

Technical Supplement: Adult Admitted Patient Survey, 2016

February 2018

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Please note that there is the potential for minor revisions of information in this report. Please check the online version at bhi.nsw.gov.au for any amendments.

The NSW Patient Survey Program

The NSW Patient Survey Program began surveying patients in NSW public facilities from 2007. From 2007 to mid-2012, the program was coordinated by the NSW Ministry of Health using questionnaires obtained under license from NRC Picker. Ipsos Social Research Institute Ltd (Ipsos) was contracted to manage the logistics of the survey program. Responsibility for the Patient Survey Program was transferred from the Ministry of Health to the Bureau of Health Information (BHI) in November 2012.

The aim of the survey program is to measure and report on patients' experiences of care in public health facilities in New South Wales (NSW), on behalf of the NSW Ministry of Health and the local health districts (LHDs). The results are used as a source of performance measurement for individual hospitals, LHDs and NSW as a whole.

This document outlines the sampling methodology, data management and analysis of the 2016 Adult Admitted Patient Survey (AAPS).

For information on changes to the questionnaire between 2016 and 2014, please refer to the *Development Report* at bhi.nsw.gov.au/nsw_patient_survey_program

For more information on how to interpret results and whether differences in the results between hospitals, LHDs or NSW are statistically different, please refer to the BHI *Guide to Interpreting Survey Differences* at bhi.nsw.gov.au/nsw_patient_survey_program

Organisational roles in producing survey samples

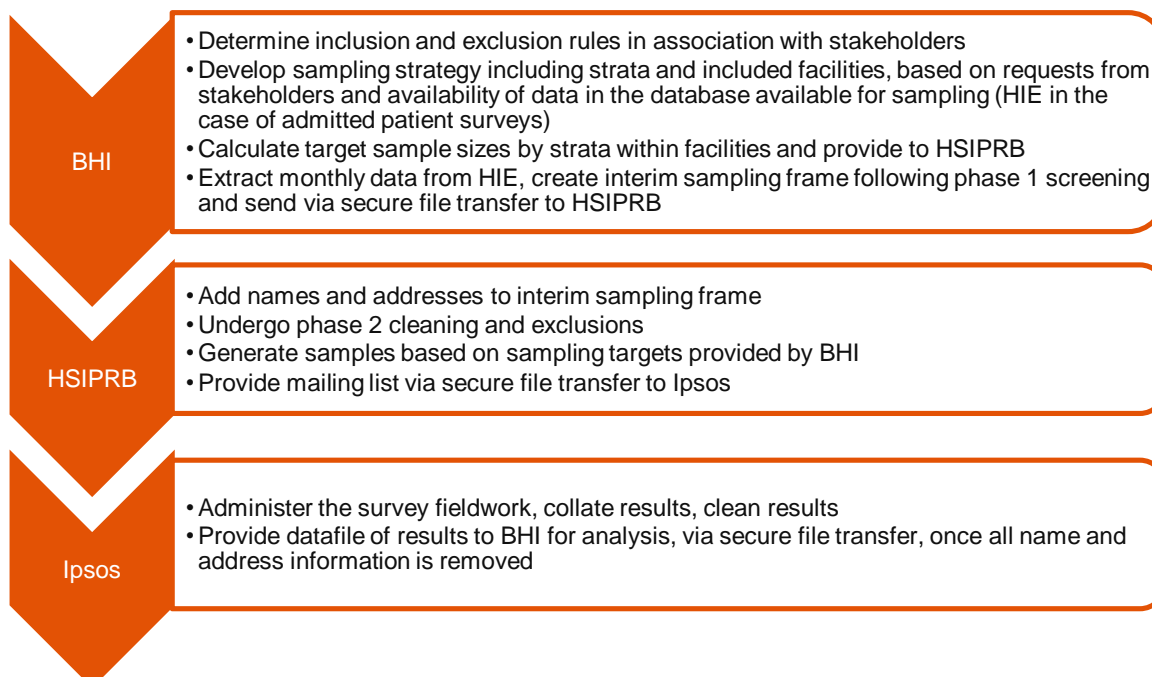
The survey program assures patients that their responses will be confidential and that staff at hospitals will not be able to determine who gave which response. BHI does this through a number of mechanisms, including:

- Data suppression (results for fewer than 30 responses are suppressed)
- Reporting aggregated results
- Anonymisation of patient comments
- Segregation of roles when constructing the survey samples (see below).

The sampling method for the survey program is a collaboration between BHI, Ipsos and the NSW Ministry of Health's Health Systems Information and Performance Reporting Branch (HSIPRB) (see Figure 1). All surveys of admitted patients use data from the Health Information Exchange (HIE).

BHI has access to de-identified unit record data from selected tables of the HIE database. Use of an encrypted patient number allows deduplication of patients within a hospital. For the AAPS, sampling frames are defined separately for each month, with the date at discharge used to define eligible records. Sample sizes for each included hospital are calculated in advance, as defined later in this report.

Figure 1 Organisational responsibilities in sampling and survey processing, Adult Admitted Patient Survey, 2016



Inclusion criteria

Phase 1 screening

Admitted patient data pass through two phases of screening. Phase 1 screening is conducted by BHI.

Inclusions

- Admitted patients aged 18 years and older
- Admitted to a facility with a peer group classification of:
 - A1: Principal referral
 - A3: Ungrouped acute – tertiary referral
 - B: Major hospitals group 1
 - C1: District group 1
 - C2: District group 2.

Exclusions

- Facilities where there were fewer than 100 admissions in the previous 12 months
- Patients who died during their hospital admission – mode of separation of 6 (Death with autopsy) or 7 (Death without autopsy)
- Patients receiving Acute and Post-Acute Care (APAC) services
- Patients who are not receiving either acute or rehabilitation care in hospital (Episode of care types 1 and 2)
- Patients who were admitted to a psychiatric unit during the hospital stay
- Patients with a personal history of self-harm (ICD-10 Z91.5) or who have intentionally self-harmed (ICD-10 X60-X84, Y87.0, Y34)
- Patients with a family history of mental or behavioural disorders (ICD-10 Z81.8) and patients who have expressed suicidal ideation (ICD-10 R45.81)
- Patient recorded with maltreatment syndromes (ICD-10 T74) in any diagnosis field, including neglect or abandonment, physical abuse, sexual abuse, psychological abuse, other maltreatment syndromes and maltreatment syndrome, unspecified
- Patients who gave birth during their admission (ICD-10 Z37.0, Z37.2, O80-O84, or procedure codes of 90467, 90468, 90469, 90470 or 16520)
- Patients who experienced a stillbirth (ICD-10 Z37.1, Z37.3, Z37.4, Z37.6, Z37.7)
- Patients who experienced pregnancy with an abortive outcome (ICD-10 O00-O08)
- Patients admitted for a termination of pregnancy procedure (ICD-10 35643-03, 35640-03)
- Patients admitted for same-day haemodialysis – code 13100-00 in any procedure fields
- Same day patients who stayed for less than three hours
- Same day patients transferred to another hospital

- Patients recorded as receiving contraceptive management (ICD-10 Z30) in any diagnosis field, including general counselling and advice on contraception, surveillance of contraceptive drugs, surveillance of contraceptive device, other contraceptive management and contraceptive management, unspecified.

Where patients had multiple visits within the sampling month, their most recent hospital stay was retained for sampling. The questionnaire instructs the patient to respond to the survey based on their most recent admission in a particular month.

Phase 2 screening

BHI provides the interim sampling frame to HSIPRB, who add patient name and address information. Data then undergo a second phase of screening. This review results in exclusions for administrative/logistical reasons, or where death had been recorded after discharge for the stay used for sample selection, but before the final sampling frame is prepared.

Exclusions

Patients meeting the following exclusion criteria are removed in this phase:

- Invalid address (including those with addresses listed as hotels, motels, nursing homes, community services, Mathew Talbot Hostel, 100 William Street, army quarters, jails, “unknown”)
- Invalid name (including twin, baby of)
- Invalid date of birth
- On the ‘do not contact’ list
- Sampled in the previous six months for any BHI patient survey currently underway
- Recorded as deceased according to the NSW Birth Deaths and Marriages Registry and/or Agency Performance and Data Collection, prior to the sample being provided to Ipsos.

The data following these exclusions are defined by BHI as the final sampling frame.

Drawing of the sample

Survey design

A stratified sample design was applied, with each facility defined as a stratum. Within each facility, patients were further stratified by the following variables:

- Age – 18–49 or 50 years and over (including patients with missing age data), based on the age variable
- Stay type – same day or overnight admission, based on the start and end times of the last hospital stay in the month.

Simple random sampling without replacement was applied within each stratum.

Calculation of sample sizes and reporting frequency

Monthly sample sizes were determined prior to the commencement of the survey year. These calculations were based on data extracted from the HIE for the previous 12-month period, using the inclusion and exclusion criteria described in section Phase 1 screening (see page 3).

All facilities were sampled on the basis of quarterly reporting, with the exception of Bulli District Hospital, which did not have sufficient patient volumes for quarterly reporting. The reporting frequency for each facility included in the survey is shown later in the report (Table 2).

Equation 1 was used to estimate the sample size per year:

$$S_i = \frac{\chi^2 NP(1-P)}{d^2(N_i-1) + \chi^2 P(1-P)} \times R_i \quad (1)$$

Where:

s_i = desired sample size for facility i

χ^2 = tabulated value of chi-squared with one degree of freedom at 5% level of significance (3.841)

N_i = patient population of facility i

P = expected proportion giving positive response to the question on satisfaction with overall care (0.8), based on previous levels of response to patient surveys

d = degree of accuracy of the 95% confidence interval expressed as a proportion (± 0.07)

R_i = number of reporting periods per year for facility i .

Sample sizes were allocated proportionately across each stratum of age group and stay type.

Sample sizes were adjusted to account for expected response rates. For this survey, the expected response rates were:

- 18–49 years: 30%
- 50+ years: 60%.

Monthly survey targets were provided to HSIPRB after dividing the inflated sample size evenly by 12, and applying a minimum monthly sample size of at least four to each sampling stratum. For each month of sampling, HSIPRB randomly selects patients within each facility and stratum, with the aim of achieving the targets provided by BHI.

Notes:

- Because the patient population at RPAH Institute of Rheumatology & Orthopaedics is relatively small, it was pooled with the Royal Prince Alfred Hospital for calculation of sample size. After calculation, the sample for these combined facilities were proportionately allocated, by strata.

Data management

Data collection

Upon completion of a survey questionnaire, the respondent either mails a paper-based questionnaire or submits the survey responses online to Ipsos. If a paper form is returned, Ipsos scans in the answers electronically and manually enters free text fields.

Once all data are collated into a single dataset, names and addresses are removed from the dataset. Also, all text entry fields are checked for potential identifiers (names of patients, names of doctors, telephone numbers, etc.) and any that are found are replaced with 'XXXX'.

Following this, each record is checked for any errors in completion. Where necessary, adjustments are made, such as removing responses where the patient has not correctly followed questionnaire instructions or where the respondent has provided multiple answers to a single response question.

At the end of this process, Ipsos uses a secure NSW Ministry of Health system to transfer the data from their servers to BHI's secure servers, all of which are password protected with limited staff access.

At no stage does BHI, who analyse the data, have access to the names and contact details of respondents. This ensures that respondent answers remain confidential and identifying data can never be publicly released.

Data analysis

Completeness of survey questionnaires

Survey completeness is a measure of how many questions each respondent answered as a proportion of all questions in the questionnaire. The level of survey completeness was high overall, with respondents answering, on average, 76 out of the 97 of the non-text questions. Over 90% of respondents answered up to 84 questions.

Weighted response rate

Younger patients were oversampled to ensure greater representation of these patients in the respondent profile. As a result, the distribution of patients in the sample does not necessarily match the distribution of patients in the population. Therefore, response rates were weighted to ensure that the overall survey response rate reflects a response rate that would be observed if patients were sampled in proportion to the patient mix. For more details about the calculation of weighted response rates, refer to the *2014 Adult Admitted Patient Survey Technical Supplement*.

The overall weighted response rate was 42%. At the LHD level, this ranged from 34% to 50%; at the facility level, this ranged from 28% to 64%. Response rates at LHD and facility level are provided in Tables 2 and 3 respectively, later in the document.

Weighting of data

Responses from the survey were weighted to ensure that results from respondents are representative of the overall patient population. At the LHD and NSW level, weights also ensure that the different sampling proportions used at the facility level are accounted for, so that LHD results are not unduly influenced by small facilities that had larger sampling proportions.

For each reporting period, responses were weighted to match the population by facility and, where appropriate, by stay type (same-day or overnight) and age (18–49 or 50+ years). Weights were calculated as follows.

An initial weight was calculated for respondents in each stratum using Equation 2:

$$w_i = \frac{N_i}{n_i} \quad (2)$$

where:

N_i = total number of patients eligible for the survey in the i^{th} stratum

n_i = number of respondents in the i^{th} stratum.

Where sampling was stratified within a facility, if the stratum cell size was five or fewer, cells were aggregated prior to weighting, provided that the aggregation did not increase the weights allocated to the cell with the small sample size.

In general, for surveys that include facilities sampled on the basis of quarterly reporting, weights were calculated for each quarter of data. Otherwise, weights were calculated for 12 months of data combined. For the 2016 Adult Admitted Patient Survey, weights were calculated separately for each quarter for all facilities. These weights were used for analyses at both the quarterly and annual levels.

Assessment of weights

Weights were assessed to ensure that undue emphasis is not applied to individual responses. The ratio of the maximum to median weight at the facility level was reviewed. For this survey, this ranged from 1.3 to 5.8.

The design effect (DEFF) estimates the increase in the variance of estimates due to the complex sample design over that of a simple random sample. It is estimated as $(1 + \text{coefficient of variance (weights)}^2)$. Sample sizes, weighted response rates and DEFFs are shown in Table 1 (by LHD and NSW) and Table 2 (by facility).

A DEFF of two indicates that the variance of estimates will be double the sample variance that would have been obtained if simple random sampling had been done. Generally speaking, LHDs with the largest DEFFs are those that have the greatest range in patient volumes across the facilities within the LHD. The standard errors at the LHD level are fairly small because of the sample sizes at that level. Therefore the increase in standard errors caused by the survey design (and leading to a larger DEFF at LHD level) is more than offset by the fact that each facility that is sampled has sufficient sample size to allow facility-level reporting. In addition, the estimates at the LHD level have appropriate distribution of respondents between large and small facilities.

Table 1 Sample size, response rates and design effects (DEFF), by LHD and overall, AAPS, January to December 2016

| LHD | Surveys mailed | Survey responses | Weighted response rate (%) | DEFF |
|-----------------------------|-----------------------|-------------------------|-----------------------------------|-------------|
| Central Coast | 2,033 | 808 | 45 | 1.2 |
| Far West | 916 | 314 | 39 | 1.1 |
| Hunter New England | 13,313 | 5,325 | 44 | 2.2 |
| Illawarra Shoalhaven | 3,548 | 1,543 | 47 | 2.0 |
| Mid North Coast | 4,206 | 1,607 | 42 | 2.1 |
| Murrumbidgee | 4,119 | 1,901 | 50 | 1.8 |
| Nepean Blue Mountains | 2,847 | 1,119 | 41 | 2.7 |
| Northern NSW | 6,589 | 2,856 | 48 | 2.1 |
| Northern Sydney | 5,207 | 1,931 | 41 | 1.4 |
| South Eastern Sydney | 5,508 | 1,887 | 41 | 1.6 |
| South Western Sydney | 5,425 | 2,323 | 48 | 1.1 |
| Southern NSW | 1,111 | 322 | 34 | 1.0 |
| St Vincent's Health Network | 5,699 | 1867 | 36 | 1.6 |
| Sydney | 3,493 | 1,163 | 37 | 1.1 |
| Western NSW | 6,005 | 2,364 | 43 | 1.7 |
| Western Sydney | 4,575 | 1,363 | 34 | 1.8 |
| NSW | 74,594 | 28,693 | 42 | 2.2 |

Table 2 Sample size, response rates and design effects (DEFF), by facility, AAPS, January to December 2016

| Facility name | Reporting period | Surveys mailed | Survey responses | Weighted response rate (%) | DEFF |
|---------------------------------------|------------------|----------------|------------------|----------------------------|------|
| Armidale and New England Hospital | Quarterly | 972 | 386 | 46 | 1.1 |
| Auburn Hospital | Quarterly | 1,185 | 291 | 28 | 1.1 |
| Ballina District Hospital | Quarterly | 846 | 403 | 53 | 1.1 |
| Bankstown / Lidcombe Hospital | Quarterly | 1,072 | 319 | 33 | 1.0 |
| Bateman's Bay District Hospital | Quarterly | 790 | 373 | 53 | 1.1 |
| Bathurst Base Hospital | Quarterly | 1021 | 377 | 42 | 1.1 |
| Bellinger River District Hospital | Quarterly | 446 | 231 | 53 | 1.4 |
| Belmont Hospital | Quarterly | 1010 | 433 | 49 | 1.1 |
| Blacktown Hospital | Quarterly | 1120 | 338 | 33 | 1.0 |
| Blue Mountains District Anzac | Quarterly | 886 | 398 | 47 | 1.1 |
| Bowral and District Hospital | Quarterly | 919 | 412 | 49 | 1.1 |
| Broken Hill Base Hospital | Quarterly | 916 | 314 | 39 | 1.1 |
| Byron Central Hospital * | Quarterly | 305 | 100 | 36 | 1.1 |
| Calvary Mater Newcastle | Quarterly | 964 | 403 | 46 | 1.0 |
| Camden Hospital | Quarterly | 385 | 170 | 46 | 1.2 |
| Campbelltown Hospital | Quarterly | 1107 | 369 | 38 | 1.1 |
| Canterbury Hospital | Quarterly | 1,092 | 352 | 35 | 1.0 |
| Casino and District Memorial Hospital | Quarterly | 797 | 362 | 48 | 1.1 |
| Cessnock District Hospital | Quarterly | 885 | 352 | 44 | 1.1 |
| Coffs Harbour Base Hospital | Quarterly | 1008 | 405 | 46 | 1.1 |
| Concord Hospital | Quarterly | 1,026 | 342 | 37 | 1.1 |
| Cooma Health Service | Quarterly | 827 | 339 | 45 | 1.1 |
| Cowra District Hospital | Quarterly | 780 | 318 | 46 | 1.1 |
| Deniliquin Health Service | Quarterly | 745 | 306 | 46 | 1.1 |
| Dubbo Base Hospital | Quarterly | 1036 | 379 | 42 | 1.1 |
| Fairfield Hospital | Quarterly | 1,126 | 299 | 29 | 1.0 |
| Forbes District Hospital | Quarterly | 647 | 266 | 44 | 1.2 |
| Gosford Hospital | Quarterly | 1042 | 404 | 45 | 1.1 |
| Goulburn Base Hospital | Quarterly | 949 | 412 | 49 | 1.0 |
| Grafton Base Hospital | Quarterly | 978 | 446 | 52 | 1.1 |
| Griffith Base Hospital | Quarterly | 999 | 305 | 36 | 1.1 |
| Gunnedah District Hospital | Quarterly | 647 | 249 | 41 | 1.3 |
| Hornsby and Ku-Ring-Gai Hospital | Quarterly | 1033 | 396 | 41 | 1.0 |
| Inverell District Hospital | Quarterly | 855 | 333 | 44 | 1.1 |
| John Hunter Hospital | Quarterly | 1091 | 389 | 41 | 1.1 |
| Kempsey Hospital | Quarterly | 900 | 428 | 55 | 1.1 |
| Kurri Kurri District Hospital | Quarterly | 742 | 453 | 64 | 1.0 |
| Lismore Base Hospital | Quarterly | 1052 | 426 | 48 | 1.1 |
| Lithgow Health Service | Quarterly | 831 | 385 | 51 | 1.1 |
| Liverpool Hospital | Quarterly | 1090 | 298 | 31 | 1.0 |

| Facility name | Reporting period | Surveys mailed | Survey responses | Weighted response rate (%) | DEFF |
|---------------------------------------|------------------|----------------|------------------|----------------------------|------|
| Macksville District Hospital | Quarterly | 783 | 405 | 56 | 1.1 |
| Maclean District Hospital | Quarterly | 655 | 327 | 54 | 1.2 |
| Maitland Hospital | Quarterly | 1066 | 398 | 43 | 1.1 |
| Manly District Hospital | Quarterly | 1,074 | 363 | 39 | 1.1 |
| Manning Base Hospital | Quarterly | 952 | 442 | 52 | 1.0 |
| Milton and Ulladulla Hospital | Quarterly | 575 | 288 | 52 | 1.1 |
| Mona Vale and District Hospital | Quarterly | 1009 | 386 | 44 | 1.0 |
| Moree District Hospital | Quarterly | 684 | 220 | 35 | 1.2 |
| Moruya District Hospital | Quarterly | 892 | 385 | 49 | 1.1 |
| Mount Druitt Hospital | Quarterly | 1138 | 419 | 43 | 1.1 |
| Mudgee District Hospital | Quarterly | 801 | 350 | 48 | 1.1 |
| Murwillumbah District Hospital | Quarterly | 906 | 419 | 52 | 1.1 |
| Muswellbrook District Hospital | Quarterly | 841 | 293 | 39 | 1.2 |
| Narrabri District Hospital | Quarterly | 618 | 234 | 40 | 1.2 |
| Nepean Hospital | Quarterly | 1130 | 336 | 35 | 1.1 |
| Orange Health Service | Quarterly | 1,014 | 373 | 42 | 1.1 |
| Parkes District Hospital | Quarterly | 706 | 301 | 45 | 1.1 |
| Port Macquarie Base Hospital | Quarterly | 982 | 432 | 51 | 1.1 |
| Prince of Wales Hospital | Quarterly | 1085 | 335 | 35 | 1.0 |
| Queanbeyan Health Service | Quarterly | 1,014 | 394 | 42 | 1.1 |
| Royal Hospital for Women | Quarterly | 1351 | 427 | 34 | 1.0 |
| Royal North Shore Hospital | Quarterly | 1,092 | 409 | 42 | 1.0 |
| Royal Prince Alfred Hospital | Quarterly | 1,375 | 469 | 38 | 1.0 |
| Ryde Hospital | Quarterly | 999 | 377 | 41 | 1.1 |
| Shellharbour Hospital | Quarterly | 939 | 443 | 52 | 1.0 |
| Shoalhaven District Memorial Hospital | Quarterly | 981 | 438 | 51 | 1.0 |
| Singleton District Hospital | Quarterly | 952 | 332 | 42 | 1.2 |
| South East Regional Hospital | Quarterly | 953 | 420 | 50 | 1.0 |
| St George Hospital | Quarterly | 1,056 | 338 | 36 | 1.1 |
| St Vincent's Hospital, Darlinghurst | Quarterly | 1,111 | 322 | 34 | 1.0 |
| Sutherland Hospital | Quarterly | 976 | 407 | 46 | 1.1 |
| Sydney/Sydney Eye Hospital | Quarterly | 1,040 | 380 | 44 | 1.1 |
| Tamworth Base Hospital | Quarterly | 1,034 | 408 | 44 | 1.1 |
| The Tweed Hospital | Quarterly | 1,050 | 373 | 42 | 1.1 |
| Tumut Health Service | Quarterly | 627 | 251 | 42 | 1.3 |
| Wagga Wagga Base Hospital | Quarterly | 1,042 | 411 | 44 | 1.1 |
| Westmead Hospital | Quarterly | 1,132 | 315 | 30 | 1.0 |
| Wollongong Hospital | Quarterly | 1,053 | 374 | 41 | 1.0 |
| Wyong Hospital | Quarterly | 991 | 404 | 46 | 1.1 |
| Young Health Service | Quarterly | 793 | 334 | 48 | 1.2 |

* Data for Byron Central Hospital were only from August to December 2016.

Comparing weighted and unweighted patient characteristics

One of the aims of weighting is to ensure that, after weighting, the characteristics of the respondents closely reflect the characteristics of the patient population.

Table 3 shows the demographic characteristics of respondents against the patient population. The four columns denote:

1. % in patient population – the patient population prior to the phase 2 screening process
2. % in eligible population – final sampling frame from which the sample is drawn. Limited demographic variables are available at this level.
3. % in respondents – respondents to survey, not adjusted for unequal sampling
4. % in respondents (weighted) – respondents to survey, adjusted by weighting to be representative of the patient population.

Table 3 Demographic characteristics of patient population vs respondents to survey, AAPS, January to December 2016

| Demographic variable | Sub-group | % in patient population | % in eligible population | % in respondents (unweighted) | % in respondents (weighted) |
|----------------------|--|-------------------------|--------------------------|-------------------------------|-----------------------------|
| LHD | Central Coast | 5 | 5 | 3 | 5 |
| | Far West | 0 | 0 | 1 | 0 |
| | Hunter New England | 12 | 12 | 19 | 12 |
| | Illawarra Shoalhaven | 5 | 5 | 5 | 5 |
| | Mid North Coast | 4 | 5 | 7 | 5 |
| | Murrumbidgee | 3 | 3 | 6 | 3 |
| | Nepean Blue Mountains | 4 | 4 | 4 | 4 |
| | Northern NSW | 6 | 6 | 10 | 6 |
| | Northern Sydney | 9 | 9 | 7 | 9 |
| | South Eastern Sydney | 9 | 10 | 7 | 10 |
| | South Western Sydney | 13 | 13 | 7 | 13 |
| | Southern NSW | 3 | 2 | 8 | 2 |
| | St Vincent's Health Network | 3 | 3 | 1 | 3 |
| | Sydney | 9 | 9 | 4 | 9 |
| | Western NSW | 4 | 4 | 8 | 4 |
| Western Sydney | 11 | 10 | 5 | 10 | |
| Peer group | A1 | 47 | 48 | 16 | 48 |
| | A3 | 3 | 3 | 4 | 3 |
| | B | 34 | 34 | 28 | 34 |
| | C1 | 9 | 8 | 18 | 8 |
| | C2 | 8 | 6 | 33 | 6 |
| Age stratum | 18–49 | 32 | 33 | 23 | 32 |
| | 50+ | 68 | 67 | 77 | 68 |
| Stay type | Overnight | 65 | 65 | 61 | 65 |
| | Same day | 35 | 35 | 39 | 35 |
| Aboriginal status | Not Aboriginal | 96 | . | 98 | 99 |
| | Aboriginal and/or Torres Strait Islander | 4 | . | 2 | 1 |
| Gender | Male | 49 | . | 45 | 46 |
| | Female | 51 | . | 55 | 54 |

Reporting

Statistical analysis

Data were analysed for the period from January to December 2016 combined, as well as by quarter. Analysis was undertaken in SAS V9.4 using the SURVEYFREQ procedure, with facility, age groups and stay type as strata. Results were weighted for all questions, with the exception of questions related to socio-demographic characteristics and self-reported health.

To ensure that respondents are not identifiable, BHI only publishes results that include a minimum of 30 respondents. For facilities or LHDs where there were too few respondents, results are suppressed.

Levels of reporting are shown in Table 4.

Table 4 Levels of reporting, AAPS, January to December 2016

| Grouping | Reporting frequency | NSW | Peer group | LHD | Facility |
|--|---------------------|-----|------------|-----|----------|
| All patients | Annually | ✓ | ✓ | ✓ | ✓ |
| | Quarterly | ✓ | ✓ | ✓ | ✓* |
| Age group: self-reported – administrative data used where question on year of birth was missing or invalid | Annually | ✓ | ✓ | ✓ | ✓ |
| Gender: self-reported – administrative data used where question on gender was missing or invalid | | ✓ | ✓ | ✓ | ✓ |
| Education: response 'Still at secondary school' was combined with 'Less than Year 12' | | ✓ | ✓ | ✓ | ✓ |
| Main language spoken at home | | ✓ | ✓ | ✓ | ✓ |
| Rurality of hospital: based on ARIA+# category of facility location – outer regional, remote and very remote combined | | ✓ | | | |
| Long-standing health conditions | | ✓ | ✓ | ✓ | ✓ |
| Self-reported health status | | ✓ | ✓ | ✓ | ✓ |
| Quintile of disadvantage: based on the Australian Bureau of Statistics Index of Relative Socio-demographic Disadvantage | | ✓ | ✓ | ✓ | ✓ |
| Country of birth: from administrative data | | ✓ | ✓ | ✓ | ✓ |
| Rurality of patient residence: based on ARIA+# category of postcode of respondent residence – outer regional, remote and very remote combined | | ✓ | ✓ | ✓ | ✓ |

Note: Only for facilities that were sampled on the basis of quarterly reporting and where at least six quarters of unsuppressed results were available.

Accessibility/Remoteness Index of Australia is the standard Australian Bureau of Statistics measure of remoteness. For more information refer to www.abs.gov.au/websitedbs/d3310114.nsf/home/remoteness+structure

Results are reported at the quarterly level for the period from January 2013 to December 2016, where questions were comparable across years. For these quarterly results, only questions related to hospital performance are reported in Healthcare Observer (bhi.nsw.gov.au/healthcare_observer). In addition, results are only reported for hospitals with reportable data for at least six quarters.

Unless otherwise specified, missing responses and those who responded 'Don't know/can't remember' to questions were excluded from analysis. For a detailed breakdown of the amount of missing or 'Don't know' responses by question, refer to Appendix 1. Typically, performance-type questions exclude missing values and 'Don't know/can't remember'-type responses. The exception is for 'Don't know/can't remember' responses for questions that ask about a third party (e.g. if family had enough opportunity to talk to doctor) or that are over 10%. Meanwhile, questions that are not related to hospital performance include results for people who responded 'Don't know/can't remember', who selected a 'Not applicable'-type response, and those who should have answered the question but did not (a 'missing response').

Confidence intervals can be displayed in Healthcare Observer for both annual and quarterly results for all performance-type questions. The BHI document, *Guide to Interpreting Survey Differences*, provides information for comparing results. However, some differences in results between facilities may be due to differences in the demographic profile of patients attending those facilities. BHI is currently developing methods to standardise survey results in order to account for differences in patient mix and to optimise direct comparisons.

Some results are calculated indirectly from respondents' answers to a survey question. See Appendix 2 for details on how response options were grouped for each of these derived measures.

Appendix 1: Percentage of missing and ‘Don’t know’ responses

These percentages are unweighted.

Table 5 Proportion of missing responses ‘don’t know’ responses for questions in the AAPS 2016

| Question text | Missing (%) | Don’t know (%) | Missing + Don’t know (%)* |
|---|-------------|----------------|---------------------------|
| 1 Was your stay in hospital planned in advance or an emergency? | 1.6 | . | 1.6 |
| 2 When you arrived in hospital did you spend time in the emergency department? | 2.3 | 1.8 | 4.2 |
| 3 Were the emergency department staff polite and courteous? | 3.6 | 1.0 | 4.6 |
| 4 Do you think the amount of time you spent in the emergency department was...? | 4.3 | 4.5 | 8.8 |
| 5 Were the staff you met on your arrival to hospital polite and courteous? | 1.5 | . | 1.5 |
| 6 Do you think the time you had to wait from arrival at hospital until you were taken to your room or ward was...? | 2.3 | 3.3 | 5.5 |
| 7 How clean were the wards or rooms you stayed in while in hospital? | 1.6 | . | 1.6 |
| 8 How clean were the toilets and bathrooms that you used while in hospital? | 2.7 | . | 2.7 |
| 9 Did you see nurses wash their hands, or use hand gel to clean their hands, before touching you? | 1.7 | 12.6 | 14.3 |
| 10 Did you see doctors wash their hands, or use hand gel to clean their hands, before touching you? | 2.5 | 17.8 | 20.3 |
| 11 Were you given enough privacy when being examined or treated? | 2.3 | . | 2.3 |
| 12 Were you given enough privacy when discussing your condition or treatment? | 2.9 | . | 2.9 |
| 13 Was your sleep ever disturbed due to noise at night? | 17.7 | . | 17.7 |
| 14 Did you have any hospital food during this stay? | 2.5 | . | 2.5 |
| 15 How would you rate the hospital food? | 2.8 | . | 2.8 |
| 16 Did you have any special dietary needs (e.g. vegetarian, diabetic, food allergies, religious, cultural, or related to your treatment)? | 3.4 | . | 3.4 |
| 17 Was the hospital food suitable for your dietary needs? | 2.3 | 1.3 | 3.7 |
| 18 If you needed to talk to a doctor, did you get the opportunity to do so? | 2.9 | . | 2.9 |
| 19 When you had important questions to ask a doctor, did they answer in a way you could understand? | 3.6 | . | 3.6 |
| 20 In your opinion, did the doctors who treated you know enough about your medical history? | 3.6 | . | 3.6 |
| 21 Did you have confidence and trust in the doctors treating you? | 3.0 | . | 3.0 |
| 22 Were the doctors kind and caring towards you? | 3.1 | . | 3.1 |
| 23 Overall, how would you rate the doctors who treated you? | 3.0 | . | 3.0 |

| Question text | Missing (%) | Don't know (%) | Missing + Don't know (%)* |
|---|-------------|----------------|---------------------------|
| 24 If you needed to talk to a nurse, did you get the opportunity to do so? | 2.0 | . | 2.0 |
| 25 When you had important questions to ask a nurse, did they answer in a way you could understand? | 2.3 | . | 2.3 |
| 26 In your opinion, did the nurses who treated you know enough about your care and treatment? | 2.4 | . | 2.4 |
| 27 Did nurses ask your name or check your identification band before giving you any medications, treatments or tests? | 2.3 | 3.9 | 6.2 |
| 28 Did you have confidence and trust in the nurses treating you? | 2.0 | . | 2.0 |
| 29 Were the nurses kind and caring towards you? | 2.1 | . | 2.1 |
| 30 Overall, how would you rate the nurses who treated you? | 2.2 | . | 2.2 |
| 31 Did the health professionals explain things in a way you could understand? | 2.6 | . | 2.6 |
| 32 Why did you have difficulty understanding the explanations of health professionals? | 8.4 | . | 8.4 |
| 33 During your stay in hospital, how much information about your condition or treatment was given to you? | 3.4 | . | 3.4 |
| 34 Did you have worries or fears about your condition or treatment while in hospital? | 3.0 | . | 3.0 |
| 35 Did a health professional discuss your worries or fears with you? | 3.2 | . | 3.2 |
| 36 Were you involved, as much as you wanted to be, in decisions about your care and treatment? | 2.6 | . | 2.6 |
| 37 How much information about your condition or treatment was given to your family, carer or someone close to you? | 2.7 | 4.1 | 6.8 |
| 38 Did you feel you were treated with respect and dignity while you were in the hospital? | 1.8 | . | 1.8 |
| 39 Were your cultural or religious beliefs respected by the hospital staff? | 3.6 | . | 3.6 |
| 40 Were you ever treated unfairly for any of the reasons below? | 19.6 | . | 19.6 |
| 41 How would you rate how well the health professionals worked together? | 16.2 | . | 16.2 |
| 42 Was a call button placed within easy reach? | 16.6 | 4.2 | 20.8 |
| 44 Not including the reason you came to hospital, during your hospital stay, or soon afterwards, did you experience any of the following complications or problems? | 7.7 | . | 7.7 |
| 45 Was the impact of this complication or problem...? | 6.6 | . | 6.6 |
| 47 Were you ever in any pain while in hospital? | 3.2 | . | 3.2 |
| 48 When you had pain, was it usually severe, moderate or mild? | 3.3 | . | 3.3 |
| 49 Do you think the hospital staff did everything they could to help manage your pain? | 2.2 | . | 2.2 |
| 50 During your stay in hospital, did you have any tests, X-rays or scans? | 2.7 | . | 2.7 |
| 51 Did a health professional discuss the purpose of these tests, X-rays or scans with you? | 4.5 | . | 4.5 |
| 52 Did you receive test, X-ray or scan results while you were still in hospital? | 5.4 | . | 5.4 |
| 53 Did a health professional explain the test, X-ray or scan results in a way that you could understand? | 3.5 | . | 3.5 |

| Question text | Missing (%) | Don't know (%) | Missing + Don't know (%)* |
|--|-------------|----------------|---------------------------|
| 54 During your stay in hospital, did you have an operation or surgical procedure? | 2.7 | . | 2.7 |
| 55 Was your operation or surgical procedure planned before you came to hospital? | 0.7 | . | 0.7 |
| 56 Thinking back to when you first tried to book an appointment with a specialist, how long did you have to wait to see that specialist? | 9.5 | 9.5 | 19.0 |
| 57 From the time a specialist said you needed the operation or surgical procedure, how long did you have to wait to be admitted to hospital? | 8.9 | 3.1 | 11.9 |
| 58 Do you think the total time between when you first tried to book an appointment with a specialist and when you were admitted to hospital was...? | 9.0 | 2.6 | 11.6 |
| 59 Before your arrival, how much information about your operation or surgical procedure was given to you by the hospital? | 8.9 | 3.5 | 12.3 |
| 60 Before your operation or surgical procedure began, did a health professional explain what would be done in a way you could understand? | 1.5 | . | 1.5 |
| 61 After the operation or procedure, did a health professional explain how the operation or surgical procedure had gone in a way you could understand? | 1.6 | 2.4 | 4.0 |
| 62 Did you feel involved in decisions about your discharge from hospital? | 3.1 | . | 3.1 |
| 63 At the time you were discharged, did you feel that you were well enough to leave the hospital? | 3.0 | . | 3.0 |
| 64 Thinking about when you left hospital, were you given enough information about how to manage your care at home? | 3.0 | . | 3.0 |
| 65 Did hospital staff take your family and home situation into account when planning your discharge? | 3.1 | 2.3 | 5.4 |
| 66 Thinking about when you left hospital, were adequate arrangements made by the hospital for any services you needed? | 3.2 | . | 3.2 |
| 67 Did hospital staff tell you who to contact if you were worried about your condition or treatment after you left hospital? | 3.6 | 8.7 | 12.3 |
| 68 Were you given or prescribed any new medication to take at home? | 3.1 | . | 3.1 |
| 69 Did a health professional in the hospital explain the purpose of this medication in a way you could understand? | 4.9 | . | 4.9 |
| 70 Did a health professional in the hospital tell you about medication side effects to watch for? | 5.9 | . | 5.9 |
| 71 Did you feel involved in the decision to use this medication in your ongoing treatment? | 5.6 | . | 5.6 |
| 72 Did the hospital provide you with a document summarising the care you received in hospital (e.g. a copy of the letter to your GP or a discharge summary)? | 3.9 | 11.8 | 15.7 |
| 73 On the day you left hospital, was your discharge delayed? | 3.0 | . | 3.0 |
| 74 How long was the delay? [in discharge] | 2.3 | 3.6 | 6.0 |
| 75 Did a member of staff explain the reason for the delay? [in discharge] | 3.6 | . | 3.6 |
| 76 What were the main reasons for the delay? [in discharge] | 3.4 | 4.7 | 8.1 |
| 77 Overall, how would you rate the care you received while in hospital? | 1.7 | . | 1.7 |
| 78 How well organised was the care you received in hospital? | 1.9 | . | 1.9 |
| 79 If asked about your hospital experience by friends and family how would you respond? | 3.0 | . | 3.0 |
| 80 Did the care and treatment received in hospital help you? | 2.4 | . | 2.4 |

| Question text | Missing (%) | Don't know (%) | Missing + Don't know (%)* |
|--|-------------|----------------|---------------------------|
| 81 Is the problem you went to hospital for...? | 3.9 | . | 3.9 |
| 82 Did you want to make a complaint about something that happened in hospital? | 2.9 | . | 2.9 |
| 83 In the week before your hospital stay, how difficult was it for you to carry out your normal daily activities (e.g. physical activity, going to work, caring for children)? | 4.9 | . | 4.9 |
| 84 About one month after your discharge from hospital, how difficult was it for you to carry out your normal daily activities? | 4.0 | . | 4.0 |
| 85 In the month following your discharge, did you go to an emergency department because of complications related to the care you received? | 3.5 | 1.3 | 4.8 |
| 86 In the month following your discharge, were you re-admitted to any hospital because of complications related to the care you received? | 3.6 | 1.0 | 4.6 |
| 87 What year were you born? | 2.9 | . | 2.9 |
| 88 What is your gender? | 1.9 | . | 1.9 |
| 89 Language mainly spoken at home | 2.0 | . | 2.0 |
| 90 Did you need, or would you have liked, to use an interpreter at any stage while you were in hospital? | 1.6 | . | 1.6 |
| 91 Did the hospital provide an interpreter when you needed one? | 3.3 | . | 3.3 |
| 92 Aboriginal and/or Torres Strait Islander origin | 3.7 | . | 3.7 |
| 93 Highest level of education completed | 4.5 | . | 4.5 |
| 94 In general, how would you rate your health? | 2.4 | . | 2.4 |
| 95 Which, if any, of the following long-standing conditions do you have (including age-related conditions)? | 5.1 | . | 5.1 |
| 96 Who completed this survey? | 2.3 | . | 2.3 |
| 97 Do you give permission for the Bureau of Health Information to link your answers from this survey to health records related to you? | 4.4 | . | 4.4 |

* Percentages for this column may not equal the sum of the 'Missing %' and 'Don't know %' columns because they were calculated using unrounded figures.

Appendix 2: Derived measures

Definition

Derived measures are those for which results are calculated indirectly from respondents' answers to a survey question. These tend to be from questions that contain a 'not applicable' type response option and are used to gather information about the array of patients' needs.

Derived measures involve the grouping together of more than one response option to a question. The derived measure 'Quintile of Disadvantage' is an exception to this rule (for more information on this, please see the *Data Dictionary: Quintile of disadvantage*)

Statistical methods

Results are expressed as the percentage of respondents who chose a specific response option or options for a question. The reported percentage is calculated as the numerator divided by the denominator (see definitions below).

Results are weighted as described in this report.

Numerator

The number of survey respondents who selected a specific response option or specific response options to a certain question, minus exclusions.

Denominator

The number of survey respondents who selected any of the response options to a certain question, minus exclusions.

Exclusions

For derived measures, the following are excluded:

- Response: 'don't know/can't remember' or similar non-committal response
- Response: invalid (i.e. respondent was meant to skip a question but did not)
- Response: missing (with the exception of questions that allow multiple responses or a 'none of these' option, to which the missing responses are combined to create a 'none reported' variable).

Interpretation of indicator

The higher the percentage, the more respondents fall into that response category.

The following questions and responses were used in the construction of the derived measures.

Table 6 Derived measures for the Adult Admitted Patient Survey questionnaire 2016

| Derived measure | Actual question text | Derived measure categories | Actual question responses |
|---|---|---|--|
| Needed to talk to a doctor | Q18. If you needed to talk to a doctor, did you get the opportunity to do so? | <ul style="list-style-type: none"> Needed to talk to doctor No need to talk to doctor | <ul style="list-style-type: none"> Yes, always Yes, sometimes No, I did not get the opportunity I had no need to talk to a doctor |
| Had important questions to ask a doctor | Q19. When you had important questions to ask a doctor, did they answer in a way you could understand? | <ul style="list-style-type: none"> Asked doctor questions Didn't ask any questions | <ul style="list-style-type: none"> Yes, always Yes, sometimes No, I did not get answers I could understand I did not ask any questions |
| Needed to talk to a nurse | Q24. If you needed to talk to a nurse, did you get the opportunity to do so? | <ul style="list-style-type: none"> Needed to talk to nurse No need to talk to nurse | <ul style="list-style-type: none"> Yes, always Yes, sometimes No, I did not get the opportunity I had no need to talk to a nurse |
| Had important questions to ask a nurse | Q25. When you had important questions to ask a nurse, did they answer in a way you could understand? | <ul style="list-style-type: none"> Asked nurse questions Didn't ask any questions | <ul style="list-style-type: none"> Yes, always Yes, sometimes No, I did not get answers I could understand I did not ask any questions |
| Wanted information about condition or treatment during stay | Q33. During your stay in hospital, how much information about your condition or treatment was given to you? | <ul style="list-style-type: none"> Wanted information Not applicable | <ul style="list-style-type: none"> Not enough The right amount Too much Not applicable to my situation |
| Wanted to be involved in decisions about care and treatment | Q36. Were you involved, as much as you wanted to be, in decisions about your care and treatment? | <ul style="list-style-type: none"> Wanted involvement Didn't want involvement | <ul style="list-style-type: none"> Yes, definitely Yes, to some extent No I was not well enough |

| Derived measure | Actual question text | Derived measure categories | Actual question responses |
|--|--|---|--|
| | | | <ul style="list-style-type: none"> I did not want or need to be involved |
| Had family/someone close who wanted information about condition or treatment | Q37. How much information about your condition or treatment was given to your family, carer or someone close to you? | <ul style="list-style-type: none"> Wanted information Not applicable | <ul style="list-style-type: none"> Not enough Right amount Too much It was not necessary to provide information to any family or friends |
| Had religious or cultural beliefs to consider | Q39. Were your cultural or religious beliefs respected by the hospital staff? | <ul style="list-style-type: none"> Had beliefs to consider Beliefs not an issue | <ul style="list-style-type: none"> Yes, always Yes, sometimes No, my beliefs were not respected My beliefs were not an issue |
| Experienced complication or problem during or shortly after hospital stay | Q44. Experienced complication or problem during or shortly after hospital stay (derived measure) | <ul style="list-style-type: none"> Experienced complication None reported | <ul style="list-style-type: none"> An infection Uncontrolled bleeding A negative reaction to medication Complication from surgery Complication from tests/procedures A blood clot A pressure wound A fall Any other complication or problem None of these Missing |
| Complication or problem occurred during hospital stay | Q46. In your opinion, were members of the hospital staff open with you about this complication or problem? [if happened during stay] | <ul style="list-style-type: none"> Occurred in hospital Occurred after left Wanted explanation | <ul style="list-style-type: none"> Yes, completely Yes, to some extent No Not applicable, as it happened after I left Yes, completely |

| Derived measure | Actual question text | Derived measure categories | Actual question responses |
|---|---|---|--|
| Wanted explanation of what would be done in operation or surgical procedure | Q60. Before your operation or surgical procedure began, did a health professional explain what would be done in a way you could understand? | <ul style="list-style-type: none"> Didn't want explanation | <ul style="list-style-type: none"> Yes, to some extent No I did not want or need an explanation |
| Wanted to be involved in decisions about their discharge | Q62. Did you feel involved in decisions about your discharge from hospital? | <ul style="list-style-type: none"> Wanted involvement Didn't want involvement | <ul style="list-style-type: none"> Yes, definitely Yes, to some extent No, I did not feel involved I did not want or need to be involved |
| Needed information on how to manage care at home | Q64. Thinking about when you left hospital, were you given enough information about how to manage your care at home? | <ul style="list-style-type: none"> Needed information Didn't need information | <ul style="list-style-type: none"> Yes, completely Yes, to some extent No, I was not given enough I did not need this type of information |
| Needed family and home situation taken into account when planning discharge | Q65. Did hospital staff take your family and home situation into account when planning your discharge? | <ul style="list-style-type: none"> Had situation to consider Not necessary | <ul style="list-style-type: none"> Yes, completely Yes, to some extent No, staff did not take my situation into account It was not necessary |
| Needed services after discharge | Q66. Thinking about when you left hospital, were adequate arrangements made by the hospital for any services you needed? | <ul style="list-style-type: none"> Needed services Didn't need services | <ul style="list-style-type: none"> Yes, completely Yes, to some extent No, arrangements were not adequate It was not necessary |
| Wanted to be involved in decision to use medication in ongoing treatment | Q71. Did you feel involved in the decision to use this medication in your ongoing treatment? | <ul style="list-style-type: none"> Wanted involvement Didn't want involvement | <ul style="list-style-type: none"> Yes, completely Yes, to some extent No, I did not feel involved I did not want to be involved |