



## HARC REPORT

Using patient surveys to measure, inform  
and improve hospital performance:  
investigating international best practice

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Health Information

A report summarising a HARC study tour, July – Sept 2014

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The contribution of the Hospitals Alliance for Research Collaboration is gratefully acknowledged.

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## Executive summary

The Bureau of Health Information (BHI) manages the NSW Patient Survey Program on behalf of NSW Health. The survey program provides data to hospitals and local health districts (LHDs) that can be used to direct service improvement and provides information to the public, the Ministry of Health and the NSW government to enhance transparency and accountability of the care provided to NSW patients.

The Hospital Alliance for Research Collaboration (HARC) Scholarship (the ‘Project’) aims to explore international best practice in patient survey development and reporting, particularly in terms of methods used for adjustment of survey results for patient mix. Findings will be used to further develop the NSW Patient Survey Program, to ensure that healthcare workers and policy makers in NSW have the best possible information to inform targeted improvements in patient experience and, ultimately, patient outcomes.

The HARC scholarship enabled BHI to hold extensive discussions with international organisations covering a wide range of topics. As well as provide the basis for creating a proposal for case-mix adjusting survey results, this report identifies for BHI the following priority areas to be considered during the further development of the patient survey program. This will ensure that results of the NSW Patient Survey Program can be better used in quality improvement processes:

- Valid measures – measures reported from the patient survey should be valid and adequately reflect the domain of patient experience under investigation
- Timeliness – results should be released in a timely manner and as soon as possible after receipt of the survey response data
- Regular provision of data - patient experience information should be made available as frequently as other aspects of performance such as waiting times in ED and for elective surgery, mortality and quality of care
- Actionable results – reports should highlight actionable results relevant to clinicians and/or managers.

# Introduction

BHI is a board governed organisation that provides independent reports about the performance of the NSW public healthcare system. It was established in 2009 to provide system-wide support through transparent reporting. BHI supports the accountability of the healthcare system by providing regular and detailed information to the community, government and healthcare professionals. This in turn supports quality improvement by highlighting how well the healthcare system is functioning and where there are opportunities to improve. One of the most important tools for this work is the NSW Patient Survey Program, which has been managed by BHI since July 2012.

BHI has a mandate to “*prepare and publish regular reports on the performance of the NSW public health system, including the safety and quality, effectiveness, efficiency and responsiveness of the system of the system to the health needs of the people of NSW*”(see [http://www.bhi.nsw.gov.au/about\\_the\\_bureau/our\\_functions](http://www.bhi.nsw.gov.au/about_the_bureau/our_functions)). The NSW Patient Survey Program allows more fulsome reporting of the performance of the NSW health system because there are aspects of performance that can only be captured or assessed by the patient experiencing them.

The aim of this Project was to investigate how results from patient surveys have been developed, presented, disseminated and used to improve quality and safety in hospitals across Canada and the UK. By learning from more developed programs overseas, we aim to provide survey results in more meaningful and useful ways for NSW hospitals and LHDs. The Project aims to identify strategies that can direct service improvement in hospitals, leading to improvements in the quality and safety of care. Finally, the Project seeks to identify ways that the survey data can better be used to measure the performance of hospitals and to provide supporting data for various national standard. For example, against Standard 2 of the National Standards (Australian Commission on Safety and Quality in Health Care) or for the Performance and Accountability Framework produced by the Council of Australian Governments (National Health Performance Authority 2012).

One last critical component of this work is in reporting comparative performance and being able to adjust results to take into account differences in patient mix. There are numerous ways to conduct this adjustment but the Project presented an ideal opportunity to investigate methods used in some international jurisdictions and to discuss possibilities with other experts. Arriving at an optimal method for standardisation of survey results was the final aim of the Project.

## Background

The NSW Ministry of Health was responsible for administering the NSW Patient Survey Program from 2007-2011. While BHI published several reports using this data between 2010 and 2013, BHI assumed responsibility for managing the program in July 2012. The following paragraphs discuss the progress made by BHI in the two years between taking over management of the survey program and the HARC scholarship being awarded.

The first six months of BHI administration involved revising the sampling frame, sampling processes and redeveloping the questionnaires for the NSW adult admitted and emergency department (ED) patient surveys. Sampling for the Adult Admitted

Patient Survey commenced with the cohort of January 2013 patients onwards while sampling for the ED Patient Survey commenced with the cohort of April 2013 patients onwards. BHI receives data approximately six months after the end of the quarter in which the patients received care in hospital. Over time, the survey program will generate an ever-increasing amount of data for reporting with multiple annual surveys maturing in June 2015.

The Project afforded an ideal opportunity to investigate methods used by other organisations to ensure methods used by BHI for ongoing analysis and reporting of survey results were consistent with international best practice. In addition, the Project was timed to allow the maximum benefit so that many of the lessons learnt could be in place before large amounts of data become available.

## Literature review

### Background and purpose

The purpose of the literature review was to obtain background information on patient survey instruments, analysis methods and reporting strategies employed by the organisations visited during the study tour.

### Brief description of search methods and results

The literature was searched using a snowball approach. Links or references in reports to any methodological aspects were investigated. Literature covered included published articles, organisational reports, 'white' papers and 'grey' literature.

### Findings and analysis

The findings of the literature review were used to enable meaningful dialogue and exchange of information and ideas with colleagues in similar organisations overseas. Table 1 provides a summary of patient surveys identified in Canada and the UK. The organisations responsible for either running or reporting on these surveys formed the basis of the majority of the visits planned during the Project.

Results from the literature review are incorporated in the following section, as well as the BHI proposal for standardisation of the survey results (Attachment A).

**Table 1: Summary of surveys used/developed by groups visited as part of the HARC scholarship study tour**

Survey title	English NHS survey program	Picker Institute Europe (PIE) surveys	Family and friends test (NHS England)	Scottish NHS survey program	English GP Patient Survey	Scottish GP Patient Survey	British Columbia ED survey	Canadian Patient Experience Survey – Inpatient Care
<b>Patient type</b>	Different patient groups	Different patient groups	All patients	Inpatient and maternity	Primary health care units	GP practice patients	ED patients	Adult Inpatients
<b>Sampling</b>	Administered by Trusts, mandated by government	Based on English NHS surveys	Administered by Trusts, mandated by government	Central administered, previously administered by Trusts	Administered centrally from the GP register	Administered centrally from the GP register	Random sampling, bimonthly collection	To be administered by provinces
<b>What is reported</b>	Score	Problem score	Family and Friends test – PIE created score – Started with net promoter score	Percent positive responses per question	Percent positive responses per question	Percent positive responses per question	Scores based on % positive for questions and for dimensions	% selecting most positive question response
<b>Analysis</b>	Scores are adjusted for over-dispersion Complex calculation of std error N<30 not published	Limited standardisation applied Uses PIE domains	No demographics collected so cannot be compared across hospital Trusts  Denominator often supplied from separate data source → results limited in use	Information Services Division (ISD) does weighted analysis. Weight each question separately  Use benchmarking but not statistical significance testing		Unweighted at GP practice level (Picker) Weighted analysis and an overview report (Government agency) N<50 not published		Administered at province level by facility. N<10 not published
<b>Reporting</b>	Care Quality Commission (CQC), Department of Health (DOH) and other mandatory reporting required  Provides hospital level analysis	Number of standard deviations from mean  Presentations to Boards and other staff  Change management team provided	Applicable down to ward level		Online reporting at practice level	Online reporting at practice level	Control charts on monthly basis to EDs with >20,000 patients per year	Against national benchmarks (yet to be determined)
<b>Comments</b>	Hospital Trusts can contract a supplier  CQC consider receiving confidential data a serious breach  If sample size is too low then omitted from ALL calculations, not just for that facility	Trusts can contract PIE to run surveys on their behalf  PIE use different analyses and presentation formats to differentiate from competing organisations	A single mandatory question  Different Trusts use different modes of data collection  Nearly all Trusts include additional open response questions	Six questions are scored and aggregated for Scotland performance  They don't suppress small numbers in the main report, but for report at Trust level there is a min of 20	Massive: had sample size of 5m per year; now 2.2m per year.  Now stratified by clinic		Survey partner is NRC+Picker Canada	In development
<b>Source</b>	Picker 2013	Picker 2013	NHS 2013	Scottish Govt 2012	Ipsos Mori 2013	Scottish Govt 2012	Cuthbertson 2014	CIHI 2014

## Description of visits to overseas organisations

### Purpose and timing of visits

The aim of the Project was to discuss approaches to patient survey development, implementation and reporting with a range of overseas agencies and learn from their experience. Visiting a number of different agencies was viewed as being more productive than visiting a single organisation for a longer period or attending a single large conference, collecting more diverse views on organisational perspectives for survey use and on survey methodologies.

Meetings in England and Scotland mainly focussed on people and organisations involved in the management, development and/or reporting of NHS patient surveys or the GP patient survey. Canadian visits had a broader focus on performance reporting generally and included Statistics Canada, the Canadian Institute of Health Improvement (CIHI), the Institute for Clinical Evaluative Sciences (ICES) in Toronto and British Columbia (BC) Ministry of Health. The ICES visit had two components; their surveying of paediatric patients and combining survey and administrative data in reporting, an area of particular interest to BHI. Opportunistically, the meeting in BC included discussions with a researcher studying patient reported outcome measures (PROMS).

Appendix 1 provides a complete list of meetings arranged as part of this HARC scholarship.

### Summary of activities

In most cases, meetings involved one-on-one or small group discussions. During my visits to CIHI and Statistics Canada, a presentation about BHI and the NSW Patient Survey Program was given to a large, mixed audience. Upon reflection, all meetings were deemed to be very useful for our future work and highly relevant to the BHI role, although the allocated meeting time usually only allowed for discussion of a few specific aspects of each organisation's programs – on many occasions discussions exceeded the time allocated.

## Survey and survey development issues discussed

### Question types

Over the past 20 years, patient surveys have evolved from principally measuring patient satisfaction to measuring patient experience. Questionnaires have increasingly focused on collecting information about how patients experience care and the quality of the care from the patient's perspective, rather than simply asking patients to rate their satisfaction with the care received. The NSW Patient Survey Program emphasises reporting questions, although some rating questions are still included. According to discussions with Jocelyn Cornwall, reporting questions can be further



divided into relational and transactional or functional questions (also see Robert and Cornwell, 2012).

Transactional questions ask about what was done and should not be greatly affected by different demographic groups responding in a different manner. Therefore there should be little differential response bias. Relational questions are, as the descriptor suggests, about relationships – for example, about whether the health professionals were kind and caring, approachable to discuss fears and worries and so on. These questions are more likely to suffer from the differential response bias compared with transactional questions because different patient groups tend to have different expectations in relational aspects of care.

#### How people respond to a question with an internal filter

How people respond to filtered questions was raised in several discussions with international colleagues. It was noted that people respond to a question with an internal filter (a response option that acts as a filter) in a different way to when the filter question precedes the actual question.

For example, patients may be asked a question about the quality of food, with a response option of ‘I didn’t have food’ included as an internal filter. Alternatively, prior to a question on the quality of the food they may receive a preceding question, asking whether or not they received food while in hospital, with only those who answer in the affirmative being asked the subsequent question about its quality.

NHS Scotland noted a similar challenge around their questions regarding pain and pain management. These discussions provided a great opportunity to exchange ideas and experience regarding the best ways to manage these questions; BHI has noted it is best to be as consistent as possible in the use of filter questions and/or internal filters when fielding questions requiring filters across multiple surveys.

#### Pre-survey assessment: Cognitive testing, etc.

In general, international colleagues advised that cognitive testing be performed on any new questions, and that people from minority groups be included in the testing. During cognitive testing, all respondents should be carefully monitored for body language, hesitation in responding to a specific question and other behaviour that might suggest difficulties with individual or groups of questions. After completing the survey, respondents should be further questioned about their motivation in providing particular responses and to put the responses for selected questions on a scale of 0 to 10 so that the scaling of the different response options can be quantified.

In addition, colleagues regarded it best practice to commence with a pilot study, including the analysis of the resultant responses. This provides opportunities to review response options for questions with undesirable response characteristics. Unfortunately, a lag time of 6 to 9 months from sampling to receipt of the data for the NSW patient survey makes use of pilot testing of questionnaires challenging. It should be noted that pilot testing only requires two to three hundred responses, which is easily obtained from a single month of data. As such, one option to consider may be early receipt of the first month of data from a new survey so that any major issues can be identified at the earliest possible point.

## Response rates

Both the English GP Patient Survey (GPPS) and NHS Scotland GP surveys have an average response rate of 20%. The response rate for the Friends and Family Test (FFT) is even lower. At one stage, a financial incentive was provided for Trusts to obtain a response rate of above 15%. Improving survey response rates is still part of incentive programs in the UK via the Commissioning for Quality and Innovation (CQUIN) program run by NHS (NHS Commissioning Board, 2013).

The NHS inpatient survey has had a response rate of between 30 and 40%. This is comparable to the response rate achieved in the NSW patient survey.

## Methodological issues – analysis of survey

### Weighting of survey data

All major jurisdictional surveys weight the data in some way to provide more fair comparisons.

NHS Scotland weights results for each question in the inpatient survey separately. They do this by weighting the result received for each stratum by the relative number of eligible inpatients. They recently considered changing the weighting process to one that uses demographic variables but decided that it was not in the interest of the program, particularly for comparing current and historic survey results. Similar to NSW, results are weighted so that each hospital contributes to the overall result in proportion to the number of patients treated in the hospital.

For the English NHS surveys, weights are calculated based on the age and sex (and sometimes other) profiles responding to each question. The weights are standardised to the age/sex distribution of England but are winzorised to ensure that individual responses are not overly represented. These weights are used to report comparable Trust-level results. If sample size is insufficient for a Trust-level report then the facility is excluded from the overall results for the UK. A second weighting of data is applied so that each NHS Trust contributes equally to the UK average, irrespective of the size of the facility. Interestingly, self-reported health status was initially included in the suit of variables used in the NHS weighting process, but later dropped (Raleigh, pers comm).

The GPPS data are weighted for general reporting. The weighting process for this survey has four parts – adjustment for disproportional sampling proportion, adjustment for non-response, calibration to practice totals, and age and sex adjustments at a higher level of aggregation. Details of the weighting procedure are available in Ipsos Mori (2014).

Canadian surveys, notably those established in Ontario and BC, are weighted, but are not adjusted for demographic variables.

### Adjustments/standardisation

The surveys undertaken in the USA by the Consumer Assessment of Healthcare Providers and Systems (CAHPS), including the hospital survey (also known as HCAHPS) are adjusted using model-based methods, as an alternative to being weighted. Journal papers based on the GPPS data use a similar standardisation method

to that used by the HCAHPS survey. The standardisation, or more specifically, patient mix adjustment method, employed by these surveys is implemented using linear regression, with adjustment for non-response, modality of survey delivery (telephone, mail, mixed method) and patient demographic variables (O'Malley et al 2005). The demographic variables included are race, language spoken at home, age, type of service (medical, surgical, obstetric) and education. In addition, long-term health condition and self-reported health condition are included (Zaslavsky et al 2001, Raleigh et al 2014).

When model-based methods are used, the weights and adjustment for stratification and/or other aspects of the complex survey design that are part of valid analysis using conventional survey analytical methods are usually ignored. Rather, the strata variables and any variables usually included in the weighting and analysis process are incorporated into the set of independent variables include in the model and removed from the model if not statistically significant.

As a result of information and experience gained during this Project, BHI developed a plan for standardisation of the NSW patient survey data. This also involved considering what form of response variable should be modelled and reported. A recommendation was also made regarding which demographic should be assessed for inclusion in the standardisation and sensitivity analyses for other variables, such as non-response.

The draft recommendation was critiqued by an international group of survey experts and has been adopted for implementation by BHI moving forward. The final BHI standardisation document, *BHI proposed methodology - scoring and standardisation - Final proposal.pdf* is provided along with this report.

#### Differential response bias

Differential response bias occurs when patients respond differently to survey questions despite having the same level of care, due to demographic or other factors unrelated to the care provided/received. There is a large volume of research that shows that different patient populations and demographic groups respond differently to patient experience survey questions. This is one reason why it is important to take potential differences in demographic groups into account when comparing hospitals and jurisdictions, for instance using standardisation.

A report based on the Scottish inpatient experience survey (Boyd and Hodgekiss, 2011) showed that there were statistically significant differences amongst several demographic groups in responses to survey questions and that these differences related to the patient's age, self-reported health status, existing long-term illness, religious beliefs, and sexual orientation. Differences also relate whether the patient's stay was planned or an emergency. There was also large variation between hospitals and hospital types (equivalent to NSW hospital peer groups).

Haggerty et al (2011) also found differential response bias between French and English responders to a pilot survey, partly due to a difference in the interpretation of the French- and English- version of the question and/or responses. Raleigh et al (2014) recently published a paper showing that ranking of facilities can be affected by what is included in the standardisation. This paper showed that the ethnic background of respondents affected the way that they responded, a result also reported following analysis of the UK General Practice patient survey (GPPS) (Lyratzopoulos 2012).

During discussions with Martin Roland (Cambridge Centre for Health Services Research, University of Cambridge School of Clinical Medicine, 4 Aug 2014), it was mentioned that, as part of ongoing research into UK's GPPS, the Centre for Health Services Research was devising a trial to determine whether ethnic minority groups have a less positive experience of care, or, whether there is a scale difference in responses in a patient survey. In this trial, English and Pakistani patients will be filmed during standardised consultations, and their responses to the survey questions will be assessed against a review of the video footage by researchers.

The centre at which Jeannie Haggerty works used item response theory (IRT) to assess the level of differential response bias in responses to several validated primary health care instruments when developing a primary health care survey for Canada (Haggerty et al, 2011). During discussions with Haggerty as part of this Project the potential of implementing IRT in the NSW patient survey program was discussed. Haggerty and team had the advantage of using previously validated instruments, which means that the contribution of each component of the overall score could be assessed against the instrument's overall score. In contrast, the NSW patient survey questionnaires are not derived from validated instruments. It was decided that, despite this, a modified version of IRT could still be applied to the NSW survey data. For example, ordinal regression in SAS (the software used by BHI to analyse the survey data) can be used to determine whether differential response bias exists between demographic groups by calculating the odds ratio of a specific response to a particular question due to binary demographic groups (for respondents who usually speak a language other than English at home vs. English, Aboriginal vs. Non-Aboriginal).

## Reporting

### Use of survey data

Most organisations regard three main objectives of patient experience surveys as being to support and facilitate:

- Accountability/reporting, local monitoring and governance
- Quality improvement
- System performance management (Robert et al 2012b, Key Finding 2a page 13).

All jurisdictions appear to have quality frameworks that require patient experience measurement and reporting. In the UK, the new NHS Outcomes Framework being implemented by the Care Quality Commission (CQC) requires data to measure each of these objectives.

### Reporting survey results

BHI aims to disseminate the results of the NSW patient survey a range of stakeholders, both within and outside of the NSW health system, to optimise their opportunity for use. Currently, the National Standards require hospitals and LHDs to collect data on the Standards but do not yet set require improvement to meet set benchmarks. BHI has prioritised proactive engagement of hospital staff with the results of the surveys to facilitate change. This includes highlighting actionable

responses and results, and ensuring that benchmarks are set at realistic and achievable levels.

The majority view of international colleagues consulted in the Project was that survey results should receive the same level of attention and scrutiny as other core performance measures (e.g. hospital mortality, readmission, ED and elective surgery waiting times) and be held to the same standards of rigor. Ideally, this would include the review of patient experience results at major LHD Board and hospital management meetings. This is one aim of the Patient Based Care Challenge program run by the NSW Clinical Excellence Commission (CEC 2014). This initiative of the CEC will definitely assist in bringing patient experience data to the attention of LHD boards, and ensure more effective use of the survey data to promote quality improvement. Additional reporting and different methods of surveying patients are also considered as part of this initiative.

In general, survey results should be provided in a manner that is:

- clear
- easily understood
- actionable (something that can be addressed)
- patient-centred
- accompanied by a summary of key themes and targeted areas for improvement.

The international experts almost universally held the view that the majority of stakeholders require simple, broad but succinct summaries; a brief summary of ‘top line’ information. At the same time, it was suggested that what is reported and how it is reported should be determined in conjunction with consumers and other stakeholders. It was suggested that BHI may need to provide different reports for the public than those provided internal to the health system.

### Comparing results with benchmarks

The majority of organisations visited compare survey results with a benchmark than with an average. One reason for this is that if all facilities are performing below expectation, a comparison against the mean will suggest that some facilities are doing well; while in reality they are all performing poorly. In addition, use of benchmarks simplifies the statistical methods being used.

The CQC has set mandatory targets for each of the performance measures that they include in their subset of indicators created from the NHS survey data. Picker Europe also creates ‘cut-offs’ for performance purposes, and CIHI intend using benchmarking as a basis of their analysis of the new Canadian Patient Experience Survey.

The results for nine high profile questions in the BC ED survey are presented in the form of control charts, with control limits based on the previous three years of data, thus providing an historic benchmark based on data from the one facility. These questions include an overall care question and eight others that have been shown to be highly associated with overall care and have poor results.

The nine questions are:

- Overall how would you rate the care you received in the emergency department?
- How would you rate the amount of time you spent in the ED?
- Did you have to wait too long to see a doctor?
- Did you have enough to say about your care?
- Did you feel you had enough privacy during your ED visit?
- Were the possible causes of your problems explained in a way that you could understand?
- Were you told what danger signals about your illness or injury to watch for when you got home?
- While you were in the ED, were you able to get all the services you needed?
- How would you rate the courtesy of the ED staff?

The result for the overall rating of care question is based on the mean score from response options ranging from 0 to 10; the remaining questions are measured by the percent positive responses.

NRC Picker Canada publishes comprehensive results from the BC ED survey annually. In these reports, comparisons are made with the average of the five highest performing facilities in BC, and also the average of the five best performing facilities in Canada. While this does not constitute a fixed benchmark, it provides a standard against which facilities can seek to achieve.

To date, BHI has based all comparisons on difference from the state mean. On the basis of the discussions carried out during this Project it is recommended that BHI consider moving to comparison against set benchmarks in reporting from the NSW Patient Survey Program.

### Options for displaying results

The following provides a summary of information obtained regarding response options that could be considered in BHI patient surveys. See the accompanying document, *BHI proposed methodology - scoring and standardisation- Final proposal.pdf* for more details.

Following interviews and a review of literature, the most common options for reporting are:

- Most positive response option
- Percent positive
- Problem score
- Linearised score
- Z score.

During the Project, no single method of reporting was found to be used consistently across all organisations, or even one method that is exclusively used by one organisation. Picker uses the problem score (the proportion in the lowest response category, or sometimes the sum of the negative response options), as the negative response options tend to be more sensitive to issues. On the other hand, it was generally considered that the problem score is not well understood by the public and was often seen as overly harsh by Trusts.



The most positive response option reporting method is used for most of the variables included in the US HCAHPS surveys and is the current preferred method for the new Canadian-wide patient experience survey reporting. It is also the one preferred by BHI. This indicator can be construed in different ways to different audiences. For example, when presenting to Boards, the most positive response category allows robust statistical comparisons to be made, and provides the greatest degree of variation in results between hospitals. For reporting to clinical staff, use of the most positive category reinforces the concept that the top level is the epitome of the best care; anything else can be improved upon. Finally, for public reporting, the most positive response allows for the simplest measure of performance to be made available, removing the difficulty of comparing across multiple response categories. Percentages are also generally more easily understood than scores. Nonetheless, the most positive category does not describe the pattern of lower rated responses. So although, as a summary item the most positive response option is useful, it is important to provide access to all data showing all response options.

Conversely, scores have the advantage of including all response categories, not just those who responded to a single response or subset of response options.

Whatever method is used for reporting, it is important that it is sensitive to changes over time without being overly 'noisy' when used to report longitudinal results.

The NHS patient survey data is reported in different ways for different organisations and their purposes. For example, while percentages (most positive response, percent positive or problem score) are most often used to direct service improvement, comparison of performance between trusts more often uses linearised scores or z-scores, created using the adjusted weights. Picker Europe creates a second set of z-scores from the survey data for the Intelligent Modelling process run by the Care Quality Commission (CQC; see <http://www.cqc.org.uk/content/intelligent-monitoring-nhs-acute-hospitals>). These z-scores are adjusted for case mix using model-based methods. Benchmark reports are created for each Trust from this analysis. Expectation for the benchmarking is provided by calculating the z-score together with spread. Adjustment for case-mix is performed question by question, for about 40 survey questions (see Spiegelhalter et al 2012).

One of the main criticisms of the scoring method is that scoring is usually done on a linear basis although Spiegelhalter et al (2012) suggest a method of creating non-linear z-scores based on ordinal response scales on the assumption that a latent normal curve underlies categorical response options. As far as can be ascertained, this non-linear method of scoring is not being implemented anywhere that scoring is done.

It should be noted that in the English patient survey, z-scores are only used for comparisons within a question; neither Picker Europe nor CQC use z-scores for comparisons *between* questions. This is important for BHI in that one of the questions that is raised regularly is the desire to compare how well one question is done relative to another question. In addition, the z-score is not calculated where there are less than 30 responses

#### Aggregation of results from multiple questions

Although not used to compare between questions, the z-scores *are* used by NHS England to create an aggregate of 20 questions for reporting purposes. The standard error of the aggregate score is difficult to calculate as it takes autocorrelation into

account. Respondents are excluded from this composite if fewer than five questions across the whole questionnaire are answered.

Aggregation from the NHS survey was previously done based on the Picker domains (which had been tested for construct validity). The aggregation was subsequently changed to groupings based on the questionnaire subheadings although these categories were never tested using factor analysis or other methods to determine whether they were all estimating a single construct.

When asked whether it was appropriate to aggregate questions using most positive response or other methods of reporting, Picker Europe recommends transforming to z-score before aggregating. This ensures that all of the questions have the same basic scale.

NHS Scotland creates an aggregate score based on six of the questions in the NHS Scotland surveys. Responses to these questions are scored linearly and the average is used as an indicator in the annual NHS report 'Scotland Performs'.

The Canadian arm of NRC-Picker provides comprehensive survey reports for BC surveys that include aggregated questions based on the Picker domains.

### Format of reporting

The agencies visited produced several innovative visualisations and used a variety of software for reporting, from macro-enabled Excel versions to off the shelf products to specially developed software. Many, similar to BHI, are limited by being unable to use visualisation software for the analysis component of the product. Several agencies showed examples of the visualisations that they are developing to assist with interpretation, but most were only currently used for internal reporting. They included:

1. *A box-and-whisker type display* showing the range and mean for hospitals in the same peer group, with the position of the hospital in question also shown as a triangle
2. *Bulls Eye*. Results for all questions are shown on spikes emanating from a single point, each question depicted by a single line. A series of concentric circles denote the mean and plus or minus one standard deviation. The result for each facility is denoted by a dot, with the position of the dot denoting how this facility goes compared with others. Results closer to the centre are better. The length of the arc shows the range in results overall. This depiction gives a visual feel for the entire set of questions thus summarising a large volume of information.
3. *Importance map*. This is used extensively at Picker. It graphs the ranking, average or problem score depicted so that the greatest deviation from the state mean gives the highest values on the X axis against the correlation with the overall score on the Y axis. Focusing on improving factors that affect the questions that are fall in the top right quadrant will provide the biggest improvement to overall care.
4. Dashboards with three colours (red, yellow and green), with green depicting at or over target, yellow denoting 10% below target and red depicting below target by more than 10%.
5. *Line chart* shows most positive response over time; results for all response options over time are shown in an accompanying table



6. A *table* which shows change since last time, highest score in trust and lowest score in trust.
7. 7. When depicting results for the Picker Children's survey, the results for the same question for the three groups (parent, child, all) are shown on the same graph/table using *different colours* for the three groups (parent, child, all)
8. *Control charts* by month, with sample size and 90% confidence intervals included with the estimates.

### How much to report

Robert and Cornwall (2012) argue that a handful of questions are sufficient to summarise the information provided by patient surveys.

These questions are:

#### **PROMs questions:**

- How helpful was your stay?
- How are you now?
- How much did your recent stay help your condition?

#### **PREMs questions:**

- 'Would you recommend this service?'
- plus questions on:
  - Compassion of staff
  - Co-ordination of care
  - Information flow

#### **Physical comfort**

- EQ5D questions:
  - Mobility
  - Self-care
  - Usual activities
  - Pain-discomfort
  - Anxiety depression.

The control charts published from BC's emergency department (ED) survey also focus on a subset of questions, however the logic behind the choice of questions is different to those suggested by Robert and Cornwell (2012).

### Frequency of reporting

The frequency of reporting may ultimately depend on what the survey results are being used for. There was reasonable consensus that *quality improvement* was best served by near real-time or real-time collection and reporting of patient experience results.

The results of the 9 ED survey questions published in control charts in BC have been reported on a quarterly basis but are moving to monthly reporting in the near future because hospitals were asking for more timely data. This survey is mailed within five days of the end of each fortnight (twice a month), so although it is a mailed survey, results are already quite timely. This survey has the shortest latency for receiving

results of any of the programs investigated in this work. These control chart results are accompanied by the comprehensive results on an annual basis.

While monthly results may be useful, Picker Europe and CQC ran a pilot study where weekly results were provided at the ward level to 12 Trusts – the results showed that it created information overload and was too costly to sustain.

While usually considered the most robust and inclusive, mailed questionnaires are often perceived as not being sufficiently ‘timely’, taking approximately 24 weeks from the time that the patient attends hospital to the time that the data are available for analysis and reporting. In the absence of complete email records, they have the advantage of being the most cost-effective option also and are therefore considered the best option for the NSW Patient Survey Program at this time.

### **Other important issues**

International experts identified the morale of hospital staff as being highly related to good patient experience – BHI was strongly encouraged to either consider conducting a staff survey or integrating staff experience survey data. One option would be to copy NHS England, which runs a version of the Friends and Family Test for hospital staff, asking:

- Would you recommend your work place to friends to be treated?
- Would you recommend your work place to friends for work?

### **Near real-time monitoring of patient experience**

There is a growing focus on near real-time monitoring of patients experience where survey questions are asked at the point of care or immediately following discharge. Tablets are often used or patients are sent an SMS message post-discharge. Some facilities provide patients with a token, which is dropped into one of a series of bottles depending on whether the patient considers the care received as great, average or poor.

Greaves et al (2012) shows that, although the web-based results have greater potential for bias, there was a significant association between web-based ratings of patient care through the NHS Choices website and results from conventional surveys of patient experience. In the absence of robust patient email records, this does still present an option for low cost surveying.

Near-real-time surveys are seen to be closer to the occasion of care, therefore a better reflection of the care received. In addition, because these surveys are made available to all patients, results can be presented at a lower level of administration (ward level). Frontline staff also tends to be more engaged in the survey as they sometimes help administer the survey and the results are for their ward. Another advantage is that it provides timely and useful free text feedback, which, if actioned quickly can lead to fairly immediate resolutions of issues that may otherwise go undetected for a while.

On the other hand, such results cannot be used for robust comparison between hospitals, typically because numbers are frequently too small for reliable analysis. Additionally, if the survey is administered in hospital, this can result in the patient feeling undue influence to respond positively, particularly if administered by hospital staff.

Another example of near-real-time feedback is the UK Friends and Family Test (FFT). A review based on the first six months of results (NHS England 2014) shows that the greatest benefit came from the optional text comments provided by respondents, although the fact that the results can be reported at the ward level is also beneficial as the results are easily attributable to ward staff. It found that the results are likely to be biased, with the level of bias being difficult to assess, as demographic data are not collected. This, together with the fact that the FFT question can be posed using a variety of delivery modes from, means that this is not a robust method to be able to compare between facilities or Trusts. On the other hand, they are of great benefit when considered results over time within the one facility, particularly if attributable to particular wards.

However, the Project did collect more positive views of real-time feedback, including from the Dr Foster Unit of Imperial College. This feedback suggested that surveillance and real-time monitoring had been proven to be effective tools for identifying issues at hospitals. On the other hand, Dr Foster experience did not include NHS survey results in their Quality Investigator as it was not cost-effective. They considered that the benefit of patient surveys was for mandatory reporting of process measures.

### The importance of communication

In addition to the valuable technical information that was obtained during the various meetings, the importance of communication and involvement with stakeholders came through many of the discussions.

The opinion of some colleagues from NHS England was that managers and health professionals are more engaged with survey results if they are presented in a practical (actionable), rather than theoretical, manner. That is, there will be more traction with management if results show that practical changes to aspects of patient care measured by the patient survey lead to improvement in the overall patient experience of care. They suggested focussing on hospitals with poorer results, using the data to garner direction for improvement. Further, this process needed to be developed with the involvement of both management and frontline staff. In NSW, this approach would need to involve key partners such as the Agency for Clinical Innovation (ACI) and/or the Clinical Excellence Commission (CEC).

Personalised action plans are part of the survey package available to Trusts that engage Picker as their survey partner.<sup>1</sup> Following the release of survey results, Picker meets face-to-face with a group of stakeholders from the Trust. The group typically includes the Director of Nursing, patient experience or advocacy lead and chief of medical staff. Results are presented by Picker followed by a structured analysis of issues and generation of a prioritised action plan to address issues. Picker contributes to actions through use of an organisational 'Good Practices' database and a 'patients-accelerating change' team. These additional services were added because stakeholders often reported not knowing how to use survey results.

International colleagues also suggested running annual workshops where the overarching survey results can be discussed. This gives stakeholders an opportunity to ask questions about how to interpret and use survey results. If this process was

<sup>1</sup> In the UK each Trust is able to select the survey partner who then runs the survey program based on extensive documentation provided by the CQC.

implemented, it might be possible to include a breakout session which allows delegates to brainstorm potential actions in a similar way to the approach used by Picker in the UK. It may be worth considering instigating patient quality awards (either at this workshop or separately) that could work to promote the benefits of the survey and disseminate results more widely.

Another approach recommended by overseas agencies was to incorporate qualitative feedback as part of patient experience reporting. Picker Europe provides text comments, grouped by response to the Family and Friends Test question as a powerful way to reinforce patient results. Similarly, hospital profiles created from the survey results in British Columbia always include a text response. The NSW Patient Survey Program will begin thematic coding of patient comments from June 2015 onwards and will be able to consider this approach.

Finally, small data bites such as “7 out of 10 don’t know how to use medications” were seen as good to include, as they can grab attention to quickly highlight areas of concern and potentially, quick wins, within the system. Use of infographics to display this information was seen to be the best way to improve the public’s understanding of such results.

All of the survey programs on which this Project was based had been going for a longer period than the two years that BHI has been involved, so they have longitudinal data. They all provide comparisons with the previous period in their reporting. Some also compare results between different patient types.

Based on these discussions, it is suggested that BHI could do the following:

- An annual workshop with survey leads to discuss results
- Develop relationships with CEC and ACI to action the results
- Once repeat data are available, include comparisons with this time last year etc. to allow facilities to be able to see how they’ve changed
- Present results across surveys
- Make data available for secondary analysis
- Host a forum with our stakeholders to discuss the data received so far and what can be done with it
- Host an ‘early’ forum – a meeting with stakeholders where preliminary results are provided and methods for analysis and/or presentation are brainstormed prior to doing a more detailed report.

## Summary of results in light of project objectives

One advantage of the trip was being able to personally meet people in roles and organisations that are similar to the BHI. This opened up opportunities for further contact and potential collaboration with these organisations, both personally and for BHI. For instance, as a result of my HARC scholarship study tour I was invited to be part of a review panel for Canada's patient experience survey of inpatients.

Organisations from the UK have also contacted me, and are interested in comparing the results from the oversampling of the Cancer patients with those from the UK. The establishment of contact is possibly one reason why Katinka Moran, who has received a HARC scholarship this year (2015), was sent a series of specific questions about the NSW Patient Survey by one of the colleagues at the Canadian Institute of Health Innovation (CIHI) with whom I met with during my time in Canada.

The contacts made during the trip were invaluable when looking for participants to be part of the methodology review panel regarding BHI's proposed method for scoring and standardisation.

In summary, this study tour showed that in general, BHI survey methodology is similar to that used in the UK and Canada and that these jurisdictions have similar issues to those identified in the NSW Patient Survey Program. The advice and information received has assisted in developing a method of case-mix adjustment that is similar to methods used by major patient survey programs internationally. In addition, valuable advice was received that will assist BHI in providing the patient survey results in a way that will best meet the needs of stakeholders as well as provide patients and other consumers with information about patient experience at hospitals in NSW.

## Appendix

**Table 1 List of meetings attended during HARC Study Tour**

UK		
Sun 27 July	Clare Aitken, Dr Foster Intelligence	Meeting in London prior to Clare returning to Australia and taking up a position with BHI
Tues 29 July	Paul Aylin	Dr Foster Intelligence 3 Dorset Rise, Ground Floor, London.
Tues 29 July	Jocelyn Cornwell	The Point of Care Foundation 11-13 Cavendish Square London, W1G 0AN
Wed 30 July	Paul Williamson Dr Foster Intelligence	Finsbury Tower. 103-105 Bunhill Row London EC1Y 8TG Dr Foster Intelligence 3 Dorset Rise, Ground Floor, London.
Thurs 31 July	Small Area Health Statistics Unit	Small Area Health Statistics Unit (SAHSU) Imperial College London
Mon 4 Aug	Martin Roland	University of Cambridge School of Clinical Medicine, Cambridge
Tues 5 August	Forrest Frankovitch, head of analysis (patients and Info)	NHS England, Quarry House Quarry Hill Leeds LS2 7UE
Thurs 7 August	Julie Kidd and ISD - SG	Information Services Division, NHS National Services Scotland, Gyle Square, Edinburgh EH12 9EB,
Tues 12 August	Veena Raleigh	Telephone discussion
Tues 19 August	Angela Coulter	Linton Lodge Oxford (breakfast meeting)
Tues 19 August	Chris Graham Surveys team, Picker Institute, Europe -	Picker Institute Europe Buxton Court. 3 West Way Oxford OX2 0JB
Wed 20 August	Professor John Campbell	Exeter University
Canada		
Mon 25 August	Jeannie Haggerty	Mc Gill University (Canada)
Tues 26 August	Claudia San Martin	Stats Canada (Canada)
Tues 26 August	Melanie (organiser)	CIHI Ottawa (Canada)
Wed 27 August	Richard Glazier; Astrid Guttmann	Toronto (Institute for Clinical Evaluative Sciences (ICES) (Canada)
Thur 28 August	Jeanie Lacrois (and team)	CIHI Toronto (Canada)
Fri 5 Sept	Lena Cuthbertson	Vancouver (Canada)

### Potential areas of further study

Some areas of further study were revealed during this study tour. These include the following:

- Comparison of online and paper results. Although all respondents have a choice in the NSW patient survey program, the mode and trust effects are not easily separated in the NHS England survey
- Investigate whether there is an effect of ethnicity over and above SES effect
- Look at propensity of giving text response to the positive and negative text response questions relative to overall care response

- Look at whether there is a differential effect of exclusion due to address etc. for different demographic groups, in particularly Aboriginal people relative to non-Aboriginal people
- Effect of length of recall on survey results
- Investigate whether objectives of care are different for patients who have poor self-reported health status compared with patients with better self-reported health status and whether this depends on age.

#### An important paper: What matters most to patients

Jocelyn Cornwell mentioned a document so entitled during my discussions with her. It was a report prepared by several authors including the Kings Fund following a project funded by the Department of Health and NHS Institute for Innovation and Improvement (Robert et al 2012a). Although Jocelyn mentioned during the meeting that the report included case studies of 12 organisations that had seen the effect of focusing on Patient Safety actually create change, she did not mention the abundance of other information provided in this 200-page document.

There is an extensive summary of 31 documents from both peer reviewed and grey literature on patient experience (including a paper by BHI director of surveys and quarterly reports, Jason Boyd) that help identify ‘what matters most’ to patients and how this may assist in determining what and how to capture patient feedback.

This report notes that the framework underlying good patient experience has not changed much since the seminal work of the Picker Institute as published in the book *“Through the patients’ eyes”* (Gerteis et al (2003)). It does, however, also suggest that these important aspects of care can be split into ‘relational’ aspects (dignity, respect etc.) and ‘functional’ aspects (access, food etc.), both of which are important. The associated policy document (Robert and Cornwell 2012b) notes that in most cases it is the relational aspects of care which are more important to patients.

This report mentions a ‘broader review by Picker Institute Europe’ that the following are required in order to most effectively improve patient experience:

- Training of health professionals in communication skills that improve the patient-centeredness of their consultations in length and ‘style’)
- Identify areas from patient feedback that can be used as priorities for quality improvement
- Report PROMS – with the aim of improving management of conditions, and possibly diagnosis
- Reporting these results publically to stimulate improvement at the hospital level (see page 35).

In terms of effectiveness of application, it finds that “leading-edge provider organisations:

- Recognize and maximize the value of patient stories
- Use measures that allow comparison over time and between organisations
- Demonstrates leadership and organisational commitment
- Dedicates resources to the tasks of capturing, understanding and improving patient experience and
- Establish clear links with commissioners.” (page 6).

Furthermore, it finds that triangulation with other data to help ‘understand’ patient experience data PLUS presenting patient experience alongside regularly reviewed data (for instance financial and activity data) is the most effective way of improving the focus on patient experience and seeing it get to the front page of the agenda.

Effectively what this is saying is that it is necessary for those at the top to be passionate about improving patient experience; and for front-line staff to be interested in improving patient experience as well. Two case studies from the end of the report are shown in figure 1.

**Figure 1 Case studies from Robert et al (page 199, 2012a)**

**Case studies from other sources**

**Case Study 9: Putting You First**

A case study described as part of NHS Employers Shared Learning initiative.

West Suffolk Hospital NHS Trust involved staff across the trust in a continuing campaign to improve patients' experiences. It began with a series of events run by consultants April Strategy, designed to enable staff to hear patients' real stories and experiences first hand. Staff surveys and workshops followed, with nearly 40% of staff directly involved in shaping the content of the programme. A Patients First handbook was issued, containing 10 service standards to help staff understand how they individually and as teams can change their behaviours to consistently put patients first, and a pledge to give them the support they need to make the change. About a quarter of the workforce has already taken part in a Patients First personal development session, to help staff to improve their communication and customer service skills.

Since launch services have developed their own action plans to ensure that their patients 'feel safe, feel cared for and feel confident in their treatment'. Measurement suggested that in the initial three months patient satisfaction increased by 40% with a commensurate decrease in dissatisfied patients.

<http://www.nhsemployers.org/SharedLearning/Pages/Sharedlearning.aspx>

**Case Study 10: iCARE**

A case study described as part of NHS Employers Shared Learning initiative.

Yeovil District Hospital NHS Foundation Trust's iCARE programme (Communication, Attitude, Respect and Environment) aims to equip staff to meet and exceed the expectations of all service users, as well as shape how they work with each other. The 'i' stands for the individual and stresses that every member of staff has a fundamental role to play in delivering exceptional care. The programme was developed following complaints and conciliation meetings that highlighted poor standards of care for some patients and their relatives, with areas for improvement linked to leadership, interpersonal skills and behaviour and the ability to demonstrate the 'human' face of care.

Initially developed by a senior matron, the trust identified that the approach should become the central focus of the organisation's developing culture and strategy. Development involved 'discovery work' with patients and carers and awareness sessions for all staff covering the principles behind the concept and the opportunity to explore how iCARE could influence their own area of work and responsibility. A weekly update on computer screens reminds staff about training sessions and to share examples of positive patient feedback. Questionnaires suggest that the focus on the four key areas has improved the patient experience.

[web]



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