

Data Quality Assessment

NSW Health Patient Survey 2009

Hospital Quarterly: April to June 2010



Summary

This data quality assessment summarises the results of our review of the strengths of the 2009 NSW Health Patient Survey – in particular the subsection for non-admitted emergency patients. Through this focus we looked at patients who visited emergency departments in public hospitals in NSW and were not subsequently admitted to hospital. The data quality assessment aims to examine the quality of the survey data and opportunities for this survey to better support performance reporting to clinicians, the community and the NSW Parliament. Due to the technical nature of this narrative, a glossary of terms is provided.

The collection and use of patient survey data aligns with NSW Government initiatives to strengthen the public health system by measuring, monitoring and improving patient care experiences. Since 2007, the NSW Department of Health has conducted the largest patient experience survey program in Australia and one that rivals or exceeds the size of major survey initiatives in Europe and North America.

The NSW Department of Health commissioned two organisations to conduct the 2009 cross-sectional mailed survey to create performance estimates at the hospital, area health service and state levels. The survey design was a random sample, stratified by the volume of non-admitted emergency patients attending each public hospital. No additional stratification was applied and the samples were not stratified to reflect the age or gender structure of the emergency department, hospital or local populations. Therefore, the case-weights calculated take account of differences in response rates and emergency department volumes but not of age and/or gender response bias. The Bureau's staff verified the case-weights. The recruitment strategy was good, but only 32 per cent of non-admitted emergency patients returned useable questionnaires which suggests there is potential for response bias.

The response rate is comparable to a similar patient survey from Canada that sampled non-admitted emergency patients of all age groups. This assessment includes suggestions to support improvements in sampling, response rates and case-weight methods.

The NSW Department of Health used patient survey questionnaires developed by NRC+Picker from the United States, which are based on qualitative research regarding the dimensions of care that are important to patients. As such, the questionnaire has good face and content validity. We found insufficient published information to be able to assess the robustness of the survey questionnaire in terms of sensitivity, specificity and reliability.

The 2009 patient survey data for non-admitted emergency patients have been deemed by the Bureau to be of sufficient quality for performance measurement and public reporting.

The survey questionnaire for non-admitted emergency patients is lengthy and the creation of a shorter version may increase response rates and, thereby, reduce the potential for response bias. Statistical methods, such as factor analyses, could be conducted to identify a briefer set of questions which could measure care experiences and improve internal reliability and construct validity with a decreased burden on the respondent. A survey that includes a more limited set of questions about care experiences would create the opportunity to ask patients about the impact of care on health (i.e. health outcomes) as well as unintended complications (e.g. healthcare associated infections).

In this assessment, the Bureau has reviewed the patient survey tools with regard to the quality of the final data. The Bureau has made comments and recommendations on the non-admitted emergency department patient component of the survey programme.

NSW Health Patient Survey (non-admitted emergency department patients)

Strengths

Largest patient survey of emergency department care in Australia and one that rivals or exceeds the size of major survey initiatives in Europe, Europe and North America.

Survey questionnaire is based on qualitative research regarding the dimensions of care that are important to patients.

Supports performance estimates at the hospital, area health service and state levels.

Opportunities

Develop a shorter survey that measures care experiences that matter most to patients. Shortening the survey questionnaire would create the opportunity to ask patients about the impact of care on their health and about unexpected complications. This information would be valuable in the assessment of performance of emergency departments in NSW and understanding patient outcomes following care.

This data quality assessment outlines suggestions to improve survey sampling, response rates and case-weight methods.

Introduction

This Data Quality Assessment summarises the results of the Bureau of Health Information's review of the strengths of the 2009 NSW Health Patient Survey, the quality of the resultant survey data and opportunities to better support performance reporting to clinicians, the community and Parliament. Due to the technical nature of this assessment, a glossary of terms is provided.

To create this assessment, the Bureau's staff reviewed documents that the NSW Department of Health provided at our request, interviewed staff involved in managing the patient survey and analysed the 2009 data. Our focus was the survey of people who attended a NSW public hospital emergency department as a patient during February 2009, but were not subsequently admitted to the hospital (non-admitted emergency patients). Between May and July 2009, over 21,000 of these patients completed

questionnaires to share their first-hand experiences with care in emergency departments in NSW.

Patients who were admitted to hospital from emergency departments were excluded from this survey, as they were eligible to participate in other patient surveys. Survey participants needed to have completed information for first and last name and for postal address as all questionnaires were mailed out. The date of birth field needed to be complete to ensure that the questionnaire was sent to the parents of younger patients. Any patient who died in the emergency department was excluded as were all babies born during the sampling month. The patient survey is one of many initiatives implemented by the NSW Department of Health to understand and improve patient and caregiver experiences.

Sampling frame for the 2009 NSW Health Patient Survey: Non-admitted emergency patients

Included if:

- Attended a public hospital emergency department during February 2009 (including planned return visits, outpatient clinics and pre-arranged admissions)

Excluded if:

- Admitted to hospital as a result of the visit
- Died while in the emergency department or dead on arrival
- Missing first or last name
- Missing postal address
- Missing date of birth
- Missing primary diagnosis
- Date of birth is February 2009 (to exclude births in the sampling month)

Does the NSW Health Patient Survey measure what matters?

In 2007, the NSW Department of Health contracted IPSOS/Eureka in Australia and NRC+Picker in North America to conduct a cross-sectional patient survey. Between 2007 and 2009, the NSW Department of Health and these firms conducted the largest patient survey program of emergency department care in Australia and one that rivals or exceeds the size of major survey initiatives in Europe and North America.^{1,2}

The collection and use of patient survey data aligns with NSW and Australian initiatives to improve patient care experiences, specifically:

- In 2007, the NSW Minister for Health established the *State Health Plan: Towards 2010* that articulates the vision, goals and strategic directions of the public health system. One of the seven strategic directions was to “create better experiences for people using health services” and one strategy to gauge success was to “measure, report and improve customer satisfaction through annual patient satisfaction services and widespread local monitoring of patient experience.”³
- In 2008, the NSW government’s response to the *Special Commission of Inquiry into Acute Care Services in NSW Public Hospitals* was articulated in *Caring Together: The Health Action Plan for NSW*. One of the six major strategies in *Caring Together* was a commitment to creating better experiences for patients. Between 2007 and 2010, the NSW Department of Health has committed to undertake an array of initiatives to create better experiences for people using health services and to measure and report on progress.

- Between 2007 and 2010, the importance of creating better care experiences for patients has become a hallmark of the Australian Charter of Healthcare Rights,⁴ a proposed National Safety and Quality Framework⁵ and intergovernmental commitments.⁶

Opportunities to improve

The questionnaire of non-admitted emergency patients included 85 questions. Lengthy questionnaires pose an increased time burden on patients although evidence on whether longer questionnaires decrease response rate is equivocal.⁷ Lengthy questionnaires also increase the resources required to administer a survey and result in a large amount of information. While this information can prove useful to healthcare workers across NSW Health, it does require increased time to distil the most important findings.

The patient survey questionnaire could include a more limited set of questions about care experiences by focusing on measuring the dimensions of care most associated with patients overall views on quality in NSW.

- In order to create a shorter version of the survey to focus on these dimensions, scientific methods such as factor analyses could be used to identify a briefer set of questions and improve construct validity. Additionally, questions that ask for information contained within hospital record systems might be removed if this information was available as a sample field, for example, time spent waiting to see a doctor or nurse and postcode.

- At the same time, a long version of the questionnaire could be used with a small percentage of patients in NSW to ensure that a comprehensive set of data remains available to monitor any shift in the care experiences that underlie patient views on overall quality of care. The short version could be used for a survey sample from which to derive performance measures for hospitals, while the long version could be used to obtain results representative of area health services and to monitor the factors that underlie patient perspectives on quality of care.
- A survey that includes a more limited set of questions about care experiences would create the opportunity to ask patients about the impact of care on health (i.e. health outcomes) as well as unexpected complications (e.g. healthcare associated infections). Patient-reported outcomes are very difficult to measure with existing information systems in NSW but are a valid source of information regarding outcomes in different clinical areas.⁸ They have been used elsewhere to inform efforts to improve the beneficial impact of health services.^{9,10}

Does the NSW Health Patient Survey use robust survey methods?

In May 2009, survey questionnaires focusing on non-admitted emergency patients were mailed to a random sample 70,893 patients who were treated and discharged in February 2009 from emergency departments at a NSW public hospital. The recruitment strategy conformed to internationally-recognised best practice¹¹ with up to two reminders being sent out to participants in June and July 2009. A free telephone service with translation services for non-English participants was provided to assist patients and their carers with any queries and to allow patients to complete the questionnaire over the phone.

The focus was on recruitment of enough participants to ensure sufficient statistical power to create performance measures for hospitals, area health services, hospital peer groups and the state. The sampling design of the survey was a random sample, stratified by the number of emergency department patients at each hospital. Due to the limited information available in the sampling frame and therefore the sample, no case weight adjustments can be made to account for variation in responses across age, gender or morbidity groups nor can response bias be adequately assessed.

In the 2009 survey, only patients from those emergency departments with an electronic information system were invited to participate in the survey. This differed from the 2007 and 2008 surveys where all NSW emergency departments participated, and all emergency departments will again participate in 2010. The effect of this limited sample was a reduction of approximately 11 per cent in the total number of patients who were mailed questionnaires.

In 2009, 32 per cent of non-admitted emergency patients returned a useable questionnaire which suggests there is potential for response bias.¹² In 2007 and 2008 the response rates for non-admitted emergency patients was comparable at 28 per cent and 33 per cent.^{13,14} Unfortunately,

comparable response rates for surveys of non-admitted emergency patients within Australia are not available as NSW is the only state to conduct this type of survey. The Emergency Care Sector Survey conducted in British Columbia, Canada in 2007 sampled non-admitted emergency patients and achieved a comparable response rate to the 2009 NSW survey; 32 per cent of patients replied, ranging from 28 to 38 per cent across health authorities in that province. Critically, the age and gender structure of respondents differed from composition of those who were mailed surveys; older people and women being more likely to respond to the survey.¹⁵

In 2009, case weights for the NSW Health Patient Survey were calculated on the basis of the total number of emergency department patients who were treated but not admitted at each hospital to adjust for variation in the volume of care across emergency departments. The Bureau's staff verified the case weights assigned in 2009 and used these in its analyses. Due to the above-mentioned data limitations for the sample frame, no case weight adjustments were made by the two organisations commissioned by the NSW Department of Health to account for variation in responses across age, gender or morbidity groups.

In August 2009, the process and outcomes of the NSW Patient Survey were evaluated by the NSW Department of Health which made recommendations for improvement. A NSW Health Patient Survey Governance Committee established by the Department adopted all recommendations for the survey programme and implementation of these changes has resulted in significant change to the survey programme.

NSW Department of Health staff report that the 2010 NSW Health Patient Survey will transition from collection of patient data once each year to more regular data collection throughout the year. Patients will be given the option to complete the survey by mail or online with some people given the option to complete by telephone. The results will be distributed

to each hospital using a web based application and the general public will be able to access aspects of the results through the web. These changes will improve access to data by health service managers, frontline staff and the public.

Opportunities to improve

The sampling strategy has been designed to recognise that hospitals across NSW have very different service volumes; it does not recognise differences in the demographic and health status of patients who visit different emergency departments. Since the age and health of patients influences the likelihood that they will complete a survey or report positive experiences with care,¹⁶ one way to minimise response bias is to use a sampling strategy and/or case weight methods that accounts for these patient characteristics and/or survey methods that optimise response rates and, thereby, minimise response bias.

The NSW Department of Health's sampling frame included age in the sample information to allow identification of younger patients so the appropriate information letter could be sent to the parents or guardians of children. The sampling frame provides a title for each participant to allowing gender distinction, Mr for male participants and Ms for female participants. This information was not included in the final survey dataset and data on the age and gender composition of the sample has not been compiled. The questionnaire collected age and gender information and this information is available for those who returned the questionnaire (32% of the sample). Due to the unavailability of this demographic information for the whole of the survey sample, the Bureau cannot quantify what, if any, response bias occurred in the survey and cannot adequately compensate for this by application of case weights to the data. Ensuring that accurate demographic information is both collected and used from hospital records for every patient in the sample would improve our understanding of the relevance of the data.

Response bias might also be reduced by increasing response rates so they are much higher than the 32 per cent achieved for this survey. The response rate for this survey might improve if a shorter version of the questionnaire were used and through consideration of additional recruitment strategies.^{17,18}

Does the NSW Health Patient Survey use a robust survey questionnaire?

The NRC+Picker patient survey questionnaire measures dimensions of care identified in qualitative research as important to patients.¹⁹ Thus, it has face validity for the population it was initially developed for. Modifications to the content of the questionnaire have come about through consultation with the NSW Department of Health and other stakeholders, thus providing content validity.

There is insufficient published evidence to establish the survey questionnaire's concurrent validity, reliability, sensitivity and specificity.

Opportunities to improve

The NSW Department of Health could require documentation to substantiate the validity, reliability and sensitivity of the questionnaire through its contractual relationship with NRC+Picker and other survey research firms.

Investigation into the robustness of the survey tools could also be facilitated through comparisons with how the tool has been used in other countries. Since the NRC+Picker survey was used in NSW and has been used in North America, there are opportunities to compare NSW to jurisdictions on that continent. Additionally, some of the questions on the NRC+Picker survey are similar to the Picker Institute Europe survey – again, there are opportunities to compare NSW to jurisdictions in Europe. This would require special purpose analyses to create fair comparisons since different jurisdictions measure care experiences among slightly different groups of patients.

Since most states use different questionnaires in their survey programmes, there have been few opportunities to compare NSW to the rest of Australia. The Australian Bureau of Statistics has conducted a care experiences survey of the general public and has published interstate comparisons of performance starting in July 2010. The Bureau of Health Information and other organisations commissioned a care experiences survey of the general public in NSW and ten other countries and will publish international comparisons of performance in November 2010.

Greater use could be made of the survey data if the questionnaires used across all Australian states were standardised. This would provide NSW with increased context at a state level and would have a much wider audience including national government. It would be necessary to ensure the questionnaire is appropriate to all Australian jurisdictions and to reassess face and content validity.

Does the NSW Health Patient Survey use a robust approach to reporting results?

The NSW Department of Health has released public reports following implementation of the survey in 2007, 2008 and 2009. Those reports include information on state-wide performance and some information about area health services and hospitals. Results have not been standardised to support comparisons between hospitals and area health services which vary in patient characteristics known to influence ratings, such as age and health status.

The Department of Health staff report that the general public will be able to access aspects of the survey results through the web in 2010. These planned improvements aim to improve the public's access to data.

Opportunities to improve

The NSW Health Patient Surveys provide data on the experiences of patients of publically provided healthcare since 2007. Additional analysis of this data can provide insight into what is most important to patients and the Bureau's reports *Insights into Care: Patients' Perspectives on NSW Public Hospitals* and *Hospital Quarterly: April to June 2010* provide examples of how the results of a complex patient survey can be distilled to provide the community with important information regarding the performance of the NSW public health system.

The survey could be promoted to hospitals as a tool to identify best practice in, and learn from, other hospitals' emergency departments and for patients to understand what standard of care they should expect at emergency departments in NSW. To support fair comparisons for the purposes of public reporting, patient ratings of care experiences should be standardised statistically to show how emergency departments in public hospitals would rate if they served very similar populations of patients. The process of standardisation is important because different emergency departments provide services to different kinds of people with different illnesses and severity of illness. These differences can impact patients' ratings of care independently of the quality of the care healthcare professionals give them.

The Bureau's findings that patient characteristics are associated with their ratings of quality of care align with results of a systematic review of international evidence.^{20,21} These findings underscore the necessity of standardisation in order to make comparisons fairer, when comparing between organisations or over time.

Appendix 1: Participating emergency departments in the NSW Health Patient Survey 2009

	Peer group	Area health service
Principal referral hospitals (A1)		
Concord Hospital	A1	SSWAHS
Gosford Hospital	A1	NSCCAHS
John Hunter Hospital	A1	HNEAHS
Liverpool Hospital	A1	SSWAHS
Nepean Hospital	A1	SWAHS
Prince of Wales Hospital	A1	SESAHS
Royal North Shore Hospital	A1	NSCCAHS
Royal Prince Alfred Hospital	A1	SSWAHS
St George Hospital	A1	SESAHS
St Vincent's Hospital	A1	SESAHS
Westmead Hospital	A1	SWAHS
Wollongong Hospital	A1	SESAHS
Paediatric specialist hospitals (A2)		
Sydney Children's Hospital	A2	SESAHS
The Children's Hospital at Westmead	A2	CHW
Ungrouped acute – tertiary referral hospitals (A3)		
Calvary Mater Hospital - Newcastle	A3	HNEAHS
Sydney Eye Hospital	A3	SESAHS
Sydney Hospital	A3	SESAHS
Major metropolitan (BM)		
Auburn Hospital	BM	SWAHS
Bankstown - Lidcombe Hospital	BM	SSWAHS
Blacktown Hospital	BM	SWAHS
Campbelltown Hospital	BM	SSWAHS
Canterbury Hospital	BM	SSWAHS
Fairfield Hospital	BM	SSWAHS
Hornsby and Ku-Ring-Gai Hospital	BM	NSCCAHS
Manly District Hospital	BM	NSCCAHS
Mona Vale and District Hospital	BM	NSCCAHS
Sutherland Hospital	BM	SESAHS
Wyong Hospital	BM	NSCCAHS

* In 2009, 85 of the 189 emergency departments participated in the NSW Health Patient Survey compared with all emergency departments in the 2007 and 2008 surveys.

Major non-metropolitan hospitals (BMN)

Coffs Harbour Base Hospital	BNM	NCAHS
Dubbo Base Hospital	BNM	GWAHS
Lismore Base Hospital	BNM	NCAHS
Manning Hospital	BNM	HNEAHS
Orange Base Hospital	BNM	GWAHS
Port Macquarie Base Hospital	BNM	NCAHS
Shoalhaven and District Memorial Hospital	BNM	SESIAHS
Tamworth Hospital	BNM	HNEAHS
The Maitland Hospital	BNM	HNEAHS
The Tweed Hospital	BNM	NCAHS
Wagga Wagga Base Hospital	BNM	GSAHS

District group 1 hospitals (C1)

Armidale Hospital	C1	HNEAHS
Bathurst Base Hospital	C1	GWAHS
Belmont District Health Service	C1	HNEAHS
Bowral and District Hospital	C1	SSWAHS
Broken Hill Health Service	C1	GWAHS
Goulburn Base Hospital	C1	GSAHS
Grafton Base Hospital	C1	NCAHS
Griffith Base Hospital	C1	GSAHS
Hawkesbury District Health Service	C1	SWAHS
Mount Druitt Hospital	C1	SWAHS
Ryde Hospital	C1	NSCCAHS
Shellharbour Hospital	C1	SESIAHS

District group 2 hospitals (C2)

Blue Mountains District Anzac Memorial Hospital	C2	SWAHS
Bulli District Hospital	C2	SESIAHS
Camden Hospital	C2	SSWAHS
Cessnock District Health Service	C2	HNEAHS
Gunnedah District Health Service	C2	HNEAHS
Inverell District Health Service	C2	HNEAHS
Kempsey District Hospital	C2	NCAHS
Kurri Kurri District Health Service	C2	HNEAHS
Lithgow Health Service	C2	SWAHS
Milton and Ulladulla Hospital	C2	SESIAHS
Moree District Health Service	C2	HNEAHS
Murwillumbah District Hospital	C2	NCAHS
Muswellbrook District Health Service	C2	HNEAHS
Narrabri District Health Service	C2	HNEAHS
Singleton District Health Service	C2	HNEAHS

Community acute – surgery hospitals (D1a)

Glen Innes District Health Service	D1a	HNEAHS
Gloucester District Health Service	D1a	HNEAHS
Quirindi District Health Service	D1a	HNEAHS
Scone District Health Service	D1a	HNEAHS

Community acute – non-surgery hospitals (D1b)

Buladelah Community Hospital	D1b	HNEAHS
Tenterfield Community Hospital	D1b	HNEAHS
Tomaree Community Hospital	D1b	HNEAHS
Wee Waa Community Hospital	D1b	HNEAHS

Community non-acute hospitals (D2)

Bingara Community Hospital	D2	HNEAHS
Dungog Community Hospital	D2	HNEAHS
Guyra Community Hospital	D2	HNEAHS
Manilla District Health Service	D2	HNEAHS
Merriwa Community Hospital	D2	HNEAHS
Tingha Community Hospital	D2	HNEAHS
Walcha Community Hospital	D2	HNEAHS
Warialda Community Hospital	D2	HNEAHS
Werris Creek Community Hospital	D2	HNEAHS
Wilson Memorial Community Hospital	D2	HNEAHS

Multi-purpose service hospitals (F3)

Barraba Multi-Purpose Service	F3	HNEAHS
Boggabri Multi-Purpose Service	F3	HNEAHS
Denman Multi-Purpose Service	F3	HNEAHS

Glossary

Case weights – are numeric values used by analysts to account mathematically for the degree to which participants in the survey are representative of the underlying population.

Concurrent validity – the degree to which the survey results correlate with other measures of the same construct that are measured at the same time.

Construct validity – the different constructs or dimensions of care that the survey questionnaire attempts to measure such as access to care, staff courtesy, etc. and the degree to which they represent the totality of what is important.

Factor analysis – is a statistical assessment of the degree to which each question adds value to the measure of each dimension or, conversely, does not add value. It is often used to ensure that survey questions measure different constructs and to minimise duplicate of question topics.

Face validity – whether a survey, on the face of it, represents all of the types of experiences that clinicians or patients would agree influence quality of care.

Reliability – refers to the consistency of a survey in measuring performance. This means the survey obtains the same or very similar measurements of performance when actual care experience has not changed between them.

Response bias – occurs when not all patients complete a survey and those that do are not representative of all patients. A robust sampling strategy, high participation rates and appropriate use of case weights in the analysis will minimise this bias.

Sampling frame – the list of people who are eligible to be recruited to participate in the survey.

Sampling strategy – refers to research methods used to identify those patients to be invited to complete a survey. This process should ensure that patients who receive the survey are as representative of all patients as possible.

Sensitivity – the degree to which a survey detects differences in care experiences between hospitals or area health services, or over time, when there are true differences or changes in care experiences.

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About the Bureau

The Bureau of Health Information was established in 2009 as an independent, board-governed organisation established by the NSW Government to be the leading source of information on the performance of the public health system in NSW.

Our Mission

The Bureau provides the community, healthcare professionals and the NSW Parliament with timely, accurate and comparable information about the performance of the NSW public health system in ways that enhance the system's accountability and inform efforts to increase its beneficial impact on the health and well being of people in NSW.

The Bureau of Health Information is a statutory health corporation. The conclusions in this report are those of the Bureau of Health Information and no official endorsement by the NSW Minister for Health, the NSW Department of Health or any other NSW statutory health corporation is intended or should be inferred.

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