New Brunswick Health Council

Engage. Evaluate. Inform. Recommend.

Hospital Patient Care Experience in New Brunswick

2010 Acute Care Survey Results
Technical Appendix
October 2010

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New Brunswickers have a right to be aware of the decisions being made, to be part of the decision-making process, and to be aware of the outcomes delivered by the health system and its cost. The **New Brunswick Health Council** will foster this transparency, engagement, and accountability by engaging citizens in a meaningful dialogue, measuring, monitoring, and evaluating population health and health service quality, informing citizens on health system performance and recommending improvements to health system partners.

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1. OVERVIEW

The New Brunswick Health Council (NBHC) released the results of its first province-wide survey in July 2010 entitled *Hospital Patient Care Experience in New Brunswick – 2010 Acute Care Survey Results*.

The survey was completed by medical and surgical patients, 18 years of age or older, discharged between November 1, 2009 and January 31, 2010 from a hospital or facility providing acute care, with at least one overnight stay.

While the objective of the previously released NBHC report is to provide baseline data and information to the public and regional health authorities in order to measure and monitor improvements over time, this technical appendix provides a more comprehensive picture of the questionnaire design, survey methodology and data management process.

In order to assess the accuracy and precision of the 2010 NBHC acute care survey instrument, psychometric testing results are reported using common tests of reliability and validity. Where applicable, comparisons are made to the research literature where similar measures of patient care experiences have been described and examined.

2. SURVEY DESIGN

Several factors have been taken into consideration in order to design the care experience survey including accreditation requirements, reliability and validity of the survey instrument, comparability with other North American jurisdictions, feedback from various stakeholders, and using the appropriate steps to develop a bilingual questionnaire.

2.1 Measurement tool certification of the New Brunswick care experience survey

Hospitals in New Brunswick are grouped under one of two Regional Health Authorities (RHAs); the Horizon Health Network (formerly known as Regional Health Authority B) and the Vitalité Health Network (formerly known as Regional Health Authority A) were created in 2008 following major changes to the governance and organizational structure of the healthcare system in New Brunswick.

Both RHAs are preparing for their first voluntary national accreditation program that will assess an organization against standards of excellence and will use the results to foster ongoing quality improvement in services provided to patients and clients.

By way of collaboration and prevention of duplication, an opportunity has been identified for the NBHC to work with the RHAs and the Department of Health toward the development of a standardized survey tool that evaluates quality of patient care in all New Brunswick hospitals and facilities providing acute care.

It is through this opportunity that the NBHC has chosen to undertake Accreditation Canada's *Measurement Tool Certification Process* under the *Positive Client Experience Program* in order to minimize reporting and maximize organizational efforts. Accreditation Canada is an internationally recognized not-for-profit independent organization providing an external peer-review process to health care organizations.

2.2 Adaptation from other survey tools

The questionnaire used in this New Brunswick care experience survey was an adaptation of similar surveys conducted by healthcare providers in other jurisdictions. The NBHC questionnaire was based on a combination of HCAHPS® (Hospital Consumer Assessment of Healthcare Providers & Systems), CTM-3 (Care Transitions Measure), and HQC (Saskatchewan Health Quality Council) questionnaires.

Most of the indicators used by the NBHC are the same as those developed by the *Federal Agency for Healthcare Research and Quality* (HCAHPS survey tool) in the United States. The HCAHPS survey tool has been rigorously validated in North America[1,2,3,4,5,6,7,8], and the NBHC's evaluation of patient care uses HCAHPS indicators to measure nurse communications, doctor communications, responsiveness of staff, communication about medicines, pain control, physical environment (cleanliness and quiet at night), and discharge information.

The CTM indicator is a performance measure used to promote quality improvement in the area of transitional care by evaluating the extent to which patients are asked about their health care needs and the extent to which they are being prepared when going from hospital to home[9].

Saskatchewan's first province-wide acute care survey of hospital patients was released in 2005 by HQC (http://www.hqc.sk.ca). The NBHC care experience survey includes items from the HQC questionnaire that represent several key dimensions of care, namely questions relating to admission, patient safety, client and family centred care, and discharge.

All HCAHPS items are kept together in the questionnaire. The survey flow, with respect to the order in which questions appear, reflects patient experiences from admission to discharge.

Equity is an important dimension of hospital quality care. The NBHC patient care experience survey also includes items that measure equity based on preferred language of service (English or French).

2.3 Contributions from stakeholders

The New Brunswick Health Council values actively engaging stakeholders and citizens when the public is involved in any survey or engagement exercise. The NBHC has chosen to focus its efforts in four strategic areas: population health, care experience, sustainability and engagement. Accordingly, four working groups were formed with members of the Council to provide guidance and advice to NBHC staff. The Care Experience Working Group was asked to provide an external review of patient care experiences being evaluated in the questionnaire, and served as a valuable sounding board in the development of the survey.

The survey development process required the involvement of appropriate persons and organizations that might be affected by the application of the proposed

instrument. It also involved keeping stakeholders well informed, considering their opinions, ideas, and responding to all questions and concerns on a regular, ongoing basis. These are key factors in order to improve the instrument and facilitate its eventual adoption.

The NBHC patient care experience survey was conducted by Ipsos Reid, an independent research company, on behalf of the NBHC and regional health authorities. Ipsos Reid has previous experience conducting surveys in the field of health care for organizations across Canada and internationally. The Ipsos Reid team members also provided valuable feedback on the survey design.

Special attention was also given to questions that provide a comprehensive picture of the characteristics of survey respondents, such as self-rated health, education level, identification of Aboriginal persons, language spoken at home, and preferred language of health care service (English or French).

2.4 Development of the French questionnaire

Several steps were taken to ensure that New Brunswick patients could respond to the survey in either official language (English or French). The French version of the NBHC questionnaire was based on the English version described in the previous sections. A forward/backward translation procedure was applied as a first step, and then cognitive interviews were conducted for the French questionnaire to assess survey comprehension.

Prior to cognitive testing, the English questionnaire was translated into French by a professional translator, and then back-translated into English by a different translator. This was done in order to ensure that no meaning had been lost from the original version. The translated questionnaire was then fully reviewed by the NBHC and Ipsos Reid project teams. A French-language version of HCAHPS used in Europe (Belgium) was also reviewed to assess its suitability for use in the New Brunswick context. The French-language questionnaire tested in the cognitive interviews was based on the version produced once all of these steps had taken place.

Cognitive interviewing is a qualitative methodology aimed at evaluating how respondents understand survey questions and how they arrive at their answers. This is a process that has been used in previous translation validations of HCAHPS, for example, Spanish translation of the English questionnaire in the United States[7].

In this qualitative research for the NBHC, an Ipsos Reid interviewer worked through the French questionnaire with participants in a one-on-one telephone interview and asked qualitative questions to test their understanding. These qualitative techniques included:

- Asking respondents to restate the question in their own words (paraphrasing);
- Asking them to define key terms in the question;
- Using "retrospective think-alouds", where respondents describe how they arrived at their answers.

Participants were also probed on their understanding of the wording of specific questions including potential alternative wordings.

Cognitive testing of a translated questionnaire involves a range of potential restrictions on the changes that can be recommended as a result of the research. Any questionnaire changes to the French version must also be considered with regard to the English version, which utilizes many items from the already standardized HCAHPS survey tool. Any changes that would substantively alter the meaning of the French version compared to the English one would introduce a bias when comparing samples from each language group when the survey is fielded and analyzed.

The objective of this qualitative research is therefore to recommend changes where appropriate but not to include any improvements that would have a significant detrimental impact on comparability with the patient care experience survey in English.

2.4.1 Participant profile

Qualitative cognitive testing was conducted via telephone interviews with nine (9) French-speaking New Brunswick citizens living in "mainly French-speaking" health zones. The sample was reflective of the target population based on age, gender, education level, and geographic location (health zone). Interviews lasted an average of 40 minutes and were conducted between November 23, 2009 and November 27, 2009. Educational attainment was felt to be particularly important given that the questionnaire is designed to be read and understood by all New Brunswick patients, regardless of their level of formal education.

The sample of participants was supplied by the New Brunswick Health Council and all were residents of New Brunswick. Participants were each paid an honorarium of $50 in recognition for their time to take part in the research.

All participants were sent a copy of the French-language questionnaire before the interview, either by email or mail. This was to allow them the opportunity to review the survey before discussing it in detail during the interview. Participants were informed that the discussion was confidential and that their comments would not be attributed to them personally. All participants gave their informed and explicit consent to take part in the interview and for it to be audio-recorded.

The findings of this exercise are treated as qualitative in nature, and therefore these findings are viewed as directional rather than as definitive conclusions.

2.4.2 Cognitive Testing

Overall, participants understood the French version of the patient care experience survey and the meaning of the questions. Participants generally found the questions to be relevant and uncontroversial. However, while participants thought the questions were fairly clear overall, they did suggest a range of specific wording changes aimed at clarifying questions or instructions. Participant suggestions were either recommended as changes to be made to the questionnaire, or noted as points that were raised with the NBHC for further discussion.

Ipsos Reid also tested a series of words or expressions to ensure they were being correctly interpreted. Overall, these were all well understood. Results of the qualitative testing were useful and modifications were made to the questionnaire.

2.5 Patient care experience indicators

All indicators in this report are based on questions asked of recently discharged patients participating in the NBHC patient care experience survey and are about their recent stay in a New Brunswick hospital.

A copy of the questionnaire is provided in **Appendix A**. In **Appendix B**, the survey questions are grouped by dimension of care, providing a specific reference for each patient care experience indicator.

The survey items employed one of several types of frequency response scales. Responses to the HCAHPS items that pertain to specific care experiences are based on either a four-point scale (never, sometimes, usually, always) or a dichotomous scale (yes, no). Responses to the HCAHPS items that represent a measure of overall satisfaction are based on a four-point scale (definitely no, probably no, probably yes, definitely yes) for the *intention to recommend* indicator, and an eleven-point scale (0 to 10) for the *overall hospital rating*. The top and bottom responses to this eleven-point scale included verbal anchors.

Thirteen indicators are being used for the public reporting component of this study and have been adapted from the HCAHPS, CTM-3 and HQC questionnaires. A detailed description of these indicators is provided in **Appendix C**.

3. SURVEY SCOPE

3.1 Target population

The survey was completed by **medical** and **surgical** patients, 18 years of age or older, discharged from a hospital or facility providing **acute care** between November 1, 2009 and January 31, 2010 with **at least one overnight stay**. A hospital providing "acute care" is one which is primarily involved in providing short-term inpatient medical care to people with illness or in need of surgery.

3.2 Opting out of the survey

Patients were excluded if they specifically requested not to be included in the upcoming survey process; "opting out" was an option communicated to all discharged patients through the use of in-facility posters as well as the personal distribution of handbills (postcard format) at admission to patients during the survey period from November 1, 2009 to January 31, 2010. Posters and handbills are discussed in more detail in section 4.2.

A toll-free number was advertised on "in-facility" posters and personally distributed handbills to all discharged patients offering the option to have their name removed from the patient care experience survey. In addition, the New Brunswick Health Council web site and toll-free inquiry line were provided to callers when it was determined that due to the nature of their call or their inquiry, it was better handled directly by NBHC staff.

Callers to the toll-free number requesting their name be removed from the patient care experience survey mailing list were asked to provide their full name, mailing address, as well as the hospital in which they were a patient and the date (or approximate timing) of their discharge. This information was required in order to find and remove the patient from the New Brunswick Health Council's patient discharge "data file".

Between the period of November 1, 2009 and March 31, 2010, there were only 33 patients who called the toll-free "opt out" line and requested their names be removed from the patient care experience survey mailing list. NBHC staff removed "opt out" patient names as well as other exclusions from the discharge patient list prior to releasing the final patient mailing list to Ipsos Reid.

3.3 Other patient inclusions/exclusions

Obstetric patients were not included in the study sample. Results from a previous HCAHPS study[5] suggest that surgery and medical are the most similar services and that medical and obstetrics are the most distinct services.

The selection criteria for the NBHC study sample are essentially the same as the HCAHPS pilot study[1]. The following patients were excluded from the study sample:

- Obstetric patients
- Patients under 18 years old
- Psychiatric, rehab, and chronic care cases
- Patients discharged to another health facility
- Patients with a hospitalization related to an Alternate Level of Care (ALC)
- Patients who died in hospital

Only the most recent hospital stay was retained for the majority of patients who had multiple hospital stays. Additional exclusions were also applied that represented a smaller set of patients:

- Patients who called the toll-free number to opt out of the survey
- Patients treated through addiction services
- Patients flagged as requiring palliative care
- Patients flagged as pregnant treated as a medical or surgical case
- Patients flagged with attempted suicide or suicide ideation
- Patients flagged as inmates
- Patients flagged as leaving against medical advice
- Patients flagged with severe dementia
- Patients with missing data needed for identification
- Patients with an out-of-province address

3.4 Hospitals/facilities included in the survey

This patient care experience survey was conducted only among recently discharged patients of hospitals/facilities providing acute care in New Brunswick.

Some hospitals/facilities were not included in the patient care experience survey, because patients did not meet the selection criteria for this project. Surveys were only completed by **medical** and **surgical** patients discharged between November 1, 2009

and January 31, 2010 from a hospital or facility providing **acute care**, with **at least one overnight stay**.

Hospitals/facilities included in the patient care experience survey can be viewed at the NBHC web site (http://www.nbhc.ca).

4. SURVEY METHODOLOGY

4.1 Census approach

The patient care experience survey was a census survey distributed to all eligible patients in New Brunswick. The final patient master file with all exclusions removed by the NBHC was provided to Ipsos Reid to form the basis of the study's target population: *all medical and surgical patients, 18 years of age and older, with an overnight stay in hospital and discharged within a three month period, November 1, 2009 to January 31, 2010, from hospitals in New Brunswick that provide acute care services.*

Due to the distribution of patients across the 19 hospitals providing acute care in New Brunswick, it was determined that a full census would be the best way to ensure results would be representative at the hospital/facility level, particularly important for the smaller hospitals/facilities with fewer discharged patients. Using a census survey approach also increases the statistical confidence and accuracy of the survey results; and since there is no sampling of patients, eliminates random sampling error.

4.2 Distribution of posters and handbills

In an effort to inform *medical* and *surgical* patients of the patient care experience survey being conducted by the New Brunswick Health Council, bilingual posters (11x17) and handbills (postcard format) were distributed to all hospitals/facilities providing acute care in New Brunswick.

"Opting out" was an option communicated to all patients through the poster and the personal distribution of handbills by staff at the time of admission during the study period of November 1, 2009 through to January 31, 2010. A toll-free number was provided to address any questions or concerns as well as to allow those patients who preferred not to take part in the care experience survey to request their name be removed from the survey mailing list. Copies of the poster and handbill are provided in **Appendix D** and **Appendix E** respectively.

4.3 Media communications and information for patients

The NBHC delivered a press release to inform the citizens of New Brunswick about this province-wide initiative, and to inform that patients discharged from hospital may receive a mail-out survey. A list of Questions and Answers pertaining to the care experience survey was also available to the public on the NBHC web site.

4.4 Data security protocols and privacy requirements

In order to protect the confidentiality of the information being provided by the New Brunswick Health Council as well as that being provided by the patients themselves at the time of contact, Ipsos Reid and all parties involved in the conduct of this survey followed strict data security procedures and transmitted information only through a secure file transfer site and following strict data transfer and data security protocols in place to deal with sensitive information. The privacy laws of New Brunswick and Canada were respected in the conduct of this patient care experience survey.

Patients' privacy and confidentiality were protected because the survey was conducted in compliance with all existing and relevant privacy and access legislation in New Brunswick and nationally, as well as emerging privacy best practices. A Privacy Impact Assessment (PIA) was also completed in collaboration with the New Brunswick Department of Health's Chief Privacy Officer.

In practical terms, a key principle for this survey was the de-identification of patient information; ensuring that personal information about respondents is stored separately from their responses to the survey so that they cannot be identified. To this end Ipsos Reid assigned to each discharged patient a unique 8-digit ID number that took into account their hospital and RHA for analysis purposes.

In an effort to respect patient's rights to privacy and confidentiality and developing a transparent and trusting process, information regarding the patient care experience survey was available to the public. Upon receipt of the survey kit by mail, the survey cover letter once again reviewed the purpose of the study and provided the discharged patient with the option to call and request no further survey materials be sent to their home. Patients requesting removal were excluded from the survey process at that time.

5. DATA MANAGEMENT AND FLOW PROCESS

All the necessary steps were taken to ensure that the patient's personal information was protected and secure. A very small number of NBHC and Ipsos Reid staff had access to the information, and they were all bound by formal confidentiality agreements. A formal agreement was also concluded between the NBHC and Ipsos Reid to protect the privacy and confidentiality of the information being provided.

The survey flow process diagram in **Appendix F** provides a visual representation of all the steps taken to ensure that the patient's personal information is protected and to ensure that the patient has several opportunities to remove their name from the mailing list.

5.1 Transfer of patient discharge data from the hospitals to the NBHC

Patient discharge information including name, address, Medicare number, age, gender, hospital code, discharge date, reason of visit, and discharge disposition code was submitted to the NBHC by the various hospitals providing acute care in New Brunswick through the Department of Health via a secure file transfer program. The Medicare number was only used to flag patients with multiple stays and to ensure that only the most recent hospital stay was retained for the majority of patients.

The original data files in Microsoft Excel were password protected and the NBHC stored them on a USB key. A copy of each original data file was also available on a separate USB key that served as a backup. Data files were stored in a locked safe inside an office that was secured by a key swipe mechanism. All data files prior to the mailing were only viewed by the NBHC research analyst using the USB key. Survey results and data used for analysis after the mailing were de-identified and therefore stored on a secure desktop computer within password protected files.

5.2 Data validation and selection

Data files were obtained in two waves (see section 5.4 for details). For each wave, several steps were needed to ensure that the data validation and selection of names for the mailing list followed a structured and logical approach. Microsoft Office Excel 2007 and SAS version 9.2 were used throughout this process, from the verification of the original data to the production of the final mail files.

Based on the final mailing list, the survey was sent to a total of 10,784 patients. Surveys were completed and returned by 5,371 patients, for an overall 50% response rate.

5.3 Transfer of data from the NBHC to Ipsos Reid

For each wave, two data files were created in preparation for the mailing, one for each of the two regional health authorities. These data files were inspected for completeness, and transferred via secure file transfer protocol (SFTP) to Ipsos Reid. Only essential information required for mailing purposes was included in the file. Patient information such as Medicare number and reason for visit was not included in these files.

5.4 Mail survey administration

The methodology selected and used for the patient care experience survey was a self-administered mail questionnaire. This method was chosen as it met current privacy legislation criteria, while still meeting the requirements of all parties involved in the survey process. Of utmost concern was meeting the privacy needs of the patients and the data needs of the Regional Health Authorities for the purpose of future quality improvement. This methodology allows the New Brunswick Health Council and RHAs to obtain the information required for the Accreditation Canada certification process, and address the need for the NBHC to begin assessing care experienced by New Brunswick residents in order to fulfill their mandate.

Ipsos Reid was responsible for the administration of the mail survey. The New Brunswick Health Council provided Ipsos Reid with discharged patient data in two waves. The initial wave included patients who had been discharged between November 1, 2009 and December 31, 2009, with the exception of Horizon Health Network Saint John zone hospital patient discharge data. The Horizon Health Network patient discharge records (Saint John zone) for the entire three-month period, as well as all other New Brunswick hospital/facility records for the month of January 2010 were provided in a second wave.

The survey kit, printed and compiled by TransContinental Printing, was sent via Canada Post mail service to all eligible discharged patients, and consisted of the following components:

- *Cover letter (bilingual)* – explaining the nature of the survey and co-signed by the New Brunswick Health Council and the appropriate Regional Health Authority (see **Appendix G**). The letter was personally addressed to the patient, and referenced in the body of the letter was the hospital the patient had been discharged from during the study period and for which their opinions on the care they received during their stay was requested in the enclosed survey questionnaire;

- ***Survey questionnaire (bilingual) –*** A twelve page questionnaire consisting of 54 questions including two open-end questions, pre-printed with the patient's unique Ipsos Reid assigned tracking code (English and French, printed in booklet style on one sheet, back-to-back); and,
- ***Business reply envelope, postage paid –*** Included in the survey kit was a postage paid, business reply envelope pre-addressed to Ipsos Reid's office based in Saint John, New Brunswick.

The mail-out process was managed in two waves as follows:

- **Wave 1** – all discharged patients from November 1 to December 31, 2009 (with the exception of discharge patients from Horizon Health Network's Saint John zone hospitals/facilities).
- **Wave 2** – all discharged patients in January, 2010 and Horizon Health Network's Saint John zone patients discharged from November 1, 2009 to January 31, 2010.

In addition to the initial survey kit sent to all eligible discharged patients (10,784) in the two waves, two reminder mailings were made in order to encourage response among those yet to return their survey questionnaire. The initial reminder mailing consisted of a reminder cover letter (referencing the initial mail survey), another survey questionnaire, and a second business reply envelope, postage paid and addressed to Ipsos Reid. The second reminder mailing consisted only of a reminder letter, encouraging patients who had not responded to return their patient care experience survey as quickly as possible.

6. DATA COLLECTION OF SURVEY RESPONSES

Completed questionnaires were received by the Ipsos Reid team in New Brunswick and the patient tracking code was recorded daily for mail list management purposes as a first step, and then all returned questionnaires were sent to the Ipsos data-processing centre.

Ipsos Reid operates to the highest quality data gathering standards in the industry. Data capture is carried out using MPA Data Entry software, which is designed to be "heads down", meaning that data entry operators can focus fully on input, reducing the risk of input error.

Ipsos followed a tried and tested process to dealing with item non-response in this study: data entry operators enter the data exactly as it has been recorded by respondents, regardless of whether the respondent has answered the correct question or followed the correct question routing. All required data cleaning was carried out by an experienced data analyst, following specific guidelines provided by the research team. This ensures that the data is cleaned, but within clear guidelines, avoiding potential inconsistencies.

In addition to the "heads down" data entry process and guidelines for cleaning data, Ipsos also verified 30% of all data with critical fields such as the patient tracking number which was 100% verified. Responses to open-end questions (verbatim) were entered but not coded.

7. STATISTICAL ANALYSIS

Sample characteristics based on the overall response (n=5,371) are provided in **Appendix H**.

7.1 Composite score calculations

Composite scores are groupings of two or more individual items (questions) that measure the same dimension of patient care, and represent the percentage of responses to all questions within that group that fall into a "top box" category. For example, the two items within the *Pain Control* composite have a four-point response scale (Never, Sometimes, Usually, and Always). All responses to these two questions are combined, and the score is derived from the percentage of combined responses which are "Always". In other words, the composite indicator score is the percentage of all responses to any of the questions that are combined into the composite.

7.2 Missing values

Analyzing survey results always includes dealing with missing values. Upon completion of a missing value analysis on the "cleaned" data file, it was determined that both unit and item non-response was not an issue of concern. Rates of missing values for all but 4 of the 53 items were less than 7%, and most (40 of 53) were 5% or less.

Therefore, Available Case Analysis (ACA) was used for dealing with missing values. Although this method resulted in reduced sample sizes for the analyses, these sample sizes were sufficiently large enough for the calculation of each indicator score to include only responses with a non-missing value. For example, when calculating a composite indicator score that is based on three items, respondents who have at least one non-missing value for one of the three items are included in the aggregate indicator score.

7.3 Survey response and non-response analysis

Based on an in-depth review of the survey response rate by hospital/facility, health zone and regional health authority and comparing these proportions to actual discharge data on this same basis for the population over the three-month study period, it was determined the study base was representative of the population and weighting of the data based on sampling design was not required.

When patients selected in the survey sample do not complete the survey there is the potential for bias that results from this non-response. Non-response bias occurs when a sample characteristic such as age or gender deviates from the population characteristic due to differences between respondents and non-respondents. A high response rate will usually minimize this bias.

In addition to reviewing the data in terms of completed response by hospital/facility and comparing this to the actual patient discharge data, an analysis was done within each regional health authority, health zone and hospital to compare actual age and gender proportions of the response data to the population.

While there is some level of under-representation in the study of discharged patients under 45 years of age, there is very little difference in the 45 to 64 year age category and, not surprisingly, an over-representation in the study sample of those 65 years of age and older. In all cases, the differences observed between the population and the sample remains within nine percent.

With respect to the patient's gender, there are only minor differences observed when comparing response to the survey with the population of discharged patients.

A univariate logistic regression model was fitted to determine if respondents differed from non-respondents based on demographics such as age and gender, and based on the RHA to which the hospital they were discharged from belongs. The analysis showed that age was a significant predictor of being a responder on the survey ($p<0.0001$). Compared to patients under 45 (reference group), patients between ages 45-64 were more likely to respond the survey (odds ratio: 2.52), as were patients 65 and over (odds ratio: 3.08). Gender was a predictor of being a respondent ($p=0.01$), however not as significant as age. Female patients were more likely to respond to the survey compared to male patients (odds ratio: 1.10).

The RHA to which the hospital belongs was a predictor of survey response ($p=0.004$), however not as significant as the patient's age. Patients discharged from Horizon Health Network were more likely to respond to the survey compared to patients discharged from Vitalité Health Network (odds ratio: 1.12).

Based on the analysis of actual respondents to the patient care experience survey with the actual discharge patient population, it was determined that weighting of the data was not required. In order for survey results to be compared with other provinces using a similar tool, a decision was made to maintain a similar methodology.

Therefore, the results of the NBHC care experience survey have not been weighted and no adjustments were made for non-response. Previous research has looked at the need for non-response weights in the HCAHPS survey[6]. The authors conclude that non-response weights should not be used for between-hospital comparisons of the HCAHPS indicators, but may make small contributions to overall estimates or demographic comparisons, especially in the absence of case-mix adjustments.

7.4 Significance testing

In order to determine when results for indicators in the patient care experience survey public report were statistically different from one another, there were two types of significance testing conducted.

A "single sample t-test" at a confidence level of 95% was used to test for statistical significance when comparing results of a single hospital/facility to overall New Brunswick results, or when comparing results of a health zone to the overall RHA results.

The base used was the sample size for the indicator being tested (or in the case of a composite indicator, the smallest sample size for any of the questions included in the composite indicator). For example, if there were two questions in the composite indicator and 200 patients answered one question and 175 patients answered the second question, the base used for the purpose of the t-test was 175 (the smallest number of patients answering one of the two questions).

The overall result being compared to was considered the "norm" for the purpose of this test of statistical significance.

Testing for statistical significance among sub-groups of patients to determine if there are any differences in patient care experience on the basis of age category, gender, or language of preference was accomplished using a t-test as well. In this case, the t-test was designed to compare results obtained between independent or mutually exclusive sub-groups of patients. The testing is done on column proportions as well as mean scores and is an appropriate measure of significance when comparing banner points against each other to determine if there is any statistical difference at this level. The test was done at a confidence level of 95%.

7.5 Case-mix adjustments

Case-mix refers to the respondents' health status and other socio-demographic characteristics that may affect the ratings of care. Health status and age are two patient characteristics frequently found to be associated with patient evaluations about the quality of their care. Individuals in better health and older individuals tend to rate their care higher. Education level can also affect ratings, with more educated individuals giving lower ratings. Without an adjustment, differences between scores could be due to case-mix differences rather than true differences in quality. An assessment must be made to determine if it is appropriate to adjust the data to account for case-mix differences.

Patient care experience indicators can be influenced by a patient's age, gender, language, education and self-rated health. The results of the NBHC care experience survey have not been adjusted for these characteristics, as case-mix adjustments are implemented primarily when hospitals are compared to one another. Since the objectives of reporting patient care experience indicators at the hospital level was to compare hospital scores to the provincial average and to facilitate trending over time rather than compare one hospital to another, a decision was made not to implement these adjustments.

In addition, in order for comparisons to be made with other North American jursidictions using a similar tool, case-mix adjustments were not employed. For comparability, a decision was made to maintain a similar methodology.

8. RELIABILITY AND VALIDITY TESTING

In this section the reliability and validity of the survey instrument is assessed using common psychometric tests to ensure the accuracy and generalization of the results. *Reliability* refers to the consistency or reproducibility of a measure or the degree to which survey results are free from random error. The more reliable an instrument, the better it reflects a respondent's true opinions and distinguishes among patients with different levels of experience and satisfaction. *Validity* refers to the extent to which a survey instrument measures what it claims to measure, or the degree to which survey results are free from both random error and systematic bias.

Unless stated otherwise, all analysis results for *composite* indicators in section 8 are based only on respondents who have non-missing values for *all* items within that composite. In other words, respondents are excluded from the calculation of the composite score if at least one of the items within that composite has a missing value.

It is important to note that results in the public report are based on composite indicator scores at an aggregate level, whereas statistical analyses (such as correlation and regression) in section 8 are based on composite indicator scores calculated at the respondent level. SAS version 9.2 was used to perform the analyses presented in this section.

8.1 Assessment of the equivalence between English and French versions

Since New Brunswick is an officially bilingual province, each patient who received the mail-out questionnaire had the option to complete the survey in English or in French. In this section, comparisons are made between the responses to the English version of the survey and the French version.

Respondents to the English version represent 75.5% (4,057) of all completed surveys, while French version respondents represent the other 24.5% (1,314).

Analyses in the following sections include respondent characteristics, item descriptives, internal consistency reliability, item-scale correlations, and relationship between composite scores and the overall hospital rating.

8.1.1 Respondent characteristics

Less than one-third of French version respondents (31%) identified themselves as being in "fair" or "poor" overall health, compared with 37% of English version

respondents (Table 1). A greater proportion of respondents to the French version identified themselves as being in "excellent" overall mental or emotional health (26%), compared to 18% of English version respondents.

Compared with the English version, French version respondents tend to be younger (50.5% of French version respondents were under 65 years old, versus 43.7% for English) and have less education (37% of French version respondents had an education level of "8th grade or less" versus 19% for English).

Differences between the English and French version respondents that are *not* statistically significant include gender, respondents identifying themselves as an aboriginal person, and whether the language spoken at home or the preferred language of service is the same as the language chosen by the respondent to complete the survey.

Table 1: Respondent characteristics for the English and French versions of the survey

Characteristic	*English survey*	*French survey*	*Chi-square (p)*
Self-rated health (Q45)	*n* = 3,920	*n* = 1,274	38.17
Excellent	5.10%	9.11%	(<.01)
Very good	21.96%	21.35%	
Good	35.84%	38.23%	
Fair	28.98%	25.59%	
Poor	8.11%	5.73%	
Self-rated mental health (Q46)	*n* = 3,907	*n* = 1,264	47.97
Excellent	17.89%	26.19%	(<.01)
Very good	31.81%	29.19%	
Good	34.12%	32.36%	
Fair	13.41%	10.84%	
Poor	2.76%	1.42%	
Age	*n* = 4,057	*n* = 1,314	20.67
Under 45	9.10%	11.95%	(<.01)
45-64	34.63%	38.51%	
65 & over	56.27%	49.54%	
Gender	*n* = 4,057	*n* = 1,314	0.14
Male	46.09%	45.51%	(0.71)
Female	53.91%	54.49%	
Education level (Q47)	*n* = 3,855	*n* = 1,246	222.48
8th grade or less	18.63%	37.24%	(<.01)
Some high school, but did not graduate	18.86%	13.56%	
High school or GED	24.46%	14.93%	
College, trade, or technical school diploma/certificate	27.13%	21.27%	
Undergraduate degree	5.21%	8.19%	
Post university/graduate level education	5.71%	4.82%	
Aboriginal person (Q49)	*n* = 3,821	*n* = 1,233	0.58
Yes	1.62%	1.95%	(0.44)
No	98.38%	98.05%	
Language mainly spoken at home is English or French (Q48)	*n* = 3,959	*n* = 1,298	1.13
Same as language of survey	92.25%	93.14%	(0.29)
Not the same as language of survey	7.75%	6.86%	
Preferred language of service is English or French (Q50)	*n* = 3,949	*n* = 1,286	2.19
Same as language of survey	95.77%	94.79%	(0.14)
Not the same as language of survey	4.23%	5.21%	

8.1.2 Item descriptives

The mean and standard deviation for each item and composite score have been compared between English and French version respondents.

French version respondents had significantly higher composite indicator scores for *doctor communications*, *responsiveness of staff*, *discharge information*, *pain control*, and *care transitions measure*. French version respondents had significantly higher single-item scores for *quiet at night*, *overall hospital rating*, and *intention to recommend*. English version respondents had significantly higher single-item scores for *patient safety* and *equity based on preferred language of service*.

Patterns with respect to the mean score were similar across language groups for indicator scores that use the response scale "Never / Sometimes / Usually / Always". Maximum scores for both English and French version respondents were obtained for *doctor communications* and *equity based on preferred language of service*. The next highest scores for both English and French were obtained for *nurse communications* and *pain control*.

Mid-range scores for both English and French were obtained for *responsiveness of staff* and *cleanliness*. Minimum scores for both English and French version respondents were obtained for *communication about medicines* and *quiet at night*.

8.1.3 Internal consistency reliability

Internal consistency reliability coefficients provide an estimate of the amount of systematic variance in composite scores. Cronbach's alpha[10] is the most commonly used coefficient and was used to provide reliability estimates. A Cronbach's alpha coefficient of 0.60 or higher will be considered as demonstrating good reliability, as this is a commonly accepted cutoff criterion[11], although a value greater than 0.70 is strongly recommended for most purposes.

For all composites except *responsiveness of staff*, the differences between the English and French alpha coefficients are small, ranging from 0.02 to 0.04.

Patterns with respect to the magnitude of the Cronbach's alpha coefficients were similar across language groups, with the exception of *responsiveness of staff* where the alpha coefficient for English was significantly higher than

French (0.75 versus 0.48 respectively). This difference may be related to the culture of respondents and their expectations with respect to how quickly the hospital staff provides assistance as soon as they want help. Further research is required to explore this dimension of care from a language perspective.

Composites exhibiting the highest alphas for both English and French version respondents are *nurse communications*, *doctor communications*, *pain control*, and *care transitions measure*.

8.1.4 Item-scale correlations

An individual item is considered to be a good indicator of its hypothesized composite if the item score correlates at least 0.40 with its composite score, and higher with its own composite score than the other composite scores[12]. The correlation of each item with its hypothesized composite score was calculated and corrected for overlap by removing the target item from the calculation of the total composite score[13].

The French and English versions of the instrument exhibited a similar, though not identical, pattern of item-composite correlations. For both English and French version respondents, items belonging to the *nurse communications*, *doctor communications*, and *pain control* composites had the highest set of item-composite correlations. Items for the *discharge information* composite had the lowest item-composite correlations for both English and French.

For all composites except *responsiveness of staff*, the differences between the English and French item-composite correlations are small, ranging from 0.01 to 0.07.

For both English and French version respondents, the "call button response" item within the *responsiveness of staff* composite exhibited a higher correlation with the *nurse communication* composite than with its hypothesized composite. This was also observed in the research literature for a similar instrument (comparing Spanish to English) that was implemented as a pilot study in the United States[7].

For French version respondents, the "call button response" item also exhibited a higher correlation with the *pain control* composite than with its hypothesized composite, and the "help with bathroom" item exhibited a higher correlation with the *nurse communication* composite.

8.1.5 Correlations between overall hospital rating and each of the composites

The relationship of each composite score to the overall hospital rating is a common measure of survey validity. For each composite the correlation obtained for the French version respondents is lower than the correlation obtained for English.

The composite most highly correlated with overall hospital rating for both English and French version respondents is *nurse communications*. High correlations were also obtained for both English and French with respect to *doctor communications*, *communication about medicines*, *responsiveness of staff*, and *pain control*. Composites having the least correlation with overall hospital rating for both English and French are *discharge information* and *care transitions measure*.

The pattern of relationships is very similar across language versions and mirrors results reported in the HCAHPS research literature for a similar instrument (comparing Spanish to English) that was implemented as a pilot study in the United States[7].

8.2 Measurement properties of the HCAHPS composites

In this section, measurement properties include internal consistency reliability, item-scale correlations, and relationship between each of the composites and the overall hospital rating. These analyses were performed on all English and French responses combined (5,371).

Among HCAHPS composite indicators, *nurse communications* and *doctor communications* had the highest Cronbach's alpha coefficients at 0.84, followed by *pain control* (0.80), *communication about medicines* (0.72), and *responsiveness of staff* (0.68). This measure of internal consistency reliability is described in section 8.1.3. *Physical environment* (0.52) and *discharge information* (0.49) had the lowest HCAHPS alpha coefficients.

The indicator scores for the two items within the *physical environment* composite were reported separately in the public report, whereas results for *discharge information* were reported as a composite. While the alpha coefficients were lower than the acceptable cutoff of 0.60, they compare favorably to the internal consistency

reliability reported in the HCAHPS research literature for a similar instrument that was implemented as a pilot study in the United States[4].

Given the importance of receiving proper discharge instructions for successfully transitioning from the hospital to home, and in order for comparisons to be made with other North American jurisdictions using a similar tool, a decision was made to maintain a similar methodology and report results for *discharge information* as a composite in the public report.

Item-scale correlations based on HCAHPS composites were calculated for total respondents. This measure is described in section 8.1.4. Most of the HCAHPS items had a higher correlation with their own hypothesized composite than with other HCAHPS composites. The "call button response" item within the *responsiveness of staff* composite exhibited a higher correlation with the *nurse communication* composite than with its hypothesized composite. This was also observed in the research literature for a similar instrument that was implemented as a pilot study in the United States[7]. The "call button response" item also exhibited a very similar correlation with the *pain control* composite as with its hypothesized composite.

Correlations between each of the HCAHPS composites and the overall hospital rating were also calculated for total respondents. Five of the six HCAHPS composite scores were highly correlated with the overall hospital rating, ranging from 0.42 to 0.64. Among the HCAHPS composites, *communication with nurses* (0.64) and *responsiveness of staff* (0.61) are most highly correlated with the *overall hospital rating*, while the *discharge information* composite was the least correlated (0.26).

8.3 Measurement properties of the CTM composite

In this section, measurement properties include internal consistency reliability and relationship between the CTM composite and the overall hospital rating. These analyses were performed on all English and French responses combined (5,371).

The CTM composite has a Cronbach's alpha coefficient of 0.83 for total respondents. This measure of internal consistency reliability is described in section 8.1.3. The correlation between the CTM composite and overall hospital rating for total respondents is fairly high (0.38).

8.4 Measurement properties of single-item responses and contributions to the prediction of overall hospital rating

Regression analyses can show the extent to which care experience indicator scores predict patients' ratings of the overall quality of care. All items have been assigned a response scoring model for correlation and regression analyses in this section. Details of this response scoring model are given in **Appendix I**.

The relationship between individual items (not covered by a composite score) and the overall hospital rating has also been examined. These items refer to hospital patient care experiences such as *cleanliness*, *quiet at night*, *admission process*, *patient safety*, *food quality*, *client and family centred care*, *discharge process*, and *equity based on preferred language of service*.

Correlations between items/composites and overall hospital rating, and individual indicator contributions to the prediction of overall hospital rating are shown and described in **Appendix J**. Items within the HCAHPS *discharge information* composite are considered separately for the analyses in this section, as well as the items within the HCAHPS *responsiveness of staff* composite.

For all 15 single-item and composite indicators highlighted in **Appendix J** and considered to have a relatively strong correlation with the overall hospital rating, a simple linear regression model was used to determine the individual contribution of each indicator (separately from all other indicators) to the prediction of the overall hospital rating.

The regression model R^2 was 42% for the *nurse communications* indicator, which can be considered as contributing substantially to the prediction of the overall hospital rating. Two new composites, *patient safety* and *client and family centred care*, account for 30% and 29% respectively of the variance in overall hospital rating. The regression model R^2 for the two items that represent *responsiveness of staff*, "call button response" and "help with bathroom and bedpan", was 27% and 23% respectively. The *pain control* composite indicator also has an important contribution as it accounts for 27% of the variance in overall hospital rating.

Multivariate linear regression analysis was used to measure the cumulative contribution of these 15 indicators in predicting the overall hospital rating. All variables included in the model must have non-missing values. This becomes an issue because: (1) no imputation methods were used to replace missing values, (2) the

percentage of missing values tends to be fairly high for some of the HCAHPS "filtered" questions, and (3) some of the composite indicators have a greater number of missing values because they are based only on respondents who have non-missing values for *all* items within that composite.

This leads to a data set that is too small for a regression model using 15 indicators as the predictor variables. Specifically, unless an imputation method is applied to the data, too few total respondents are eligible to be included in the regression model. However, further analysis of the data has shown that even if an imputation method is used to replace missing values, there are still not enough respondents eligible for regression. This means that a large amount of the total respondents have at least one missing value among either the overall hospital rating or a survey item within one of the 15 indicators.

A simple imputation method was therefore used to increase the number of respondents available for the regression model: for each of the eight (8) composite indicators given in **Appendix J,** a composite score is calculated at the respondent level if at least one of the items within that composite has a non-missing response.

Taking the *nurse communications* composite as an example of this imputation method, there are three (3) items within this composite (Q5, Q6 and Q7). If all three items have a non-missing response, then the composite score is the average of the three item scores. If all three items have a missing response, then the composite score at the respondent level is considered as missing. Finally, if one or two of the item scores are missing, then the composite score at the respondent level is the average of all remaining non-missing item values.

In doing so, the missing value at the respondent level has in fact been replaced by the mean of the remaining non-missing values for that respondent. Since these composites are shown to exhibit good internal consistency reliability, a decision was made to replace individual item missing responses using values from other highly correlated items.

Using this imputation approach in developing a multiple regression model with all 15 indicators as the predictor variables, a data set with a sufficient number of respondents is now available to build the model.

Several multivariate linear regression models were developed and examined. First the indicators relating to HCAHPS only were chosen to measure the cumulative

contribution in predicting the overall hospital rating. These 10 indicators include *nurse communications*, *doctor communications*, *pain control*, *communication about medicines*, *call-button response*, *help with bathroom and bedpan*, *cleanliness*, *quiet at night*, *help after discharge* and *information in writing*. Based on the regression model R^2, these care experience indicators account for 57.8% of the variance in overall hospital rating.

Another model was developed using all 15 indicators highlighted in **Appendix J**. A forward approach was used whereby the model was first based on *nurse communications* only, since this indicator had the highest individual contribution to the prediction in overall hospital rating (41.6%). As a second step, the *patient safety* indicator, having the next highest individual contribution (29.7%), was added to the model. These two care experience indicators account for 46.0% of the variance in overall hospital rating. One by one, all 15 indicators were added to the model.

This approach provides insight in determining to what extent there can be additional contributions in predicting the overall hospital rating, by comparing the improvement in model fit based on the change in the model adjusted R^2. Overall, these 15 patient care experience indicators account for 61.6% of the variance in overall hospital rating. In fact, if only five (5) of these indicators were kept (*nurse communications*, *patient safety*, *call-button response*, *pain control*, and *help with bathroom and bedpan*) based on composites/items with an increase in R^2 greater than 5%, the contribution to the prediction in overall hospital rating is 55.7%.

Based on the New Brunswick survey results, these can be considered as the five (5) patient care experience indicators that are fundamental in affecting the overall hospital rating. Since the *call-button response* and *help with bathroom and bedpan* indicators fall under the *responsiveness of staff* category, there are essentially four dimensions of patient care experience in hospitals providing acute care that can substantially drive changes in the patient's perspective of overall hospital rating: *nurse communications*, *patient safety*, *responsiveness of staff*, and *pain control*.

Finally, potential confounders such as self-reported health status, age, gender, education and language were added to the existing 15-indicator model to determine whether there are additional contributions in predicting the overall hospital rating, by again comparing the improvement in model fit based on the change in the model adjusted R^2. None of the potential confounders had a significant additional influence on overall hospital rating, as the improvement in model adjusted R^2 for each of these demographic variables was less than 1%.

8.5. Conclusion

In general, the psychometric testing results presented in this report have shown that measures of reliability and validity for the English and French survey instruments are comparable. Despite differences between English and French respondent characteristics, these analysis results provide evidence of the equivalence between the English and French versions of the survey.

Measurement properties of composite scores and single-item responses have been examined. Psychometric testing of HCAHPS composite indicators has revealed similar patterns as those reported in previous research literature. Based on responses from this New Brunswick province-wide survey, the HCAHPS patient care experience indicators account for 57.8% of the variance in overall hospital rating. A good survey will account for 50% or more of the variance in global evaluations of overall quality[14].

Although the CTM composite indicator does not offer a significant additional contribution to the prediction of overall hospital rating when added to the HCAHPS indicators, this measure is essential in evaluating patient centredness and coordination of care. Improvements in care transitions at discharge can affect the overall hospital rating (individual CTM contribution was evaluated at 14.7%), however not as much as nursing services captured by HCAHPS indicators.

Other survey items not covered by HCAHPS or CTM may have a relatively important contribution to the prediction of overall hospital rating, such as admission process, patient safety, food quality, client and family centred care, and the extent to which the discharge process was organized. By adding these items to the CTM and HCAHPS indicators, the survey provides patient care experience indicators that account for 61.6% of the variance in overall hospital rating.

This report provides evidence that the New Brunswick patient care experience survey is a valid and powerful tool to evaluate overall hospital quality of care. Patient care experience indicators can be developed for several dimensions of care, and when presented in a clear and concise manner to the public and stakeholders, the reporting of these indicators leads to a useful and practical approach when highlighting key areas of focus at the provincial, regional health authority, and hospital levels.

Potential composite indicators have been developed for the *admission*, *patient safety* and *client and family centred care* items, and have demonstrated good internal

consistency reliability although they have not been rigorously tested using a factor analysis model.

Among the additional survey items not covered by HCAHPS or CTM, the *patient safety* composite has the greatest contribution to the prediction of overall hospital rating. In fact, analyses in this report suggest that patient safety should be considered as one of the four biggest drivers of overall hospital rating in an acute care setting, from the patient's perspective. These four fundamental drivers are *nurse communications*, *patient safety*, *responsiveness of staff*, and *pain control*.

The patient safety dimension in itself is an important element of hospital quality of care. The NBHC, with its mandate to measure, monitor and evaluate health service quality will be producing a separate patient safety report, drilling down further into the information captured by survey respondents and performing analyses not covered by the overall scope of this technical appendix.

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APPENDIX "A"

Survey Questionnaire

New Brunswick Health Council
Engage. Evaluate. Inform. Recommend.

YOUR HOSPITAL / FACILITY STAY

***MARKING INSTRUCTIONS**:*
*Please **fill in ● or place a check ☑ in the circle** that best describes your experience during your hospital stay.*
If you wish, a caregiver, friend, or family member can complete this survey on your behalf. Thank you!

WHEN YOU ARRIVED AT THE HOSPITAL

1. Were you:
- ○1 Admitted through the Emergency Department
- ○2 Admitted through a planned admission by your doctor
- ○3 Admitted unexpectedly after a day procedure or test
- ○4 Other

2. How organized was the admission process?
○1 Not at all organized ○2 Somewhat organized ○3 Very organized

3. Do you feel you had to wait an unnecessarily long time to go to your room?
○1 Yes, definitely ○2 Yes, somewhat ○3 No

4. Did the hospital staff ask you what medicines and supplements you were taking at home?
○1 Yes ○2 No ○3 Do not know / Do not remember / Not applicable

YOUR CARE FROM NURSES

5. During this hospital stay, how often did nurses treat you with courtesy and respect?
○1 Never ○2 Sometimes ○3 Usually ○4 Always

6. During this hospital stay, how often did nurses listen carefully to you?
○1 Never ○2 Sometimes ○3 Usually ○4 Always

7. During this hospital stay, how often did nurses explain things in a way you could understand?
○1 Never ○2 Sometimes ○3 Usually ○4 Always

8. During this hospital stay, after you pressed the call button, how often did you get help as soon as you wanted it?

○1 Never ○2 Sometimes ○3 Usually ○4 Always ○5 I never pressed the call button

YOUR CARE FROM DOCTORS

9. During this hospital stay, how often did doctors treat you with courtesy and respect?

○1 Never ○2 Sometimes ○3 Usually ○4 Always

10. During this hospital stay, how often did doctors listen carefully to you?

○1 Never ○2 Sometimes ○3 Usually ○4 Always

11. During this hospital stay, how often did doctors explain things in a way you could understand?

○1 Never ○2 Sometimes ○3 Usually ○4 Always

THE HOSPITAL ENVIRONMENT

12. During this hospital stay, how often were your room and bathroom kept clean?

○1 Never ○2 Sometimes ○3 Usually ○4 Always

13. During this hospital stay, how often was the area around your room quiet at night?

○1 Never ○2 Sometimes ○3 Usually ○4 Always

YOUR EXPERIENCES IN THIS HOSPITAL

14. During this hospital stay, did you need help from nurses or other hospital staff in getting to the bathroom or in using a bedpan?

○1 Yes ○2 No → **Go to Q16**

15. How often did you get help in getting to the bathroom or in using a bedpan as soon as you wanted?

○1 Never ○2 Sometimes ○3 Usually ○4 Always

16. During this hospital stay, did you need medicine for pain?

○1 Yes ○2 No → **Go to Q19**

17. During this hospital stay, how often was your pain well controlled?

○1 Never ○2 Sometimes ○3 Usually ○4 Always)

18. During this hospital stay, how often did the hospital staff do everything they could to help you with your pain?

○1 Never ○2 Sometimes ○3 Usually ○4 Always

19. During this hospital stay, were you given any medicine that you had not taken before?

○1 Yes ○2 No → **Go to Q22**

20. Before giving you any new medicine, how often did hospital staff tell you what the medicine was for?

○1 Never ○2 Sometimes ○3 Usually ○4 Always)

21. Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?

○1 Never ○2 Sometimes ○3 Usually ○4 Always

WHEN YOU LEFT THE HOSPITAL

22. After you left the hospital, did you go directly to your own home, to someone else's home, or to another health facility?

○1 Own home ○2 Someone else's home ○3 Another health facility → **Go to Q25**

23. During this hospital stay, did doctors, nurses, or other hospital staff talk with you about whether you would have the help you needed when you left the hospital?

○1 Yes ○2 No

24. During this hospital stay, did you get information in writing about what symptoms or health problems to look out for after you left the hospital?

○1 Yes ○2 No

Card 02 (1-2) Dup (3-11)

OVERALL RATING OF HOSPITAL

Please answer the following questions about your stay at the hospital named on the cover. Do not include any other hospital stays in your answers.

25. Using any number from 0 to 10, where 0 is the worst hospital possible and 10 is the best hospital possible, what number would you use to rate this hospital during your stay?

0 Worst hospital possible	1	2	3	4	5	6	7	8	9	10 Best hospital possible
○	○	○	○	○	○	○	○	○	○	○

26. Would you recommend this hospital to your friends and family?

○1 Definitely no ○2 Probably no ○3 Probably yes ○4 Definitely yes

MORE QUESTIONS ABOUT YOUR STAY AT THE HOSPITAL

27. Do you or your family members believe that you were harmed because of a medical error or mistake during this hospital stay?

○1 Yes ○2 No ○3 Do not know / Do not remember / Not applicable

If the answer for question 27 is Yes, please provide additional details:

_____

_____

_____

_____

28. Do you believe that this hospital takes your safety seriously?

○1 Yes, definitely ○2 Yes, somewhat ○3 No

29. Were you given a brochure or any other written material about patient safety?

○1 Yes ○2 No ○3 Do not know / Do not remember / Not applicable

30. Did a staff member talk to you about patient safety?

○1 Yes ○2 No ○3 Do not know / Do not remember / Not applicable

31. Did you notice staff wash or disinfect their hands before caring for you?

○1 Yes, always ○3 Never ○5 I could not see any facilities for washing / disinfecting hands (19)

○2 Yes, sometimes ○4 I did not notice

32. Did staff check your identification band before giving you medicines, treatments, or tests?

○1 Yes, always ○2 Yes, sometimes ○3 No ○4 I do not remember (20)

33. How would you rate the quality of the food (how it tasted, serving temperature, variety)?

○1 Poor ○2 Fair ○3 Good ○4 Very good ○5 Excellent

CLIENT AND FAMILY CENTRED CARE

In answering the following questions, please think about the whole time you were in the hospital.

34. Do you feel that facts about your health and treatment plan were <u>explained fully, clearly and in a useful way</u>?

○1 Yes ○3 No

○2 Sometimes ○4 Do not know / Do not remember/ Not applicable

35. Was your family/support person encouraged to participate in your care and treatment plan?

- ○1 Yes
- ○2 Sometimes
- ○3 No
- ○4 Do not know / Do not remember/ Not applicable

36. The hospital staff consulted me or my family or caregiver in making decisions about my care.

- ○1 Strongly disagree
- ○2 Disagree
- ○3 Agree
- ○4 Strongly agree
- ○5 Don't know / Don't remember / Not applicable

37. The hospital staff took my cultural values and those of my family or caregiver into account.

- ○1 Strongly disagree
- ○2 Disagree
- ○3 Agree
- ○4 Strongly agree
- ○5 Don't know / Don't remember / Not applicable

38. The hospital staff provided me and my family or caregiver with emotional support and counseling.

- ○1 Strongly disagree
- ○2 Disagree
- ○3 Agree
- ○4 Strongly agree
- ○5 Don't know / Don't remember / Not applicable

GOING HOME

39. The hospital staff took my preferences and those of my family or caregiver into account in deciding what my health care needs would be when I left the hospital.

- ○1 Strongly disagree
- ○2 Disagree
- ○3 Agree
- ○4 Strongly agree
- ○5 Don't know / Don't remember / Not applicable

40. When I left the hospital, I had a good understanding of the things I was responsible for in managing my health.

- ○1 Strongly disagree
- ○2 Disagree
- ○3 Agree
- ○4 Strongly agree
- ○5 Don't know / Don't remember / Not applicable

41. When I left the hospital, I clearly understood the purpose for taking each of my medications.

- ○1 Strongly disagree
- ○2 Disagree
- ○3 Agree
- ○4 Strongly agree
- ○5 Don't know / Don't remember / Not applicable

42. How important was it to you that you were included in the planning for your discharge?

- ○1 Not important at all
- ○2 Not that important
- ○3 Unsure
- ○4 Somewhat important
- ○5 Very important

43. How organized was the discharge process?

- ○1 Not at all organized
- ○2 Somewhat organized
- ○3 Very organized
- ○4 Completely organized

44. Were you told what day you would likely be able to leave the hospital?

- ○1 Yes, within the first two days, I was told what day I would likely be able to leave the hospital
- ○2 Yes, after the first two days, I was told what day I would likely be able to leave the hospital
- ○3 No, I was not told what day I would likely be able to leave the hospital
- ○4 Do not know / Do not remember / Not applicable

ABOUT YOU

45. In general, how would you rate your health?

○1 Excellent ○2 Very good ○3 Good ○4 Fair ○5 Poor)

46. In general, how would you rate your overall mental or emotional health?

○1 Excellent ○2 Very good ○3 Good ○4 Fair ○5 Poor

47. What is the highest grade or level of school that you have completed?

- ○1 8th grade or less
- ○2 Some high school, but did not graduate
- ○3 High school or GED
- ○4 College, trade, or technical school diploma/certificate
- ○5 Undergraduate degree
- ○6 Post university/graduate level education

48. What language do you mainly speak at home?

- ○1 English
- ○2 French
- ○3 First Nation, Indian, Métis, or Inuit
- ○4 Other _____

49. Are you an Aboriginal person, that is, North American Indian, Métis or Inuit?

○1 Yes ○2 No

50. Under the Official Languages Act, you have the right to be served in either English or French. Of these two languages, which is your preference?

○1 English ○2 French

51. How often did you receive the service you needed in the official language (English or French) of your choice?

○1 Never ○2 Sometimes ○3 Usually ○4 Always

52. If you do not speak English or French as your primary language, was there an interpreter at the hospital that could explain everything you needed to know about the care you received?

○1 Yes ○3 I do not know
○2 No ○4 I did not need an interpreter

53. Who completed this survey?

○1 Patient ○2 Someone else

54. Is there anything else you would like to tell us about your hospital stay or do you have any suggestions for changes that may have improved your experience?

_____
_____
_____
_____

Thank you for taking the time to complete this questionnaire!
Your answers are greatly appreciated.

Please use the enclosed pre-paid envelope and return this questionnaire to:

IPSOS REID CANADA
PO BOX 986 STN MAIN
SAINT JOHN, NB E2L 9Z9

This survey is adapted from HCAHPS® (Hospital Consumer Assessment of Healthcare Providers & Systems), CTM (Care Transitions Measure), and HQC (Saskatchewan Health Quality Council) questionnaires.

APPENDIX "B"

Survey Items Grouped by Dimension of Care

Dimension of care	Source	Survey items
Admission	HQC	Q2, Q3, Q4
Nurse communications	HCAHPS	Q5, Q6, Q7
Doctor communications	HCAHPS	Q9, Q10, Q11
Physical environment	HCAHPS	Q12, Q13
Responsiveness of staff	HCAHPS	Q8, Q15
Pain control	HCAHPS	Q17, Q18
Communication about medicines	HCAHPS	Q20, Q21
Discharge information	HCAHPS	Q23, Q24
Overall hospital rating	HCAHPS	Q25
Intention to recommend	HCAHPS	Q26
Patient safety	HQC	Q27, Q28, Q29, Q30, Q31, Q32
Food quality	HQC	Q33
Client and family centred care	HQC/AC	Q34, Q35, Q36, Q37, Q38
Care transitions measure	CTM	Q39, Q40, Q41
Additional discharge items	HQC	Q42, Q43, Q44
Equity based on preferred language of service	NBHC	Q51

The remaining items in the survey can either be categorized as "qualifier" questions (Q14, Q16, Q19, Q22), items corresponding to respondent characteristics (Q1, Q45-50, Q52, Q53) and an open-ended question (Q54) to capture overall patient comments and feedback.

HCAHPS®: Hospital Consumer Assessment of Healthcare Providers & Systems
CTM: Care Transitions Measure
HQC: Health Quality Council
AC: Accreditation Canada
NBHC: New Brunswick Health Council

APPENDIX "C"

Patient Care Experience Indicators

Six of the indicators in the public report are based on individual survey questions which assess a single aspect of the care experience. These include:

1. **Overall Hospital Rating**
   "Using any number from 0 to 10, where 0 is the worst hospital possible and 10 is the best hospital possible, what number would you use to rate this hospital during your stay?"

   How is this indicator score calculated? The indicator score is the percentage of patients who gave the hospital a rating of "8, 9 or 10" on a scale from 0 to 10
   (Base – all respondents)

2. **Equity Based on Preferred Language of Service**
   "How often did you receive the service you needed in the official language (English or French) of your choice?"

   How is this indicator score calculated? An indicator score can be given for each response category (Never, Sometimes, Usually and Always) for each preferred language (English or French).

3. **Cleanliness**
   "During this hospital stay, how often were your room and bathroom kept clean?"

   How is this indicator score calculated? The indicator score is the percentage of patients who indicated that their room and bathroom were "Always" kept clean.

4. **Quiet at Night**
   "During this hospital stay, how often was the area around your room quiet at night?"

   How is this indicator score calculated? The indicator score is the percentage of patients who indicated the area around their room was "Always" quiet at night.

5. **Intention to Recommend**
   "Would you recommend this hospital to your friends and family?"

   How is this indicator score calculated? The indicator score is the percentage of patients who indicated that they "Definitely, yes" would recommend their hospital to friends and family.

6. **Patient Safety**
   "Do you or your family members believe that you were harmed because of a medical error or mistake during this hospital stay?"

   How is this indicator score calculated? The indicator score is the percentage of patients who indicated, "Yes" that they believed they were harmed because of a medical error or mistake during the hospital stay.

The other seven indicators in the public report are composite indicators which are based on the aggregation of various question items comprising a specific indicator. A composite measure is therefore based on combining responses to two or more questions into one overall score.

These multiple question composite indicators include:

1. **Pain Control**
   The pain control indicator measures how well hospital staff helps patients manage pain.

   "During this hospital stay, how often was your pain well controlled?"
   "During this hospital stay, how often did the hospital staff do everything they could to help you with your pain?"

   How is this indicator score calculated? The indicator score is the percentage of "Always" responses among all answers (Never, Sometimes, Usually, Always) given to the two questions.

2. **Communication with Nurses**
   The communication with nurses indicator measures how well nurses communicate with patients.

   "During this hospital stay, how often did the nurses treat your with courtesy and respect?"
   "During this hospital stay, how often did the nurses listen carefully to you?"
   "During this hospital stay, how often did nurses explain things in a way you could understand?"

   How is this indicator score calculated? The indicator score is the percentage of "Always" responses among all answers (Never, Sometimes, Usually, Always) given to the three questions.

3. **Communication with Doctors**
   The communication with doctors indicator measures how well doctors communicate with patients.

   "During this hospital stay, how often did the doctors treat your with courtesy and respect?"
   "During this hospital stay, how often did the doctors listen carefully to you?"
   "During this hospital stay, how often did doctors explain things in a way you could understand?"

   How is this indicator score calculated? The indicator score is the percentage of "Always" responses among all answers (Never, Sometimes, Usually, Always) given to the three questions.

4. **Responsiveness of Staff**
   The responsiveness of staff measures how often the hospital staff was available to give support and assistance to patients as soon as they wanted help

   "During this hospital stay, after you pressed the call button, how often did you get help as soon as you wanted it?"
   "How often did you get help in getting to the bathroom or in using a bedpan as soon as you wanted?"

   How is this indicator score calculated? The indicator score is the percentage of "Always" responses among all answers (Never, Sometimes, Usually, Always) given to the two questions

5. **Communication About Medicines**
   The communication about medicines indicator measures how well hospital staff communicates with patients about medicines

   "Before giving you any new medicine, how often did hospital staff tell you what the medicine was for?"
   "Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?"

   How is this indicator score calculated? The indicator score is the percentage of "Always" responses among all answers (Never, Sometimes, Usually, Always) given to the two questions.

6. **Discharge Information**
   The discharge information indicator measures whether key information was provided to the patient at discharge and whether patients were asked about their care after leaving the hospital

   "During this hospital stay, did doctors, nurses or other hospital staff talk with you about whether you would have the help you needed when you left the hospital?"
   "During this hospital stay, did you get information in writing about what symptoms or health problems to look out for after you left the hospital?"

   How is this indicator score calculated? The indicator score is the percentage of "Yes" responses among all answers (Yes, No) given to the two questions.

7. **Care Transitions Measure**
   The care transitions measure indicator evaluates the extent to which patients are asked about their health care needs and being better prepared when going home from hospital

   "The hospital staff took my preferences and those of my family or caregiver into account in deciding what my health care needs would be when I left the hospital."
   "When I left the hospital, I had a good understanding of the things I was responsible for in managing my health."
   "When I left the hospital, I clearly understood the purpose for taking each of my medications."

   How is this indicator score calculated? The indicator score is the percentage of "Strongly Agree" responses among all answers (Strongly Disagree, Disagree, Agree, Strongly Agree, Don't Know/Don't Remember/Not Applicable) given to the three questions. The Care Transitions Measure is a performance measure used to promote quality improvement in the area of transitional care (http://www.caretransitions.org).

APPENDIX "D"

Poster placed at Hospitals/Facilities

Patient Care Experience Survey

WE VALUE YOUR OPINION!

The *New Brunswick Health Council* is partnering with the regional health authorities to conduct a Patient Care Experience Survey with *Ipsos Reid* as the service provider.

If you are a patient in a hospital in New Brunswick between November 1st, 2009 and January 31st, 2010 you may be selected to complete a mail-out survey about your hospital care experience.

These surveys will be mailed between January and March 2010.

Your responses will be confidential and will help improve patient hospital care in New Brunswick.

Removing Your Name from the Survey List or Questions:

1-888-346-6454

If you have any questions or concerns or if you would **prefer not to take part** in the Patient Care Experience Survey you may call at the toll-free number given above.

New Brunswick Health Council | Conseil de la santé du Nouveau-Brunswick

Engage. Evaluate. Inform. Recommend.
Engager. Évaluer. Informer. Recommander.

Horizon Health Network

Régie régionale de la santé
Regional Health Authority

Sondage sur l'expérience vécue par le patient

VOTRE OPINION EST IMPORTANTE!

Le *Conseil de la santé du Nouveau-Brunswick* en partenariat avec les régies régionales de la santé ont retenu les services d'*Ipsos Reid* pour effectuer un sondage sur l'expérience vécue par le patient.

Si vous êtes un(e) patient(e) hospitalisé(e) au Nouveau-Brunswick entre le 1er novembre 2009 et le 31 janvier 2010, vous pourriez être sélectionné(e) pour remplir un sondage, via la poste, à propos des soins hospitaliers reçus.

Ces sondages seront postés entre janvier et mars 2010.
Vos réponses demeureront confidentielles.

Les résultats du sondage aideront à améliorer les soins des patients en milieu hospitalier au Nouveau-Brunswick.

Pour enlever votre nom de la liste du sondage ou pour des questions:

1-888-346-6454

Si vous avez des questions ou des inquiétudes, ou encore si **vous ne voulez pas faire partie de la liste d'envoi** du sondage sur l'expérience vécue par le patient, téléphonez au numéro sans frais ci-haut.

New Brunswick Health Council | Conseil de la santé du Nouveau-Brunswick
Engage. Evaluate. Inform. Recommend.
Engager. Évaluer. Informer. Recommander.

Régie régionale de la santé
Regional Health Authority

Réseau de santé Horizon Health Network

APPENDIX "E"

Handbill Distributed to Patients at Admission

New Brunswick Health Council | Horizon Health Network | Régie régionale de la santé Regional Health Authority A

We value your opinion! The *New Brunswick Health Council* is partnering with the *Horizon Health Network* and the *Regional Health Authority A* to conduct a Patient Care Experience Survey with *Ipsos Reid* as the service provider.

If you are a patient in a hospital in New Brunswick between November 1st, 2009 and January 31st, 2010 you may be selected to complete a mail-out survey about your hospital care experience.
These surveys will be mailed between January and March 2010.

Your responses will be confidential and will help improve patient hospital care in New Brunswick.

Removing Your Name From the Survey List or Questions :
1-888-346-6454

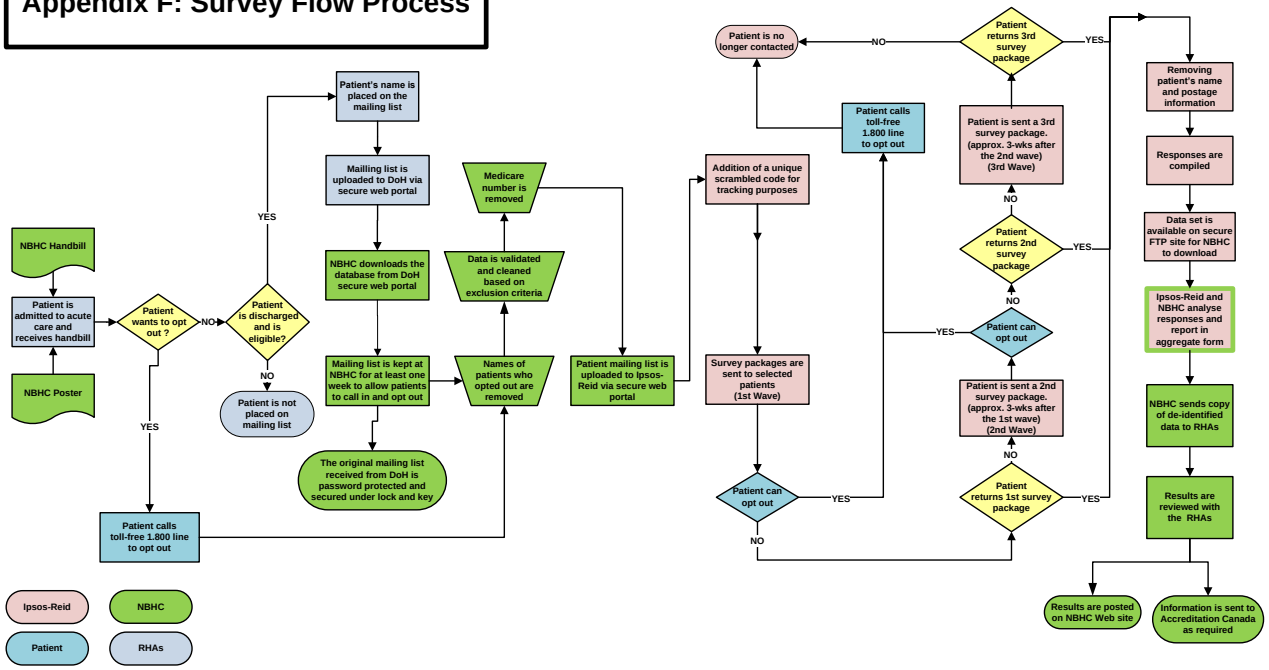
If you have any questions or concerns or if you would prefer not to take part in the Patient Care Experience Survey you may call the toll-free number on the left.

APPENDIX "F"

Survey Flow Process

New Brunswick Health Council
Engage. Evaluate. Inform. Recommend.

Appendix F: Survey Flow Process



APPENDIX "G"

Survey Cover Letter (*English – Horizon Health Network*)

Date

[Insert Patient Name]
[Insert Patient Address]

Dear Sir or Madam,

The *New Brunswick Health Council* (NBHC) is partnering with the *Horizon Health Network* to take part in a province-wide survey asking people about the care they received in New Brunswick hospitals, with *Ipsos Reid* as the service provider.

As a recently discharged patient at the [insert hospital name], your name was chosen from a list of patients. Your recent hospital experience is important to us, and your opinions can help us improve patient care in New Brunswick hospitals.

Your participation is voluntary. Your answers will be kept confidential, and your name is not required on the survey. Your doctors, nurses and hospital will not know how you responded, so you can feel free to be open and honest. We hope that you will take the time to complete the survey. You can skip any question on the survey if you are not comfortable answering it.

If you have any questions or concerns, or if you would like to have your name removed from the survey list, please call the toll-free number **1-888-346-6454**.

If this survey was sent to you by mistake please contact us to have your name removed from the list. Every effort is made to make sure this survey is not sent to patients who have passed away. If a grieving family member receives this, please accept our heartfelt sympathy and sincere apology. If you wish, you may respond to this survey on behalf of your loved one. If you choose not to respond, we will respect your wishes.

For more information about the survey process and the results of this project, you can visit the NBHC web site at www.nbhc.ca or call the toll-free number **1-877-225-2521**.

Thank you for your help. Your thoughts and ideas will help us serve you better in the future. After you have completed the survey, please return it in the pre-paid envelope.

Donald J. Peters
President / CEO
Horizon Health Network

Stéphane Robichaud
Chief Executive Officer
New Brunswick Health Council

APPENDIX "H"

Survey Sample Characteristics (n=5,371)

Regional Health Authority	Responses
Horizon Health Network	3,468 64.6%
Vitalité Health Network	1,903 35.4%

Gender	Responses
Female	2,903 54.0%
Male	2,468 46.0%

Age Category	Responses
Under 45	526 9.8%
45 to 64	1,911 35.6%
65 & over	2,934 54.6%

Preferred Language of Service	Responses
English	3,849 71.7%
French	1,386 25.8%
Not stated	136 2.5%

Highest level of education completed	Responses
8th grade or less	1,182 22.0%
Some high school, but did not graduate	896 16.7%
High school or GED	1,129 21.0%
College, trade or technical school diploma/certificate	1,311 24.4%
Undergraduate degree	303 5.6%
Post university/graduate level	280 5.2%
Not stated	270 5.0%

Self-rated health	Responses
Excellent	316 5.9%
Very good	1,133 21.1%
Good	1,892 35.2%
Fair	1,462 27.2%
Poor	391 7.3%
Not stated	177 3.3%

Self-rated mental/emotional health	Responses
Excellent	1,030 19.2%
Very good	1,612 30.0%
Good	1,742 32.4%
Fair	661 12.3%
Poor	126 2.3%
Not stated	200 3.7%

Who completed the survey	Responses
Patient	4,515 84.1%
Someone else	655 12.2%
Not stated	201 3.7%

APPENDIX "I"

Response Scoring for Correlation and Regression Analyses

Response option	Scoring	Questionnaire
Not at all organized Somewhat organized Very organized	0 50 100	Q2
Yes, definitely Yes, somewhat No	100 50 0	Q28
Yes No	100 0	Q4, Q23, Q24, Q29, Q30
Never Sometimes Usually Always	0 33 66 100	Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q15, Q17, Q18, Q20, Q21, Q51
0 – Worst hospital possible 1 2 3 4 5 6 7 8 9 10 – Best hospital possible	0 10 20 30 40 50 60 70 80 90 100	Q25
Definitely no Probably no Probably yes Definitely yes	0 33 66 100	Q26
Yes, always Yes, sometimes Never/No	100 50 0	Q31, Q32

Response option	Scoring	Questionnaire
Poor Fair Good Very good Excellent	0 25 50 75 100	Q33, Q45, Q46
Yes Sometimes No	100 50 0	Q34, Q35
Strongly disagree Disagree Agree Strongly agree	0 33 66 100	Q36, Q37, Q38, Q39, Q40, Q41
Not at all organized Somewhat organized Very organized Completely organized	0 33 66 100	Q43

Reverse scoring options

Response option	Scoring	Questionnaire
Yes, definitely Yes, somewhat No	0 50 100	Q3
Yes No	0 100	Q27

APPENDIX "J"

Correlations between items/composites and overall hospital rating, and individual indicator contributions to the prediction of overall hospital rating

Dimension of care	*Composite/Item*	*Correlation with overall hospital rating*	*Contribution to the prediction of overall hospital rating (R^2)*	*Item-scale correlation*	*Internal consistency reliability (Cronbach's alpha)*
Admission	Admission process (Q2)	0.35	N/A	0.43	N/A
	Wait time to go to their room (Q3)	0.29	N/A	0.43	N/A
	Medicines taken at home (Q4)	0.10	N/A	N/A	N/A
	Admission composite (Q2 & Q3)	0.37	13.9%	N/A	0.60
Nurse communications	HCAHPS composite (Q5, Q6, Q7)	0.64	41.6%	N/A	0.84
Responsiveness of staff	HCAHPS : Call button response (Q8)	0.52	26.8%	0.51	N/A
	HCAHPS: Help with bathroom and bedpan (Q15)	0.48	22.8%	0.51	N/A
	HCAHPS composite (Q8 & Q15)	0.61	N/A	N/A	0.68
Doctor communications	HCAHPS composite (Q9, Q10, Q11)	0.42	17.8%	N/A	0.84
Physical environment	HCAHPS : Cleanliness (Q12)	0.41	16.8%	0.35	N/A
	HCAHPS : Quiet at night (Q13)	0.41	16.6%	0.35	N/A
	HCAHPS composite (Q12 & Q13)	N/A	N/A	N/A	0.52
Pain control	HCAHPS composite (Q17 & Q18)	0.52	26.7%	N/A	0.80
Communication about medicines	HCAHPS composite (Q20 & Q21)	0.45	20.6%	N/A	0.72

	Composite/Item	*Correlation with overall hospital rating*	*Contribution to the prediction of overall hospital rating (R^2)*	*Item-scale correlation*	*Internal consistency reliability (Cronbach's alpha)*
Discharge information	HCAHPS : Help after discharge (Q23)	0.19	3.6%	0.32	N/A
	HCAHPS: Information in writing (Q24)	0.23	5.2%	0.32	N/A
	HCAHPS composite (Q23 & Q24)	0.26	N/A	N/A	0.49
Patient Safety	Believed they were harmed because of a medical error (Q27)	0.27	7.5%	N/A	N/A
	Hospital takes patient safety seriously (Q28)	0.55	N/A	0.41	N/A
	Staff gave written material (Q29)	0.29	N/A	0.60	N/A
	Staff talked to patient (Q30)	0.33	N/A	0.64	N/A
	Staff washed hands (Q31)	0.39	N/A	0.46	N/A
	Staff checked identification band (Q32)	0.28	N/A	0.39	N/A
	Patient safety composite (Q28, Q29, Q30, Q31, Q32)	0.54	29.7%	N/A	0.73
Food quality	Rating of food (Q33)	0.35	12.0%	N/A	N/A
Client and family centred care	Facts about health and treatment plan (Q34)	0.45	N/A	0.43	N/A
	Support person was encouraged to participate in patient care (Q35)	0.28	N/A	0.45	N/A
	Staff consulted in making decisions about care (Q36)	0.35	N/A	0.62	N/A
	Staff took cultural values into account (Q37)	0.33	N/A	0.57	N/A
	Staff provided emotional support (Q38)	0.44	N/A	0.66	N/A
	Client and family centred care composite (Q34, Q35, Q36, Q37, Q38)	0.54	29.3%	N/A	0.78

	Composite/Item	*Correlation with overall hospital rating*	*Contribution to the prediction of overall hospital rating (R^2)*	*Item-scale correlation*	*Internal consistency reliability (Cronbach's alpha)*
Care transitions measure	CTM composite (Q39, Q40, Q41)	0.38	14.7%	N/A	0.83
Additional discharge items	Importance of being included in discharge planning (Q42)	0.10	N/A	N/A	N/A
	Discharge process (Q43)	0.45	20.1%	N/A	N/A
	Staff told patients what day they would leave (Q44)	0.15	N/A	N/A	N/A
Equity based on language of service	Received service in the language of their choice (Q51)	0.14	N/A	N/A	N/A

Indicators highlighted are chosen for multivariate regression analysis to determine the overall contribution of survey items to the prediction of overall hospital rating

Single items within the care experience dimensions of *admission process* (Q2 to Q4), *patient safety* (Q27 to Q32), *client and family centred care* (Q34 to Q38) and *discharge process* (additional discharge items Q42 to Q44) were examined using correlation analyses to determine whether some of these single-item indicators can be grouped together into a composite score for the purpose of calculating contributions to the prediction of overall hospital rating.

Among *admission process* items (Q2 to Q4), Q4 was discarded due to a fairly low correlation to the overall hospital rating (0.10). The two remaining items (Q2 and Q3) were chosen for the admission composite: item-scale correlations for this new composite are 0.43 and the Cronbach's alpha coefficient (0.60) is considered as demonstrating good reliability.

Among *patient safety* items (Q27 to Q32), Q27 was discarded due to a fairly low item-scale correlation when all 6 safety items are grouped as a composite (0.19). The five remaining items (Q28 to Q32) were chosen for the patient safety composite: item-scale correlations for this composite ranged from 0.39 to 0.64. The Cronbach's alpha coefficient for this new composite (0.73) is considered as demonstrating good reliability.

All five *client and family centred care* items (Q34 to Q38) were chosen for the *client and family centred care* composite: item-scale correlations for this composite ranged from 0.43 to 0.66. The Cronbach's alpha coefficient for this new composite (0.78) is considered as demonstrating good reliability.

Among *discharge process* items (Q42 to Q44), Q42 and Q44 were discarded due to a fairly low correlation to the overall hospital rating (0.10 and 0.15 respectively). The remaining item (Q43) was therefore chosen as an individual item to calculate contributions to the prediction of overall hospital rating.

Three (3) more indicators were discarded due to a relatively low correlation to the overall hospital rating. These indicators include the two HCAHPS individual *discharge information* items (Q23 and Q24) which has a correlation with overall hospital rating of 0.19 and 0.23 respectively, and the *equity based on preferred language of service* item which has a correlation of 0.14.