Hospital Report 2007: Acute Care
System Integration and Change Technical Summary

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Overview

The Acute Care System Integration and Change (SIC) quadrant reports on indicators that assess efforts made by Ontario hospitals to evaluate the use of clinical information technology, dissemination of information, coordination of care, support of human resources, use of standardized protocols, promotion of a healthy work environment, management of ambulatory care clinics, and patient safety practices. This *SIC Technical Summary* presents additional details of the methodology and results not provided in *Hospital Report 2007: Acute Care*.

Unlike the other three quadrants, there are few accepted standard measures in the areas captured by the SIC indicators. While some hospitals collect measures of employee skills and training, few measures of human capital and organizational learning are available through existing administrative databases. Available measures are also often unusable because variations in data coding create difficulties in comparing performance across organizations. Thus, the indicators used in the SIC quadrant of *Hospital Report 2007: Acute Care* were derived from the *2007 SIC survey*.

For each SIC indicator, this *SIC Technical Summary* provides a description of the calculations used to arrive at indicator values and performance categories for participating hospitals. In addition, data on the distribution of scores for each indicator are provided for the province as a whole and for teaching, community and small hospital peer groups.

Methodology

The following sections describe the methodology used to identify indicators for *Hospital Report 2007: Acute Care,* including the modification of the survey instrument, redevelopment of the indicators, the data collection process, a detailed description of how each indicator was constructed and the modified performance allocation method. There are twelve SIC indicators presented in *Hospital Report 2007: Acute Care.*

Development of the 2007 Online System Integration and Change Survey

In 2005, Hospital Reports subscribed to an online survey tool to create two electronic surveys for the SIC quadrant. The first, a Board Governance Survey, was sent to Board Chairs for Acute Care hospitals in November 2005, and the second was an online version of the Acute Care SIC Survey: Healthy Workplace Environment section. Hospital Report contacts volunteered to pilot test the online survey and to act in an advisory capacity for the development and pilot testing process. A total of 22 hospitals completed the online Healthy Workplace Environment survey. Results from the pilot test showed a strong desire on the part of hospitals for an online survey process; however, participants provided detailed requirements for development and implementation of a product with more functionality.

A thorough review of software products was conducted and an online vendor was chosen. The online survey software that was chosen provided the most flexibility and ability to customize the survey.

After the multi-sector survey, consisting of 102 questions, was entered into the survey tool, validation, skip logic, and workflow design were developed using the online software. A web-based demonstration and a sample pilot survey consisting of the SIC questions were conducted with eleven participating hospitals to receive feedback on question format and the online tool. The final survey was sent to Ontario hospitals via email in December 2006. Participant satisfaction, ease of use, and data quality were assessed by various qualitative and quantitative feedback methods.

Compared to previous years' manual data entry process, the online tool eliminated the need to create a MS Access database for data entry and validation, hire and train staff for a six-week data entry period, and perform significant manual quality checks and follow-up calls to hospitals. The online tool effectively reduced the administrative costs such as mailing and printing.

Survey Redevelopment

During the 2005 data verification process, Hospital Report contacts indicated that the SIC survey was lengthy and cumbersome, and that some of the questions were unclear. Over the year, CIHI worked with the HRRC researchers and principle investigators to streamline and restructure the survey sections and questions. The objectives were to reduce the number of questions. Questions were considered for removal if they met one of the following criteria:

1. Questions not being used in an indicator calculation
2. Questions with potential problems with interpretation as indicated by low response rates and frequently asked questions from respondents
3. Response rates for specific questions were the same year after year
4. Questions that were being addressed in another section

Other changes were made to improve the survey such as clarification on questions and customizing questions to appropriate sectors/respondents. The 2007 SIC survey included 102 questions and nine sections. The assigned sections that all hospitals participating in the *Hospital Report 2007: Acute Care SIC survey* include:

- Management of Human Resources
- Investments in Information Technology
- Use and Dissemination of Information for Clinical Decision Making
- Use and Dissemination of Information for Quality Improvement
- Healthy Work Environment
- Patient Safety

New Indicators

This year, new indicators were developed in the patient safety section of the survey. The two new indicators include: 1) Formalized Audit of Hand Hygiene Practices and 2) Medication Documentation and Reconciliation.

The Formalized Audit of Hand Hygiene Practices indicator was designed to measure the extent to which hand hygiene practices are audited, the frequency in which they are monitored, and whether they are used as criteria for performance appraisal for all staff in the organization.

The Medication Documentation and Reconciliation indicator was designed to measure the extent to which hospital staff document, reconcile and discuss complete lists of patient medications.

Performance classification was not assigned to the new indicators. They are reported at a provincial level only this year. Hospital-specific data for these indicators are available in the e-Scorecard.

Describing the Survey Process

In general, the SIC survey was sent to 123 participating Ontario hospitals (regardless of which hospital was participating in which sector) in mid-December 2006. A total of 103 hospitals completed and returned the surveys for a response rate of approximately 84%. 103 acute care hospitals completed the SIC survey. Hospitals were asked to complete one survey for the entire corporation.

A web-based survey was distributed via email to the Hospital Report contact at each organization. The Hospital Report contact disseminated the sections of the survey (via the custom-designed workflow) to the person in the organization who possesses the most knowledge about topics covered in that section. At the end of each section, one individual was required to sign-off on a statement of accuracy. This statement required hospital personnel to confirm that their responses were accurate and reflected the current operating circumstances.

Hospitals were given approximately six weeks to complete the survey. One month after the initial distribution of surveys, reminder notices were sent to hospitals that had not yet completed the survey. Three hospitals did not return surveys. Acute Care responses, by hospital type, are presented below.

Table 1.1: Acute Care SIC Surveys Completed

	Completed Surveys	Surveys Not Returned/ Non-participating	Total
Teaching	15	0	15
Community	61	4	65
Small	27	16	43
All Hospitals	103	20	123

Data Quality

The indicators for this quadrant are based on hospital survey data that are inevitably subject to a "social desirability bias". That is, consciously or unconsciously, respondents may answer questions in a way that puts their organization in the best possible light. To counteract this bias, an effort was made to construct survey questions that focused on specific behaviours rather than attitudes. Despite this focus, opportunities remained for varying interpretations, and some degree of interpretation may still be reflected in answers to many of the questions.

CIHI analysts performed data quality checks on the completed surveys to ensure that all mandatory questions were answered and that skip logic, validation and question masking were performed correctly by the online survey. We found two causes for follow-up which affected ten hospitals. The first technical issue was that if there was a midterm change in participation status in a sector, there was a possibility that some sector-specific questions were not shown to the respondents, and therefore were left unanswered. The other technical issue was that the custom-built validation on one of the questions did not catch all possible answer choices, leaving impossible responses. We followed-up with the ten hospitals via email and asked the Hospital Report contact to complete the missing questions in a hard copy document. Analysts then entered this data into the populated database. Two analysts then developed SAS code for the indicator calculations independently of each other and compared results. Once the SIC indicator scores were produced, random manual checks of hospitals' scores were done by examining the original surveys to ensure a high level of reliability.

Developing the Indicators

The twelve SIC indicators used in *Hospital Report 2007: Acute Care* are:

1. Use of Clinical Information Technology
2. Use of Data for Decision-Making
3. Use of Standardized Protocols
4. Community Involvement and Coordination of Care
5. Management and Support of Human Resources
6. Healthy Work Environment
7. Patient Safety Reporting and Analysis
8. Promoting a Patient Safety Culture
9. Strategies to Manage the Waiting Process in Ambulatory Care Clinics
10. Performance Management in Ambulatory Care
11. Formalized Audit of Hand Hygiene Practices ***(new)***
12. Medication Documentation and Reconciliation ***(new)***

Once the surveys were completed, the process of confirming the questions to be used in the SIC indicator calculations for *Hospital Report 2007: Acute Care* began. Response distributions were calculated for each question in the *2007 SIC survey*. Hospital-specific data for all Acute Care SIC indicators are available to hospitals in the e-Scorecard.

During the 2007 survey redevelopment process, modifications were made to *Hospital Report 2007*: *Acute Care* SIC indicators such as recalculation and reweighing of indicators, and adding new or deleting survey indicator questions. Therefore, please note that caution should be taken when comparing indicator results with previous years. Please see Appendix A for list of indicator changes.

Comparability of Indicator Results

No changes were made to two of the existing indicators, therefore, year-over-year comparisons can be made in specific areas for the following indicators: Strategies to Manage the Waiting Process in Ambulatory Care Clinics and Performance Management in Ambulatory Care. For the other indicators, please review the indicator descriptions to identify the changes. Caution should be taken when comparing the indicators with previous report's results due to the changes in the calculation of indicator questions and weights.

Scoring of the Indicator

A detailed description of the questions used and points allocated in the construction of each of the 12 indicators is provided below. To calculate the indicator score, each question must be multiplied by the specified weighting. For example:

Hospital A received 18 points for Question **X** out of a possible total of 25 points. To calculate the contribution of this question to the indicator score, divide hospital A's score (18) by the total possible points (25) and multiple by the specified weighting for Question **X** (23%). Therefore, hospital A received 16.56% of the total indicator score for question **X**.

The weights for each question are provided in tables at the end of each indicator. The weighted scores are then summed for each question to get the overall score for that component of the indicator. For example:

Component Score =

$$\left\{ \left(\frac{HospitalQuestionScore}{MaximumQuestionScore} \times QuestionWeight \right) + \left(\frac{HospitalQuestionScore}{MaximumQuestionScore} \times QuestionWeight \right) + \ldots \right\}$$

The overall indicator scores are then calculated by summing the scores for each component. When a question is not applicable to a hospital, the question is removed from the denominator for that component.

Detailed Description of the Indicator Calculations

Indicator 1: Use of Clinical Information Technology

The Use of Clinical Information Technology indicator was constructed to reflect the degree to which clinical information is available electronically to care providers inside and outside of the organization. It is based on one question from section 1 and three questions from section 2.

Component 1: Use of Information Technology (53%)

Section 1, Question 7:

This question inquired about the existence of staff roles currently within the organization. For the role of telehealth/videocare coordinator, hospitals were given 1 point if they indicated that the role was under development and 2 points if the role was permanent in the organization. For some organizations, the permanence of this staff role may have been attempted or reviewed and found to be not applicable. Therefore, in order to avoid penalizing those organizations where this role was not applicable after being reviewed, this question was removed from the component. This question was out of a total of 2 points.

Section 2, Question 14:

Organizations were asked to indicate the extent to which electronic records and data were currently being used as a primary source of information in the organization. For eight of the items (patient visit registration information (e.g. ADT systems), diagnostic imaging reports, electronic medical images, diagnostic laboratory results, patient-based pharmacy/drug profiles, nursing clinical documentation, physician clinical documentation and clinical documentation by other health professionals), respondents indicated whether records were: all paper (0), electronic as the primary source (1), electronic as the primary source and remote access is possible (1.5). The number in brackets represents the number of points given for each response. The total point allocation for this question was 12 points.

Section 2, Question 15a:

Seven functions were listed in this question. Organizations were asked to indicate whether patient-care staffs are currently able to perform each of the seven functions online. Specifically, organizations were asked whether each of the functions: could not be performed online by patient-care staff (0), or could be performed online at the corporate level (1). The column regarding Emergency Department is not used in this indicator. The number in brackets represents the number of points given for each response. The total point allocation for this question was 7 points.

Component 2: Access to Information Technology (47%)
Section 2, Question 13a, b, c:
Organization were asked to indicate the extent to which physicians, nurses, and other patient care staff currently have IT resources available to them. For each row (total of 20 rows), respondents were asked to indicator the percent of staff that had access: none (0), few (1), some (2), most (3). The number in brackets represents the number of points given for each response. The total point allocation for this question was 60 points.

Table 1.2: Use of Clinical Information Technology Indicator Summary

Question	Total Possible Points	Overall Weighting
Component 1: Use of Information Technology (53%)		
Section 1, Question 7	2	10%
Section 2, Question 14	12	23%
Section 2, Question 15a	7	20%
Component 2: Access to Information Technology (47%)		
Section 2, Question 13	60	47%
Total Score		100%

Indicator 2: Use of Data for Decision-Making

The Use of Data for Decision-Making indicator was constructed to reflect the extent to which an organization is disseminating and utilizing both administrative and clinical data. It is based on two questions from section 1, five questions from section 3 and five questions from section 9.

Component 1: Clinical Data Dissemination and Benchmarking (20%)
Section 3, Question 19:
Eleven clinical measures were listed in this question and organizations indicated whether they were currently collecting data in each of these areas and, if so, how widely data was collected and the degree to which the data was shared and benchmarked. If the organization was collecting data, they were asked whether they engaged in certain behaviours. For each of the clinical measures for which data was being collected, there were 5 possible points: (1 point) for sharing data with a senior medical staff group/ group responsible for quality of care issues, (2 points) for comparing internally across specialties and/or to past performance and (2 points) for collecting and comparing externally with other organizations.

It is possible that some of these measures do not apply to all hospitals. For example, three of the measures relate to surgical procedures alone and some hospitals could indicate they had less than 50 surgical cases. To avoid penalizing hospitals that had fewer than 50 surgical cases, responses for three measures (unplanned return to OR, unplanned injury or unplanned repair of organ during surgery, percent surgery/procedures completed on scheduled day of procedure) were removed from the calculation of their indicator score. If a hospital indicated that their organization did not have an ICU/CCU, responses to unplanned transfer to ICU/CCU were removed from the calculation. If a hospital did not have an Emergency Department, responses to waiting time to gain access from the ED to inpatient bed were removed and the denominator was adjusted. The total point allocation for this question was 55 points. If organizations had less than 50 surgical cases AND did not have an ICU/CCU, this component was removed from the indicator and the denominator was adjusted.

Component 2: Safety and Utilization Management (20%)

Section 9, Question 99c:
Organizations were asked whether the hospital's reporting system for actual and potential adverse events was recorded by written submission on standardized form (0.5 point), via electronic submission (1 point), other (0 points) or not developed (0 points). The total point allocation for this question was 1 point.

Section 9, Question 99d:
This question asked whether or not the hospital maintained a registry of all sentinel events. Organizations that maintained a registry received 1 point. The total point allocation for this question was 1 point.

Section 9, Question 99g:
Organizations were asked if they conducted at least one patient safety-related prospective analysis per year and implemented appropriate improvements or changes. Organizations with no plan or plans in development received 0 points. Organizations with a partially implemented plan received 0.5 points. Organizations with a plan to be fully implemented in 2008 received 1 point, and organizations with a fully implemented plan received 1.5 points. The total point allocation for this question was 1.5 points.

Section 9, Question 101f:
Organizations were asked whether or not a strategy of having a designated 'patient safety officer' who promotes action through training of staff & implementation of methods, assumes responsibility for monitoring implementation of recommendations subsequent to patient safety assessment and reports back to a patient safety steering committee was used to improve patient safety within the hospital. If there was a patient safety officer in specific departments only, hospitals were given 0.5 points. If this strategy was hospital-wide, organizations received 1 point. The total point allocation for this question was 1 point.

Section 9, Question 101k:
This question asked whether a hospital had an adverse event team/patient safety steering committee that responds to all adverse events to mitigate harm to the patient and prevent further harm, curtail any undue punitive action, review events, and support family, staff and physicians. If a hospital specified this was in specific departments only, they received 0.5 points, and if this was a hospital-wide strategy, hospitals received 1 point. The total point allocation for this question was 1 point.

Component 3: Staff Information-Based Roles (20%)

Section 1, Question 7:
This question inquired about the existence of staff roles currently in the organization. For three roles (utilization review analyst, quality and/or risk management analyst, and decision support role), hospitals were given 5 points if they indicated that the role was under development and 10 points if the role was permanent in the organization. For some organizations, a specific staff role may have been reviewed and determined to be not applicable. Therefore, in order to avoid penalizing those organizations where that role was not applicable after reviewing, the denominator of this question was adjusted to include only those staff roles that were applicable. The maximum point allocation for this question was 30 points.

Section 2, Question 12a, b, c:
This question asked about participation in continuing education activities for staff. Three staff groups (physicians, nurses and other patient care staff) were used in the calculation of this

indicator. For three items (quality improvement/utilization management, clinical management, and identifying and managing adverse events) respondents were asked to indicate the percent of staff who participated in these programs/activities: none (0), few or <25% (1), some or 25-74% (2) and most or 75%+ (3). The number in brackets represents the number of points given for each response. The total point allocation for this question was 27 points.

Component 4: Dissemination of Information (20%)
Section 3, Question 23 and 24:
Both questions asked how organizations disseminated employee satisfaction results. Question 23 asked which strategies were currently in use to disseminate employee satisfaction results among different groups in the organization. For each staff group, one point was given for having indicated that an internal written report is circulated about key highlights, and three points were given for indicating a verbal presentation and discussion of results. The total point allocation for question 23 was 20 points.
In question 24, organizations were given points for using additional strategies to disseminate employee feedback such as a hospital's intranet (1), external website (1), postings in a public area in the hospital (1), circulated internally (e.g., newsletter/electronic mail) (1), and circulated externally (e.g., newsletter/electronic mail). The number in brackets represents the number of points given for each response. The total point allocation for question 24 was 5 points. The combined total point allocation for questions 23 and 24 was 25 points.

Section 3, Question 26:
This question asked how changes made as a result of patient satisfaction findings were disseminated amongst different groups in the organization. For all 7 groups, organizations received one point if an internal written report is circulated, and three points if they indicated that they use a verbal presentation and discussion of results targeting Quality Improvement initiatives. The total point allocation for this question was 28 points.

Component 5: Benchmarking of Information (20%)
Section 3, Question 25:
This question asked if organizations were currently engaged in external benchmarking practices where they compared physician and employee satisfaction data across two or more external organizations. For this question, one point was awarded for responding affirmatively to external benchmarking for any of the four staff groups. The total point allocation for this question was 4 points.

Table 1.3: Use of Data for Decision-Making Indicator Summary

Question	Total Possible Points	Overall Weighting
Component 1: Clinical Data Dissemination and Benchmarking (20%)		
Section 3, Question 19	55	20%
Component 2: Safety and Utilization Management (20%)		
Section 9, Question 99c	1	20%
Section 9, Question 99d	1	
Section 9, Question 99g	1.5	
Section 9, Question 101f	1	
Section 9, Question 101k	1	

Question	Total Possible Points	Overall Weighting
Component 3: Staff Information-Based Roles (20%)		
Section 1, Question 7	30	10%
Section 1, Question 12a,b,c	27	10%
Component 4: Dissemination of Information (20%)		
Section 3, Question 23 and 24	20 + 5 = 25	10%
Section 3, Question 26	28	10%
Component 5: Benchmarking of Information (20%)		
Section 3, Question 25	4	20%
Total Score		100%

Indicator 3: Use of Standardized Protocols

The Use of Standardized Protocols indicator was constructed to reflect the degree to which organizations are developing and using standardized protocols in a broad range of relatively common conditions and procedures. This indicator is based on two questions from section 3.

Component 1: Development of Standardized Protocols (50%)

Section 3, Question 20:

Organizations were asked to indicate the extent to which standardized protocols (e.g. clinical practice guidelines, care pathways, etc) were currently developed and in use for seven conditions (asthma, stroke, AMI, diabetes, pneumonia, heart failure, and gastroenteritis). For each area respondents were given points if: a standardized protocol is being developed and will be implemented in the next 6 months (1); few patients (<25%) were being cared for using the standardized protocol (2), some patients (25-74%) were being cared for using the standardized protocol (3), or most patients (75+%) were being cared for using the standardized protocol (4).

Since very small hospitals may not see any patients with the conditions identified, not all areas necessarily apply to every hospital. CIHI discharge abstract database (DAD) data from 2005/2006 were used to identify hospitals with fewer than 12 cases in any of these 7 areas. For those low-volume hospitals, a score was not calculated for the applicable condition or procedure. Organizations had to have valid scores for at least 2 out of the 7 conditions and procedures to be given an overall score. The maximum point allocation for this question was 28 points; however, it is possible for hospitals to have different denominators.

Table 1.4: Case Selection for the Development and Use of Standardized Protocols Indicator

Medical Patient Group	ICD-10-CA Codes Used to Select Cases
Asthma	J45.^
Stroke	I61.^, I64, I63.0, I63.1, I63.2, I63.3, I63.4, I63.5, I63.8, I63.9, I67.2, I67.4, I67.6, I67.7, I67.8, I67.9

Medical Patient Group	ICD-10-CA Codes Used to Select Cases
Acute myocardial infarction	I21.^, I22.^
Diabetes	E10.^, E11.^, E13.^, E14.^
Pneumonia	J12.^, J13, J14, J15.^, J16.^, J18.^
Heart Failure	I26.0, I27.9, I50.0, I50.1, I50.9
Gastroenteritis	K52.^

Component 2: Development Involvement with Other Organizations (50%)
Section 3, Question 21: If organizations indicated in question 20 that a standardized protocol was currently developed for a given clinical area AND at least a "few" patients were cared for using the protocol, organizations were asked to indicate if the standardized protocols included aspects of care and/or was developed in conjunction with other health care organizations external to the hospital. Appropriate health care organizations are indicated in Table 1.5. The total point allocation for this question was 30 points. It is possible for a hospital to have a smaller denominator for this question. The maximum value for a specific clinical area was removed from the denominator if there were fewer than 12 cases for the procedure or condition at the hospital. Organizations had to have at least 12 cases in 2 or more procedures to be given an overall score.

Table 1.5: Clinical Areas and Appropriate Health Care Organizations

Clinical Area	Appropriate Health Care Organizations				
	Acute Care Hospitals	Complex Continuing Care Hospitals	Rehabilitation Hospitals	Primary Care Providers	Long-Term Care Facilities
Stroke					
Pneumonia					
Diabetes					
Heart Failure					
Gastroenteritis		NA			
Asthma		NA			NA
AMI		NA			NA

Table 1.6: Development and Use of Standardized Protocols Indicator Summary

Question	Possible Points	Overall Weighting
Component 1: Development of Standardized Protocols (50%)		
Section 3, Question 20	Maximum of 4 points for each clinical area with at least 12 cases (Maximum = 28)	50%
Stroke	4 (if ≥ 12 cases)	
Pneumonia	4 (if ≥ 12 cases)	
Diabetes	4 (if ≥ 12 cases)	

Question	Possible Points	Overall Weighting
Heart Failure	4 (if ≥ 12 cases)	
Gastroenteritis	4 (if ≥ 12 cases)	
Asthma	4 (if ≥ 12 cases)	
AMI	4 (if ≥ 12 cases)	
Component 2: Development Involvement with Other Organizations (50%)		
Section 3, Question 21	Maximum = 30	50%
Stroke	5 (if ≥ 12 cases)	
Pneumonia	5 (if ≥ 12 cases)	
Diabetes	5 (if ≥ 12 cases)	
Heart Failure	5 (if ≥ 12 cases)	
Gastroenteritis	4 (if ≥ 12 cases)	
Asthma	3 (if ≥ 12 cases)	
AMI	3 (if ≥ 12 cases)	

Indicator 4: Community Involvement and Coordination of Care

The Community Involvement and Coordination of Care indicator was constructed to reflect the degree of coordination of an organization, both internally and externally (with other care providers and the community). This indicator consists of one question from section 1, one question from section 3, and one question from section 4.

Component 1: Communication and Coordination with the Community (80%)

Section 4, Question 30:

This question asked organizations if they currently have community advisory groups. Hospitals received one point for indicating that they did have community advisory groups at corporate level, two points for indicating that the community advisory group existed at the program level. The total point allocation for this question was 2 points.

Section 3, Question 22b:

This question inquires about seven specific corporate strategies that organizations participate in with other health care organizations. Hospitals were given two points for each corporate strategy undertaken with other acute care hospitals, CCACs and LTC facilities, and were awarded one point for each corporate strategy with community-based service agencies, mental health facilities, public health departments, and primary care providers. The total point allocation for this question was 70 points.

Component 2: Coordination within the Hospital (20%)

Section 1, Question 7:

This question inquired about the existence of staff roles currently within the organization. For two roles (case manager and social worker), hospitals were given 5 points if they indicated that the role was under development and 10 points if the role was permanent in the organization. For some organizations, a specific staff role may have been reviewed and found to be not applicable. Therefore, in order to avoid penalizing those organizations where that role was not applicable after reviewing, the denominator of this question was adjusted to include only those staff roles that were applicable. The maximum point allocation for this question was 20 points.

Table 1.7: Community Involvement and Coordination of Care Indicator Summary

Question	Total Possible Points	Overall Weighting
Component 1: Communication and Coordination with the Community (80%)		
Section 4, Question 30	2	20%
Section 3, Question 22b	70	60%
Component 2: Coordination within the Hospital (20%)		
Section 1, Question 7	20	20%
Total Score		100%

Indicator 5: Management and Support of Human Resources

The way in which a hospital implements innovative training programs and employee practices may help describe a hospital's reaction to its changing environment. The Management and Support of Human Resources indicator measures the degree to which hospitals are supporting their staff through the maintenance or development of staff roles in specialized functions, the provision of staff training and education and implementing recruitment and retention strategies. Thirteen questions (ten questions from section 1, two questions from section 3, and one question from section 5) were used to calculate this indicator.

Component 1: Support Processes (40%)

Section 1, Question 8:

Question 8 asked whether the organization conducted and tracked performance evaluations, how frequently the organization conducted performance evaluations and the percent of each staff group who had undergone a performance evaluation in the last two years. For all staff groups, hospitals received 4 points if formal performance evaluations were completed yearly or more frequently and 2 points if they were conducted every 2 years, and 0.5 points if they were conducted less frequently than two years. The total point allocation for this part of the question was 16 and was weighted out of 10.0%.

Section 1, Question 9:

Organizations were asked to indicate whether they currently had education in clinical skills and knowledge in a classroom setting, as well as education in clinical skills and knowledge in a clinical setting as part of their formal orientation program for newly hired staff. Hospitals were given 1 point for each process. The total point allocation for this question was 4 points.

Section 3, Question 16 and 17:

In question 16, organizations were asked to indicate which structures were currently in place to deal with clinical/medical ethical dilemmas that may arise with respect to patient care. Hospitals were awarded one point if an ethics consultation team assembled on a case-by-case basis using internal resources, and two points if either ethics consultation was contracted out to external experts or the clinical ethics service was staffed by clinical ethicist(s) with advanced training. The total point allocation for this question was 5 points.

In question 17, hospitals were awarded one point for each of the 4 staff groups that were indicated as having access to in-house training provided by an ethicist. The total point allocation for this question was 4 points.

Section 1, Question 4:

This question asked if organizations currently had formal succession plans for three groups within the organization. One point was assigned for responding affirmatively to having a formal

succession plan for each of the three groups. The total point allocation for this question was 3 points.

Component 2: Work Environment (20%)

Section 1, Question 10b:

For nurses, other patient care staff, and other hospital staff, hospitals were asked to indicate the number of formal disputes, grievances, or complaints filed between April 1, 2005 and March 31, 2006. The number of formal disputes, grievances or complaints filed was used in the calculation of the indicator. In order to make the responses from the hospitals comparable, the values were divided by the total number of nurses, other patient-care staff and other hospital staff (from Section 1, Question 5). An index of the number of formal disputes, grievances or complaints per non-managerial employees was developed by dividing the total number of formal disputes, grievances or complaints by the total number of non-managerial full-time staff. This value was then divided by the maximum index value from *Hospital Report 2002: Acute Care* (0.33). The maximum value was 20% greater than the highest value attained in 2002 by a hospital once the outliers were removed. Twenty percent was chosen so that hospitals could improve their values over time while the denominator stayed constant so that this question could be compared in future years. This does not alter a hospital's performance allocation as performance allocations are relative to other hospitals. Each hospital's score was then subtracted from 1 to ensure a higher score represented 'better' performance.

Section 5, Question 34:

Organizations were asked to indicate the total number of WSIB lost-time claims between April 1, 2005 and March 31, 2006. An index of the number of WSIB lost-time claims per non-managerial employees was developed by dividing the total number of WSIB lost-time claims by the total number of non-managerial full-time staff (the number of non-managerial full-time staff was determined from the headcount provided in Section 1, Question 5). This value was then divided by the maximum index value from *Hospital Report 2002: Acute Care* (0.22). This maximum value was 20% greater than the highest value attained by a hospital in 2002, once the outliers were removed. Twenty percent was chosen so that hospitals could improve their values over time while the denominator stayed constant so that this question could be compared in future years. This does not alter a hospital's performance allocation as performance allocations are relative to other hospitals. Each hospital's score was then subtracted from 1 to ensure a higher score represented 'better' performance.

Component 3: Staff Supportive Roles (20%)

Section 1, Question 7:

This question inquired about the existence of staff roles currently in the organization. For five roles (staff responsible for physician recruitment, nurse educator in Emergency Department (for hospitals with an Emergency Department only), hospitalist and designated staff responsible for professional practice issues, and volunteer coordinator), hospitals were given 5 points if they indicated that the role was under development and 10 points if the role was permanent in the organization. For some organizations, a specific staff role may have been reviewed and found to be not applicable. Therefore, in order to avoid penalizing those organizations where that role was not applicable after reviewing, the denominator of this question was adjusted to include only those staff roles that were applicable. The maximum point allocation for this question was 50 points.

Section 1, Question 11:

Organizations were asked to indicate whether they provided any of seven types of continuing education or professional development support to nurses and other patient care staff. Hospitals

were given 1 point for each of the staff groups indicated as having the following seven items available to them: reimbursement of continuing education course, reimbursement of advanced education, bursaries/scholarships, paid time off to take courses, unpaid time off to take courses, flexible scheduling to take courses, and on-site courses provided by hospital staff or external experts. The total point allocation for this question was 14 points.

Section 1, Question 12a, b, c:
This question asked whether an organization currently invests in continuing education activities for staff. There were three staff groups listed. For four items (team building, cultural diversity, availability of community services for patients, and leadership development) respondents were asked to indicate the percent of staff who participated in these programs/activities: none (0), few or <25% (1), some or 25-74% (2) and most or 75+% (3). The number in brackets represents the number of points given for each response. The total point allocation for this question was 36 points.

Component 4: Recruitment and Retention (20%)
Section 1, Question 1:
Question 1 lists fourteen recruitment and retention strategies for nurses, other patient-care staff and other hospital staff. Organizations received 1 point for each employee group for whom the recruitment and retention strategy currently existed. The following 4 recruitment strategies were excluded from the calculation in question 1: a hospital website that offers information about employment at the hospital, availability/use of employee assistance programs, recognition programs for excellence or accomplishments and opportunities for advanced education supported by the hospital and/or hospital foundation. The total point allocation for this question was 30 points.

Section 1, Question 2:
This question asked hospitals to indicate whether they currently had a forum that included recruitment/retention activities and quality of worklife activities as part of its mandate. For each activity for which a hospital indicated there was a forum, hospitals received one point for each of the four staff groups that were included in the representation. The total point allocation for this question was 8 points.

Section 1, Question 3:
Hospitals were asked to indicate whether they currently tracked staff turnover rates. Hospitals received one point for responding affirmatively and one point for each of the four staff groups that were indicated as having their separations tracked by the organization. The total point allocation for this question was 5 points.

Table 1.8: Management and Support of Human Resources Indicator Summary

Question	Total Possible Points	Overall Weighting
Component 1: Support Processes (40%)		
Section 1, Question 8	16	10%
Section 1, Question 9	4	10%
Section 3, Question 16, 17	9	10%
Section 1, Question 4	3	10%
Component 2: Work Environment (20%)		
Section 1, Question 10b	1	10%

Question	Total Possible Points	Overall Weighting
(max index value 0.33)		
Section 5, Question 34 (max index value 0.22)	1	10%
Component 3: Staff Supportive Roles (20%)		
Section 1, Question 7 ***C is for Hospital with ED only***	50	7%
Section 1, Question 11	14	6%
Section 1, Question 12a,b,c	36	7%
Component 4: Recruitment and Retention (20%)		
Section 1, Question 1	30	10%
Section 1, Question 2	8	5%
Section 1, Question 3	5	5%
Total Score		100%

Indicator 6: Healthy Work Environment

The Healthy Work Environment indicator was designed to measure the extent to which hospitals have mechanisms in place to support and promote a healthy work environment and thereby contribute to employee's physical, social, mental and emotional well-being. Eleven questions from section 5 were used to calculate this indicator. This year, the Healthy Work Environment indicator is calculated across all sectors. **Note:** Hospitals who participated in multiple sectors would have the same Healthy Work Environment score across all sectors. However, the provincial average and performance allocation for that indicator would vary because it is based on participating hospitals within that sector only.

Component 1: Healthy Workplace Policy/Plan (30%)

Section 5, Question 31a:

Organizations were asked about their workplace policy/plan. Three points were given to organizations that had a policy/plan that extended beyond policies mandated by health and safety legislation. The total point allocation for this question was 3 points.

Section 5, Question 31b:

This question asked if the organization's healthy workplace policy/plan was based on an employee needs assessment. Organizations with an informal assessment process in place to evaluate employee needs, attitudes and preferences in regard to healthy workplace programs were given 1 point and 2 points were assigned to organizations with a formal assessment. The total point allocation for this question was 2 points.

Component 2: Accountability & Responsibility (10%)

Section 5, Question 32a:

This question asked if accountability and responsibility for healthy workplace initiatives were formally assigned within the organization. Organizations were given 3 points if accountability and responsibility were formally assigned. The total point allocation for this question was 3 points.

Section 5, Question 32b:

If accountability and responsibility for healthy workplace initiatives were formally assigned within the organization, they were then asked to specify which group was accountable and responsible

for healthy workplace initiatives. Organizations that chose senior management received 1 point. If accountability and responsibility were shared broadly throughout the organization, organizations were given 2 points. The total point allocation for this question was 3 points.

Component 3: Assessment, Analysis, & Improvement (20%)
Section 5, Question 33a:
Organizations were asked if there were processes in place to assess and analyze the organization's approach to healthy workplace issues. Three points were given if there were ongoing processes in place. The total point allocation for this question was 3 points.

Section 5, Question 33b:
Organizations were asked to identify which of the following outcomes associated with developing a healthy workplace were collected and analyzed within the organization. There were 11 outcomes provided in the question. Organizations who indicated there was an informal process received 1 point and those with a formal process received 2 points. The total point allocation for this question was 22 points.

Section 5, Question 33c:
This question asks organizations how they disseminated information about the outcomes associated with their healthy workplace policy/programs. For each of the 4 groups, organizations received 1 point if an internal written report was circulated about key highlights. If either a verbal presentation and discussion of results occurred or results were reviewed beyond the initial verbal presentation for a specific initiative, organizations received 3 points. The total point allocation for this question was 16 points.

Component 4: Key Dimensions (40%)
Section 5, Question 35:
Organizations were asked about 7 processes in place to support a positive psychosocial environment. Hospitals with a process in place to encourage the participation of front-line employees in decision-making and overall control of their jobs were given 2 points for an informal process and 4 points for a formal process. Additionally, hospitals with a process in place to create innovative schedules, hours of work and job sharing arrangements to meet the needs of work settings is allocated 2 points for an informal process and 4 points for a formal process. Hospitals received 1 point for an informal process and 2 points for a formal process for the 5 other processes in place. The total point allocation for this question was 18 points.

Section 5, Question 36a:
This question asked if there were one or more healthy lifestyle programs offered by your organization. If organizations answered yes, they received 3 points. The total point allocation for this question was 3 points.

Section 5, Question 36b:
If an organization indicated there was a healthy lifestyle program offered, they were asked which of the healthy lifestyle program(s) included any of the 4 components (e.g. formal approach to education and skill development, assessment of behaviour change, monitoring/evaluation of utilization of programs, long term planning). 1 point is allocated to each of the 4 components. The total point allocation for this question was 4 points.

Section 5, Question 36c:
Organizations were asked if their program(s) were developed (or lack thereof) based on an employee needs assessment. If an organization identified yes, they were given 3 points. The

total point allocation for this question was 3 points. If organizations answered in Q36a='NO' and Q36c='YES', then Q36 was removed from the component and the key dimensions component was composed of Q35 only.

Table 1.9: Healthy Work Environment Indicator Summary

Question	Total Possible Points	Overall Weighting
Component 1: Healthy Workplace Plan/Policy (30%)		
Section 5, Question 31a	3	30%
Section 5, Question 31b	2	
Component 2: Accountability & Responsibility (10%)		
Section 5, Question 32a	3	10%
Section 5, Question 32b	3	
Component 3: Assessment, Analysis, and Improvement (20%)		
Section 5, Question 33a	3	20%
Section 5, Question 33b	22	
Section 5, Question 33c	16	
Component 4: Key Dimensions (40%)		
Section 5, Question 35	18	27%
Section 5, Question 36a	3	13%
Section 5, Question 36b	4	
Section 5, Question 36c	3	
Total Score		100%

Indicator 7: Patient Safety Reporting and Analysis

The Patient Safety Reporting and Analysis indicator was designed to measure the degree to which patient safety reporting processes and patient safety analysis activities are implemented and monitored within the hospital. Five questions were used from section 9.

Component 1: Patient Safety Reporting Processes (80%)

Section 9, Question 99b:

This question asked hospitals whether or not they provided quarterly reports to the board on patient safety, which also included changes/improvements following incident investigation and follow-up. If it was partially implemented – developed but to be implemented in stages, hospitals received 0.5 points. If it was to be developed in 2007 for full implementation in 2008, hospitals received 1 point. If it was fully implemented in the hospital, hospitals received 1.5 points. The total point allocation for this question was 1.5 points.

Section 9, Question 99d:

This question asked hospitals if they maintained a registry of all sentinel events. If a registry was maintained, hospitals received one point. The total point allocation for this question was 1 point.

Section 9, Question 99e:

This question asked if hospitals implemented a formal policy and process of disclosure of adverse events to patients/families that also included support mechanisms for patients, family and care/service providers. If the policy was partially implemented – developed but to be

implemented in stages, the hospital received 0.5 points. If this policy was to be developed in 2007 for full implementation in 2008, hospitals received 1 point. If this policy was already fully implemented in the hospital, hospitals received 1.5 points. The total point allocation for this question was 1.5 points.

Section 9, Question 101h:
This question asked if hospitals developed a reporting system to collect information from employees that could lead to near misses or actual adverse events as a strategy to improve patient safety. If this strategy was in place in specific departments, hospitals received 0.5 points; if it was implemented hospital-wide, hospitals received 1 point. The total point allocation is 1 point.

Component 2: Patient Safety Analysis Activities (20%)
Section 9, Question 101L:
This question asked whether or not hospitals conducted targeted chart audits as a current strategy to improve patient safety. If this strategy was in place in specific departments only, hospitals received 0.5 points. If this was a hospital-wide strategy, hospitals received 1 point. The total point allocation for this question was 1 point.

Table 1.10: Patient Safety Reporting and Analysis Indicator Summary

Question	Total Possible Points	Overall Weighting
Component 1: Patient Safety Reporting Processes (80%)		
Section 9, Question 99b	1.5	20%
Section 9, Question 99d	1	20%
Section 9, Question 99e	1.5	20%
Section 9, Question 101h	1	20%
Component 2: Patient Safety Analysis Activities (20%)		
Section 9, Question 101L	1	20%
Total Score		100%

Indicator 8: Promoting a Patient Safety Culture

The Promoting a Patient Safety Culture indicator was designed to measure the extent to which hospitals implement organizational practices to create a work setting that supports the safe delivery of care/service. Ten questions from section 9 were used.

Section 9, Question 99a:
This question asked whether or not the hospital adopted patient safety as a written strategic priority/goal. If hospitals indicated ‘yes’ they received 1 point. The total point allocation for this question is 1 point.

Section 9, Question 101a, b:
This question asked whether or not conducting employee and patient surveys was used as a strategy to improve patient safety within the hospital. If these strategies were in specific departments only, hospitals received 0.5 points. If these strategies were hospital-wide, hospitals received 1 point. The total point allocation for this question was 2 points.

Section 9, Question 101c:

This question asked whether or not hospitals conducted safety briefings in patient care units as a strategy to improve patient safety. If this strategy was in specific departments only, hospitals received 0.5 points. If this strategy was hospital-wide, hospitals received 1 point. The total point allocation for this question was 1 point.

Section 9, Question 101d:
Organizations were asked if they used patient safety leadership walkrounds in the hospital to improve patient safety. If so, the walkrounds must be conducted at least weekly. If this strategy was in specific departments only, hospitals received 0.5 points. If this strategy was hospital-wide, hospitals received 1 point. The total point allocation for this question was 1 point.

Section 9, Question 101e:
This question asked whether or not their hospital provided feedback to front-line staff and maintained database to monitor as a strategy to improve patient safety. If this strategy was in specific departments only, hospitals received 0.5 points. If this strategy was hospital-wide, hospitals received 1 point. The total point allocation for this question was 1 point.

Section 9, Question 101g:
Organizations were asked whether or not their hospital appointed and trained 'Safety Champions' for every department and patient care unit to improve patient safety. If this strategy was in specific departments only, hospitals received 0.5 points. If this strategy was hospital-wide, hospitals received 1 point. The total point allocation for this question was 1 point.

Section 9, Question 101i:
This question asked whether hospitals used a non-punitive reporting policy to improve patient safety. If this strategy was in specific departments only, hospitals received 0.5 points. If this strategy was hospital-wide, hospitals received 1 point. The total point allocation for this question was 1 point.

Section 9, Question 101j:
This question asked whether or not hospitals had relay safety events at shift change as a strategy to improve patient safety. If this strategy was in specific departments only, hospitals received 0.5 points. If this strategy was hospital-wide, hospitals received 1 point. The total point allocation for this question was 1 point.

Section 9, Question 101k:
This question asked whether or not hospitals had an adverse event team/patient safety steering committee. These teams are committed to culture of support, providing 24-hour coverage to respond to all adverse events, review events and support staff, family and physicians. If this strategy occurred in specific departments only, hospitals received 0.5 points. If this strategy was in place hospital-wide, hospitals received 1 point. The total point allocation for this question was 1 point.

Table 1.11: Promoting a Patient Safety Culture Indicator Summary

Question	Total Possible Points	Overall Weighting
Component 1: Promoting a Patient Safety Culture (100%)		
Section 9, Question 99a	1	100%

Question	Total Possible Points	Overall Weighting
Section 9, Question 101a Section 9, Question 101b	1 1	
Section 9, Question 101c	1	
Section 9, Question 101d	1	
Section 9, Question 101e	1	
Section 9, Question 101g	1	
Section 9, Question 101i	1	
Section 9, Question 101j	1	
Section 9, Question 101k	1	
Total Score		100%

Indicator 9: Strategies to Manage the Waiting Process in Ambulatory Care Clinics

The Strategies to Manage the Waiting Process in Ambulatory Care Clinics indicator was designed to measure the extent to which hospitals use formal processes to remove a patient from a waiting list, use a centralized scheduling system to coordinate all patient visits and use strategies to make the patient's wait experience more informative and comfortable. Three questions from section 4 were used to calculate this indicator.

Component 1: Formal Processes to Remove Patient from Wait List (24%)
Section 4, Question 27 (row a):
This question asked hospitals what proportion of their ambulatory care clinics currently has a formal process to remove a patient from the wait list when appropriate. Hospitals were given 1 point for <25% few, 2 points for 25-74% some and 3 points for 75+% most. The total point allocation for this question was 3 points.

Component 2: Centralized Scheduling System to Coordinate Patient Visits (43%)
Section 4, Question 27 (row b):
This question asked hospitals what proportion of their ambulatory care clinics currently made use of a centralized scheduling system that coordinated all patient visits. Hospitals were given 1 point for <25% few, 2 points for 25-74% some and 3 points for 75+% most. The total point allocation for this question was 3 points.

Component 3: Strategies to Make the Patient's Wait More Comfortable/Informative (33%)
Section 4, Question 28:
This question asked hospitals which services or tools were consistently provided to make the patient's wait experience more comfortable and/or informative for the patient and family. Hospitals received 1 point for each of the 5 services or tools. The total point allocation for this question was 5 points.

Table 1.12: Strategies to Manage the Waiting Process in Ambulatory Care Clinics Indicator Summary

Question	Total Possible Points	Overall Weighting

Question	Total Possible Points	Overall Weighting
Component 1: Formal Processes to Remove Patient from Wait List		
Section 4, Question 27 (row a)	3	24%
Component 2: Centralized Scheduling System to Coordinate Patient Visits		
Section 4, Question 27 (row b)	3	43%
Component 3: Strategies to Make the Patient's Wait More Comfortable/Informative		
Section 4, Question 28	5	33%
Total Score		100%

Indicator 10: Performance Management in Ambulatory Care

The Performance Management in Ambulatory Care indicator was designed to measure the extent to which hospitals use and monitor clinic performance indicators, as well as how hospitals incorporate quality improvement initiatives in ambulatory clinics. Three questions from section 4 were used to calculate this indicator.

Component 1: Use and Monitoring of Performance Indicators Internally (41%)
Section 4, Question 27 (row c):
This question asked what proportion of hospitals' ambulatory care clinics monitored performance indicators internally. Hospitals received 1 point for few of the clinics (<25%), 2 points for some of the clinics (25-74%) and 3 points for most of the clinics (75+%). The total point allocation for this question was 3 points.

Component 2: Use and Monitoring of Performance Indicators Externally (26%)
Section 4, Question 27 (row d):
This question asked what proportion of hospitals' ambulatory care clinics monitored performance indicators externally. Hospitals received 1 point for few of the clinics (<25%), 2 points for some of the clinics (25-74%) and 3 points for most of the clinics (75+%). The total point allocation for this question was 3 points.

Component 3: Use of Ongoing Quality Improvement Projects (33%)
Section 4, Question 27 (row e):
This question asked what proportion of the hospital's clinics currently has ongoing quality improvement initiatives. Hospitals received 1 point if hospitals indicated few of the clinics (<25%), 2 points for some of the clinics (25-74%) and 3 points for most of the clinics (75+%). The total point allocation for this question was 3 points.

Table 1.13: Performance Management in Ambulatory Care Indicator Summary

Question	Total Possible Points	Overall Weighting
Component 1: Use and Monitoring of Performance Indicators Internally		
Section 4, Question 27 (row c)	3	41%

Question	Total Possible Points	Overall Weighting
Component 2: Use and Monitoring of Performance Indicators Externally		
Section 4, Question 27 (row d)	3	26%
Component 3: Use of Ongoing Quality Improvement Projects		
Section 4, Question 27 (row e)	3	33%
Total Score		100%

Indicator 11: Formalized Audit of Hand Hygiene Practices

The Formalized Audit of Hand Hygiene Practices indicator was designed to measure the extent to which hand hygiene practices are audited, the frequency in which they are monitored, and whether they are used as criteria for performance appraisal for all staff in the organization. Three questions from section 9 were used to calculate this indicator.

Component 1: Auditing Hand Hygiene Practices (33.3%)
Section 9, Question 95c:
This question asked whether the organization had a fully implemented formal mechanism for auditing hand hygiene practices. Hospitals received 1 point if they answered yes. The total point allocation for this question was 1 point.

Component 2: Frequency of Monitoring Hand Hygiene Practices (33.3%)
Section 9, Question 95e:
This question asked about the frequency of hand hygiene monitoring. Hospitals received 0.5 points if they monitored annually or at another frequency and 1 point if they monitored monthly or weekly. The total point allocation for this question was 1 point.

Component 3: Criteria for Performance Appraisal (33.3%)
Section 9, Question 95g:
This question asked whether the organization used hand hygiene practice as a criterion for performance appraisal for all staff. Hospitals received 1 point if they did. The total point allocation for this question was 1 point.

Table 1.14: Formalized Audit of Hand Hygiene Practices Indicator Summary

Question	Total Possible Points	Overall Weighting
Component 1: Auditing Hand Hygiene Practices		
Section 9, Question 95c	1	33.3%
Component 2: Frequency of Monitoring Hand Hygiene Practices		
Section 9, Question 95e	1	33.3%
Component 3: Criteria for Performance Appraisal		
Section 9, Question 95g	1	33.3%
Total Score		100%

Indicator 12: Medication Documentation and Reconciliation

The Medication Documentation and Reconciliation indicator was designed to measure the extent to which hospital staff document, reconcile and discuss complete lists of patient medications. Two questions from section 9 were used to calculate this indicator.

Component 1: Documentation of Medications upon Admission (50%)

Section 9, Question 98a:

This question asked whether the organization documents a complete list of each patient's current medications upon admission. Hospitals received 0.5 points if a process was partially implemented – developed but to be implemented in stages, 1 point if a process was to be developed in 2007 for full implementation in 2008, and 1.5 points if a process was fully implemented in the hospital. The total point allocation for this question was 1.5 points.

Component 2: Reconciliation and Communication of Medication Information upon Referral or Transfer (50%)

Section 9, Question 98c:

This question asked whether the complete list of the patient's medications is reconciled and communicated to the next provider of health care service when the patient is referred or transferred to another setting, service, practitioner, or level of care within or outside of the hospital. Hospitals received 0.5 points if a process was partially implemented – developed but to be implemented in stages, 1 point if a process was to be developed in 2007 for full implementation in 2008, and 1.5 points if a process was fully implemented in the hospital. The total point allocation for this question was 1.5 points.

Table 1.15: Medication Documentation and Reconciliation Indicator Summary

Question	Total Possible Points	Overall Weighting
Component 1: Documentation of Medications upon Admission		
Section 9, Question 98a	1.5	50%
Component 2: Reconciliation and Communication of Medication Information upon Referral or Transfer		
Section 9, Question 98c	1.5	50%
Total Score		100%

Verification

Hospitals were not sent preliminary values for the survey questions that were used in the calculations of the SIC indicators. This is because there were phone calls made and emails were sent after the surveys were received, where hospitals were given ample time to respond to any data quality issues or missing answers that were detected.

Methodology to Determine Relative Performance in Hospital Report 2007: Acute Care

As in previous report, a three-point scale was used to designate performance allocations as "above average", "average" or "below average". This section describes the method for determining relative performance between organizations.

Determining relative performance among hospitals for the ten indicators derived from the *Hospital Report 2007 SIC Survey* was based on two peer groups: teaching/community hospitals and small hospitals. Peer group reporting was adopted because small hospitals face different challenges in carrying out many of the activities reported in the SIC areas. In addition, not all of these indicators apply equally to small hospitals and teaching/community hospitals. For example, it might be less meaningful for a small hospital to conduct a formal patient or employee satisfaction survey when they only have 200 discharges annually or 80 full-time staff. Small hospitals were defined as those hospitals funded using the JPPC Small Hospital Rate Model. Please refer to www.jppc.org for more information.

Hospitals are allocated into three categories: "below average", "average", and "above average", determined by the position of the hospital's indicator value relative to the mean indicator value of its peer group. These values were reviewed to ensure meaningful differences among hospitals in the three categories. The criteria used to determine relative performance in each peer group is described below.

In Hospital Report 2006, the method of assigning performance allocation was based on the interval of the mean +/- 1.645 standard deviations. The end-points of this interval are the upper and lower cut-point for "above" and "below" average classification. With an assumption that the indicator values are approximately normal, this interval should capture roughly 90% of the indicator values.

However in 2007, the high degree of variability in indicator scores and/or relatively high mean resulted in upper cut value to excess 100 or a lower cut value below 0 for several indicators. This made it impossible for hospitals to achieve the "above average" or "below average" status for those indicators.

A new performance allocation method was applied to Hospital Report 2007 SIC indicators to resolve this issue. This new method determines the upper and lower cut points based on the 95th percentile as above average and the 5th percentile as below average. Similar to the original method, this interval should capture roughly 90% of the indicator values. This method does not require normality and bounded the cut points within 0 to 100. This method is consistent among all sectors of the System Integration and Change quadrant.
Table 1.16 shows the cut off values correspond for each of the indicators. Hospitals with scores above or below these cut points were respectively identified as hospitals with above or below average levels of performance.

Table 1.16: Indicator Values Differentiating the Three Performance Categories in *Hospital Report 2007: Acute Care* for Teaching/Community Hospitals

Indicator	Below Average Performance Cut Off	Above Average Performance Cut Off	Total Possible Score
Teaching/ Community Peer Group			
Use of Clinical Information Technology	33.59	90.61	100.00
Use of Data for Decision-Making	32.44	92.72	100.00
Use of Standardized Protocols	13.93	68.33	100.00
Community Involvement and Coordination of Care	28.86	94.00	100.00
Management and Support of Human	44.25	88.91	100.00

Indicator	Below Average Performance Cut Off	Above Average Performance Cut Off	Total Possible Score
Resources			
Healthy Work Environment	28.40	99.02	100.00
Patient Safety Reporting and Analysis	33.33	100.00	100.00
Promoting a Patient Safety Culture	20.00	85.00	100.00
Strategies to Manage the Waiting Process in Ambulatory Care Clinics	13.20	93.40	100.00
Performance Management in Ambulatory Care	22.00	100.00	100.00
Small Hospital Peer Group			
Use of Clinical Information Technology	16.02	64.57	100.00
Use of Data for Decision-Making	18.30	63.48	100.00
Use of Standardized Protocols	4.17	66.67	100.00
Community Involvement and Coordination of Care	0.00	59.43	100.00
Management and Support of Human Resources	23.29	77.94	100.00
Healthy Work Environment	20.17	94.27	100.00
Patient Safety Reporting and Analysis	0.00	100.00	100.00
Promoting a Patient Safety Culture	10.00	80.00	100.00
Strategies to Manage the Waiting Process in Ambulatory Care Clinics	6.60	86.80	100.00
Performance Management in Ambulatory Care	0.00	82.67	100.00

It is important to consider the meaning and value of these cut points. The methodology used for identifying these cut points (which subsequently mark an organization as having average, or above, or below average performance in each of these areas) is reasonable, scientifically sound, and conservative, however, the results need to be interpreted somewhat cautiously since the range of scores that capture "average" performance on these indicators is quite large. Hospitals with scores close to the upper or lower cut points can gain an increased understanding of their performance levels upon receipt of their hospitals' results.

From a performance improvement standpoint, a teaching/community hospital achieving a score of 35 on the Use of Clinical Information Technology indicator, while identified as having "average" level of performance, falls very close to the "somewhat below average" cut point. Moreover, 35 points on the Use of Clinical Information Technology indicator means that the teaching/community hospital has almost no clinical information accessible electronically throughout the hospital. Clearly there is opportunity for considering improvement in this area for such a hospital.

System-Level Findings

This section provides provincial findings for the twelve indicators of SIC. In addition, the data are presented for teaching, community and small hospitals separately.

For each of the twelve Acute Care SIC indicators several statistics are displayed: the valid N (number of hospitals that received a score for this indicator), the mean and the standard deviation. In addition, the minimum score and maximum score received for each indicator are displayed along with three percentile rankings: the 25th, 50th (median) and 75th. Just as the median is the value above and below which 50% of cases fall, percentiles provide the same information for different percentages of cases. For example, the value in the 25th percentile is the value that 25% of hospitals scored at or below (and the value above which 75% of hospitals scored).

The statistics in each indicator table are displayed for all 103 hospitals that returned a survey, as well as for teaching, community and small hospital groups. Combined, these statistics provide important measures of central tendency and detailed information about the dispersion of scores for each indicator.

Peer Group Differences

In *Hospital Report 2007: Acute Care*, teaching and community hospitals were included in the same peer group for performance allocations. Below, they are separated out to provide more detailed data at the hospital group level. In reporting data at this level, it is important to clarify that data are provided for these different groups so that hospitals can situate themselves relative to their peers, not to facilitate comparisons between these two different groups.

Table 1.17: Use of Clinical Information Technology Indicator

	All Hospitals	Teaching	Community	Small
Valid N	103	15	61	27
Mean	58.7	78.8	61.9	40.2
Std Deviation	18.8	10.4	14.7	14.6
Minimum	9.1	63.6	21.88	9.1
25th Percentile	47.6	70.9	52.5	31.1
Median	61.2	75.7	62.8	37.9
75th Percentile	71.8	86.4	71.0	49.8
Maximum	98.3	98.3	94.8	84.6

Table 1.18: Use of Data for Decision-Making Indicator

	All Hospitals	Teaching	Community	Small
Valid N	103	15	61	27
Mean	59.0	75.1	63.4	40.3
Std Deviation	21.0	14.5	18.0	17.5
Minimum	0	47.9	234	0
25th Percentile	44.5	60.1	47.2	28.0
Median	60.1	75.1	65.5	40.1
75th Percentile	77.7	89.4	78.4	49.5
Maximum	94.1	93.4	94.1	84.6

Table 1.19: Use of Standardized Protocols Indicator

	All Hospitals	Teaching	Community	Small
Valid N	98	15	61	22
Mean	38.1	45.8	40.6	26.0

Std Deviation	18.7	19.08	16.5	19.7
Minimum	0	13.9	1.8	0
25th Percentile	23.1	31.9	31.4	12.4
Median	37.6	48.5	40.7	21.6
75th Percentile	52.6	53.0	53.8	36.1
Maximum	81.1	81.1	69.9	74.1

Table 1.20: Community Involvement and Coordination of Care Indicator

	All Hospitals	Teaching	Community	Small
Valid N	103	15	61	27
Mean	54.1	73.9	60.3	29.2
Std Deviation	24.3	16.8	19.2	18.7
Minimum	0	40.6	10	0
25th Percentile	36.0	65.4	48.3	15.3
Median	58.6	71.1	60.9	29.7
75th Percentile	71.1	89.1	73.4	39.4
Maximum	100	100	94.9	80.3

Table 1.21: Management and Support of Human Resources Indicator

	All Hospitals	Teaching	Community	Small
Valid N	103	15	61	27
Mean	63.4	77.0	66.1	49.8
Std Deviation	15.2	11.2	11.8	14.2
Minimum	19.7	54.4	41.5	19.7
25th Percentile	55.5	67.7	59.0	42.2
Median	62.7	77.7	65.4	49.6
75th Percentile	75.5	88.4	74.7	58.2
Maximum	91.1	91.1	89.7	82.0

Table 1.22: Healthy Work Environment Indicator

	All Hospitals	Teaching	Community	Small
Valid N	103	15	61	27
Mean	71.0	83.8	73.8	57.5
Std Deviation	25.9	19.3	24.9	26.5
Minimum	12.0	38.2	18.0	12.0
25th Percentile	49.0	69.8	53.5	33.5
Median	83.5	91.0	84.6	55.9
75th Percentile	93.1	98.1	93.4	85.6
Maximum	100	100	100	100

Table 1.23: Patient Safety Reporting and Analysis Indicator

	All Hospitals	Teaching	Community	Small
Valid N	103	15	61	27
Mean	75.3	81.8	77.7	66.3
Std Deviation	23.7	11.9	21.3	30.9

Minimum	0	60	10	0
25th Percentile	63.3	66.7	63.3	46.7
Median	80.0	90.0	80.0	73.3
75th Percentile	90.0	90.0	90.0	90.0
Maximum	100	100	100	100

Table 1.24: Promoting a Patient Safety Culture Indicator

	All Hospitals	Teaching	Community	Small
Valid N	103	15	61	27
Mean	56.4	64.3	57.8	48.9
Std Deviation	20.5	13.4	20.2	22.4
Minimum	5.0	45.0	10.0	5.0
25th Percentile	40.0	55.0	45.0	30.0
Median	60.0	65.0	60.0	50.0
75th Percentile	70.0	75.0	70.0	65.0
Maximum	95.0	85.0	95.0	85.0

Table 1.25: Strategies to Manage the Waiting Process in Ambulatory Care Clinics Indicator

	All Hospitals	Teaching	Community	Small
Valid N	103	15	61	27
Mean	59.0	71.6	62.8	43.6
Std Deviation	25.3	18.0	23.7	26.0
Minimum	6.6	36.9	6.6	6.6
25th Percentile	40.7	57.0	50.1	19.8
Median	63.1	71.1	69.4	41.9
75th Percentile	79.1	80.2	80.2	62.8
Maximum	100	100	93.4	93.4

Table 1.26: Performance Management in Ambulatory Care Indicator

	All Hospitals	Teaching	Community	Small
Valid N	103	15	61	27
Mean	60.1	74.5	62.6	46.3
Std Deviation	26.98	19.3	26.8	25.7
Minimum	0	33.3	0	0
25th Percentile	38.3	60.7	38.3	24.7
Median	66.7	82.7	69	49.3
75th Percentile	80.3	91.3	80.3	66.7
Maximum	100	100	100	100

Table 1.27: Formalized Audit of Hand Hygiene Practices Indicator

	All Hospitals	Teaching	Community	Small
Valid N	103	15	61	27
Mean	12.6	24.4	12.8	5.6
Std Deviation	25.3	27.4	25.7	21.2
Minimum	0	0	0	0

25th Percentile	0	0	0	0
Median	0	0	0	0
75th Percentile	0	50.0	0	0
Maximum	100	66.7	100	100

Table 1.28: Medication Documentation and Reconciliation Indicator

	All Hospitals	Teaching	Community	Small
Valid N	103	15	61	27
Mean	47.4	36.7	47.8	52.5
Std Deviation	31.9	24.6	31.0	36.8
Minimum	0	0	0	0
25th Percentile	33.3	33.3	33.3	33.3
Median	33.3	33.3	33.3	50.0
75th Percentile	66.7	50.0	66.7	100
Maximum	100	100	100	100

Table 1.29: Average Indicator Scores by LHIN [1]

LHIN	Use of Clinical Information Technology	Use of Data for Decision-Making	Use of Standardized Protocols	Community Involvement and Coordination of Care	Management and Support of Human Resources
LHIN 1 (Erie St. Clair)	70.4	69.9	41.5	56.9	65.8
LHIN 2 (South West)	62.0	61.5	47.2	58.8	64.5
LHIN 3 (Waterloo Wellington)	58.2	58.4	46.4	46.9	64.9
LHIN 4 (Hamilton Niagara Haldimand Brant)	56.8	64.3	44.1	55.7	65.9
LHIN 5 (Central West)	69.7	77.4	60.1	66.6	74.2
LHIN 6 (Mississauga Halton)	67.3	87.5	50.9	69.0	79.3
LHIN 7 (Toronto Central)	82.5	84.8	47.6	76.3	85.8
LHIN 8 (Central)	68.9	67.5	30.0	60.1	70.1
LHIN 9 (Central East)	53.6	61.8	37.4	54.1	65.0
LHIN 10 (South East)	64.6	51.4	43.9	53.5	65.4
LHIN 11 (Champlain)	47.9	59.8	30.1	54.1	63.7
LHIN 12 (North Simcoe Muskoka)	55.3	54.0	37.5	56.9	60.5
LHIN 13 (North East)	49.6	34.8	24.2	40.8	45.2
LHIN 14 (North West)	49.7	40.7	15.3	34.7	49.3
LHIN	**Healthy Work Environment**	**Patient Safety Reporting and Analysis**	**Promoting a Patient Safety Culture**	**Strategies to Manage the Waiting Process in Ambulatory Care Clinics**	**Performance Management in Ambulatory Care**
LHIN 1 (Erie St. Clair)	84.5	85.3	61.0	49.9	64.4
LHIN 2 (South West)	64.9	81.9	60.0	56.4	55.9

[1] The new Formalized Audit of Hand Hygiene Practices and Medication Documentation and Reconciliation are not publicly reported at a hospital-specific level.

LHIN 3 (Waterloo Wellington)	74.5	87.8	55.8	53.4	46.1
LHIN 4 (Hamilton Niagara Haldimand Brant)	86.1	78.3	68.8	66.0	66.2
LHIN 5 (Central West)	59.3	85.0	75.0	80.7	85.8
LHIN 6 (Mississauga Halton)	93.7	93.3	71.7	71.0	76.6
LHIN 7 (Toronto Central)	95.0	87.6	73.6	78.2	77.4
LHIN 8 (Central)	65.6	66.7	41.0	59.3	71.6
LHIN 9 (Central East)	66.8	75.4	64.4	66.4	74.7
LHIN 10 (South East)	65.9	81.1	43.3	68.7	59.4
LHIN 11 (Champlain)	81.5	79.5	55.4	59.7	52.4
LHIN 12 (North Simcoe Muskoka)	69.3	68.7	51.0	52.5	45.9
LHIN 13 (North East)	50.4	47.8	45.4	56.1	51.2
LHIN 14 (North West)	54.1	63.8	43.1	32.3	55.4

Summary of Results

Ontario acute care hospitals are constantly facing new challenges everyday. Collaborating with other LHIN partners is becoming increasingly important in establishing high levels of care among hospitals. This year, results from the SIC survey indicated that a high proportion of acute care hospitals are working with other acute care hospitals to improve data collection and sharing capabilities compared to 2006. In addition, results indicate more hospitals collaborated with community based service agencies in planning and carrying out education sessions for partner and hospital staff. Despite gradual increases in collaboration with other LHIN partners from one year to the next, there are still opportunities for hospitals to improve collaboration efforts.

The indicators of SIC provide a performance profile reflecting efforts by acute care hospitals in Ontario to meet these challenges. These indicators capture four broad but key areas:

- Implementing patient safety strategies to decrease the levels of infection rates
- Investing in recruitment and retention strategies for all hospital staff
- Improve timely access to care

Overall, hospitals have made considerable improvements in the several indicators, or investments, when compared to *Hospital Report: 2006* survey results. However, there continues to be variation in performance for all indicators, indicating opportunities for improvement in targeted areas for some hospitals.

Appendix A: 2007 Methodology Changes

During the 2007 SIC survey redevelopment phase of the survey, questions were reviewed by both the HRRC researchers and CIHI staff. The methodology changed for eight indicators. Wording changes were made to better clarify the questions and provide more defined answer choices. The table below indicates the major changes to the questions where the changes effected the indicator calculation and scoring.

INDICATOR NAME	*Hospital Report 2006 SIC Survey*	*Hospital Report 2007 SIC Survey*
Use of Clinical Information Technology	Q.18: Two functions were dropped during the redevelopment process (Recording nursing workload data and Accessing clinical decision support tools) and two functions were merged together (Accessing Literature Search Databases and Accessing Library Resources/Educational Materials) Total points=9, Weight=20%	Q. 15a: Two functions were dropped during the redevelopment process (Accessing literature search databases or other library resources and/or educational materials, and Accessing hospital policies and procedures) Total points=7, Weight=20% ------------------------------------- Q. 13: One function was removed (Access to a clinical repository that can store clinical images). The question on the number of desktop computers was also removed. Other regulated health professionals and unregulated patient care staff were merged into other patient care staff. Total points=60, Weight=47%
Use of Data for Decision-Making	Q.49c, Q.49d, Q.49f, Q.51e Q.51l, Q.52d (1 point each) were added to replace Q.51. Total points=6, Weight=14% --------------------------------- Q.25 was reweighed to 20% to keep the component's overall weight consistent with last year's.	Q.19: Four clinical measures were dropped during the redevelopment process (In-hospital complication rates beyond those measured in Hospital Report: Acute Care, Infection rates, Length of stay, Measures of appropriateness from other sources other than CIHI data) Total points=55, Weight=20% ------------------------------------- Q.99g: Additional answer choices were added to this question (Organizations with a partially implemented plan received 0.5 points, Organizations with a plan to fully implement in 2008 received 1 point, and Organizations with a fully implemented plan received 1.5 points) Total points=1.5 ------------------------------------- Two questions (Routine incident reporting system and Utilization management strategies) were dropped from this indicator. -------------------------------------

		Q.7: One staff role was dropped during redevelopment (Infection control practitioner). Scoring was changed so hospitals received 5 points if a role was under development and 10 points if the role was permanent. Total points=30 ------------------------------------ Q.12: Quality improvement was merged with Utilization management; Research activities and skills and Infection control were dropped during redevelopment. Total points=27 ------------------------------------ Q.23: Senior management team and Managers at the program/department level were merged, Nurses were merged with other regulated health professionals, unregulated patient care staff and other hospital staff, and a new staff group was included (Staff/Committee/Task force focused on quality improvement) Total points=20 ------------------------------------ Q.24: Two new answer choices were added (hospital intranet, external newsletter/email) Total points=5 ------------------------------------ Q.26: Senior management team and Managers at the program/department level were merged, Nurses were merged with other regulated health professionals, unregulated patient care staff and other hospital staff, and three new groups were added (Staff/Committee/Task force focused on quality improvement, Community, Current or former patients/families) Total points=28 ------------------------------------ Q.25: Other regulated and unregulated staff were merged. Total points=4
Use of Standardized Protocols		Q.20: Removed gastrointestinal bleed and the five procedures during redevelopment. Total points=28, Weight=50% ------------------------------------ Q.21: Removed gastrointestinal bleed and the five procedures during redevelopment. Total points=30, Weight=50%

Community Involvement and Coordination of Care		Four questions were deleted from previous year during redevelopment (Q.29, 30, 34 and 37a). ------------------------------------ Q.22b: Two strategies were dropped during redevelopment (Developing standardized protocols, Representation on hospital standing committee on patient care/discharge planning). Two LHIN partners were dropped during redevelopment (Cancer Centres and Rehab Facilities). Total points=70 ------------------------------------ Q.7: Four roles were dropped (Patient flow coordinator, Patient advocate/ombudsperson, Volunteer coordinator, and Designated staff who addresses equity issues). Point allocation was changed. Total points=20
Management and Support of Human Resources indicator	Q.9 Physicians group was removed during the redevelopment process. Total points=8, total weight remained the same at 7%. ---------------------------------- Q.6: Two groups were removed this year (Board of Director's Chair and Chairs of standing committees of the board) Total points=3, Weight=5%	questions were deleted from previous year during redevelopment (Q.4, 8). ------------------------------------ Q.8: Added physicians as a staff group, merged Other regulated and unregulated patient care staff. Point allocation changed to benefit hospitals who did performance evaluations more often. Total points=16 ------------------------------------ Q.9: Question was asked of only two staff groups (nurses and other patient care staff). Total points=4 ------------------------------------ Q.16: Two points are allocated if ethics consultation was contracted out to external experts or clinical ethics service was staffed by clinical ethicist with advanced training. Total points =5 ------------------------------------ Q.17: Other regulated and unregulated patient care staff were merged. Total points=4 ------------------------------------ Previous year's Q14 was dropped during redevelopment ------------------------------------ Q.10b: Other regulated and unregulated patient care staff were merged. ------------------------------------

		Q.7: Three roles were dropped (Acute care/specialty nurse practitioner, Clinical nurse specialist, and Pathology assistant), and two roles were added (Designated staff responsible for professional practice issues, and Volunteer coordinator). Point allocation changed. Total points=50 ------------------------------------ Q.11: Other regulated and unregulated patient care staff were merged. One row was added (On-site courses provided by hospital staff or external experts). Total points=14 ------------------------------------ Q.12: Five items were dropped during redevelopment (Conflict management, Ethical issues, Domestic violence/abuse, Violence in the workplace, Communication skills). The question was also asked of physicians. Total points=36 ------------------------------------ Q.1: Other regulated and unregulated patient care staff were merged. Three strategies were dropped during redevelopment (Eldercare program, Staff lounge, and Wellness program). Total points=30 ------------------------------------ Q.2: Other regulated and unregulated patient care staff were merged. Total points=8 ------------------------------------ Q.3: Other regulated and unregulated patient care staff were merged. Total points=5
Healthy Work Environment	Two new questions were added this year (Q.40b and Q.40c). A total of 11 questions were used in this year's calculation of the Healthy Work Environment Indicator.	Q.33c: Senior management team and Managers at the program/department level were merged, and all patient care and other hospital staff were merged. Total points=16 ------------------------------------ Q.35: Dropped one row (Recognize excellence and accomplishments). Total points=18
Patient Safety Reporting and Analysis		Q.99b: Additional answer choices were added to this question (Organizations with a partially implemented plan received 0.5 points, Organizations with a plan to fully implement in 2008

		received 1 point, and Organizations with a fully implemented plan received 1.5 points) Total points=1.5 ------------------------------------ Q.99e: Additional answer choices were added to this question (Organizations with a partially implemented plan received 0.5 points, Organizations with a plan to fully implement in 2008 received 1 point, and Organizations with a fully implemented plan received 1.5 points) Total points=1.5 ------------------------------------ Two previous year's questions were dropped during redevelopment (Q.49f, 51p)
Promoting a Patient Safety Culture		Q.101a,b: Employee and patient surveys were split into two rows. Total points=2
Formalized Audit of Hand Hygiene Practices Indicator		New indicator this year
Medication Documentation and Reconciliation Indicator		New indicator this year