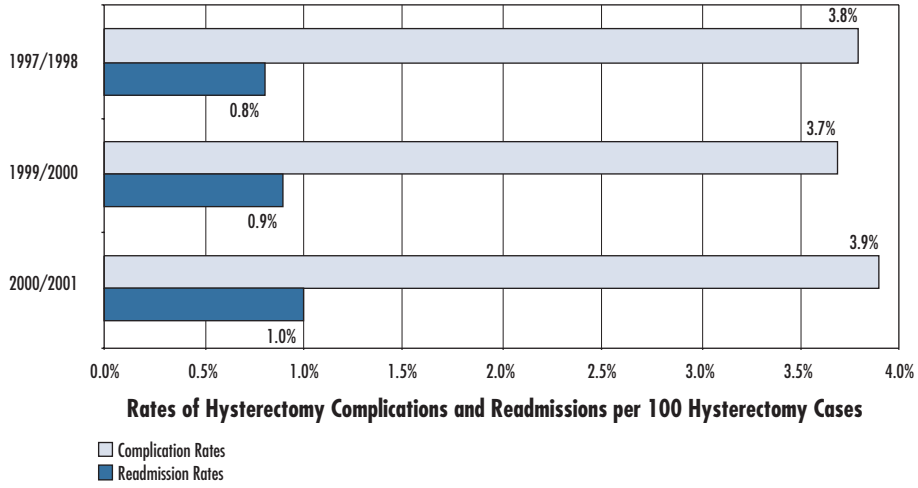
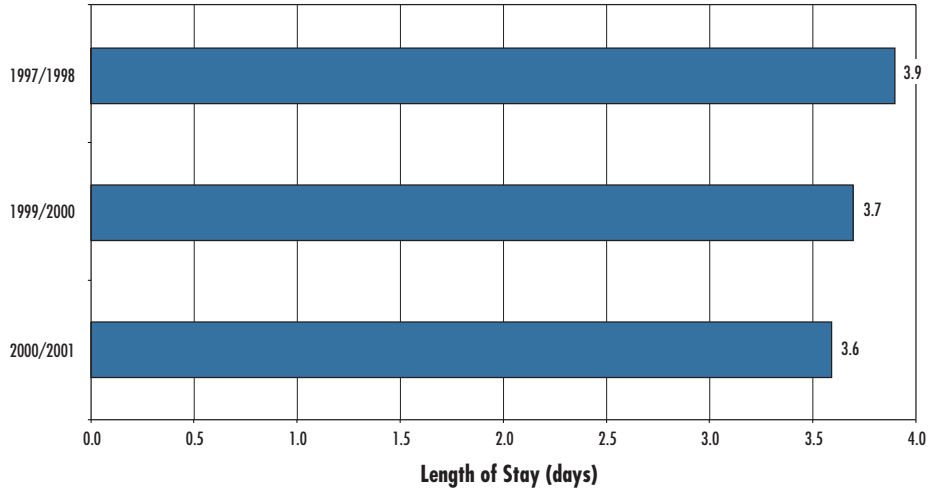


FIGURE 1.3: HYSTERECTOMY LENGTH OF STAY



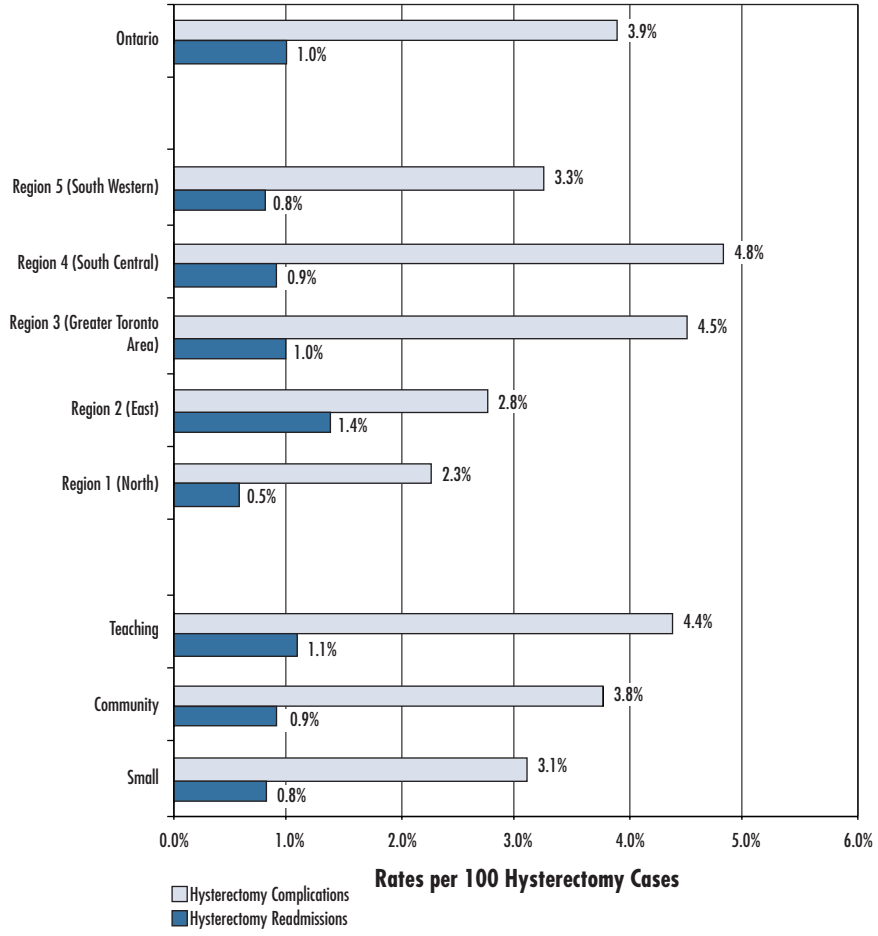
In most cases, hysterectomies are elective or urgent procedures performed to relieve symptoms and to enhance quality of life. Typical indications underlying most hysterectomy cases include abnormal uterine bleeding, pelvic pain, endometriosis and other benign disorders.[30]

Hysterectomy Snapshot

Fewer women in Ontario across both the 15-64 year and 65-84 year age groups were hospitalized for hysterectomy in 2000/2001 than in the previous two years. Beyond measures of utilization, indicators of complications, readmissions and length of stay following a hysterectomy provide useful information about clinical quality and efficiency.

Hysterectomy can be performed through the abdomen or the vagina. According to research, vaginal hysterectomies are usually preferred to abdominal hysterectomies because they are associated with a lower risk of complications following surgery, and a faster recovery time.[20,31] The ratio of vaginal-to-abdominal hysterectomies is an indicator that reflects the frequency of the two types of surgery; higher ratios are generally better. A ratio of one (1.00) means that equal numbers of women receive each type of surgery; a ratio of less than one (1.00) means that fewer women have vaginal hysterectomies. Across Ontario, vaginal hysterectomies remained roughly half as common as abdominal hysterectomies (0.46); this ratio is slightly higher than the value reported for 1999/2000 (0.44). Note that hysterectomy cases included in these calculations exclude women with malignancies (i.e. cancers or neoplasms of uncertain behaviour).

FIGURE 1.4: COMPARING PERFORMANCE ON HYSTERECTOMY COMPLICATIONS AND READMISSIONS



The rates of hysterectomy complications were highest in Region 3 (Greater Toronto Area) and Region 4 (South Central) and lowest in Region 1 (North). The rates of hysterectomy readmissions were highest in Region 2 (East) and lowest in Region 1 (North). Compared to small and community hospitals, teaching hospitals had the highest rates of hysterectomy complications and readmissions.

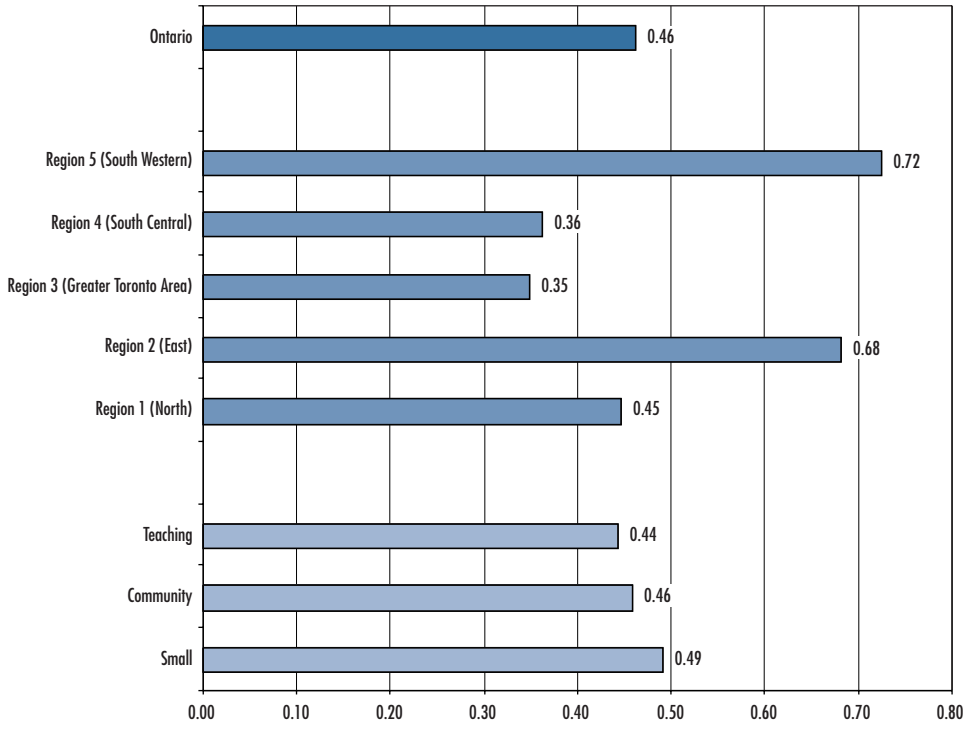
Performance Across Regions and Peer Groups

The average length of stay for women undergoing hysterectomy in 2000/2001 did not vary substantially by region and by peer group; differences were less than half a day. There was comparatively greater variation in complications and readmissions following a hysterectomy, and in the extent to which vaginal and abdominal hysterectomies were performed. These variations are shown in Figures 1.4 and 1.5.

These findings reinforce the importance of considering improvements in quality (i.e. complications, readmissions, appropriateness of surgical method) versus efficiency (i.e. length of stay). In fact, a growing body of research suggests that taking steps to improve quality in the short-term will, in turn, improve efficiency and reduce costs.[32,33] This is congruent with the overall finding that emerged from *Hospital Report 2002: Acute Care* suggesting that as decreases in length of stay have stabilized, further increases in efficiency may be achieved by focusing directly on improvements in quality.

These findings also highlight opportunities to better understand reasons for such variation, and the implications of this variation. This could be accomplished by exploring how hospitals interact with others in the system, namely, community and primary care entities, to provide care to women prior to and following a hysterectomy, and linking this information to rates of complications and readmissions, and system costs. It is important to keep in

FIGURE 1.5: COMPARING VAGINAL TO ABDOMINAL HYSTERECTOMY RATIOS (2000/2001)



The ratios of vaginal-to-abdominal hysterectomies vary widely across regions in Ontario. Region 1 (North), Region 3 (Greater Toronto Area) and Region 4 (South Central) have the lowest ratios and Region 2 (East) and Region 5 (South Western) have the highest ratios. These data point to the importance of further research with hospitals to understand the issues underlying these regional differences, including patients' characteristics, access to primary care providers and specialists, and practice patterns and adoption of best practices. Experts suggest that there may be gaps in gynaecological care in some areas, including timely access to preventive care, and to alternative therapies and technologies.

There is one small northern hospital with a ratio substantially higher than all others; this is called an extreme value in the data, and may be attributed to a number of factors, including issues with coding or data quality, differences in clinical practice or random variation. This extreme value has a substantial impact on the ratio for small hospitals but did not have a notable effect on any other values presented here. With this value removed, as shown in Figure 1.5, there is relatively little variation across types of hospitals. In small, community and teaching hospitals, slightly more women had abdominal than vaginal hysterectomies.

mind that care provided during a hospital visit is one small part of a much larger continuum of care. Patients interact with multiple types of providers in various settings; quality of care depends, in part, on smooth transitions between these interactions and adequate follow-up. For instance, research is starting to suggest that populations with poorer access to community services and a shortage of health human resources may also have higher rates of hysterectomies.[29] Socioeconomic factors such as lower income and higher education levels have also been associated with higher rates of hysterectomies.[34] Exploring whether these factors are linked to quality of care (i.e. appropriateness of hysterectomy use and surgical method, adverse outcomes) is an important issue for further investigation.

Furthermore, measuring and comparing how hysterectomies are performed across hospitals, regions and peer groups is only a starting point to examining the quality of hysterectomy care in Ontario. Although high ratios of vaginal-to-abdominal hysterectomy are generally better, hospitals and regions with high overall rates of hysterectomy, based on population data, should continue to examine the appropriateness of those hysterectomies in general. For example, evidence from other work suggests that hysterectomy rates in Ontario's northern, rural areas are at least twice those of southern, urban areas.[35] Findings from the analyses in this excerpt show that Region 1 (North), which may have the highest population-based hysterectomy rate, did not actually have the lowest ratio of vaginal-to-abdominal hysterectomies or the highest rates of complications and readmissions. A closer look at these relationships at hospital and patient-specific levels should be pursued.

Exploring Relationships

Rates of complications and readmissions are markers of quality of care; length of stay is an indicator of clinical efficiency. To better understand the performance of Ontario hospitals as it relates to the experience of women undergoing hysterectomy and the quality of care they receive, it is helpful to examine the hospital-specific relationships between some of these key indicators.

In 2000/2001, there was a positive relationship between the rates of complications and length of stay for women hospitalized for hysterectomies; this relationship ($r = .31$) is weak and statistically significant ($p<0.05$)[(a)]. Thus, although it is a weak relationship, it appears that hospitals that had hysterectomy patients with higher rates of complications also had hysterectomy patients with generally longer hospitalizations. This is not surprising given that one of the criteria for identifying a complication is that the length of stay for the episode of care is longer than expected (i.e. provincial median). This finding points to the link between complications (or quality) and inefficiencies (or higher costs) discussed previously. We should also note that there is no optimum or appropriate length of stay. Shorter lengths of stay are not necessarily better as patients may be discharged too early, which may compromise quality of care.

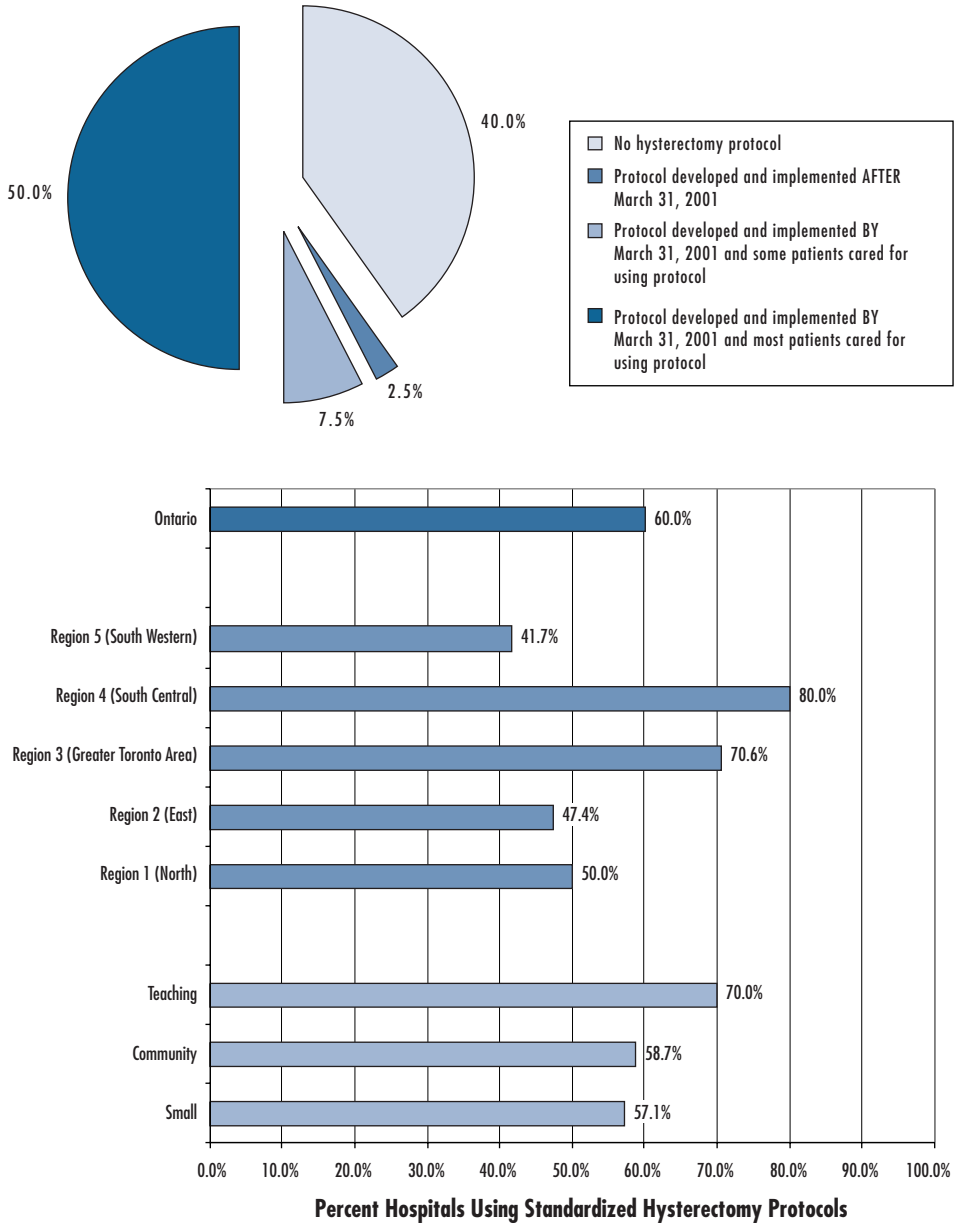
There was a negative relationship between the ratio of vaginal-to-abdominal hysterectomies and hysterectomy complications. Although supporting the research evidence that vaginal hysterectomies are associated with fewer complications, this relationship was not statistically significant. There was, however, a significant negative relationship between the ratio of vaginal-to-abdominal hysterectomies and the length of stay of hysterectomy patients ($r= -0.55$) ($p<0.05$). Hospitals performing more vaginal hysterectomies relative to abdominal hysterectomies also had hysterectomy patients with shorter hospital stays.

(a) $p < 0.05$ means that there is less than 5.0% chance (or probability) that the finding is due to chance, or conversely, greater than a 95% chance that the finding of a relationship is not due to chance.

Understanding the Statistics of Relationships

Correlations are a statistical approach used to measure the strength and direction of a relationship between two variables; correlation coefficients range from –1.0 to 1.0. Correlations of $r = 0.5$ and higher are generally recognized as describing moderate to strong relationships; correlations lower than $r = 0.5$ are generally low or weak. Note that statistical significance of these relationships is not necessarily the same as clinical and managerial significance.

FIGURE 1.6: USE OF STANDARDIZED HYSTERECTOMY PROTOCOLS



In 2001, half of all eligible hospitals (50%) had implemented a standardized protocol and were actively using it on the majority of hysterectomy patients, 10% of hospitals had only recently developed the protocol and/or were using it on some patients, and 40% of hospitals did not have any kind of standardized guideline for hysterectomy.

In addition, a higher proportion of teaching hospitals and hospitals in Region 3 (Greater Toronto Area) and Region 4 (South Central) had developed and implemented guidelines and/or care pathways for hysterectomy.

Improving Care and Outcomes for Hysterectomy

Standardized protocols for hysterectomy, such as the Society of Obstetricians and Gynaecologists of Canada's (SOGC) clinical practice guidelines[31] have been developed and modified to reflect emerging clinical advances and best practices in order to help guide decision-making before, during and after hysterectomy. Based on the best available evidence on the choice method for hysterectomy,

alternative treatments, and the benefits and risks to the patient, protocols such as these may be implemented in hospitals to help promote a consistently high standard of care.[29]

Experts suggest that successful adoption of guidelines in hospitals is largely the result of committed leadership, engagement of clinicians, systems for implementation, effective program management and consistency with the culture of the organization or program.[36,37] Do regions or hospitals reporting greater use of protocols have more structures and processes in place to support successful development and implementation of such tools? Further work to examine the impact of hysterectomy protocols on hysterectomy outcomes in Ontario hospitals should consider the role of these factors in guideline development, dissemination and implementation.

Next Steps

The development, implementation and updating of protocols are important indicators of the extent to which hospitals are keeping pace with change. Given that there are a growing number of alternative options available for women with benign conditions, there may continue to be uncertainty about appropriate use and variation in clinical policies. Raising provider and hospital awareness about practice patterns, and continuing the study of relative costs, benefits and risks associated with these options will be important.

In addition, to ensure that these hysterectomy protocols actually help improve outcomes for women, including relief of symptoms, minimal complications and improved quality of life, they should be part of a supportive and accessible system that recognizes the critical role of patients in making decisions about their health.

An expert panel[29] on hysterectomies in Ontario recently concluded that achieving best practices in the use of hysterectomy depends on women having timely and reasonable access to:

- Information needed to participate in decision-making
- Multidisciplinary health care providers, including primary care physicians and specialists
- Alternative therapeutic or diagnostic technologies or resources for care

As a next step, it will be important to measure the extent to which women in Ontario have access to and use the services listed above and to assess the relationships between use of services, composition of care teams and quality of care for hysterectomy. This will require linking data on availability of care, access and outcomes across different sectors. Working towards this strategy will help to comprehensively reflect the health care experiences of women in Ontario.

Highlights

- Fewer women were hospitalized for hysterectomy in 2000/2001 than in the previous two years.
- There has been little change in the rates of complication and readmission and in the average length of stay for this procedure in the three reported years.
- Vaginal hysterectomies, which are generally preferred, remain about half as common as abdominal hysterectomies in Ontario.
- Hospitals that were performing more vaginal than abdominal hysterectomies generally had shorter lengths of stay and lower rates of complications following a hysterectomy.
- There was substantial variation between regions and small, community and teaching hospitals on measures of quality for hysterectomy, including ratios of vaginal-to-abdominal hysterectomies, and in the extent to which hospitals have implemented guidelines to help direct care before, during and after a hysterectomy.

What You Will Find in This Chapter

- Highlights of the performance of Ontario hospitals on clinical conditions and procedures that are relevant to and often different in women and men, including care and outcomes after hospitalization for a heart attack, gall bladder surgery and pneumonia
- Highlights of how satisfaction with the quality of care and services received in Ontario hospitals differs by sex
- Next steps to help better understand and eventually address the differences between women and men on clinical utilization and outcomes, and satisfaction

Using Ratios to Study Sex Differences

One way of gaining insight into sex inequities is to calculate and compare the ratios of rates of utilization and outcomes for both sexes. A ratio close to one (1.00) indicates that both sexes have about the same rates. For indicators where women have lower rates than men, the ratio is less than one (1.00). Conducting analyses with these relative indicators provides a consistent and more complete picture of the differences between sexes.

Key Findings: II. How Women and Men Compare on Key Indicators of Hospital Performance

Integrating the women's health perspective into performance measurement and quality improvement requires developing a deeper understanding of how women and men compare on quality of care indicators, and why differences between the two sexes exist. To complement and build on the sex-specific focus presented in the previous section, this section will highlight a sex-sensitive focus on clinical utilization and outcomes, and patient satisfaction.

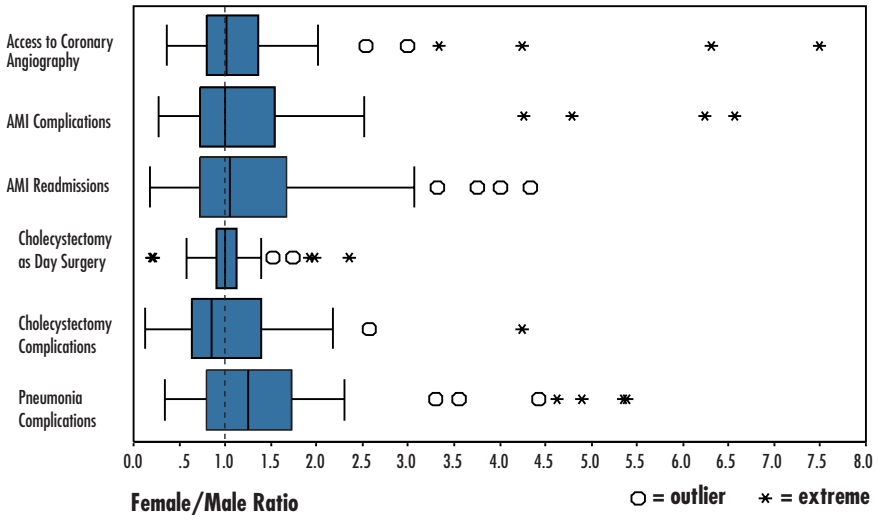
Sex Differences in Clinical Utilization and Outcomes

Among the patient groups studied and featured in *Hospital Report 2002: Acute Care*, heart disease (i.e. heart attacks, heart failure), cholecystectomy (i.e. removal of the gall bladder) and pneumonia accounted for the largest number of hospitalizations for both sexes in 2000/2001. This section of the report will focus on these conditions.

Women and men hospitalized for these conditions differed in the extent that they had access to services such as diagnostic technology and day surgery, and experienced complications and readmissions. For instance, across the clinical conditions featured in *Hospital Report 2002: Acute Care*, women treated in Ontario hospitals in 2000/2001 had overall consistently higher risk-adjusted rates of complications and readmissions than men.

To develop a better understanding of the factors underlying differences between the sexes, a closer look at hospital-level differences in access and outcomes for men and women provides a good starting point. Figure 2.0

FIGURE 2.0: VARIATION IN SEX-BASED PERFORMANCE ON CLINICAL UTILIZATION AND OUTCOME INDICATORS (2000/2001)



For each indicator, the box and whisker plot demonstrates the range of ratios across hospitals. The ratios for hospitals scoring between the 25th and 75th percentiles are included in the box, with the line in the box representing the median or 50th percentile. The box therefore represents the interquartile range and contains 50% of values. The whiskers extending from either side of each box reflect the ratio values for the lowest and highest scoring hospitals in the province.

provides an overview of the variation in access and outcomes for women and men across Ontario hospitals.

The following sections of the report will provide a more in-depth discussion of these findings.

There are many possible reasons for differences between women and men on measures of clinical outcomes and utilization. A growing body of research in this area supports that these differences can be attributed to a combination of factors, specifically:

- **Differences in biology** between the two sexes (i.e. hormonal differences, anatomy, symptoms at presentation) or proven differences in the efficacy of interventions or technology.
- **Differences in the ways in which women and men seek care,** which may be a function of social, political and economic history and contexts (i.e. caregiving roles, assumed disproportionately by women, often disrupts a woman's own care, leading to delayed presentation in the Emergency Room).
- **Differences in the ways in which the health care system responds to women and men** (i.e. differences in waiting times, referrals, practice patterns or provider vigilance), as a result of misconceptions of risks, utilization and lack of empirical evidence, which may suggest problems of access and quality of care that may be reducible.

The first two factors represent factors that drive the appearance of inequity but may not result from bias in the health care system. Some of these factors are linked to sex and others are linked to gender. For example, sex can determine differential propensities for certain health conditions, risk factors or treatment requirements. Gender can determine different exposures to certain risk factors, treatment-seeking patterns, or differential impacts of social and economic determinants of health.[3] The third factor is more likely attributable to potentially reducible inequity and biases in the system, may be linked in part to sex and/or gender, and may represent the greatest opportunity for quality improvement.

Not all factors contributing to potential biases are within the control of hospitals. Issues that lead to inequities between women and men may be system-wide, including actions of government or community-based providers. A methodology was developed to estimate the extent to which differences between women and men on key indicators of clinical outcomes and utilization may be a result of bias in the system. This approach builds on the method for identifying achievable benchmarks of care (ABCs)™ developed by Kiefe and colleagues[38] and used in this report to identify attainable ratios that reflect "best in class" equity performance. The preliminary findings of this methodology are described in the next section of this report.

How is Access to Technology Defined (e.g. Coronary Angiography)?

Hospitals were asked to record whether a patient received these services on the discharge abstract. Services received were counted in the first hospital where the patient was admitted as well as in other hospitals to which the patient was transferred. Patients with access at other times (e.g. a month following discharge from hospital) were not included.

How Care After a Heart Attack Compares for Women and Men

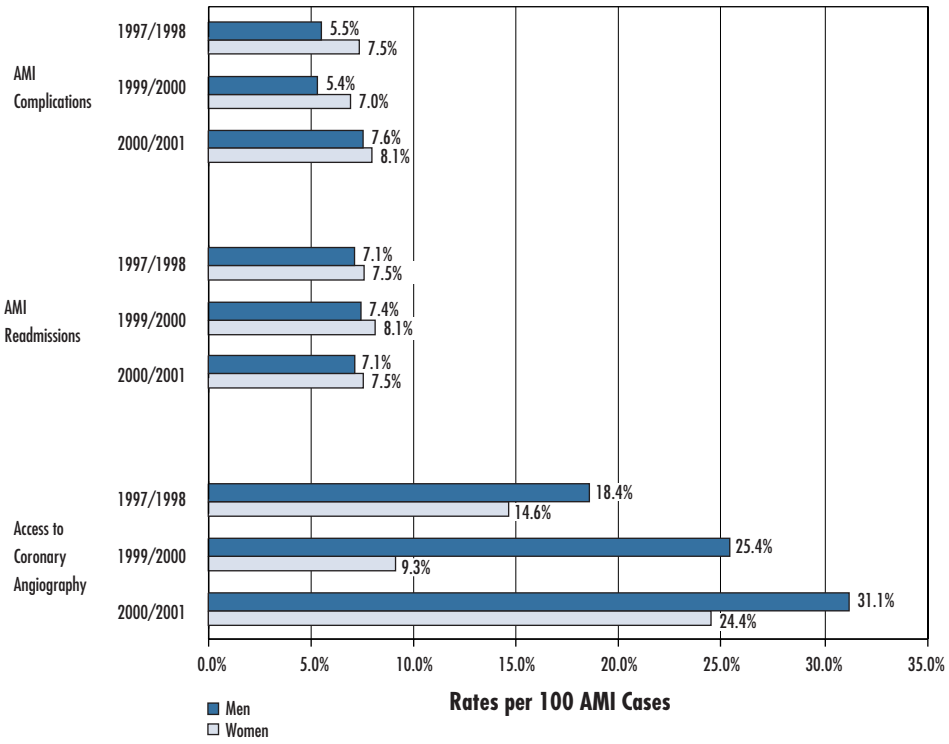
Introduction

Evaluation of the sex differences in access to cardiac care and outcomes is the subject of a growing field of international research.[39] More than 40,000 women in Canada die each year of cardiovascular disease. Historically, in Canada, more women than men have been under-diagnosed with heart disease, and underserved in coronary procedures.[39,40]

Various cardiac care utilization and outcome indicators were presented by sex in Ontario's *Hospital Report 2002: Acute Care.* These included rates of access to coronary angiography, and rates of complications and readmissions following hospitalization for acute myocardial infarction (AMI, or heart attack). Coronary angiography (i.e. cardiac catheterization) is often used to assess blood flow for AMI patients. Note that not all women and men suffering from heart attacks require this technology. However, equitable and timely access to coronary angiography is important as it is often the first step in a series of other, more invasive therapeutic procedures including surgery (to improve blood flow to the heart muscle) that may be necessary following a heart attack.[41]

Studies suggest that of all cardiac procedures, diagnostic angiography is typically the most sex inequitable.[40,42] There has been a substantial increase in the funding and capacity for coronary angiography in Ontario over the past decade.[43,44] As such, it is important to understand and compare the extent to which women and men in Ontario are utilizing this technology, and are benefiting from it.

FIGURE 2.1: RATES OF CARDIAC CARE INDICATORS BY SEX



During hospitalization for a heart attack in 2000/2001, women were more likely than men to develop a complication and be readmitted to hospital, while men were more likely than women to receive angiography.

Snapshot of Differences Between the Sexes on Care and Outcomes After a Heart Attack

As shown in Figure 2.1, the percent of both women and men who receive angiography after being admitted for a heart attack has increased consistently in Ontario over the last three reported years. This finding is consistent with other research conducted in Ontario and may be attributed to the development of regional infrastructure for cardiac care in the province.[44,45] The growth of this network of 17 cardiac care centres has

attempted to increase availability and distribution of technology, and enhance coordination of referral and management of patients requiring coronary angiography.[45] While these data provide evidence of the critical role of system integration and change in improving timely access to care, further investigation is needed to explore the relationship between this growth and equitable access and outcomes for both sexes.

Has the gap between men and women on access to coronary angiography after a heart attack narrowed or widened over time?

Relative vs. Absolute Differences

There are two ways of calculating and interpreting how differences between the rates for men and women have changed over time:

1. The **relative** approach is the ratio of the two rates.

2. The **absolute** approach is the difference of the two rates.

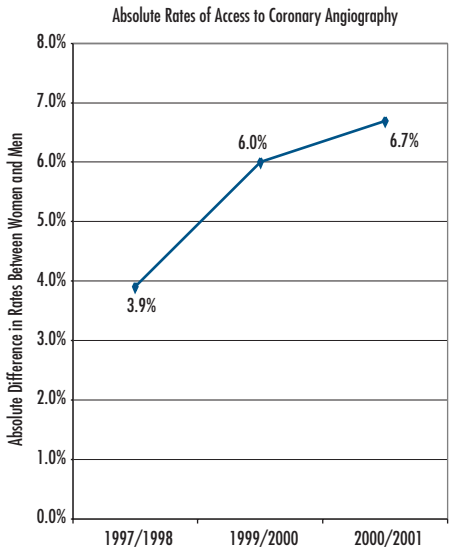
For some indicators, the approach used can change the direction of the trend, and the size of the difference. For the purpose of this report, the relative approach is more useful in that it provides some context and gives an idea of "by how much" inequities are increasing or decreasing over time as a proportion of the care provided. This table provides an example of how absolute and relative differences between the sexes were calculated and compared over the three reported years for access to coronary angiography.

Year	Rates by Sex		Absolute Difference	Relative Difference
	Male (M)	Female (F)	(M – F) Percenatge Points	(F:M)
1997/1998	18.5%	14.6%	3.9	78.9%
1999/2000	25.4%	19.4%	6.0	76.4%
2000/2001	31.2%	24.5%	6.7	78.5%

In 2000/2001, across hospitals in the province, the female-to-male ratio for access to coronary angiography was 0.79. This is slightly higher than the ratio reported in 1999/2000 (0.76). For access to coronary angiography, the inequities observed across Ontario hospitals are consistent with those studied in hospitals in other provinces.[46]

As shown in Figure 2.2, against a background of overall increasing rates and a larger absolute gap, the relative gap between women and men in adjusted rates of access to coronary angiography in Ontario hospitals has been fairly stable over the three reported years.

FIGURE 2.2: RELATIVE VS. ABSOLUTE DIFFERENCES IN SEX-BASED RATES OF CORONARY ANGIOGRAPHY



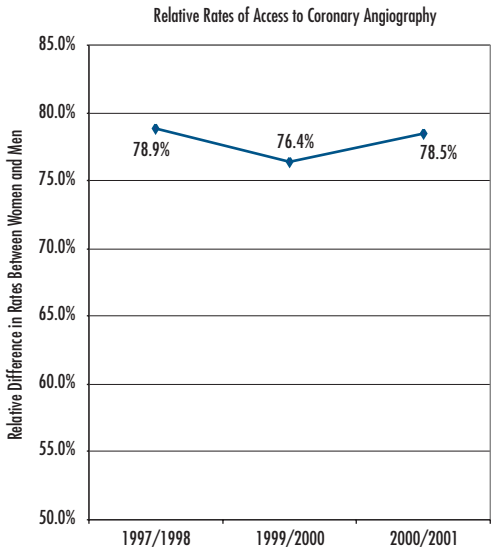
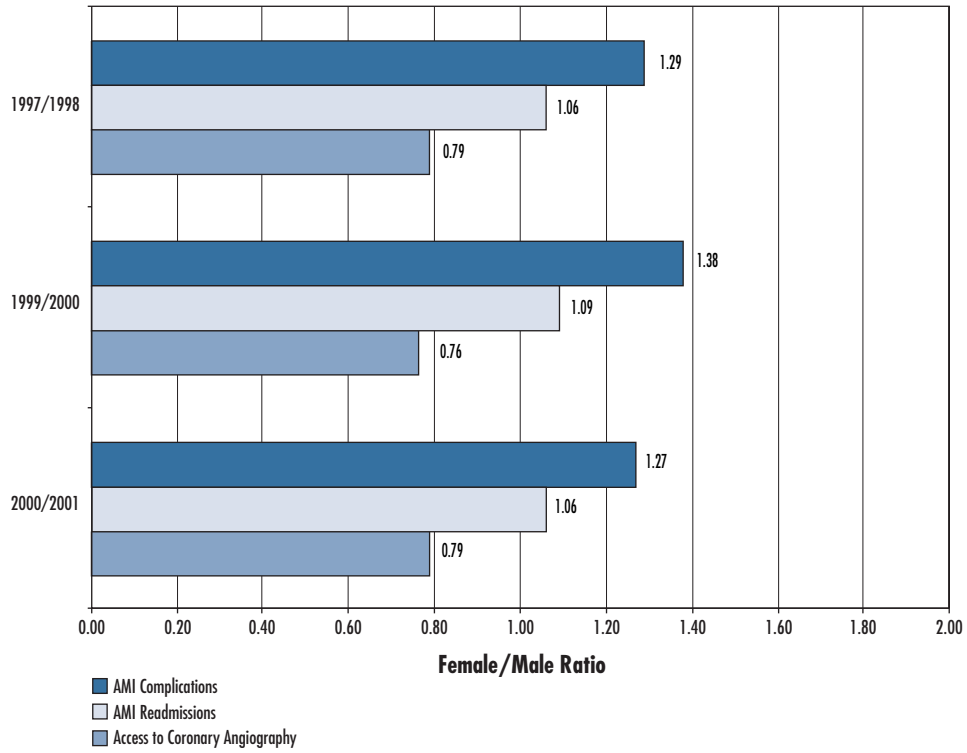


FIGURE 2.3: FEMALE/MALE RATIOS FOR AMI COMPLICATIONS, AMI READMISSIONS, ACCESS TO CORONARY ANGIOGRAPHY



As shown in Figure 2.3, across hospitals in the province, the ratio of women to men experiencing complications (1.27) and readmissions (1.06) after a heart attack in 2000/2001 has decreased since 1999/2000. This is after a rise in ratios from 1997/1998. The trend of sex-based access to coronary angiography is the reverse of that found for complications and readmissions. For the province, it seems that over time, as rates of access to coronary angiography become less sex-equitable, rates of complications and readmissions also become less sex-equitable. Hospital-specific correlations, presented in the following section, will more closely examine these relationships.

Performance Across Regions and Peer Groups

There was some regional variation in 2000/2001 in sex-based ratios of access to coronary angiography. Region 1 (North) had the highest ratio (closest to 1.00), and thus potentially greater sex-based equity, while Region 5 (South Western) had the lowest ratio, and slightly less sex-based equity. Figure 2.4 shows the values for ratios with hospitals with extreme values included in the calculations.[(b)] Based on these regional differences, it appears that equity of access to coronary angiography for both sexes may not be impacted by such factors as geographic distance of patients to cardiac centres, which is typically greatest in Region 1 (North), or the number of cardiac centres ("cath" labs), which is greatest in Region 3 (Greater Toronto Area).[46]

For female-to-male ratios of AMI complications, Region 5 (South Western) had the lowest ratio and thus most favourable equity profile, while Region 3 (Greater Toronto Area) had the highest ratio and least favourable equity profile. Note that hospitals in Region 3 (Greater Toronto Area), which account for the majority of teaching hospitals and cardiac care centres in the province, perform the largest proportion of coronary angiographies, and have the largest number of patients on their angiography waiting lists. These wait list data, however, are not publicly reported by sex.[46] Waiting times are a key measure of system

(b) For access to coronary angiography, removing the hospitals with extreme values from the analyses slightly decreases the ratios for hospitals in Region 1 (North) and Region 5 (South Western), and for small and community hospitals, making them less sex equitable. Removing extreme values, however, does not change the sequence or rank order of ratios by peer group and region for any of these AMI indicators.

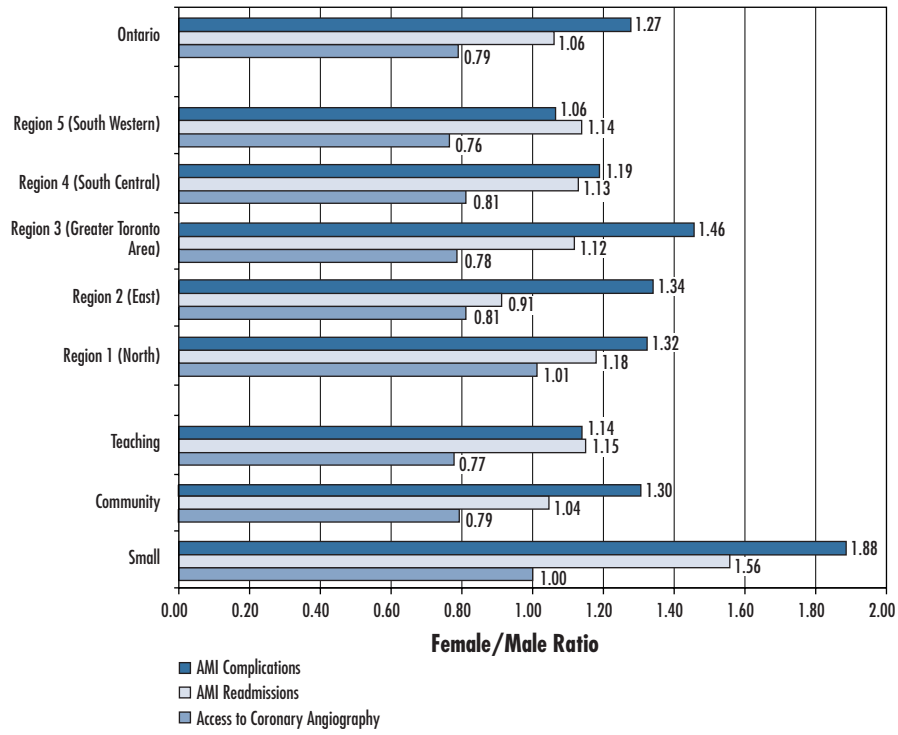
performance; making valid and reliable sex-based wait list data available is an important next step. Existing literature and information generally emphasize indicators of receipt of service rather than measures that reflect the process of accessing care (i.e. waiting times). Researchers in Ontario have reported that higher neighbourhood incomes are associated with greater use of and longer waiting times for coronary angiography, and lower rates of mortality.[47] These differences challenge and further reinforce the importance of equity as a central value underpinning the Canadian health care system.

For AMI readmissions, female-to-male ratios for hospital regions varied around 1.00. These are not unidirectional indicators. Lower rates of readmission for both sexes are considered better. Region 2 (East) had the lowest and most sex-equitable ratio for AMI readmissions (0.91), while Region 1 (North) had the highest and least sex-equitable ratio (1.18).

Compared to regional differences, there was greater variation between types of hospitals or peer groups on female-to-male ratios of complications and readmissions following an AMI. As shown in Figure 2.4, access to coronary angiography was potentially more equitable for women and men in small hospitals than in community and teaching hospitals. In contrast, small hospitals also had the least sex-equitable ratios for complications and readmissions following an AMI.

Note that these findings should be interpreted with caution given the inconsistencies in coding complications for AMI at the hospital level. Other factors such as differences in availability of specialists, practice patterns, and characteristics of the patient population and case mix (i.e. illness severity),

FIGURE 2.4: COMPARING PERFORMANCE ON COMPLICATIONS, READMISSIONS AND ACCESS TO CORONARY ANGIOGRAPHY AFTER AMI (2000/2001)



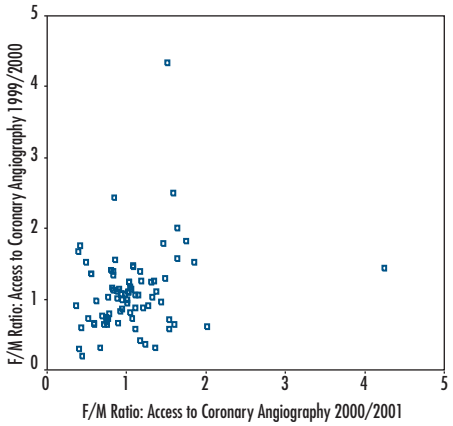
may also help to explain some of these findings. This reinforces the need to maintain a broader system perspective when interpreting these results. For example, better equity in outcomes may appear in hospitals with more severe case mix (i.e. co-morbidities) for both sexes, and higher capacity to diagnose and treat these cases than other hospitals.

Exploring Relationships

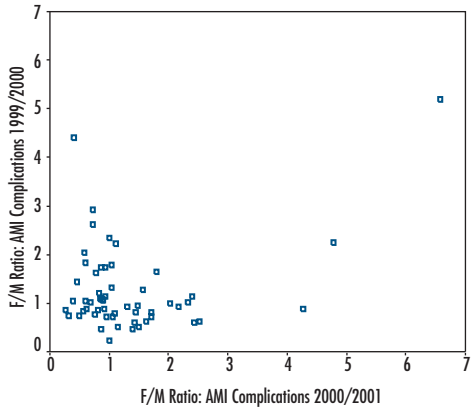
Correlations between hospital-specific sex-based ratios for care after a heart attack show that there are no notable relationships between ratios of access to coronary angiography and outcomes (AMI complications and readmissions) or between ratios of AMI complications and readmissions in the three reported years (1997/1998, 1999/2000, 2000/2001). Some research studies suggest that timely and appropriate access to coronary angiography influences outcomes of cardiac care. As opposed to complications and readmissions following hospitalization for a heart attack, however, these studies use different longer-term outcomes (e.g. long-term survival rates).[41] Further longitudinal hospital, patient and provider-level research is needed to highlight how and why differences in access between the sexes are, or are not, linked to differences in outcomes. This is especially relevant as some experts suggest that once a coronary angiography is performed, the care provided to women and men may not differ substantially.[48]

Further trending of results will be helpful in highlighting whether patterns of differences between women and men within hospitals persist over time, and in identifying opportunities for improvement. This type of analysis is important as efforts to improve quality should, in part, be responsive to issues that persist over time, as opposed to random or isolated events or data points.

FIGURE 2.5: CORRELATING FEMALE/MALE RATIOS OF ACCESS TO CORONARY ANGIOGRAPHY AND AMI COMPLICATIONS



r = .23
p < 0.05



r = .32
p < 0.05

There were weak but statistically significant relationships ($p < 0.05$) between ratios of access to coronary angiography ($r = .23$) and ratios of AMI complications over the previous two years ($r = .32$).[(c)] These are shown in the following scatter plots. In each graph, most of the data points, which represent hospitals, are clustered around an imaginary line with a positive slope; most hospitals with higher female-to-male ratios for access to coronary angiography and complications in 1999/2000 also have higher female-to-male ratios in 2000/2001, and vice versa.

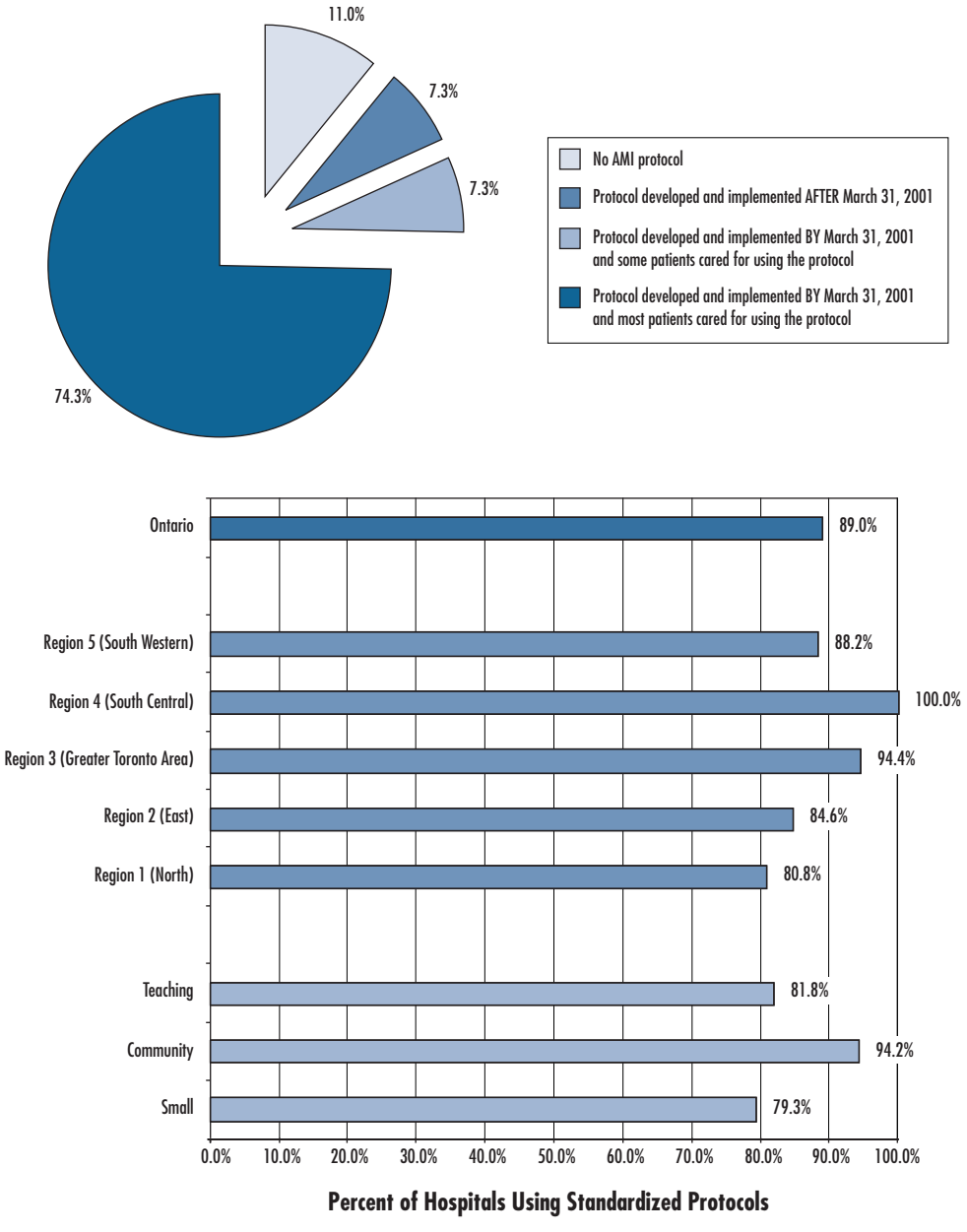
(c) $p < 0.05$ means that there is less than 5.0% chance (or probability) that the finding is due to chance, or conversely, greater than a 95% chance that the finding of a relationship is not due to chance.

Improving Care and Outcomes for Women and Men After a Heart Attack

Clinical guidelines and care pathways aim to improve patient outcomes and efficiencies by encouraging an evidence-based coordinated approach to care.

The Guidelines Advisory Committee (GAC), a joint initiative of the Ontario Medical Associations and the Ministry of Health and Long Term Care, uses a standardized process and tool for assessing the quality of guidelines and publishes recommended guidelines on its website (www.gacguidelines.ca).

FIGURE 2.6: USE OF STANDARDIZED AMI PROTOCOLS



Assessing Clinical Guidelines for Sensitivity to Sex Differences

AGREE (Appraisal of Guidelines for Research and Evaluation) is the framework used by Ontario's Guidelines Advisory Committee (GAC) to assess the quality of new, existing or updated clinical practice guidelines. Using this tool, the validity of guidelines is appraised according to the methods used in their development, the content of the recommendations in them, and the factors linked to their uptake.

Although not explicitly stated in terms of women, some of the tool's criteria refer to the need to recognize and be sensitive to differences in guideline selection. For example:

SCOPE AND PURPOSE
A clear description of the target population to be covered by the guideline must be provided. The age range, **sex,** clinical description, co-morbidity may be provided.

RIGOUR OF DEVELOPMENT
There should be an explicit link between the recommendations and current evidence (e.g. sex differences) on which the guidelines are based.

CLARITY AND PRESENTATION
Evidence is not always clear cut and there may be uncertainty about the best management (e.g. by sex); in this case, uncertainty should be stated in the guideline.

Explicit validation of the appropriateness of guidelines for women is an important next step.

In 2002, nearly 75% of Ontario hospitals reported that they had implemented standardized AMI protocols and were using them on the majority of eligible patients. Hospitals in Region 3 (Greater Toronto Area) and Region 4 (South Central), and community hospitals were most likely to report using a standardized protocol for AMI. In fact, the majority of Ontario hospitals are more likely to have protocols for AMI than any other sex-specific or sex-sensitive condition featured in this report.

For AMI, the Committee recommends the use of guidelines throughout the continuum of care from screening for chest pain to bedside management and cardiac monitoring.[49] In addition to reflecting key junctures in the continuum of care for AMI, the extent to which guidelines such as these are sensitive to potential differences between the sexes is particularly important for sex-sensitive conditions such as AMI. The data analyzed here, collected in the 2002 iteration of the System Integration and Change survey, provide little information on the nature of the protocols and the extent to which hospitals had considered sex-based differences in developing and/or adapting and implementing guidelines. Collecting more in-depth sex-sensitive information in the future will help to provide sufficient and valid information to explore relationships between the use of standardized protocols and equity in AMI care and outcomes.

Exploring Biology, Behaviour and Bias

Quality improvement experts suggest that a sound benchmark should represent a level of excellence that is data-driven, objective, attainable and reproducible.[38,50] Appendix D outlines the methodology used to calculate benchmarks for equity in clinical and utilization outcomes, and to estimate zones for potentially reducible bias in the system. Inequity does not simply infer unequal rates of morbidity for women and men. Equity, or achieving equity, means eliminating inequalities or differences between women and men that are the result of bias, are unnecessary, avoidable and that are systematically disadvantaging one sex over the other.[11] This method is an early attempt at estimating the extent to which sex differences may be avoidable and may be reduced based on benchmarks of achievable equity for the province.

Several research studies have found evidence of a number of sources of biological and behavioural factors, and of bias that may explain differences between the sexes on access and outcomes of AMI.[40,42,48] Some of these are listed in the table below.

A number of factors presented in the table are related to sex, whereas others are more closely related to gender. For instance, sex-based factors affect the presentation of symptoms of AMI; gender-related factors affect the timing of treatment-seeking in women, as well as the responses of health practitioners to women and men presenting with cardiac symptoms.[3] Some of these may be interrelated. In addition, although risk-adjustment in performance measurement reduces the pre-existing influence of differences in patient age and co-morbidity, it does not completely eliminate these factors.

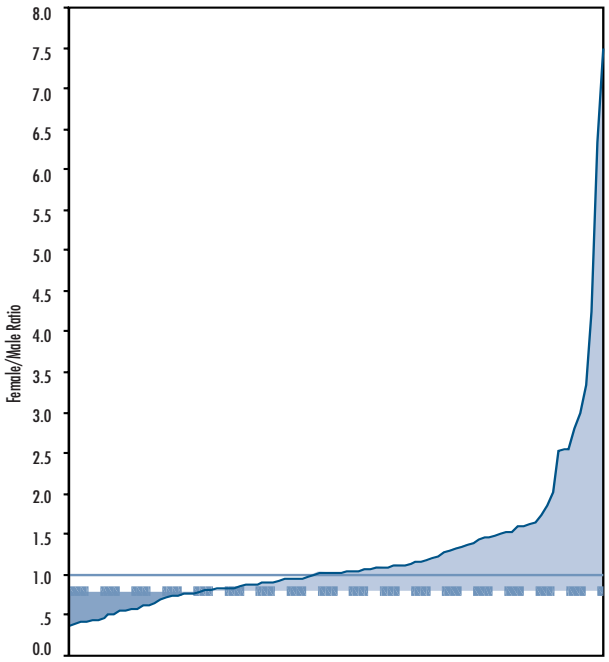
Differences due to Biology and Behaviour…	Differences due to Bias…
• Smaller coronary vessels in women than men (e.g. small-vessel theory) • Higher efficacy and accuracy of angiography in men than women • Differences in how women's cardiovascular systems respond to stress, hormones, fat and toxins • Women delaying longer than men in seeking care • Different clinical presentation (e.g. wider range and atypical and transient symptoms in women) • Greater number of co-morbidities (e.g. diabetes, hypertension) and complications in women (e.g. stroke, pulmonary edema) • Older age of women who present with symptoms	• Potential underuse of coronary catheterization in women and/or potential overuse or inappropriate use in men • Perceptions that influence clinical decision-making, symptom detection, screening, referral and vigilance (e.g. reduced perception of risk and urgency in women)

Calculating Equity Benchmarks

- Differences between women and men are generally seen as the result of a combination of mostly biological and behavioural factors and issues of bias in the health care system (not just the hospital system). These biases undermine the health and health care provided to women and may be avoidable.
- Applying this methodology to calculate equity (female/male ratio) benchmarks for care of women and men and comparing these against how hospitals are currently performing show that some of the differences between the sexes on access and outcomes may be reduced, making greater equity achievable.
- Exploring these differences in greater depth is an important area for future research. Given that these are not unidirectional benchmarks, higher or lower values are not always better. Future work should specifically focus on ensuring that equity benchmarks truly represent excellence in equity in that favourable results for one sex are not achieved at the expense of the other sex.

To what extent do differences between women and men in access and outcomes after AMI reflect biological and behavioural factors or factors related to bias? Is greater equity achievable? As Figures 2.7, 2.8, and 2.9 suggest, there are opportunities to potentially reduce inequity – as represented by the shaded areas of the curves for access to coronary angiography, AMI complications and AMI readmissions. These distributions of ratios include all extreme values for hospitals below and above the value of sex-based equity (1.00). All benchmarks for AMI indicators are different than sex-based equity (1.00). This means that when the cases are pooled, even the highest performing hospitals provide AMI care that appears inequitable. The appearance of inequity is because of biological and health-seeking factors and likely not biases in the system. The lighter shaded parts of the curve in all of these graphs include areas that represent the difference between the equity benchmark and 1.00. These areas represent the extent to which sex differences may be accounted for by differences due to biology and behaviour. All other shaded areas represent potentially reducible differences. The key message conveyed by these graphs is that there is potential to achieve greater equity in care and outcomes. These benchmark ratios are not definitive cut-off points; they simply provide preliminary achievable benchmarks for the reduction of differences between sexes.

FIGURE 2.7: BIOLOGY, BEHAVIOUR AND BIAS – ACCESS TO CORONARY ANGIOGRAPHY



Equity Benchmark	# of hospitals** used to calculate equity benchmark
0.81	4

**Hospitals are top performers (ratio closest to 1.00 with top 10% of patients)

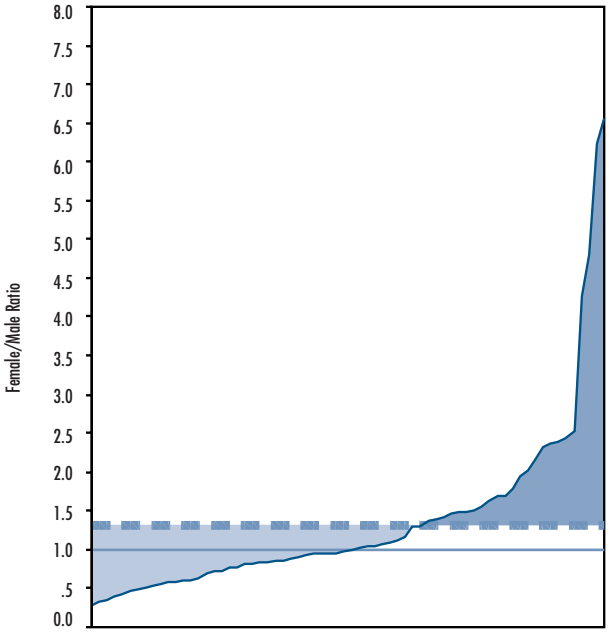
Total number of eligible hospitals included in distribution = 95

Distribution of ratios (hospitals)

Sex-based equity (1.00)

Equity benchmark (of top performers)

FIGURE 2.8: BIOLOGY, BEHAVIOUR AND BIAS – AMI COMPLICATIONS



Equity Benchmark	# of hospitals** used to calculate equity benchmark
1.32	9

**Hospitals are top performers (ratio closest to 1.00 with top 10% of patients)

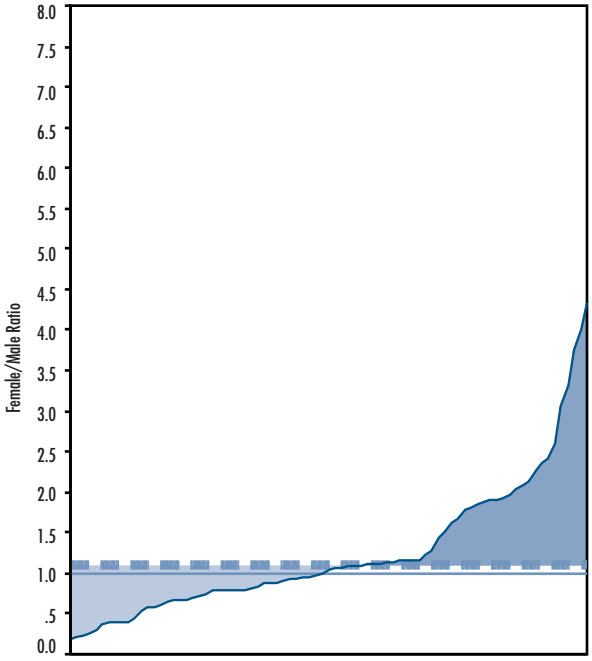
Total number of eligible hospitals included in distribution = 68

Distribution of ratios (hospitals)

Sex-based equity (1.00)

Equity benchmark (of top performers)

FIGURE 2.9: BIOLOGY, BEHAVIOUR AND BIAS – AMI READMISSIONS



Equity Benchmark	# of hospitals** used to calculate equity benchmark
1.11	7

**Hospitals are top performers (ratio closest to 1.00 with top 10% of patients)

Total number of eligible hospitals included in distribution = 81

Distribution of ratios (hospitals)

Sex-based equity (1.00)

Equity benchmark (of top performers)

Highlights

- Equitable and timely access to coronary angiography is important because it is often the first step in a series of other, more invasive therapeutic procedures, including surgery.
- In 2000/2001, men were more likely than women to receive angiography, but the gap between the sexes on use of or access to this procedure remained relatively stable over the last three reported years.
- Women are also more likely than men to develop complications and to be readmitted to hospital following a heart attack.
- There were no notable relationships between patterns of equitable access and patterns of equitable outcomes of care following hospitalization for a heart attack.
- Hospitals were most likely to report implementing and using protocols such as guidelines and care pathways to treat heart attacks than any other clinical group featured in this report. The sex-sensitivity of these guidelines, that is the extent to which sex differences are considered in their development and implementation, were not assessed.

One of the most important and relevant findings that has come out of recent studies of differences between women and men in access and outcomes for AMI is that some of these differences are related to age.[42,43] Note that women generally have a heart attack about a decade later than men. These studies have found that rates of procedures such as coronary angiography were highest for younger women, among whom the mortality rate from AMI was lowest; and conversely, rates of procedures after AMI were lowest for older women, who had the highest mortality rates after AMI. The differences between the care women and men receive after an AMI are more pronounced with age; care becomes less aggressive among older women relative to men.[42,43] In other words, sex and/or gender bias may interact with age. Further patient-level research that includes both age and sex as variables should help to provide useful information on differences in access and outcomes as a first step to improving equity and thus quality of care for women with heart disease.

How Care Compares for Women and Men Undergoing Cholecystectomy

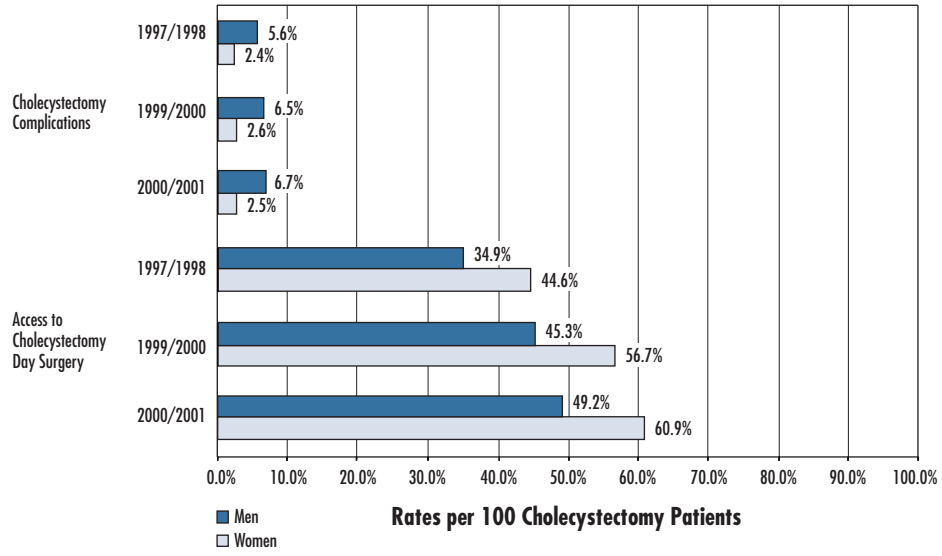
Introduction

Cholecystectomy – the removal of the gall bladder – provides a safe and effective treatment for most patients with symptomatic gall stones (cholelithias) and inflammation and infection of the gall bladder (cholecystitis). The procedure can be performed using an open method or a less invasive surgical technique with a laparoscope. The laparoscopic method is performed in about 75% of uncomplicated cases, the majority of which are performed as day surgery.[51] This minimally invasive technique is associated with fewer complications, improved recovery time, quicker return to activity, less postoperative pain and decreased length of stay.[51]

In general, women under 45 years of age are more likely than any other group to develop gall stones; overall, the prevalence of gall stones in females is about two to three times that of males.[51] Numerous reasons for this difference have been suggested in research. Generally, women have greater exposure to a combination of risk factors for gall stones, including hormones and weight cycling (i.e. rapid weight gain or loss).[51,52] Women are also more likely than men to undergo cholecystectomy. Although the differences in prevalence of gall stones and cholecystectomy by sex are known, little is known about potential differences between the sexes in access to cholecystectomy as day surgery and cholecystectomy outcomes, such as complications. Examining potential inequities in the care for gall bladder pathologies, cholecystectomy practices, and the relationships between and reasons for these differences will help to shed light on the quality of care – access, appropriateness and outcome – for this common surgical procedure in Ontario.

Snapshot of the Differences Between Sexes Undergoing Cholecystectomy

FIGURE 2.10: RATES OF CHOLECYSTECTOMY AS DAY SURGERY AND COMPLICATIONS BY SEX

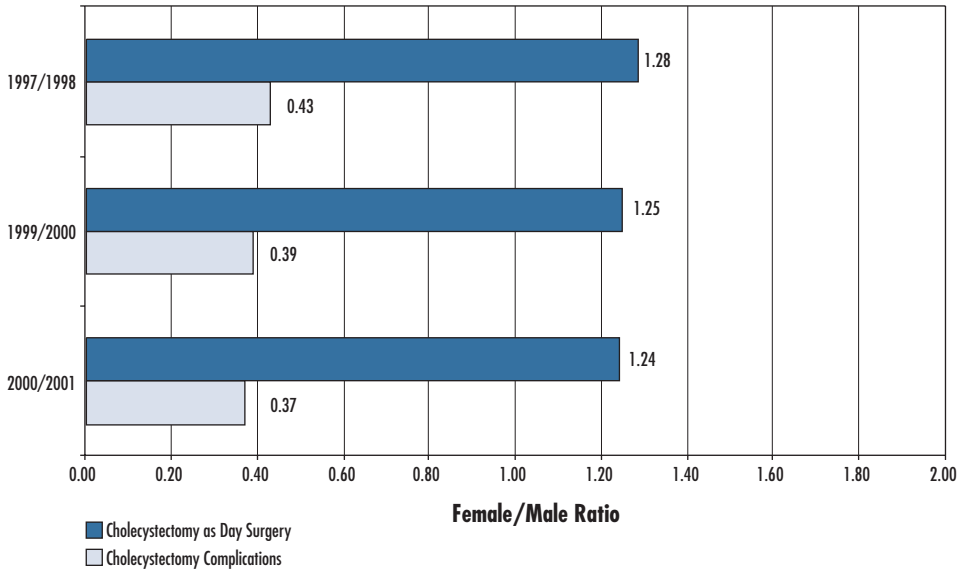


The proportion of cholecystectomies performed as day surgery procedures has increased for both sexes over the three reported years (1997/1998, 1999/2000, 2000/2001). This is consistent with the overall trend towards increased day surgery in the province. Women have consistently higher rates of access to cholecystectomy as day surgery and lower rates of cholecystectomy complications than men. In fact in 2000/2001, the largest difference in complications between the sexes was for cholecystectomy patients, with men having higher rates of complications than women. In relative terms, the risk-adjusted gap between women and men undergoing cholecystectomy as a day surgery procedure has narrowed slightly over this three-year period, and the gap between sexes on complications following a cholecystectomy has widened.

Performance Across Regions and Peer Groups

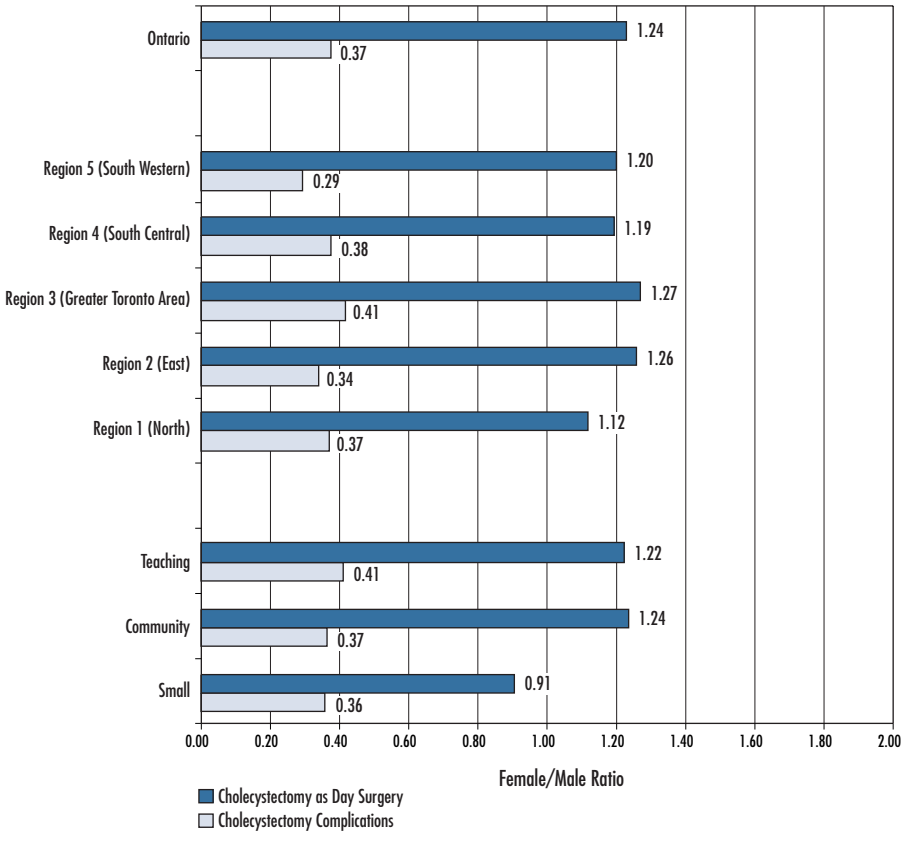
There was some regional variation on female-to-male ratios for cholecystectomy indicators. Overall, Region 1 (North) had the lowest (closest to 1.00) and thus most favourable ratio of sex equity for cholecystectomies performed as day surgery. Region 2 (East) and Region 3 (Greater Toronto Area) had the highest ratios for this indicator of access and thus had the least favourable value of sex equity. Based on female-to-male ratios calculated for complications following a cholecystectomy, Region 3 (Greater Toronto Area) was the most equitable, with a relatively higher ratio, while Region 5 (South Western) was the least equitable.

FIGURE 2.11: FEMALE/MALE RATIOS OF CHOLECYSTECTOMY AS DAY SURGERY AND COMPLICATIONS



As shown in Figure 2.11, the female-to-male ratios of cholecystectomies as day surgery in 2000/2001 (1.24) has decreased from the previous two years, meaning that access to this type of surgery is potentially becoming more sex equitable in Ontario. The female-to-male ratios of cholecystectomy complications have decreased such that men continue to experience increasingly higher rates of complications.

FIGURE 2.12: COMPARING PERFORMANCE ON INDICATORS OF ACCESS AND OUTCOME FOR CHOLECYSTECTOMY (2000/2001)



As shown in Figure 2.12, small hospitals appeared to provide more sex-equitable access to cholecystectomy as day surgery than teaching and community hospitals, which had substantially higher female to male ratios. In fact, only small hospitals had lower rates of access (to day surgery) for women than men. In addition, teaching hospitals had a slightly higher ratio for cholecystectomy complications (closest to 1.00) than small and community hospitals, and thus had fewer overall differences between women and men.(d)

Exploring Relationships

There were no notable relationships between sex-based differences in access to cholecystectomy as day surgery and sex-based differences in complications following a cholecystectomy over the three reported years

(d) Removing extreme values from the calculation of these indicators did not have any appreciable effect on their magnitude or on how the regions and peer groups compared.

(1997/1998, 1999/2000, 2000/2001). Evidence suggests that performing laparascopic cholecystectomy, which is typically performed as day surgery, leads to improved outcomes.[41] Given that men are less likely than women to have a laparascopic cholecystectomy, and thus be at higher risk for complications, a relationship between these indicators is expected. There are many patient, hospital, and system-level factors that may help to explain this general lack of relationship at hospital-level (e.g. differences in coding practices, severity of patient population, surgery volumes and flow, practice patterns, availability of and access to follow-up care). In addition to hospital-level data, patient-level data collected over time will more appropriately identify links between access and outcome indicators, or lack thereof, and highlight reasons for such findings.

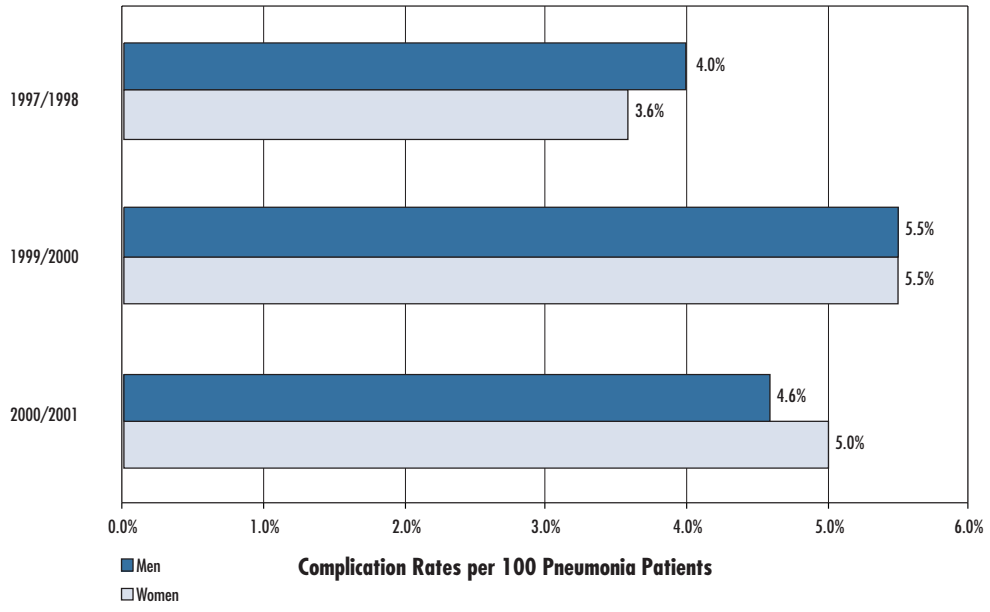
How Care Compares for Women and Men Hospitalized for Pneumonia

Introduction

Community-acquired pneumonia was one of the most common causes of hospitalization for both sexes in Ontario in 2000/2001. Recent epidemiological reports have found that women may be twice as likely as men to develop acute infections such as pneumonia; these differences have been attributed to biological and socioeconomic factors.[53] Note that, in general, factors that mediate poorer pneumonia outcomes, like poverty, are more prevalent in women than men. In addition, women may have a relatively greater proportion of underlying medical conditions that put them at increased risk of respiratory infection and hospitalization for pneumonia.[54] Investigating differences between the sexes on outcomes of pneumonia (i.e. complications) is an important starting point for exploring potential inequities in the treatment of this condition.

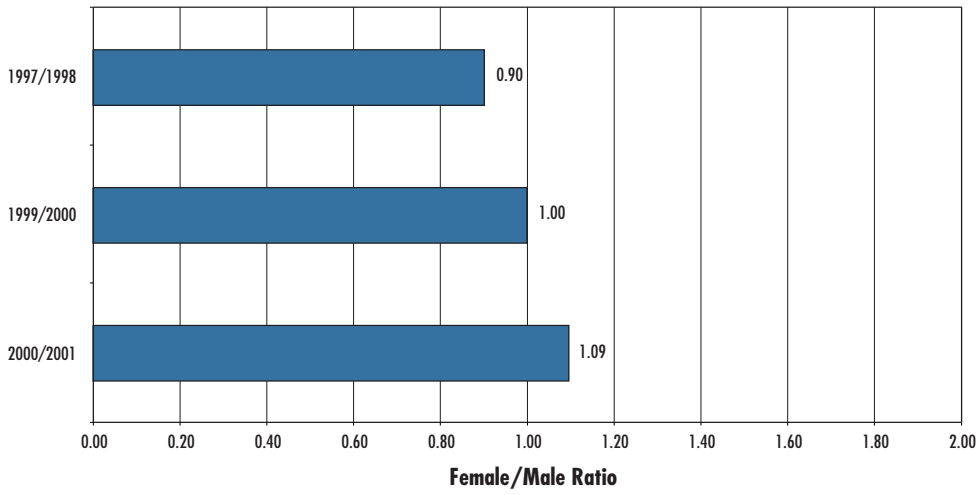
Snapshot of the Differences Between Sexes on Pneumonia Complications

FIGURE 2.13: RATES OF COMPLICATIONS BY SEX FOLLOWING HOSPITALIZATION FOR PNEUMONIA



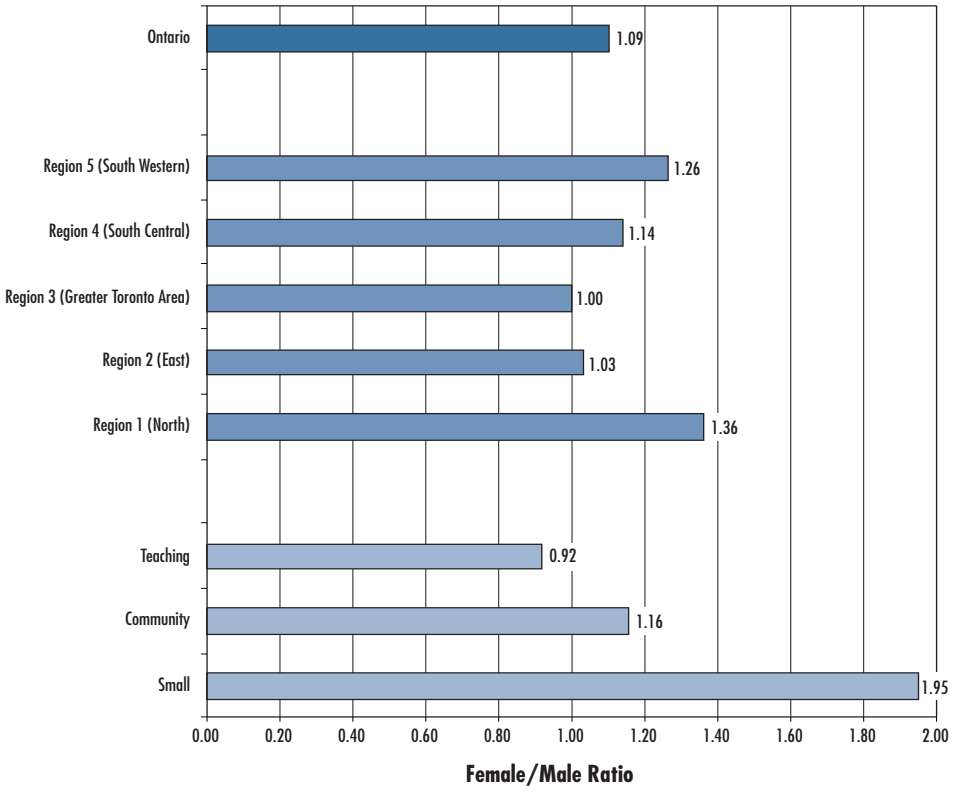
For the same episode of care for pneumonia, women are more likely to experience a complication than men. In addition, in relative terms, the gap between women and men, where women have higher complications following hospitalization for pneumonia, has increased more than for all other sex-sensitive clinical conditions featured in this report. In fact, there was a substantial shift in rates as men had higher rates of complications in 1997/1998, and by 2000/2001, women had higher rates.

FIGURE 2.14: FEMALE/MALE RATIOS FOR PNEUMONIA COMPLICATIONS



As shown in Figure 2.14, there has been a substantial increase in the female-to-male ratio for pneumonia complications.

FIGURE 2.15: COMPARING PERFORMANCE ON PNEUMONIA COMPLICATIONS (2000/2001)



Performance Across Regions and Peer Groups

As shown in Figure 2.15, there was substantial regional variation for complications following hospitalization for pneumonia in Ontario. Hospitals in Region 2 (East) and Region 3 (Greater Toronto Area) had (pooled) female-to-male ratios closest to 1.00 and thus fewer overall differences between the sexes. Hospitals in Region 1 (North) had the highest female-to-male ratio, and thus greatest inequity or differences between the sexes for pneumonia complications. Some of these findings are being replicated by other researchers in Ontario hospitals.

Small, community and teaching hospitals varied substantially on ratios of complications following hospitalization for pneumonia. Women were nearly twice as likely than men to experience complications following pneumonia in small hospitals, while men hospitalized in teaching hospitals had higher rates of complications than women.[e]

(e) Removing extreme values did not appreciably impact these results.

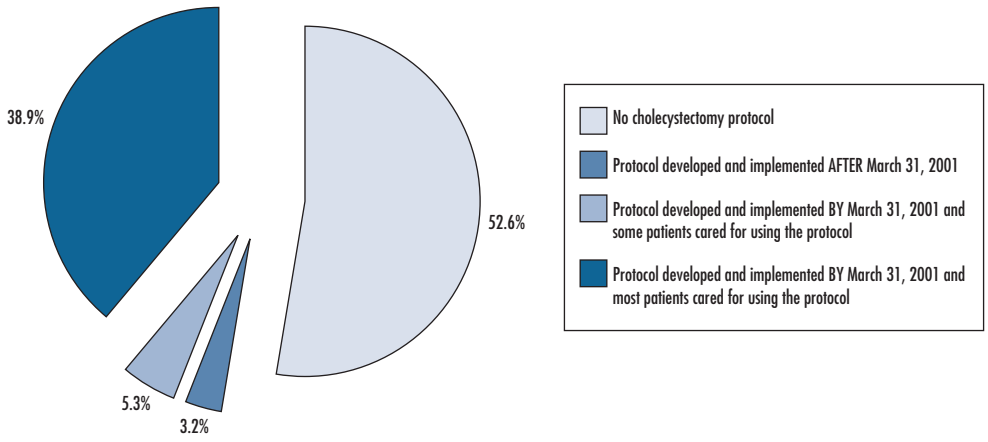
Improving Cholecystectomy and Pneumonia Care and Outcomes for Women and Men

Standardized protocols have been developed and used to help determine, based on the best available evidence, when laparoscopic cholecystectomy is appropriate for patients with gall stones, and how care should be managed from assessment to follow-up. For instance, the Guidelines Advisory Committee (GAC) recommends that clinicians use the National Institutes of Health Consensus Development Conference's statement on gallstones and laparascopic cholecystectomy.[55] Similarly, GAC recommends the Institute for Clinical Systems Improvement's guideline for the treatment of community-acquired pneumonia in adults.

How can practice improve so that care is closer to what is recommended in valid, up-to-date guidelines? Although practice behaviour may be influenced by a wide range of factors other than research evidence, effectively implementing clinical decision support tools like guidelines is recognized as critical to promoting health care providers' reflection on and improvement of practice. In essence, the way in which guidelines are developed, implemented, monitored and updated influences the likelihood that they will influence provider behaviour and practice, and ultimately be linked to improved outcomes in quality of care.[58] For instance, experts suggest that intensive energy and effort must be placed on focused strategies to gain clinician buy-in and compliance.[58,59] Information collected and analyzed over time on when and how cholecystectomy and pneumonia protocols were developed and implemented may shed light on factors that enable and impede successful adoption.

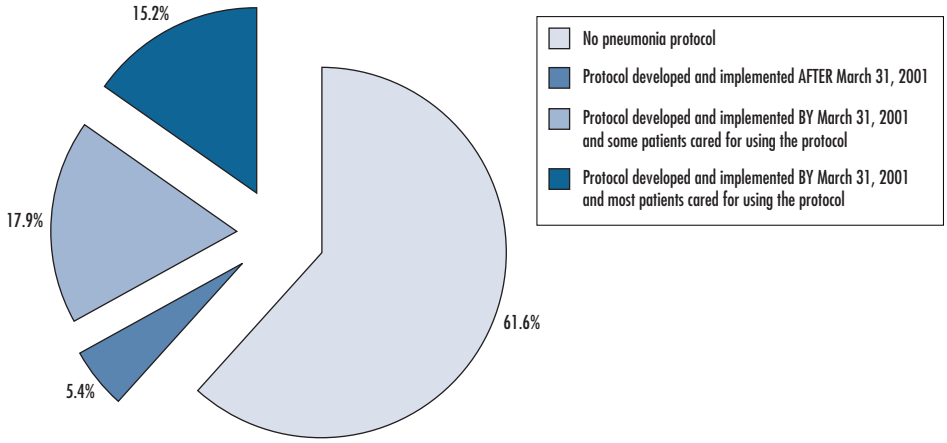
Guideline impact studies that measure physician practice and patient outcomes before and after adoption will help to determine whether and which protocols lead to improved outcomes, and the underlying mechanisms through which this occurs. In particular, based on the differences in access and outcomes between women and men reported here and elsewhere, it will be important to evaluate whether guidelines are sensitive to differences in sex, and to measure how this feature may be linked to improved equity.

FIGURE 2.16: USE OF STANDARDIZED CHOLECYSTECTOMY PROTOCOLS



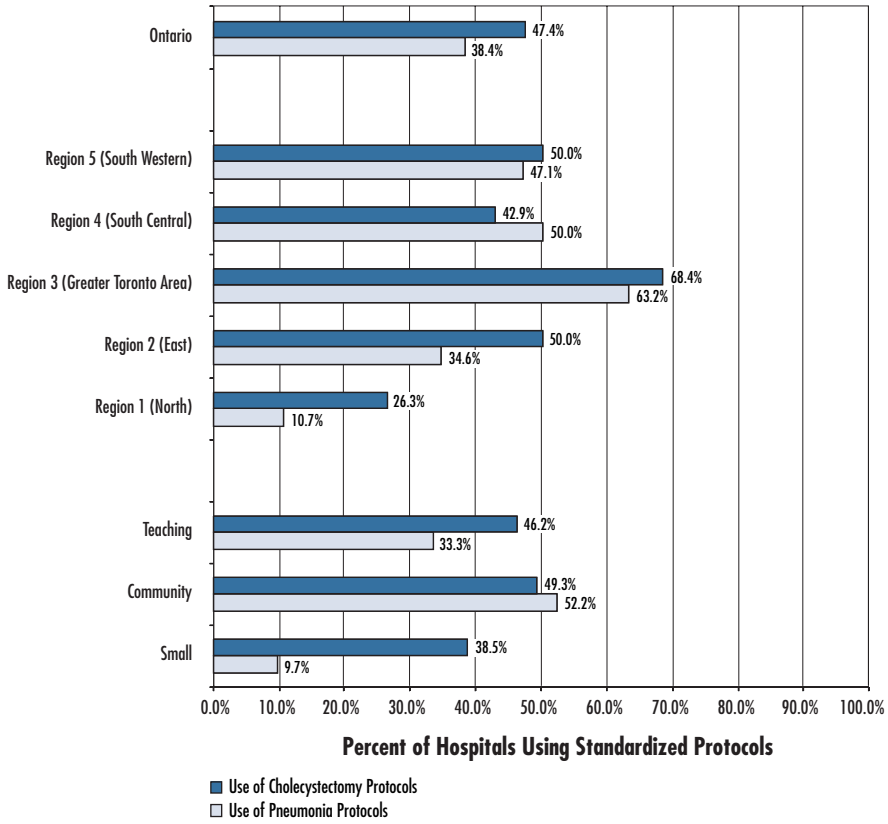
Over half (52.6%) of Ontario hospitals reported that they do not use standardized protocols for cholecystectomy; nearly 40% (38.9%) reported that they had developed and were using a cholecystectomy guideline on the majority of patients undergoing this procedure.

FIGURE 2.17: USE OF STANDARDIZED PNEUMONIA PROTOCOLS



For treatment of community-acquired pneumonia, the majority of hospitals in Ontario (61.6%) reported that they had not developed and/or used a clinical decision-making tool such as a guideline.

FIGURE 2.18: COMPARING USE OF STANDARDIZED CHOLECYSTECTOMY AND PNEUMONIA PROTOCOLS



Hospitals in Region 3 (Greater Toronto Area) and community and teaching hospitals were most likely to report that they had developed and/or were using guidelines or care pathways for cholecystectomy. It is unclear whether protocols that were used were those for day surgery and thus primarily laparoscopic surgeries and/or for inpatient and largely open surgery. Hospitals in Region 3 (Greater Toronto Area) and community hospitals were most likely to report use of pneumonia guidelines. Consensus statements for the management of pneumonia have been developed and disseminated by groups of clinicians and societies in Canada and the US. Despite substantial progress in this area, there continues to be considerable debate about the clinical management of pneumonia.[56,57] Interestingly, the region (Region 1 – North) and peer group (Small) with most inequitable rates of complications for pneumonia were also those least likely to report using a standardized protocol for pneumonia. This was not the case for cholecystectomy.

Exploring Biology, Behaviour and Bias in Care and Outcomes of Cholecystectomy and Pneumonia

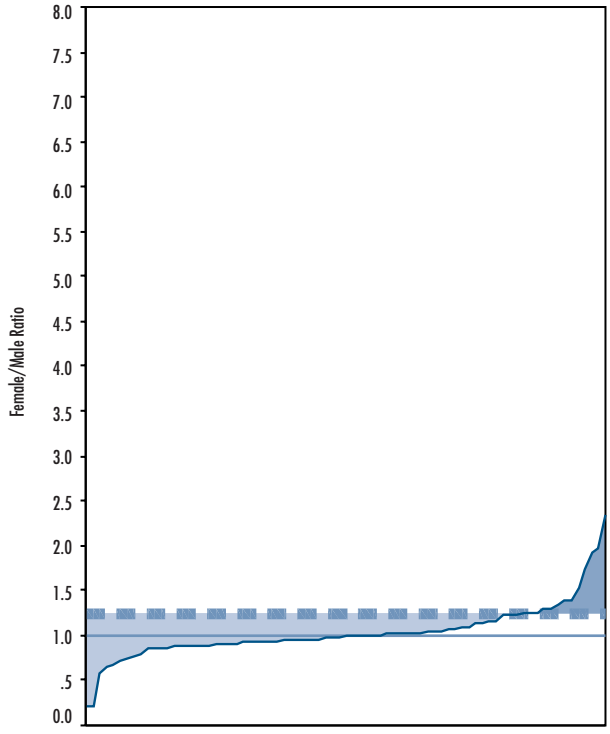
Are the observed differences between women and men on indicators of access and outcomes for cholecystectomy, and outcomes of pneumonia the result of biological or behavioural differences, or of potentially reducible bias in the system? Is there potential to achieve greater equity on these indications?

For both cholecystectomy indicators, hospitals with the "best" sex equity profile and top 10% of cholecystectomy cases had (pooled) female-to-male ratios (i.e. benchmarks) similar to the provincial ratios discussed earlier (i.e. Figures 2.12 and 2.15). As shown in the graphs, the range of hospital-based ratios for cholecystectomy as day surgery was narrower than for cholecystectomy complications. For both indicators, there were identifiable areas in which differences appeared to be largely the result of biological and behavioural factors (i.e. how patients present, differences in anatomy), as represented by parts of the lighter shaded areas, and areas in which differences were the result of potentially reducible bias in the system. These shaded zones beyond the benchmarks were greater for cholecystectomy complications for which there appeared to be considerable opportunity for reducing bias where rates for complications were higher in women. This is an interesting finding given that women are generally more likely to be considered uncomplicated cases appropriate for cholecystectomy via the laparoscopic method and performed as day surgery, which in turn is associated with favourable outcomes. Given that the benchmark is 0.40, it would appear that some hospitals have high ratios, effectively pulling the curve up. In general, men would be expected to have higher complications and this is confirmed by the equity benchmark (0.40).

Highlights

- Gall stones, an indication for cholecystectomy (removal of the gall bladder), are more prevalent in women than men.
- Compared to the open method of cholecystectomy, the less invasive laparoscopic method is performed in most uncomplicated cases, and mostly performed as day surgery.
- Women have higher rates of access to day surgery and lower rates of complications than men.
- Most of these differences are likely related to differences in biology.
- Future work should explore the appropriateness of these procedures for both sexes.

FIGURE 2.19: BIOLOGY, BEHAVIOUR AND BIAS – ACCESS TO CHOLECYSTECTOMY AS DAY SURGERY



Equity Benchmark	# of hospitals** used to calculate equity benchmark
1.24	5

**Hospitals are top performers (ratio closest to 1.00 with top 10% of patients)

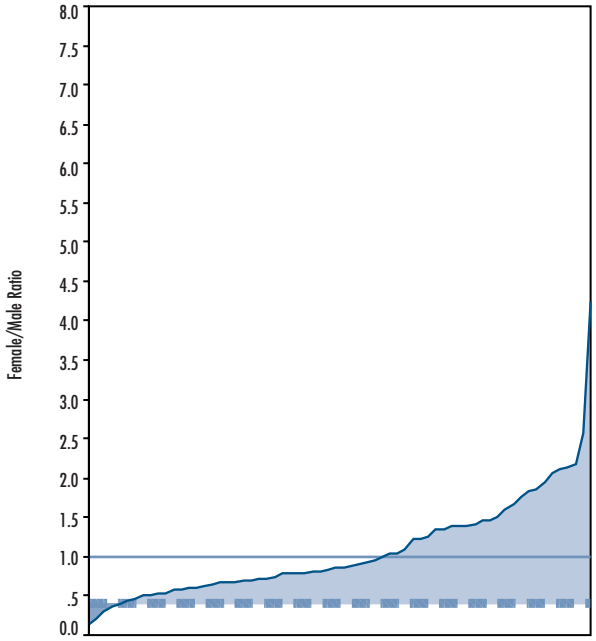
Total number of eligible hospitals included in distribution = 77

Distribution of ratios (hospitals)

Sex-based equity (1.00)

Equity benchmark (of top performers)

FIGURE 2.20: BIOLOGY, BEHAVIOUR AND BIAS – CHOLECYSTECTOMY COMPLICATIONS



Equity Benchmark	# of hospitals** used to calculate equity benchmark
0.40	7

**Hospitals are top performers (ratio closest to 1.00 with top 10% of patients)

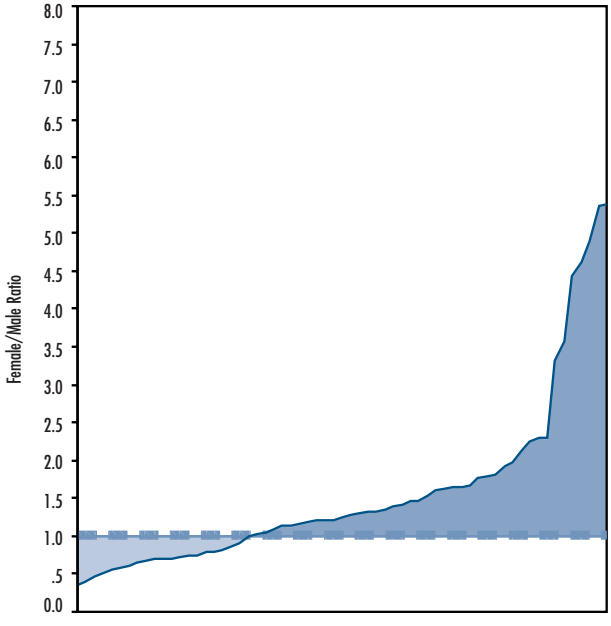
Total number of eligible hospitals included in distribution = 66

Distribution of ratios (hospitals)

Sex-based equity (1.00)

Equity benchmark (of top performers)

FIGURE 2.21: BIOLOGY, BEHAVIOUR AND BIAS – PNEUMONIA COMPLICATIONS



Equity Benchmark	# of hospitals** used to calculate equity benchmark
1.01	6

**Hospitals are top performers (ratio closest to 1.00 with top 10% of patients)

Total number of eligible hospitals included in distribution = 63

Distribution of ratios (hospitals)

Sex-based equity (1.00)

Equity benchmark (of top performers)

Despite these findings, these analyses raise important questions about appropriateness of care. As the laparoscopic technique is becoming the treatment of choice, it may be leading to a substantial increase in the cholecystectomy rate involving uncomplicated and elective patients, who are typically women. Are too many procedures performed on women without appropriate clinical indications, therefore having a potentially negative impact on quality?[60] Or are too few procedures available for men? The optimal sex-based rates for cholecystectomy procedures and outcomes have not been defined, and will require further hospital and patient-level research.

As shown in Figure 2.21 for pneumonia complications, the shaded region above the equity (1.00) and benchmark values (1.01) represents the target zone for potentially reducible bias in which women experience greater complications than men. This is substantially larger than both the area in which differences are attributable to biological and behavioural factors, which is nil, and the target zone for bias in which men experience greater complications than women. Given that the benchmark is close to sex-based equity and a number of the top performing hospitals used to calculate the equity benchmark have sex-based ratios very close to one (1.00), this may be a condition for which there is considerable opportunity for improvement in

the equitable care of women both within and outside the hospital system. What are the potential sources for differences in complications for community-acquired pneumonia? There is very little research on sex-based or gender-based differences in outcomes for pneumonia. The few available studies suggest that patient socioeconomic characteristics and processes of care in community-based and hospital settings may be important sources of inequity.[54,61] Research conducted in Ontario found that rates of hospital utilization for women were more sensitive to sociodemographic and economic factors than for men.[62] Specifically, socioeconomic inequities may put women at higher risk for acute pneumonia both directly and indirectly as a result of difficulty in accessing health care. Future hospital and patient-level research should help to further explain these differences.

Next Steps

To start to address sex inequities in clinical utilization and outcomes, more useful information on the differences between women and men is required. The following next steps will help to guide further work in this area:

- First, it will be essential to link data from administrative databases to other sources of patient and clinical practice information such as waiting times, practice patterns, sex-sensitivity of clinical guidelines, and patient involvement in decision-making. Linking databases across sectors will also help to capture patients' complete continuum of care as a large proportion of health care begins and continues in the community setting. Collecting and linking data between sources and across sectors over time will help to provide a more complete picture of the sex-based and gender-based differences in care and outcomes for these conditions.
- Second, it will be important to share and trend hospital-level data and practices over time to determine benchmarks for indicators of access and outcomes for these clinical groups. In determining these benchmarks for care, it will be important to study how and why better equity for one sex may or may not be related to poorer equity for the other sex. This will help hospital managers and providers gain a better understanding of the relationships between specific practices or processes and outcomes. This is especially important as higher use (i.e. coronary angiography, cholecystectomy day surgery) is not the same as appropriate use. This will ultimately help to inform targets for improvement or benchmarks that are valid and achievable, and represent a level of excellence based on reliable methodology and data.
- Third, conducting patient-level research, including chart reviews, will help to better determine reasons for differences, including processes of care, involvement in decision-making, biological factors, socioeconomic variables and exposure to risk factors.
- Finally, building on the work to date, attention to representation of women as subjects in clinical research, and sex-sensitivity in the study of practices, access and outcomes in care will be important. Historically, women have been poorly represented in randomized, controlled trials. Omissions of sex-based analyses reduce the reliability, validity and applicability of findings. Requirements for structured reporting of sex-related information for health services research may help to improve the usefulness and applicability of information to the care of women.

Highlights

- Women are more likely than men to experience complications following hospitalization for community-acquired pneumonia.
- The gap between women and men – with women having higher complications – has increased substantially over the three reported years. This trend was more pronounced than all other sex-sensitive clinical conditions featured in this excerpt.
- Combined with a widening gap over time, there was substantial variation between regions and hospital peer groups (small, community and teaching) on differences in pneumonia complications between women and men. The variation in performance varies from nearly no difference in Toronto to wider differences in other regions.
- Based on the calculation of equity benchmarks, greater equity is more achievable and sex differences potentially more reducible for pneumonia complications than for all other clinical indicators included in this excerpt.
- Hospitals in Ontario were also less likely to report using guidelines to help direct care for patients hospitalized for pneumonia than for all other clinical conditions featured in this excerpt.

Where Do We Go From Here?

- Link sex-based data across sectors and over time.
- Share data and facilitate partnerships to help hospitals determine and work towards benchmarks and practices linked to good (and equitable) performance.
- Conduct patient-level research.
- Advocate sex-based analyses and sex-sensitivity in research and implementation of practices.

How Women and Men Differ in Satisfaction with and Perceptions of Quality of Care

Introduction

No evaluation of hospital performance would be complete without documenting how patients feel about the quality of care and services they receive. Women and men sometimes have different opinions of their hospital experience. Research studies show that women generally report slightly lower levels of satisfaction with health care than men. Experts hypothesize that sex may be a proxy for other factors that may influence perceptions of services and care (e.g. attitudes, health status).[7,63,64] Studies also show that beyond sex, other factors may predict patient satisfaction reports and ratings. These include other patient socio-demographic characteristics, namely, age, ethnicity, and education, as well as hospital-related variables, such as hospital size and information provided to patients, and care-related variables, such as clinical condition, self-reported health status, pain and anxiety.[7,63,64] The causal mechanisms underlying the relationships between these variables and patient satisfaction, and the extent to which these variables (and their interactions) actually predict patient satisfaction, are the subjects of continued study.

The examination of patient satisfaction in Ontario continues to be an integral part of the evaluation of hospital performance using the balanced scorecard framework. The analysis and presentation of satisfaction ratings by sex, initiated in the 2001 series, was an important step towards advancing the integration of the women's health perspective in the province's *Hospital Report*. The results emerging from these analyses provide information that may be useful for highlighting important differences in the perceived quality of care and services provided in Ontario hospitals, and ultimately may be helpful for suggesting where and how improvements to care and services should be made.

What Makes Up the Ten Indicators of Patient Satisfaction?

Global Quality – three questions dealing with the overall quality of care received at the hospital and whether patients would return to the hospital or recommend the hospital to others who need care

Process Quality – based on 55 questions and nine subscales, this is the most comprehensive indicator of patient satisfaction as it includes most aspects of quality of care and services

Unit-Based Care – ten questions about patients' perceptions as to the skill, courtesy, sensitivity, level of communication, and efficiency of unit-based care providers, such as nurses

Physician Care – ten questions about patients' perceptions as to the skill, courtesy, sensitivity, level of communication, and efficiency of care provided by physicians

Support Services – five questions about the courtesy of hospital support staff (social workers, volunteers, and receptionists) as well as the quality of food served

Housekeeping – five questions about the patients' overall impression of housekeeping services provided in the hospital, including cleanliness of the hospital and courtesy of housekeeping staff

Other Caregivers – four questions about patients' satisfaction with the skill and courtesy of individuals in the hospital who drew blood, the radiology personnel, and physiotherapists

Continuity of Care – four questions about the preparation of patients for going home by hospital staff, discharge arrangements, and follow-up arrangements

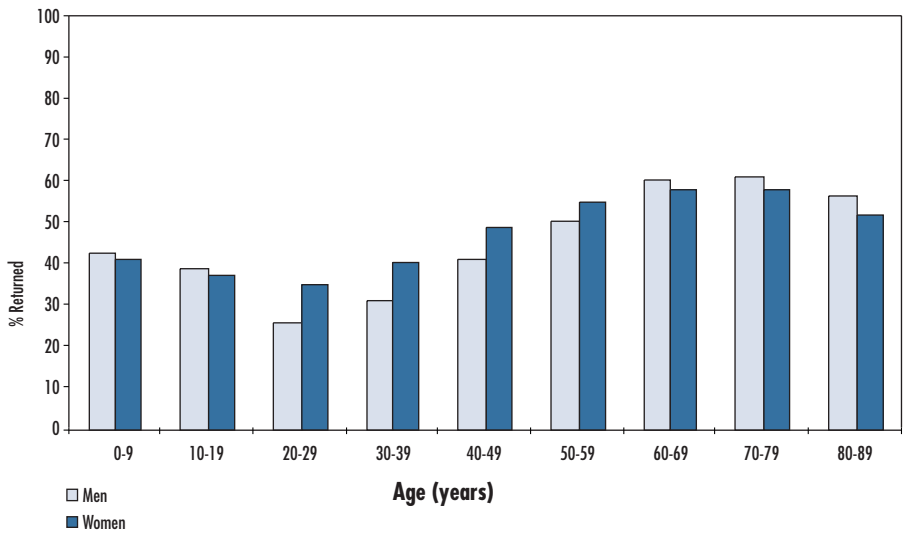
Coordination of Care – four questions about the coordination of care among the various caregivers, communication among caregivers, and timeliness of service

Outcomes of Care – three questions related to patients' satisfaction with the outcome of their hospital care

A sample of 75,000 patients discharged from 93 Ontario hospitals in 2001 were asked to rate the care they received on ten specific dimensions of quality.

About half of the surveyed patients responded and returned the questionnaire. Response rates were slightly different for women and men, and for respondents in different age groups.

FIGURE 2.22: PATIENT SATISFACTION RESPONSE RATES BY SEX



The largest difference in response rates between the sexes was for respondents in the 20-50 years age groups; in other words, a higher proportion of younger women returned surveys than any other group. Research studies show that relative to older men, younger women report more problems with the care and services they receive in hospitals.[7,63,64]

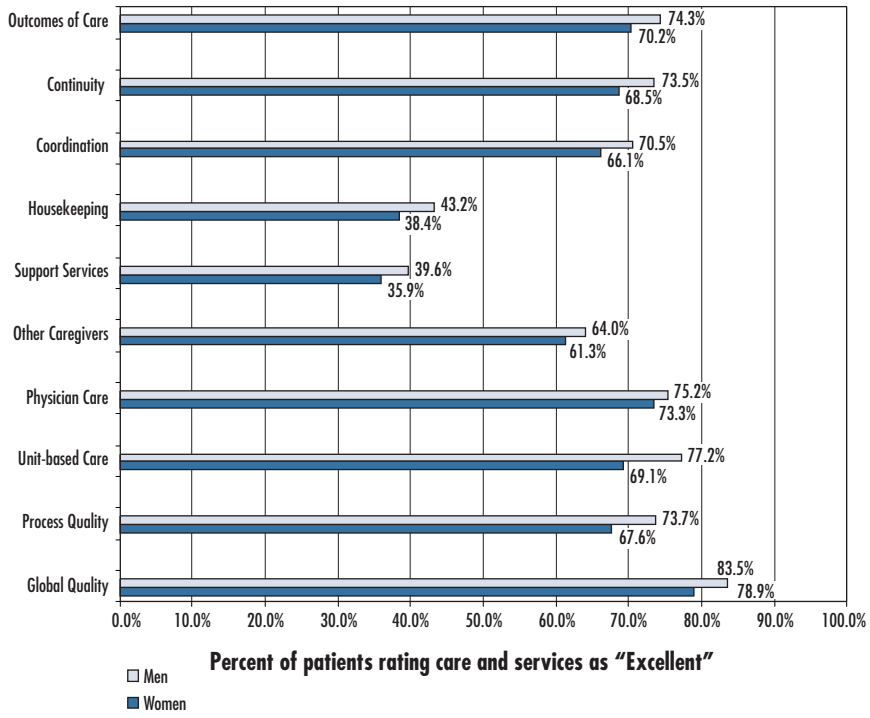
A closer look at the data reveals that, in comparison to patients from other peer groups and regions, there were relatively more women than men returning the satisfaction surveys from small hospitals and from Region 5 (South Western). These findings may reflect differences in the composition of patients in regions and peer groups, or in the potential for volunteer bias, which may shift by sex. Volunteer bias means that, despite surveying discharged patients randomly, patients who may be substantially more or less satisfied with the care they received during their hospital stay may also be those more likely to complete and return the questionnaire. Although it is a potential explanatory factor, there is currently no empirical evidence supporting a relationship between sex and volunteer bias, or satisfaction and volunteer bias.

Indicator scores out of 100 points were calculated for each hospital by averaging patients' adjusted scale ratings. To improve comparability between hospitals, regions and peer groups, patients' scores were adjusted to control for possible differences in five pre-existing patient characteristics that may have an impact on patient satisfaction scores and may not be within the control of hospitals. These characteristics are sex, age, self-assessed health status, recent hospitalizations and whether a family member or the patient completed the survey. This risk-adjustment model was applied to help determine performance allocations (i.e. number of stars) for hospitals in the *Hospital Report 2002: Acute Care*. As expected, in any analysis in which satisfaction scores are compared by sex, the variable of sex is not included in the risk-adjustment model. This method attempts to maximize the extent to which differences in satisfaction scores between women and men are actually reflective of sex differences. As noted previously however, risk-adjustment only reduces, and does not entirely eliminate pre-existing differences among people and organizations.

Snapshot of Differences Between the Sexes in Patient Satisfaction

As shown in Figure 2.23, sex appears to make some difference in adjusted ratings of patient satisfaction in Ontario hospitals. In the most recent patient satisfaction survey (2001), for all ten indicators a higher proportion of men than women rated the quality of care they received favourably (excellent/very good); a higher proportion of women than men rated their care less favourably (fair/poor/very poor). These findings are very similar to those reported from the previous year's satisfaction survey (2000).

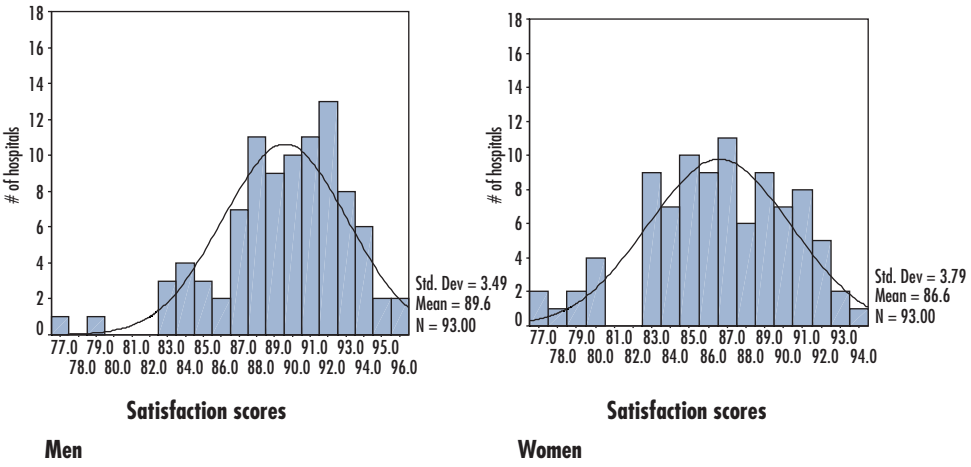
FIGURE 2.23: PERCENT OF PATIENTS BY SEX RATING CARE AND SERVICES AS EXCELLENT



In the most recent survey (2001), an average of 5% more men than women rated the care and services they received as excellent (by hospital). As shown in the graph, the difference between women and men reporting a high level of satisfaction (i.e. excellent) was greatest (i.e. 5% and higher) for three key indicators:

- **Continuity of care** which is a measure of satisfaction with preparation for discharge, follow-up care and transition to home following a stay in hospital;
- **Unit-based care** which is essentially a measure of satisfaction with nursing care; and
- **Process quality** which is made up of nine subscales and is considered the best overall comprehensive indicator of patient satisfaction.

FIGURE 2.24: DISTRIBUTION OF SCORES BY SEX – UNIT-BASED CARE



What are Histograms?

Figures 2.24, 2.25 and 2.26 are called histograms. These graphs compare the shape, centre, and spread of the distribution of average scores per hospital for women and men (separately) for the three key satisfaction indicators in which 5% or more men reported high satisfaction (i.e. excellent) than women. The curves superimposed on the graphs help to judge the distribution of the data.

FIGURE 2.25: DISTRIBUTION OF SCORES BY SEX – PROCESS QUALITY

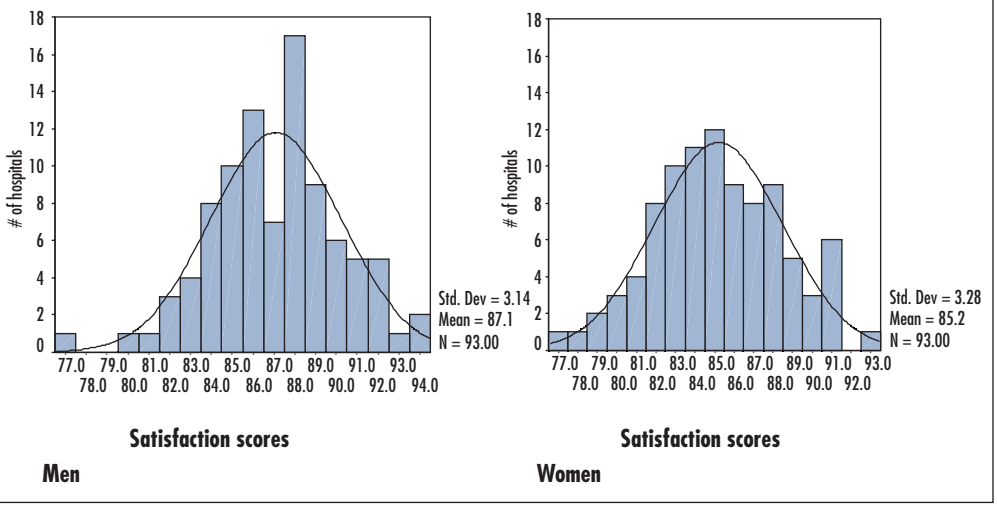
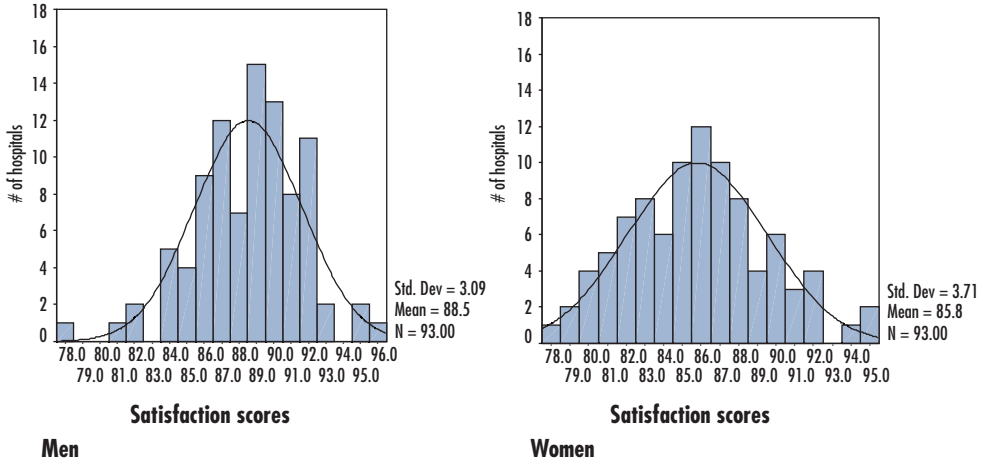
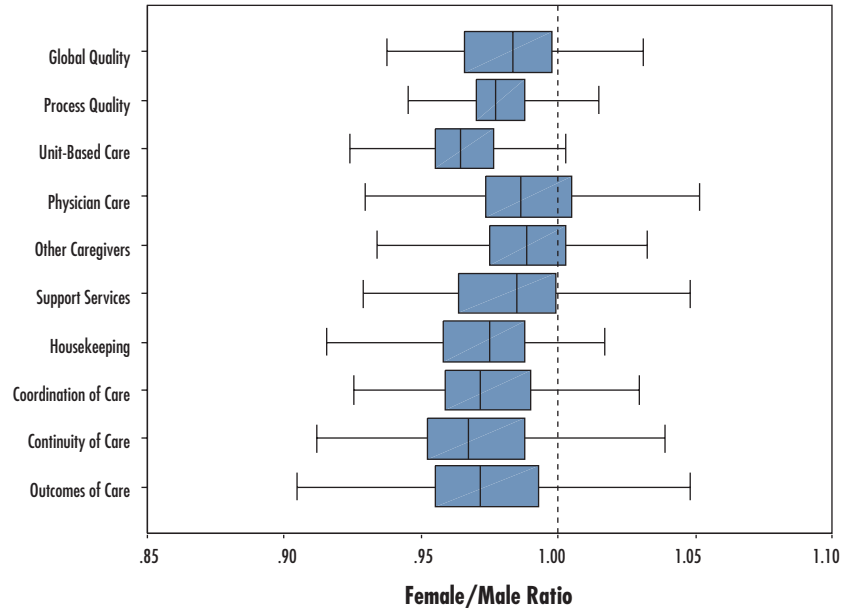


FIGURE 2.26: DISTRIBUTION OF SCORES BY SEX – CONTINUITY OF CARE



As shown in Figures 2.24, 2.25 and 2.26, the difference in mean or average hospital satisfaction scores for women and men was greatest for unit-based care (i.e. 3 indicator points), followed by continuity of care (i.e. 2.7), and process quality (i.e. 1.9), with women having lower mean satisfaction scores than men on all indicators. These mean differences were also statistically significant ($p<0.05$).[f] In addition to having lower mean scores across hospitals, women's scores were also slightly more dispersed or varied than men's scores on each of these indicators. Notice that the dispersion of scores in the distributions of satisfaction scores for women and men, measured by standard deviation, were greater or wider for women versus men for unit-based care and continuity of care. With a greater spread of scores, it appears that there are opportunities to improve satisfaction for women by addressing variation in the design and delivery of care that patients receive on the units and in preparation for discharge.

FIGURE 2.27: DISTRIBUTION OF FEMALE/MALE RATIOS FOR PATIENT SATISFACTION



Calculation of the ratios of average satisfaction scores reported by women and men for a particular hospital provides a more in-depth view of sex-based equity or inequity in patient satisfaction across hospitals. Ratios of less than one (1.00) mean that women's ratings of quality of care are lower than those of men. The box-and-whisker plot in Figure 2.27 shows the range across hospitals for the ratio of indicator scores for women compared to the same indicator scores for men at the hospital level.[g] Note that across all hospitals, female-to-male ratios of satisfaction scores are not substantially different. All median sex-based ratios of satisfaction scores are less than one (1.00), meaning that across all hospitals, women consistently reported lower satisfaction than men on all ten aspects of care. The above figure provides a picture of the variation in performance. The range of ratios was greatest for patients' satisfaction with outcomes of care, and was smallest for patients' satisfaction with unit-based

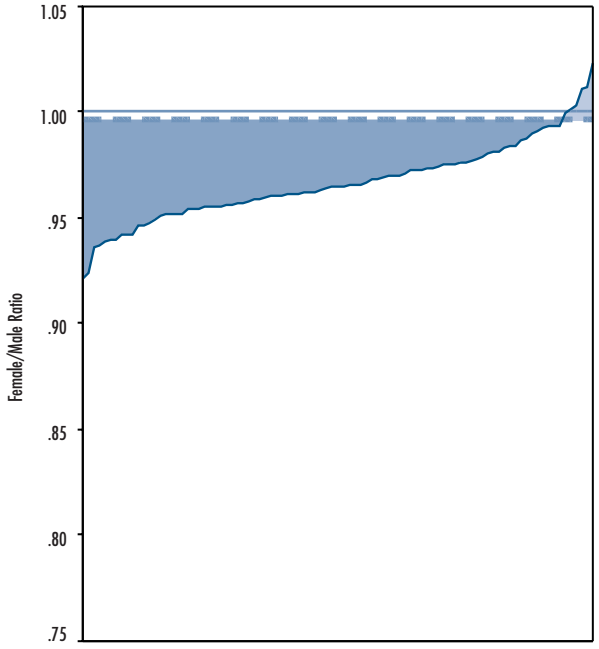
(f) The paired-samples t-test was used to compare the means of two variables (satisfaction scores for males and females) for a single group (i.e. by hospital). It computes the differences between values of the two variables for each case and tests whether the average differs from 0. Note that some of the assumptions of these statistical tests may have been violated. Statistically significant means probably true (not due to chance). $p < 0.05$ means that there is less than 5.0% chance (or probability) that the finding is due to chance, or conversely, greater than a 95% chance that the finding of a relationship is not due to chance.

(g) The black line inside the boxes reflects the score for the median hospital, indicating that 50% of hospitals scored lower and 50% of hospitals scored higher. The left and right outlines of the boxes mark the 25th and 75th percentile scores and the whiskers extending from both ends of the box display the minimum and maximum hospital scores for a particular indicator.

care and process quality. In terms of the average differences in satisfaction between women and men, the ratio of patient satisfaction scores was lowest, and thus least equitable, for unit-based care (i.e. nursing care). Scores by women and men were most similar, and thus most equitable, for satisfaction with the care provided by physicians and by other caregivers.

One of the pertinent themes emerging from this analysis is that women in Ontario appear least satisfied with the care and services provided on the unit (i.e. unit-based care), and with their discharge from hospital and their follow-up care (i.e. continuity of care). These findings point to the importance of studying and understanding the sources of these differences. The method used earlier to establish equity benchmarks for clinical utilization and outcomes, and explore the differences between women and men can also be applied to patient satisfaction. Figure 2.28 shows that biases in the system may be contributing to sex differences, and that greater equity in patient satisfaction, represented by the darker shaded area, appears to be achievable. Do women have higher expectations of, or place greater relative importance on, discharge planning than men, given the broader roles they tend to re-assume as caregivers in their homes following discharge from hospital? Are there specific hospital services/areas or clinical conditions in which women are particularly less satisfied than men with these aspects of care? Further analyses to answer these questions may provide more useful information about how and why women and men differ, and more meaningful and targeted direction for improving sex sensitivity in the design and delivery of care.

FIGURE 2.28: BIOLOGY, BEHAVIOUR AND BIAS: UNIT-BASED CARE



Equity Benchmark	# of hospitals** used to calculate equity benchmark
0.997	11

**Hospitals are top performers (ratio closest to 1.00 with top 10% of patients)

Total number of eligible hospitals included in distribution =93

Distribution of ratios (hospitals)

Sex-based equity (1.00)

Equity benchmark (of top performers)

Exploring Relationships

In addition to examining the aspects of care in which the differences between women and men on satisfaction scores are most substantial, exploring relationships between indicators may also help identify areas where there may be the greatest potential for further study and improvement. To this end, the satisfaction scores for **women** were correlated to satisfaction scores for **men** for each indicator across all hospitals. Indicators with higher (positive) correlations may be areas in which the expectations of women and men during their hospital stay elicited similar (or equitable) patterns of responses than indicators with lower (positive) correlations.

According to this analysis, the relationship between satisfaction scores for women and men was positive, moderate to strong (i.e. $r > 0.5$), and statistically significant for all ten indicators. The correlation between women's

and men's scores for continuity of care (r = 0.69), however, was relatively lower than that of all other indicators; the highest correlation was for housekeeping (r = 0.93). It appears that relative to other aspects of care, women may have different expectations than men about being prepared for going home and follow-up after a hospital stay.

Performance Across Regions and Peer Groups

This analysis will focus on the three key indicators that were identified previously as those in which at least 5% more men in Ontario had higher (i.e. excellent) satisfaction ratings than women: **unit-based care, process quality, and continuity of care**.

There were variations in the differences in satisfaction scores between women and men across regions and peer groups and types of hospitals. The box-and-whisker plots shown in Figures 2.29, 2.30, 2.31 suggest that although there was widespread consistency in men rating aspects of care slightly more favourably than women, there were also patterns in the magnitude of the differences between average scores and variability of scores across regions and peer groups.

The challenge inherent in these analyses is to understand how much of a difference between the sexes can actually be considered an actionable difference. The purpose of sharing these data is to provide a starting point for further work in equity in patient satisfaction, which will necessitate more sophisticated statistical methods, and linking of hospital-level, unit-level and patient-level data to practices, processes and initiatives. Targeting improvements in the design and delivery of care may then lead to greater, and potentially more sex-equitable satisfaction.

In the analysis of regional differences, both female and male patients discharged from hospitals in Region 3 (Greater Toronto Area) rated the quality of unit-based care (i.e. nursing care) lower than in any other region; the range of scores was also highest for Region 3 (Greater Toronto Area) hospitals. In addition, differences or inequity in average scores between women and men for nursing care were greatest in Region 3 (Greater Toronto Area). As shown in Figure 2.29, in 50% of Region 3 (Greater Toronto Area) hospitals, women rated their satisfaction with nursing care lower than 80 (out of 100 points); the average scores by hospital for nursing or unit-based care rated by women and men in hospitals in all other regions did not extend as low as 80.

FIGURE 2.29: COMPARING PATIENT SATISFACTION SCORES BY SEX: UNIT-BASED CARE

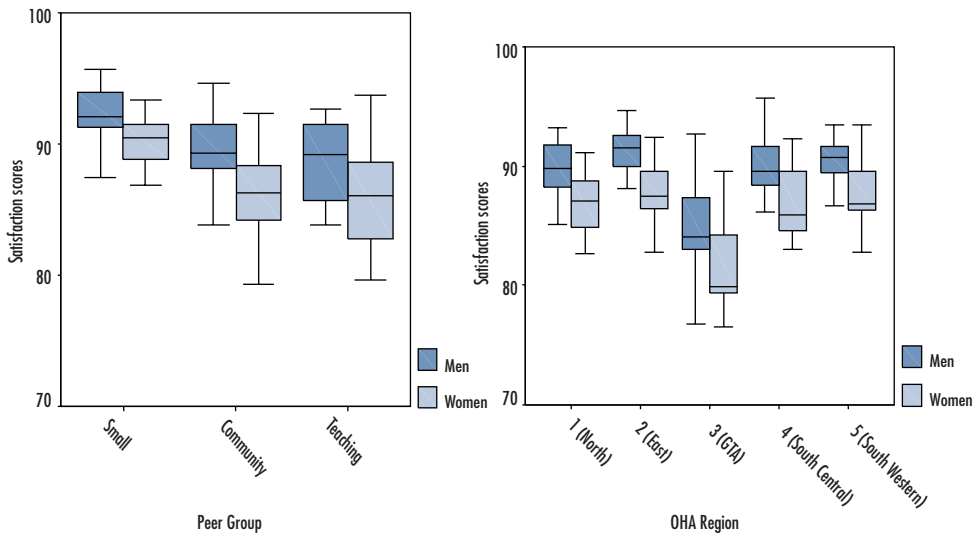


FIGURE 2.30: COMPARING PATIENT SATISFACTION SCORES BY SEX: PROCESS QUALITY

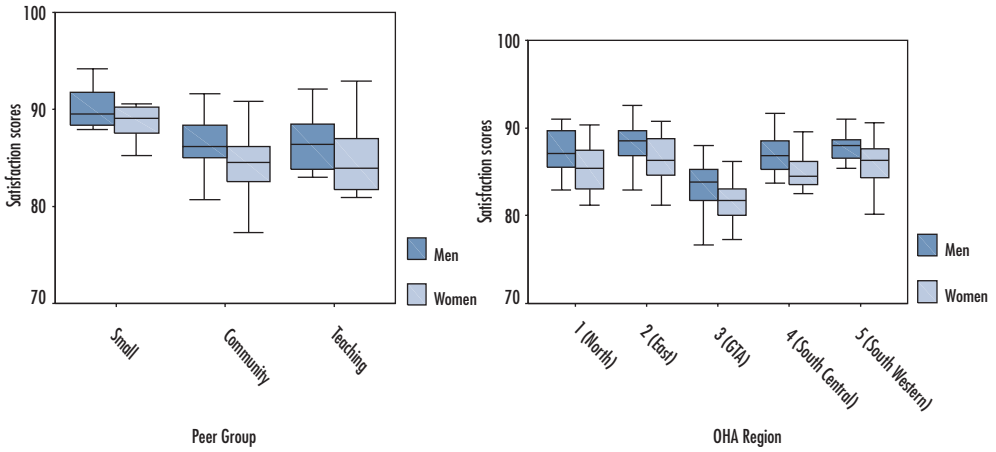
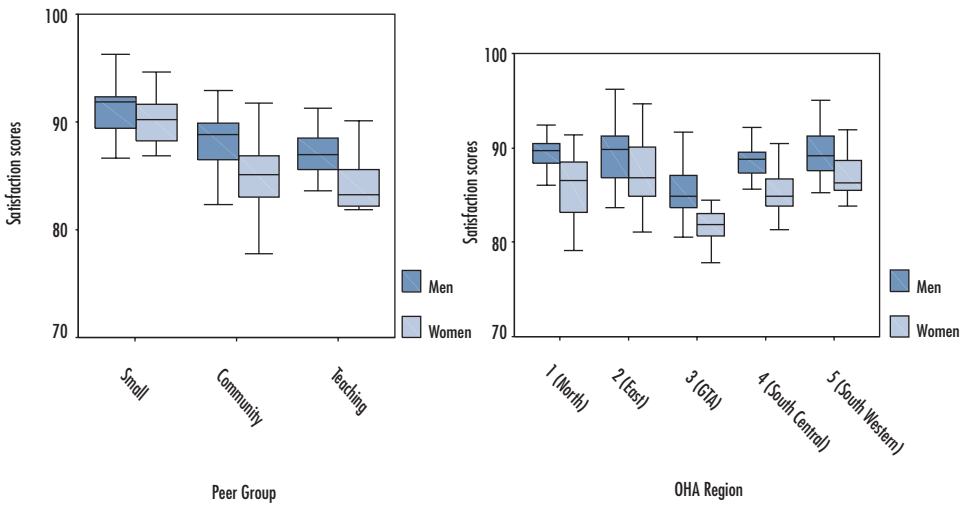


FIGURE 2.31: COMPARING PATIENT SATISFACTION SCORES BY SEX: CONTINUITY OF CARE



There was relatively less variation in the differences between women and men for satisfaction ratings with process quality and continuity of care.

Across peer groups, both women and men discharged from small hospitals had higher average scores for and were more satisfied with unit-based care (i.e. nursing care), process quality and continuity of care than community and teaching hospitals. Furthermore, smaller hospitals had more sex-equitable scores, or narrower differences between women and men, than patients discharged from community and teaching hospitals on these three key indicators. A statistical test comparing mean female to male ratio scores of satisfaction across regions and peer groups on all ten indicators of satisfaction found only one statistically significant difference: small hospitals had significantly greater sex-based equity or a significantly higher mean ratio on continuity of care than community hospitals ($p<0.05$).[h] Given the likelihood of finding a significant difference

Highlights

- For all ten indicators of satisfaction, women were consistently less satisfied than men.
- The differences between women and men in satisfaction with care were most substantial for indicators of unit-based care (i.e. nursing care), process quality (i.e. care and satisfaction with services provided), and continuity of care (i.e. discharge and follow-up).
- Overall, the differences between the sexes on patient satisfaction scores were especially small when compared to differences on clinical utilization and outcome indicators.
- There was some consistency in regional and peer group evaluations in patient satisfaction ratings. For example, on the three key measures, small hospitals had both higher average scores (for both sexes) than teaching and community hospitals and a smaller gap in satisfaction scores between the sexes. Hospitals in Region 3 (Greater Toronto Area) generally had both lower scores for both sexes and greater gaps between women and men on average satisfaction scores.

(by chance) when making multiple comparisons, it would appear that there were no clear or true differences. Although tests of statistical significance provide one way of understanding where substantial differences lie, and which specific issues warrant further attention, they do not highlight all important differences.

The size (i.e. programs, beds, number of staff) and mandates of teaching hospitals are often considerably different than those of community and small hospitals. Providing highly specialized care in an academic environment, for instance, may in part impede a teaching hospital's ability to provide seamless and personalized care, potentially affecting patient perceptions of coordination and continuity of care. Supporting this hypothesis, some studies have found that hospital size has a significant effect on hospital satisfaction scores.[64] In addition, although a few studies of patient satisfaction actually risk-adjust for hospital size in attempt to make comparisons fair, there is growing agreement among experts that removing the impact of variables such as size is undesirable as this may mask important findings and opportunities for improvement.[7,63,64]

Overall, differences in satisfaction by region and peer group may be a function of factors other than the actual quality of care delivered, including geography and the patients' relationship with the hospital. Smaller hospitals in more rural communities may be identified as the central health care institution by community members whose expectations have been established largely by the quality of care provided by that hospital. Patients in these communities may also have a high degree of familiarity with their providers. Hospitals in larger urban communities such as those in Region 3 (Greater Toronto Area) may be one of many teaching and community hospitals providing care to a patient and his/her family; expectations of quality for patients receiving care at these hospitals may be higher and familiarity with providers may be lower. Understanding how some of these factors interact with patient demographics, especially sex, will be important to explain differences in perceptions of quality of care and address these differences to improve satisfaction in Ontario hospitals.

Next Steps

Knowledge gained from patient satisfaction surveys can help set a direction for quality improvement in hospitals. Exploring differences in reported satisfaction between women and men acknowledges that different populations of patients have different expectations, experiences and perceptions of hospital care. Using and comparing patient satisfaction results, analyzed by sex, helps to highlight which aspects of care may require the most immediate attention, and how this attention may be channeled to enhance equity in satisfaction with care and services in hospitals. There are, however, considerable gaps in knowledge in this area of performance measurement. Research studies suggest that patient satisfaction is not predictable from analysis of patient variables; models that include variables of sex, age, education and self-assessed health, explain less than 10% of variation in satisfaction reports or ratings.[63,64,65] There is also a suggestion that improvement in patient scores will likely result from

(h) A statistical test called an ANOVA (analysis of variance) was conducted to test whether the mean female to male ratios of satisfaction scores were similar across regions and peer groups by comparing the variance estimated between the group means (i.e. region, peer group) to the variance estimated within group means (i.e. region, peer group). Note that some of the assumptions of these statistical tests may have been violated. Statistically significant means probably true (not due to chance). $p < 0.05$ means that there is less than 5.0% chance (or probability) that the finding is due to chance, or conversely, greater than a 95% chance that the finding of a relationship is not due to chance.

efforts aimed at meeting individual needs and expectations (i.e. not "one size fits all"), which reinforces the importance of more specific and stratified satisfaction information.[63]

Making patient satisfaction data more actionable will require making use of more sophisticated statistical methods to conduct further analyses to help address:

- Whether differences in satisfaction between women and men in Ontario reflect differences in other patient and care-related factors linked to sex and/or gender, in differences in patient expectations, attitudes, personality traits, values, or in the actual ways patients are treated;
- Whether there are regional, organizational, and program-level differences that influence patient satisfaction ratings, and sex-based differences in ratings at the hospital, subunit and clinical group level; and
- Whether risk-adjustment for sex-based differences in the evaluation of care should include such factors as self-assessed health, especially given that some of these factors may be linked to sex and/or gender, and the nature and direction of these relationships remain unclear. Risk-adjusting for some of these may actually mask issues and opportunities for learning and improvement.

In addition, it should be noted that satisfaction surveys are only one way of understanding the extent to which the needs and expectations of Ontario's hospital patients are met. Other methods, such as focus groups and compliment and complaint monitoring systems, are used by a number of hospitals to listen to what patients and their families have to say about the quality of care they receive.[66] It is therefore important to integrate information about patient experiences and perceptions that emerge from a variety of methods, and to ensure that all methods analyze and pay close attention to differences by sex.

These strategies will help researchers, managers, providers and policy-makers better understand why men are generally more satisfied than women with quality of care and services provided in Ontario hospitals.

What You Will Find in This Chapter

- Highlights of the performance of Ontario hospitals in promoting quality of worklife, especially for women in their dual roles as unpaid and paid providers of care
- Next steps to help gain a deeper understanding of how and how well Ontario's hospitals are supporting health care workers, particularly women

Key Findings: III. How Ontario Hospitals are Supporting Women as Providers of Care

Introduction

The performance of any health care organization depends on motivated, knowledgeable and well-resourced employees. Approximately one-third of all Canadians working in health care are employed in Ontario. Many of these individuals work in hospitals, and the majority of these are women. In Canada, 80% of health care workers are women. In Ontario, about 64% of health care workers who identified the hospital as their primary place of work were female.[12]

Driven by the pressure to recruit and retain health care providers, and a growing recognition of the important, mutually supportive link between the quality of employees' work lives and the quality of care provided to patients, Ontario's hospitals are finding new ways to support their staff. Supporting the large proportion of women working in hospitals is particularly important. Women in Ontario represent over two-thirds of informal or unpaid caregivers who, in addition to being formally employed, spend an average of 30 hours a week caring for family members and/or friends.[3,12] As labour-force participation increases and the population ages, there are increasingly fewer non-employed family members available to provide needed care. As a consequence, a growing proportion of health care workers, and especially women, are both raising children and caring for elderly relatives.

Worklife programs such as childcare and eldercare (i.e. information and referral services, on-site programs) and flexible work arrangements (i.e. job sharing, flex time) are examples of human resource practices that acknowledge the value of staff as the backbone of the hospital, and notably women in their caregiving roles. Worklife programs are not unique to health care. A growing number of companies are investing in building the supply and improving the quality of childcare and eldercare services in their communities.[67]

Measuring Quality of Worklife in the *Hospital Report*

In the Human Resources section of the System Integration and Change Survey completed in February 2002, hospitals were asked if they had implemented a number of incentives and strategies to recruit, support and retain their staff. The availability of childcare and eldercare programs were examples of such strategies, and those most directly related to the role of women as paid and unpaid caregivers. These two indicators, however, do not fully capture the performance of Ontario hospitals in supporting women in these roles. A number of other priority indicators related to supporting hospital staff were endorsed by the advisory panel. These included the availability of life-long learning opportunities, employee assistance programs (EAP) and succession planning strategies. There is a need to continue to develop rigourous methods to evaluate how well hospitals are supporting their staff, and in doing this, to acknowledge sex differences in use/access and outcomes for health care workers (e.g. absenteeism, staff satisfaction).

Snapshot of Quality of Worklife Practices

In 2000/2001, 6% of Ontario hospitals reported having childcare programs for staff. Less than 2% of hospitals offered eldercare programs for staff. Only one Ontario hospital reported having both childcare and eldercare programs for staff. There were no notable trends in the availability of these staff support services by region and type of hospital.

Next Steps

Studies continue to show that people who work in health care are more likely to miss work because of illness and disability, including stress and burnout, than workers in other sectors.[68] The well-being of health care workers is influenced by several factors such as the extent to which work interferes with family life, the amount of influence employees have over their jobs and their span of control, the hours worked and the workload, and the age of the workforce.[69,70,71] As in most other industries, it is difficult to optimize work environments in health care when faced with systemic and organizational change, resource shortages, and significant crises.[72] However, the weight of the evidence suggests that quality of worklife and job satisfaction have important direct and indirect effects on the ability to manage change and alleviate crises in the first place.

What key factors determine the quality of the work environment and the satisfaction of workers? According to research, wage and fringe benefits are no longer considered the primary determinants of job satisfaction. Studies by the US Families and Work Institute[47,73] found that the quality of workers' jobs and the supportiveness of their workplaces are the most powerful predictors of productivity, job satisfaction, commitment and loyalty of employees, and retention. Job quality and supportiveness are defined by several factors including autonomy on the job and involvement in decision-making, flexibility in work arrangements, learning opportunities, meaningfulness of work, opportunities for advancement and security. Experts suggest that many of these are linked to broader organizational characteristics such as a supportive culture, committed leadership, and manager-subordinate relationships that are characterized by trust and open communication.[67,71,72]

Future work to measure the quality of worklife in hospitals should start to more closely examine these factors from the perspective of women as providers of care. The recent report released by the Canadian Nurses Association and the Canadian Council for Health Services Accreditation[72] describes the use of a consensus-building process to develop a set of worklife indicators that attempt to acknowledge the root causes or underlying factors of quality or worklife issues and make a measurable difference to nurses. This work exemplifies collaborative, leading edge efforts to advance the measurement and improvement of worklife for a particular group of health care workers.

Building on this, it will be important to start to address a few emerging questions about quality of worklife in the context of women's health:

- Do human resource strategies meet the quality of worklife needs of staff, and are they sensitive to the needs of women?
- What are the barriers to and success factors of implementing these types of strategies?
- What are the specific links between implementing these practices and other aspects of hospital performance such as patient satisfaction, clinical outcomes and financial health?

Highlights

- Hospitals in Ontario and elsewhere are beginning to develop quality of worklife strategies that aim to acknowledge the value of staff as the backbone of the organization, and particularly women as key providers of both paid and unpaid health care.
- Availability of childcare and eldercare programs is one example of how hospitals are supporting their staff.
- Less than 7% of Ontario hospitals report offering on-site eldercare and childcare to their staff members.
- Other examples of innovative programs that have not yet been measured by the Hospital Report include flex time and job share arrangements, leadership and development programs.

What You Will Find in This Chapter

- A summary of the progress made to date in women's health care in Ontario hospitals and in measuring the performance of hospitals in women's health
- Final thoughts on the next steps needed to help further advance a quality improvement focus in women's health, including ways to build on existing women's health information and to put women's health information to use

Conclusions and Future Directions

Looking Back: Progress Summary

The results presented in this report support several important conclusions about the state of women's health in Ontario hospitals and the progress made to date in measuring women's health performance.

Women's Health in Ontario Hospitals

Based on the analyses highlighted in this report:

- There has been relatively little change over the previous three years on the majority of sex-specific and sex-sensitive indicators of access, appropriateness, outcomes, efficiency and satisfaction with care. However, there is much more variation across hospitals, regions and peer groups on these indicators. As discussed, there are some patterns in these variations in quality and equity that require further investigation. Ultimately, these findings point to opportunities for learning from best practices and improvement within Ontario's health care system.
- Hospitals in Ontario have developed and are using clinical decision-making tools such as guidelines to improve the quality of sex-specific and sex-sensitive care. Studies suggest that passive dissemination of guidelines may be ineffective in increasing adoption. Further analyses should highlight how these tools are developed, disseminated, and implemented. Information on the process of guideline development and implementation, including sensitivity to sex and/or gender based differences, should in turn be linked longitudinally to measures of change in provider practice and improvement in clinical outcomes.
- There is some preliminary evidence of the potential to achieve greater sex equity in the system. The differences between sexes are complex and may be a result of factors that drive the appearance of inequity (i.e. biology or behaviour), and/or factors related to actual inequity or biases in the system. These factors also reflect differences related to sex or gender or the interaction of sex and gender, and the need to conduct further study to better understand these differences. These findings point to opportunities to calculate achievable benchmarks for equity, and to integrate women's health issues like equity directly into traditional quality improvement structures within hospitals. This is important as issues related to women's health and the differences between the sexes cut across most health care programs and processes. Improvement in any hospital process or program should consider issues of sex and gender sensitivity.
- In interpreting these findings, it is important to note that there are currently no correct or standard rates or ratios. Again, these findings provide a starting point for identifying potential standards and opportunities for improvement. Further definition and pursuit of these opportunities will require additional study and refinement of current methodology.

Measuring Women's Health Performance in Ontario Hospitals

This report builds on the progress made to date in integrating the women's health perspective in performance measurement in Ontario. The participation of hospitals in measuring and reporting women's health information, and of women's health experts in supporting the feasibility and informing the development of the women's health perspective, have been the driving forces behind this progress. Hospitals' participation in these reports represents an important commitment to quality improvement in and accountability for women's health across the province.

Measurement of women's health care is an evolutionary process and changes to the indicators and methods will continue to be made based on input from experts and stakeholders.

Looking Ahead: Beyond the Excerpt

Although strides have been made in integrating women's health indicators into the province's balanced scorecard for hospitals, there are still substantial gaps in performance measurement in women's health in Ontario. These include gaps in methodology, data, and analyses. Bridging these gaps will help providers, managers, policy-makers and planners advance a quality improvement focus in women's health.

Building on Existing Women's Health Information

This report provides only a first step in understanding women's health care performance and only one perspective on hospital performance in women's health. To build on existing women's health information, a number of next steps may be pursued. These include:

Refining the methodology

Risk-adjustment models attempt to minimize differences in the health status of patients admitted to different hospitals. Attention to refining risk-adjustment to ensure fair comparisons is particularly important given the sex-sensitive findings to date and the objective of providing hospital-specific performance information in women's health.

Revisiting the *Indicator Toolbox*

The indicators presented and discussed in this report serve as a starting point. Hospitals need to collect data on women's health in other important areas and conditions that are broadly representative of women's health issues throughout their lifespan. In addition, it will be important to balance locally relevant indicators with national standards. In the *Women's Health Preliminary Study (2001)*, a toolbox of indicators relevant and important to the quality of women's health was developed using an expert and community consultation process. Indicators in this toolbox can be used by hospitals to measure their own performance. These include, for example:

- Case detection rates for caregiver stress (women versus men)
- Screening for depression during hospitalization following AMI, stroke, or HIV positive diagnosis (women versus men)

- Incorporation of sex differences into clinical guidelines
- Availability and use of education and prevention initiatives for women's health

In many cases, this will require identification and/or development of better sources of data.

Reporting at a hospital-level

As the methods and data sources underlying women's health indicators continue to improve over the next few years, a more detailed, hospital-specific level of reporting will occur. This will be important in realizing the benefit of performance measurement for quality improvement and accountability purposes in women's health.

Linking measures and tracking episodes across sectors

Single performance measures are useful in a limited way. Data linkage across settings and sectors over time is a powerful tool for developing a more complete picture of how health care needs and patterns of health care utilization are tied to various aspects of women's lives.[74]

In addition to developing new and improved sources of data, such as community and home care data, it will be important to make better use of existing survey and administrative databases that contain detailed information about use of services and practices across programs, clinical and psychosocial outcomes, and socioeconomic variables. A number of databases that may be useful in conducting analyses of women's health remain largely unexplored.[74] Linking census data and data on physician payments and hospital discharges to individual patient encounters, and to survey data (e.g. General Social Survey), for instance, will help to identify and address quality of care issues and policy impacts throughout the continuum of care.[74] These efforts should also be balanced by efforts to ensure increased vigilance about data confidentiality and security in women's health.

Conducting subpopulation and gender-based analyses

Women are not a homogeneous group, and sex-based analyses tell only part of the story of differences between women and men.[60] As highlighted in the report, gender-related factors are critical to capturing the health care experiences of women. The combined effects of sex and gender affect health status, health system responses, and eventual health outcomes.[3] In addition to sex-sensitivity, it will be important to recognize the complex and diverse interaction of other socioeconomic, social and cultural identities that define the roles, status and experiences of women in performance measurement in women's health. It will also be important to recognize the unique and diverse points of view of women in defining equity, access and quality of care. This direction is congruent with an inclusive definition of women's health.

Women's Health *involves women's emotional, social, cultural, spiritual and physical well-being, and is determined by the social, political and economic context of women's lives, as well as by biology. It is defined by, and recognizes the validity of, women's perceptions and life experiences of health and illness, the values and knowledge of women, and the role of women both as users and as providers of health care.*

Ontario Women's Health Council Working Definition of Women's Health

Putting Women's Health Performance Information to Use

In addition to addressing the challenges of gaps in current methodology, data and analyses, it will be important to continue finding ways to put women's health performance information to use. Such work will be critical to enabling hospitals to move beyond producing data and take advantage of useful information. This will encourage hospitals to integrate women's health performance information into their general quality improvement practices, and is consistent with the call by the Canadian Institutes for Health Research to mainstream women's health as an important concern for all parties.[3] In addition to guidelines and care pathways, which help form the base for quality improvement, there are a number of tools to facilitate the process of quality improvement. These include: process mapping and analysis, collaborative benchmarking (clinician participation), performance feedback, and cross-institutional site visits by providers and practitioners. Specific ways to make use of performance data in women's health, and ensure that both content and process issues are addressed for quality improvement, include:

Benchmarking

Based on the fact that no "right" or "best" rates and ratios for women's health indicators have been identified, it is difficult to know what benchmarks hospitals should work towards in this area. Some of the work in this report provides a starting point for benchmarking in women's health. Trending and sharing of hospital-level data within Ontario and across other provinces will help to develop a methodology to better understand how to arrive at women's health benchmarks that are attainable and objective, based on valid and reliable data, and represent excellence in performance. Such benchmarks will help encourage continuous quality improvement in women's health in Ontario hospitals.

Sharing success stories

There are a growing number of examples of initiatives that facilitate opportunities for health care providers and managers to work and learn together to improve quality of care. Some of these collaborative models have been successful in the dissemination of improvement knowledge, the development of resources for quality improvement, and the achievement of measurable improvements in care.[75,76] As such, it will be important to provide similar types of structured opportunities and venues to link data to new and ongoing practices and to identify, validate and share success stories about organizations that are using women's health information to improve.

Communicating accountability

As hospitals communicate more detailed and accurate information on their performance in women's health, they will be better able to provide useful information to their communities, thus demonstrating accountability. Note that accountability can be thought of as the exchange of useful information between individuals or groups during the course of a relationship. Measuring accountability in this way is an important future direction for performance measurement in women's health care in Ontario.

Continuing the Pursuit and Expansion of Knowledge About Women's Health

Providing evidence for responsive, sensitive and sound decision-making in health and health care is a critical endeavour. To develop this body of evidence and advance the quality improvement focus in women's health in a comprehensive and sustainable way, it will be important to continue to integrate women's health indicators into performance measurement frameworks.[77] It will also be critical to link evolving measures of performance in women's health care to the policies designed to improve this care. With its multidimensional focus on women seeking, receiving and providing care, and its attempt to estimate equity benchmarks, this report provides a starting point from which to move beyond hospital walls to measure and report the performance of the broader health care system in women's health. A continuing strong voice on behalf of the status of women will help to ensure that many of the women-specific areas for improvement, and the reducible differences between women and men, are addressed.

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Glossary

Acute Myocardial Infarction (AMI) – commonly known as a heart attack, is a condition that results from decreased or blocked blood flow to the heart.

Caesarean Section (c-section) – the birth of the baby through surgical incisions (cuts) made in the abdomen and uterus of the mother.

Cholecystectomy – operation to remove the gall bladder, often performed because gall stones are causing pain and other symptoms. The laparoscopic, or closed method (using small incisions in the abdomen) is most common. The gall bladder may also be removed through a larger incision in the upper abdomen (an open cholecystectomy).

Community Acquired Pneumonia – an infection of the lungs acquired before the patient is admitted to hospital.

Coronary Angiography – technology used to assess blood flow for AMI patients. Radio-opaque dyes are injected, allowing physicians to observe the flow of blood through the heart.

Correlation (coefficient) – measure of the strength of association between two variables and reflects how closely the two variables go together. The more closely the two variables go together, the stronger the association between them and the more extreme the correlation coefficient. The strength of the correlation in a scatter plot is reflected by the degree to which the points cluster together.

Extreme (in boxplot) – cases with values more than 3 box lengths from the upper or lower edge of the box. The box length is the interquartile range.

Gender – the behavioural, cultural, or psychological traits typically associated with one sex.

Hysterectomy – the removal of the uterus and sometimes also the ovaries and fallopian tubes. It can be performed using an abdominal incision or through the vagina.

Mean – "centre of gravity" of a distribution of indicator values such that the "weight" of the scores above the mean exactly balance the "weight" of the scores below it.

Median – indicator value that divides the distribution into the lower and upper 50 percent of the values.

Outlier (in boxplot) – cases with values between 1.5 and 3 box lengths from the upper or lower edge of the box. The box length is the interquartile range.

Range – highest indicator value minus the lowest indicator value.

Sex – biological maleness or femaleness.

Sex-specific indicators – indicators that are applicable to only one sex (i.e. male or female).

Sex-sensitive indicators – indicators that reflect differences in the use or outcomes of care by sex.

Variability – spread or range of scores in the distribution.

Weighted cases – A measure of the volume of care provided in hospitals.

Appendix A:

Advisory Panel

(From *Hospital Report 2001: Preliminary Study – Volume Two, Exploring Women's Health*)

Mary Addison	Co-Program Director, Women's Health Director, Sexual Assault/Domestic Violence Care Centre	Sunnybrook and Women's College Health Sciences Centre
Heather Arthur	Associate Professor, Career Scientist	Faculty of Health Sciences School of Nursing, McMaster University
Andrea Baumann	Associate Dean	Faculty of Health Sciences, School of Nursing, McMaster University
Anne Biringer	Family Practice Physician, Assistant Professor	Mount Sinai Hospital Department of Family and Community Medicine, University of Toronto
Angela M. Cheung	Associate Director, Women's Health Program	University Health Network
Mary Jane Esplen	Head, Program of Psychosocial and Psychotherapy Research in Cancer Genetics Assistant Professor	Mount Sinai Hospital Department of Psychiatry, University of Toronto
Wendy C. Graham	Family Physician	North Bay General Hospital
Ellen Hodnett	Professor and Heather M. Reisman Chair in Perinatal Nursing Research	Faculty of Nursing, University of Toronto
Terumi Izukawa	Senior Medical Program Director & Deputy Head Assistant Professor	Baycrest Centre for Geriatric Care Division of Geriatric Medicine, University of Toronto

Moira Kapral	Staff Physician, Division of General Internal Medicine and Clinical Epidemiology	University Health Network
Guylaine Lefebvre	Chief, Obstetrics and Gynaecology	St. Michael's Hospital
Vaska Micevski	Acute Care Nurse Practitioner	University Health Network
Joan K. Murphy	Head, Divisions of Gynaecology and Gynaecologic Oncology	University Health Network Mount Sinai Hospital
Paula Rochon	Geriatrician, Scientist	KLARU, Baycrest Centre for Geriatric Care Institute for Clinical Evaluative Sciences
Donna E. Stewart	Professor and Chair of Women's Health	University Health Network University of Toronto
Meir Steiner	Professor	Departments of Psychiatry and Gynaecology, McMaster University
Ruth Wilson	Professor	Department of Family Medicine, Queen's University

Appendix B

Ontario Women's Health Council Members and Mandate

The Ontario Women's Health Council (OWHC) was established in 1998 by the Minister of Health and Long-Term Care. It acts as an advocate and a catalystfor change to improve the health of Ontario women at all stages of life. The mandate of the OWHC is to:

- Advise the Minister of Health and Long-Term Care and key stakeholders on health issues affecting women;
- Advocate for improvements in women's health in Ontario;
- Promote women's health research and identify gaps in and disseminate information on current research activities; and
- Communicate its activities broadly to women throughout Ontario.

An independent advisory body, the OWHC focuses on creating a legacy of systemic change that will be embedded in the health care system for years to come. To achieve this goal, the council is working to:

- Establish a solid base of information, evidence and new knowledge that will increase understanding of the factors that contribute to women's health and contribute to the provincial, national and international body of knowledge and research on women's health issues;
- Advocate and make recommendations for improving women's health and applying new knowledge to improve the health of women and the decision-making of researchers, educators, government, community organizations and health care providers; and
- Stimulate the advancement of women's health by identifying where change is needed and by bringing forward solutions for integrating required changes into the complexities of today's health care system.

Membership

The council is comprised of members who collectively bring a broad range of expertise in the areas of treatment, research, public and community health, and corporate and consumer issues as they relate to women.

Council Membership

N. Jane Pepino, CM, QC (Chair)
Partner, Aird & Berlis LLP; Board Member, Sunnybrook & Women's College Health Sciences Center and Women's Health Committee; Board Member and past Chair, Women's College Hospital

Nancy Birnbaum, BA, MBA (Vice-Chair)
President and Chief Executive Officer, Invest in Kids

Pat Campbell, BScN, MBA
President and Chief Executive Officer, Grey Bruce Health Services

Jane Cooke-Lauder, BA, MBA, CMC
President and Chief Executive Officer, Bataleur Enterprises

Denise Cole
Senior Consultant, StrategyCorp; former Director of Policy in the Office of the Premier of Ontario December 2000 to April 2002

Marilyn Linton, BA
Journalist and former Health Editor of the Toronto Sun; immediate past Chair, Canadian Breast Cancer Foundation, Ontario Chapter Toronto; Board Member, Centre for Addiction and Mental Health Foundation; Member, Breast Centre Committee, Princess Margaret Hospital

Heather Maclean, EdD
Director, Centre for Research in Women's Health; Director, Pan American Health Organization Collaborating Centre for Research in Women's Health; Associate Professor, Department of Nutritional Sciences and Public Health Sciences, Faculty of Medicine, University of Toronto

Harriet MacMillan, MD, MSc, FRCP(C)
Associate Professor, Departments of Psychiatry and Behavioural Neurosciences, and Pediatrics, McMaster University; Director, Child Advocacy and Assessment Program, McMaster Children's Hospital

Miriam McDonald, BScPhm, MSc
Chief Executive Officer, Northeastern Ontario Medical Education Corporation; Member, Sudbury-Manitoulin Alzheimer Society Capital Campaign Cabinet; Member, Northern Research Ethics Board

Patricia R. Petryshen, BA, BScN, MSN, PhD
Executive Vice-President, Programs, Hospital Relations, and Chief Nursing Officer, St Michael's Hospital; Associate Professor, Faculty of Nursing, University of Toronto

Donna E. Stewart, MD, DPsych, FRCPC
Professor and Lillian Love Chair of Women's Health, Senior Research Scientist, University Health Network and University of Toronto; Chair, Women's Mental Health World Psychiatric Association

Ruth Wilson, MD, CCFP, FCFP
Professor, Family Medicine, Queen's University; Chair, Ontario Family Health Network

Appendix C

Authors – Women's Health Excerpt, Hospital Report Collaborative

Christina M. Porcellato

Christina Porcellato has a BSc. (Hons, Co-op) in Health Studies from the University of Waterloo (2000), and in April 2003 completed her M.H.Sc. in Health Policy, Management and Evaluation at the University of Toronto. She recently joined the Hospital Report Collaborative at the University of Toronto. In this role, she is working on projects supporting the integration of the women's health perspective in the *Hospital Report,* the development of educational initiatives in performance measurement, and case studies on the use and development of the balanced scorecard, accountability and leadership and change management.

Donna E. Stewart

Donna Stewart, MD, FRCPC, is the Lillian Love Chair in Women's Health at University Health Network and the University of Toronto, where she is responsible for research, education, policy, and health service delivery for women's health. Dr. Stewart is a practicing physician and Professor in the Faculty of Medicine in the Departments of Psychiatry, Obstetrics/Gynaecology, Medicine, Anaesthesia, Family and Community Medicine, and Surgery. She is a Senior Scientist at the Toronto General Hospital Research Institute and a faculty member of the Institute of Medical Sciences.

Dr. Stewart has published over two hundred scientific, peer-reviewed articles. She is editor of textbooks on the psychological aspects of women's health care.

Dr. Donna Stewart has made numerous presentations to provincial, federal, and American government agencies responsible for developing policy on women's health. She has served as a consultant to Health Canada, the National Institutes of Health (NIMH, NICHD), the Population Health Council, and the United States Public Health Service. She is Chair of the Sections of Women's Mental Health of both the World Psychiatric Association and the American Psychiatric Association, and a member of the Executive Committee of the Ontario Women's Health Council of the Ministry of Health. She has been a Visiting Professor in North and South America, Australia, Great Britain, Europe, the Middle East, the Far East, Africa, and Iceland, and has presented at numerous international and national professional conferences on women's health research.

Michael Murray

Michael Murray, PhD, is a Senior Research Associate on the *Hospital Report* project in the Department of Health Policy, Management and Evaluation at the University of Toronto. He is a lead investigator on the Inpatient Satisfaction component of the project. His general research interests include: patient evaluations of care and use of such data to improve health care; staff satisfaction/ morale; and quality improvement methods (especially clinical improvement).

G. Ross Baker

Ross Baker, PhD, is a Professor in the Department of Health Policy, Management and Evaluation, Faculty of Medicine, at the University of Toronto. His current research focuses on the incidence of adverse events and factors influencing patient safety in Canadian health care, and on the development and use of performance measurement and balanced scorecards in health care organizations. He is principal investigator of the study, "Adverse Events in Canadian Hospitals", funded by the Canadian Institute of Health Information and the Canadian Institutes of Health Research. Ross was a member of the National Patient Safety Steering Committee initiated by the Royal College of Physicians and Surgeons of Canada and chaired by Dr. John Wade. He was the Principal Investigator for *Hospital Report '98* and *Hospital Report '99,* performance reports on Ontario Hospitals. He serves on the editorial board of the *Joint Commission Journal on Quality Improvement and Safety.* He is the Chair of the Association of University Programs in Health Administration (AUPHA), a Washington-based organization that serves graduate and undergraduate programs in health administration in North America and elsewhere. He also serves as a board member of the newly created (US) National Center for Healthcare Leadership and chairs the Core Competency Council of the National Center for Healthcare Leadership.

Adalsteinn D. Brown

Adalsteinn (Steini) D. Brown, is an Assistant Professor in the Department of Health Policy, Management and Evaluation (HPME), Faculty of Medicine, at the University of Toronto and the Principal Investigator for the *Hospital Report* project.

Prior to joining the University of Toronto, he was a member of SAI, a health care management consulting firm with offices on Park Avenue in New York City and Sandhill Road in Menlo Park, California. He has worked with a wide range of public and private sector clients in Canada, the U.S., Europe, and the Far East on strategy in health care, health care financing, and quality improvement topics. These clients include not-for-profit insurance companies, hospital networks, and investment banks.

In addition to his work on performance measurement, he has grant and contract-funded research on the effective communication of performance information to consumers and the cost-effectiveness of emerging screening and diagnostic technologies.

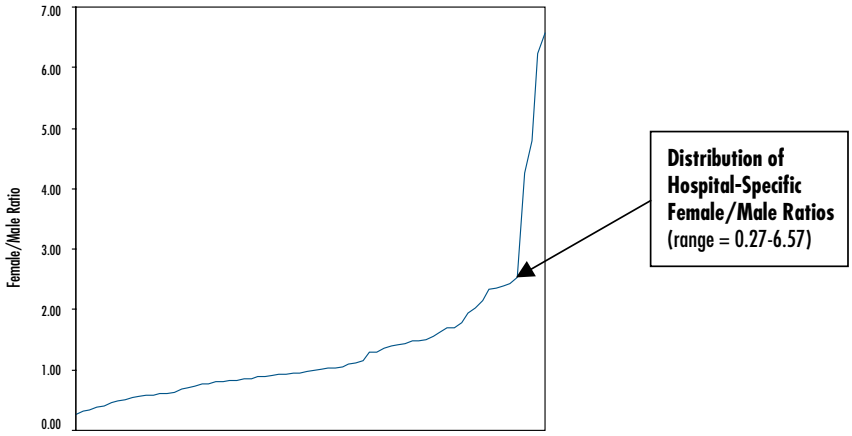
He is also Adjunct Scientist at the Institute for Clinical Evaluative Sciences (ICES) in Ontario, an Instructor in the Department of Family Medicine at the University of Western Ontario, and an Associate of the Center for Health Policy at Stanford University.

He graduated magna cum laude (government) from Harvard in 1993 and received his DPhil from the Department of Public Health and Primary Care at the University of Oxford in 2002. He was a Harvard National Scholar and a Rhodes Scholar.

Appendix D

Equity Benchmarks: Estimating Biology, Behaviour and Bias

The distribution of hospital-specific female to male ratios for a particular indicator (i.e. AMI complications) including extreme and outlier values:



This distribution of ratios is compared to two values:

1. A ratio of 1.00, which is the mathematical indicator of equity or "no difference" between the sexes
2. The pooled mean ratio of the hospitals with the top 10% of cases and the "best" equity profile (i.e. ratio closest to 1.00) for an indicator such as AMI complications

FOR EXAMPLE…

HOSPITAL	FEMALE/MALE RATIO (risk-adjusted)	TOTAL CASES (Female and Male)
Hospital A	0.89	
Hospital B	0.89	
Hospital C	0.91	
Hospital D	0.92	
Hospital E	0.94	494
Hospital F	0.95	27
Hospital G	0.96	296
Hospital H	0.98	161
Hospital I	1.00	79
Hospital J	1.01	290
Hospital K	1.04	296
Hospital L	1.04	206
Hospital M	1.06	146
Hospital N	1.09	
Hospital O	1.11	
Hospital P	1.15	
Hospital Q…	1.16	
……		
……		
……		TOTAL: 19950

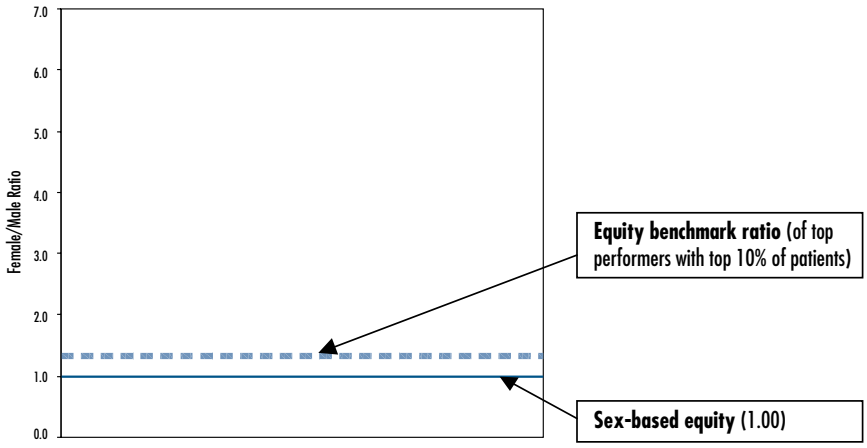
- top 10% of patients
- pooled equity benchmark ratio calculated with data from Hospitals E-M

POOLED ABC™ RATIO

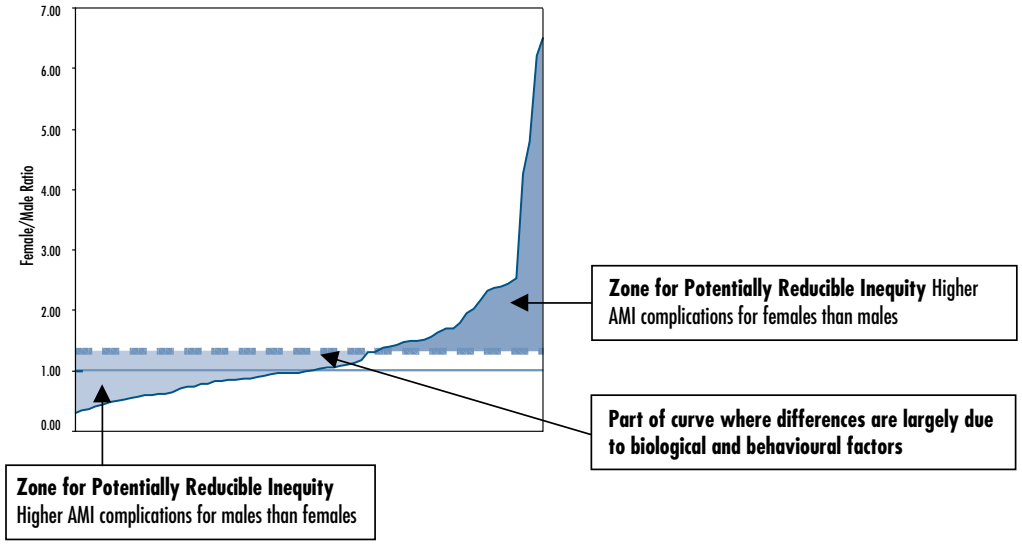
Male Numerator = 80
Male Total Cases (Denominator) = 1295
MALE COMPLICATIONS RATE (unadjusted) = 0.062 (6.2%)

Female Numerator = 57
Female Total Cases (Denominator) = 700
FEMALE COMPLICATIONS RATE (unadjusted) = 0.081 (8.1%)

FEMALE/MALE EQUITY BENCHMARK RATIO (unadjusted) = 1.32



This method hypothesizes that the value set for hospitals with the top 10% of patients with a ratio closest to 1.00 is the equity benchmark in that it takes into account differences between sexes that are most likely due to biological and health-seeking factors, which risk-adjustment may partially control. The ratios or differences between women and men substantially above or below this benchmark may reflect biases, and thus make up the target zone for **potentially reducible inequity** in the system.



KEEP IN MIND…

In interpreting the results of this methodology, it is important to consider that:

a) Pooling cases to calculate the benchmark appropriately includes hospitals with small denominators and excellent performance in the analysis but assigns a lower weight to their contribution to the benchmark. However, calculating a pooled ratio occurs after providers have been ranked and selected based on how close they are to 1.00. It has been suggested that applying a correction would effectively reduce but not eliminate the impact of hospitals with small numbers of cases for the purpose of ranking hospitals.[38,50] Although an important future consideration, this analysis is beyond the scope of this report.

b) In this report, hospital-specific outcome indicators such as complications and readmissions have been risk-adjusted for such variables as age and co-morbidities (e.g. diabetes). As risk-adjustment does not eliminate all differences to make comparisons fair, it is likely that the differences seen between women and men are, in part, a function of the interaction of sex with some of these factors that are adjusted for as well as others. For instance, as noted, differences between hospitals may be a result of the acuity of patients, and the availability of services, technology and providers. Further hospital-level and patient-level research is required to help better understand the issues underlying these differences, and to quantify more definitively benchmarks for equitable care and the extent to which differences represent bias in the system.