

Covariate selection

Differences in patient experiences between groups may reflect differences in experiences of care. However, they may also reflect differences in expectations or the way various groups tend to respond to surveys. To enable fairer comparisons across hospitals, the enhanced reporting method considers which patient characteristics may be consistently associated with more positive or less positive reported experiences.

Information regarding rurality of patients and socioeconomic status (SES) were also considered as they may relate to response tendency. However, BHI chose not to include factors such as rurality or SES as these factors may reflect differences in care. Instead, analyses of results by these patient groups are presented in BHI's interactive data portal, Healthcare Observer, to allow hospitals to see which patient groups reported more or less positive experiences of care. A list of all patient characteristics considered for inclusion in the model for standardised comparisons and how they were sourced is included in Table 5.

Information on patient health status such as self-reported overall health or mental health status could also influence both experiences of care and responding tendency, but were not considered for inclusion in the model. Currently BHI only standardises comparisons for experience of care questions by adjusting patient, not clinical or health, characteristics.

For age and sex, missing values were filled in using administrative data. Following this, there was no missing data for age and sex. Missing data for other patient characteristics were included in all analyses as an extra category in the model. Missing data in performance-related questions were excluded from all analyses.

Table 5 Patient characteristics considered for adjustment

| Variable | Source | Categories |
|--------------------------------|--|---|
| Age | Survey question, or using administrative data if missing | 0–17, 18–34, 35–54, 55–74, 75+ |
| Sex | Survey question, or using administrative data if missing | Female, Male |
| Education level | Survey question | Completed year 12, trade/technical certificate/diploma, university degree, postgraduate degree, missing |
| Language mainly spoken at home | Survey question | English, other than English, missing |

Table 6 presents a list of covariates considered for adjustment by selection stage and survey. These patient characteristics were then passed through two selection stages, as follows:

1. Univariate models were fitted for each patient characteristic (covariate) for all performance-related questions in the survey. Covariates with $p < 0.1$ in the univariate models for at least 50% of the questions were considered for inclusion in the multivariate model.
2. Multivariate logistic mixed models were fitted across all performance-related questions in the survey using the covariates selected from stage one, with age and sex included in all models. Forward stepwise modelling was used based on the equation above, including age, sex and all additional covariates added appropriately following a forward stepwise approach. Selected interaction terms were also tested.

Within each outcome (i.e. performance-related survey question) the models were ranked by the Akaike Information Criterion (AIC) – the model with the smallest AIC value was assigned the highest rank of 1. The AIC was recommended as an appropriate method for selecting models where different fixed effects are included as it applies a penalty for the number of covariates in order to protect against model overfitting.¹

The following values were obtained:

- number of questions for which the model was ranked first
- mean rank across all questions
- mean AIC value across all questions.

These values were used to identify the optimal model to create adjusted comparisons for the survey results, with each survey from the NSW Patient Survey Program assessed independently. That is, the optimal model had a high count of 1st ranking, a low mean rank, and a low mean AIC relative to other models, across all performance-related questions in the survey.

Finally, we excluded covariates that marginally improved the model by comparing the models' AIC values, to define a parsimonious number of patient-related covariates to use in standardised comparisons. Covariates that were not part of patient characteristics (e.g. whether patients were staying overnight or had same-day admission) were not included in the testing. This is because standardised comparisons are intended to control for differences in patient characteristics only, and some of these factors were considered to be under the control of hospital management rather than patients.

Age and sex were chosen for adjustment for the comparison model.

Table 6 Covariates considered for adjustment for comparisons at each selection stage, Rural Hospital Emergency Care Survey 2019

| | Available for adjustment | Passed univariate model selection threshold (stage 1) | Passed multivariate model selection threshold (stage 2) | After consultation with expert panel and confirmed by sensitivity analyses |
|-------------------------|--------------------------|---|---|--|
| Age | ✓ | ✓ | ✓ | ✓ |
| Sex | ✓ | ✓ | ✓ | ✓ |
| Education | ✓ | ✓ | ✓ | |
| Language spoken at home | ✓ | ✓ | | |

Model-based comparisons

The model calculates an estimate for each hospital's random intercept, and produces a p-value to indicate how likely these estimates are different from the average, or NSW value.

The exponential values of the estimated hospital random intercepts based on the random intercept logistic regression model can be used to estimate the odds of a positive experience (e.g. 'very good' for overall care question) for the hospital with reference to an 'average' hospital. The p-value for each hospital intercept estimate was used to determine if the hospital was significantly different from NSW, when adjusted for patient characteristics, using the following guidelines:

- If the p-value was less than the significance level (0.01) and the solution for the hospital random intercept was greater than 0, the hospital was flagged as having a more positive result than NSW.
- If the p-value was less than the significance level and the random effect solution was less than 0, the hospital was flagged as having a less positive result than NSW.
- If the p-value was greater than the significance level, the hospital was flagged grey as not significantly different to NSW.
- If a result has been flagged as 'interpret with caution', comparisons are not highlighted due to the lack of precision in the result.

When making multiple comparisons there is an increased likelihood of flagging a difference that is not 'real', but due to chance. To mitigate this issue, a p-value of 0.01 was used to reduce the likelihood of identifying differences due to chance to one comparison in 100 (from one in 20, with the more commonly used p-value of 0.05). Sampling weights were used in all models to ensure the comparisons were representative of the NSW patient population.

Statistical software

SAS software version 9.4 was used for all statistical analyses. PROC GLIMMIX procedure was used for performing logistic mixed models.

Sensitivity analyses

For this survey, education level was identified as a statistically significant predictor of selecting the 'event' for questions in the survey (Table 6, Stage 2). An expert panel convened by BHI assessed the explanatory power of an three covariate model to a two-covariate model.

Both the three-covariate model and a two-covariate model with age and sex were fit for all performance-related survey questions in the Small Hospital Emergency Care Survey 2015–16 data. Comparison of statistical significance of these survey questions for each hospital revealed minimal difference in average AIC between the two models (average AIC=3490 vs. 3492 for full vs. reduced model), and two models resulted in similar outlier status for hospitals. Therefore, the reduced two-covariate model with age and sex was adopted and used for standardised comparisons for the Rural Hospital Emergency Care Patient Survey 2019.

Methods for identifying key themes in patient comments

At the end of the Rural Hospital Emergency Care Patient Survey 2019 questionnaire, patients were asked 'What was the best part of the care you received while in the ED?' And 'What most needs improving about the care you received in the ED?'

Of the 6,156 respondents to the survey:

- 4,421 (72%) provided some comments to at least one of these questions
- 4,212 (68%) gave a comment about 'what was the best part of care'

- 3,395 (55%) gave a comment about 'what most needs improving'.

Sampling of comments

To describe 'themes' provided in these comments, BHI took a representative sample of 15% of the 4,421 respondents who provided any comments. These 662 records were sampled by LHD, age and admission status to ensure good representation of the comments provided.

Table 7 Characteristics of all respondents who provided comments and the sample selected

| | All respondents | | 15% sample | |
|-------------------------------|-----------------|------------|------------|------------|
| | Number | Percentage | Number | Percentage |
| Far West | 36 | 1 | 5 | 1 |
| Hunter New England | 1,089 | 25 | 163 | 25 |
| Murrumbidgee | 1,280 | 29 | 192 | 29 |
| Mid North Coast | 208 | 5 | 31 | 5 |
| Northern NSW | 185 | 4 | 29 | 4 |
| Southern NSW | 523 | 12 | 77 | 12 |
| Western NSW | 1,100 | 25 | 165 | 25 |
| Age | | | | |
| 0–17 years | 550 | 12 | 81 | 12 |
| 18–49 years | 543 | 12 | 81 | 12 |
| 50+ years | 3,328 | 75 | 500 | 76 |
| Sex | | | | |
| Male | 2,125 | 48 | 309 | 47 |
| Female | 2,296 | 52 | 353 | 53 |
| Admitted Emergency | 620 | 14 | 92 | 14 |
| Non-admitted Emergency | 3,801 | 86 | 570 | 86 |
| Triage category | | | | |
| 1 | 14 | 0 | - | - |
| 2 | 458 | 10 | 68 | 10 |
| 3 | 1,106 | 25 | 175 | 26 |
| 4 | 1,603 | 36 | 244 | 37 |
| 5 | 1,235 | 28 | 175 | 26 |

Data entry and coding

For surveys returned by mail, a third party vendor (Ipsos) manually enters the free text comments. Any identifying information (including patient, staff and ward names) were removed at this time.

A thematic analysis was conducted by three independent researchers, using the coding frame developed by Ipsos, with some minor revisions.

An initial set of comments were coded together to ensure consistency. Researchers then coded a

set of comments individually, coming together as a group to discuss longer comments or comments with uncertainty in regards to the appropriate coding category.

Comments were coded into 10 categories. For the most common category for each free text question, a more detailed coding was done to identify sub-themes.

Table 8 Categories and sub-themes by free-text question

| Categories | Q91. Best part of care Themes within each category | Q92. What could improve Themes within each category |
|-------------------------------|--|---|
| Timeliness | Prompt attention, diagnosis, efficient | Inefficiency, long waits |
| Staff aspects – interpersonal | Friendly, kind, compassionate, reassuring, staffed with local people, wonderful, outstanding staff | Uncaring, did not show respect, difficult to understand |
| Staff aspects – professional | Professionalism, skill shown, attentive, monitored frequently, team work | Lack of staff, staff appear overworked, lack knowledge or skill, not attentive |
| Treatment and care | Pain management, treatment needs addressed, involved in care, provided with diagnosis, quality of care | Improve pain management, inadequate treatment, poor health outcome |
| Facilities | Small local hospital, clean, quiet comfortable | Unclean, no privacy, uncomfortable, bring back services |
| Catering | Food, beverages | No food or drink provided, could have been better |
| Communication | Kept informed, listened to, clear explanations given, able to ask questions | Not enough, poor quality, did not listen to personal view, questions not answered, poor communication between staff |
| Administration | Going home, follow up care plan, access to care, free healthcare, transferred for future treatment | Issues with transport, not ready for discharge, need more follow up |
| Overall experience | Nothing needs improving/everything was good | Everything needs improving |
| Other | General comments about survey or topic not elsewhere listed, 'N/A' | General comments about survey or topic not elsewhere listed, 'N/A' |
| Positive/negative – recoded | No best part of care, nothing was good | Nothing needed improving, everything was great |

A comment could contain more than one category or sub-theme. For example:

“The kind people and the very quick service. Also the medical advice was correct and helped benefit my infection/irritation.”

This comment about the best part of care was classified as: Staff aspects – interpersonal; timeliness; and treatment and care.

The number of times a category and sub-theme was coded for the comments was then calculated to produce the most common category and sub-theme for each question.

Recoded comments

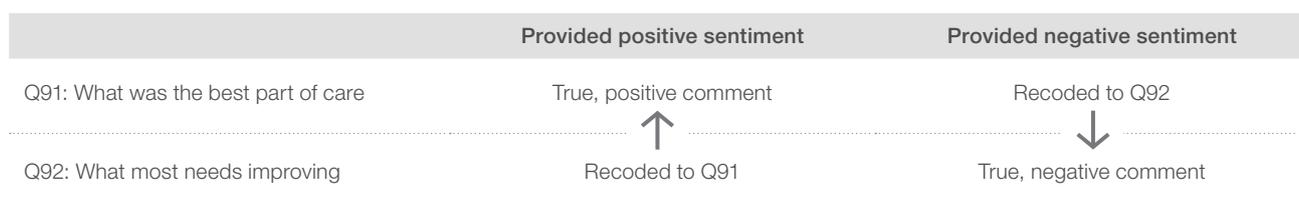
Some comments require additional coding to ensure that the patient’s experiences during their ED visit were captured as completely as possible. These comments can mostly be described using four different scenarios.

In Scenario 1, patients provided negative comments about their care in response to Q91: ‘What was the best part of the care you received while in the ED’. For example, some patients wrote ‘There was no best part of care’ or ‘nothing was good, not happy with care’.

In Scenario 2, patients provided positive comments about their care in response to Q92: ‘What most needs improving about the care you received while in this ED?’ For example, some patients wrote ‘nothing needs improving’ or ‘no improvements needed, care was excellent’.

In both these scenarios, comments were given the classification of ‘negative sentiment – recoded’ for Q91 or ‘positive sentiment – recoded’ for Q92. This means the comment was better placed as a response to the other free-text question. Once a comment was classified as ‘negative sentiment – recoded’ or ‘positive sentiment – recoded’, it was treated as equivalent to a response to the other free-text question and then coded using that question’s coding frame, as illustrated in Figure 2.

Figure 2 Decision rules to recode positive or negative comments where they were in the wrong free-text field



For example, in Scenario 1, the comment 'there was no best part of care' was classified within the Q91 'What was the best part of care' coding frame as 'negative sentiment – recoded'. It was then coded using the Q92 'What most needs improving' frame and contributed to the results for this question. The comment 'there was no best part of care' best fit into the Q92 category of 'Overall experience'. This means that it is treated the same way as comments like 'everything needs improving'.

There were 27 respondent comments to Q91 'What was the best part of care' that were classified as 'negative sentiment – recoded' and re-assigned to Q92 (see third column in Figure 2).

In Scenario 2, the comment of 'nothing needs improving' was classified within the Q92 'What most needs improving' coding frame as 'positive sentiment – recoded'. It was then coded using the Q91 'What was the best part of care' frame and contributed to results for this question. The comment 'nothing needs improving' best fit into the Q91 category of 'Overall experience'. This means that it is treated the same as comments like 'everything was great'.

There were 242 respondent comments to Q92 'What most needs improving' that were classified as 'positive sentiment – recoded' that were re-assigned to Q91 (see second column in Figure 2).

Furthermore, a comment can be classified into multiple categories as it contains a number of different ideas.

In Scenario 3, patients provided a comment that contained both a positive statement and a negative statement.

For Q91 'What was the best part of care', for example, a patient wrote: 'The staff were professional and friendly but overworked and underpaid'. This comment was classified using the Q91 coding frame as 'staff aspects – interpersonal', 'staff aspects – professional' and 'negative sentiment - recoded'. The comment was then also coded using the Q92 coding frame as 'staff aspects - professional'.

In response to Q92 'What needs improving', for example, a patient wrote: 'The care is good though the facilities could use some refurbishment'. This comment was classified using the Q92 coding frame as 'facilities' and 'positive sentiment – recoded'. The comment was then also coded using the Q91 coding frame as 'Overall experience'.

In all of the above three scenarios, if the comment contributed to the most common category for either Q91 or Q92, it then underwent detailed sub-theme coding. For example, in Scenario 3, the comment 'The staff were professional and friendly but overworked and underpaid' contributed to the most common category for Q91: 'staff – interpersonal'. As such, it was then coded into the sub-theme of 'friendly, professional, polite'. The comment also contributed to the most common category for Q92: 'staff – professional'. As such, it was then coded into the sub-theme of 'Staff not to be overworked / over tasked / not so busy / overtired'.

Blank responses, that is, where a patient provided a response to one free-text question but not the other, were excluded from the totals.

Appendix 1

Unweighted percentage of missing and 'Don't know' responses

Table 9 Percentage of 'Don't know' and/or missing responses by question, Rural Hospital Emergency Care Patient Survey, January to April 2019

| Question number | Question text | Missing % | Don't know % | Missing + Don't know %* |
|-----------------|--|-----------|--------------|-------------------------|
| 1 | What was your main form of transport to the ED? | 2.9 | | 2.9 |
| 2 | Was there a problem in finding a parking place near the ED? | 0.9 | | 0.9 |
| 3 | Was the signposting directing you to the ED of the hospital easy to follow? | 2.7 | | 2.7 |
| 4 | Overall, did the ambulance crew treat you with respect and dignity? | 1.4 | 0.8 | 2.2 |
| 5 | How would you rate how the ambulance crew and ED staff worked together? | 1.6 | 1.2 | 2.8 |
| 6 | Overall, how would you rate the care you received from the ambulance service? | 1.5 | 0.6 | 2.1 |
| 7 | Were the ED staff you met on your arrival polite and courteous? | 2.1 | 1.1 | 3.2 |
| 8 | Did the ED staff who met you on arrival give you enough information about what to expect during your visit? | 2.7 | 3.8 | 6.5 |
| 9 | Did the ED staff you met on arrival tell you how long you would have to wait for treatment? | 3.1 | 6.1 | 9.2 |
| 10 | Was the waiting time given to you by the ED staff you met on arrival about right? | 2.9 | 2.6 | 5.5 |
| 11 | Did you experience any of the following issues when in the waiting area? | 7.4 | | 7.4 |
| 12 | From the time you first arrived at the ED, how long did you wait before being triaged by a nurse – that is, before an initial assessment of your condition was made? | 3.7 | 3.7 | 7.4 |
| 13 | Did you stay until you received treatment? | 4.3 | | 4.3 |
| 14 | Why did you leave the ED before receiving treatment? | 6.3 | 3.1 | 9.4 |
| 15 | After triage (initial assessment), how long did you wait before being treated by an ED doctor or nurse? | 4.6 | 4.5 | 9.0 |
| 16 | While you were waiting to be treated, did ED staff check on your condition? | 0.9 | 3.6 | 4.4 |
| 17 | While you were waiting to be treated, did your symptoms or condition get worse? | 2.3 | 4.5 | 6.8 |
| 18 | Did you have enough time to discuss your health or medical problem with doctors? | 1.9 | 2.2 | 4.1 |
| 19 | Did you have confidence and trust in the doctors treating you? | 1.6 | | 1.6 |
| 20 | Were the doctors polite and courteous? | 1.6 | | 1.6 |
| 21 | Overall, how would you rate the doctors who treated you? | 2.6 | | 2.6 |
| 22 | In your opinion, did the ED nurses who treated you know enough about your care and treatment? | 0.8 | 1.1 | 1.9 |
| 23 | Did you have confidence and trust in the ED nurses treating you? | 0.8 | | 0.8 |
| 24 | Were the ED nurses polite and courteous? | 0.9 | | 0.9 |
| 25 | Overall, how would you rate the ED nurses who treated you? | 0.8 | | 0.8 |
| 26 | Did the ED health professionals introduce themselves to you? | 1.8 | 4.5 | 6.2 |
| 27 | Did the ED health professionals explain things in a way you could understand? | 1.2 | | 1.2 |

| Question number | Question text | Missing % | Don't know % | Missing + Don't know %* |
|-----------------|--|-----------|--------------|-------------------------|
| 28 | How much information about your condition or treatment was given to you by ED health professionals? | 1.5 | | 1.5 |
| 29 | Were you involved, as much as you wanted to be, in decisions about your care and treatment? | 1.2 | | 1.2 |
| 30 | If your family members, carer or someone else close to you wanted to talk to the ED staff, did they get the opportunity to do so? | 1.6 | 2.2 | 3.7 |
| 31 | How much information about your condition or treatment was given to your family, carer or someone else close to you? | 2.0 | 3.6 | 5.6 |
| 32 | Were you able to get assistance or advice from ED staff for your personal needs (e.g. for eating, drinking, going to the toilet, contacting family)? | 1.6 | | 1.6 |
| 33 | How would you rate how the ED health professionals worked together? | 1.3 | | 1.3 |
| 34 | Did you ever receive contradictory information about your condition or treatment from ED health professionals? | 2.4 | | 2.4 |
| 35 | Were the ED health professionals kind and caring towards you? | 1.2 | | 1.2 |
| 36 | Did you feel you were treated with respect and dignity while you were in the ED? | 1.3 | | 1.3 |
| 37 | Were you given enough privacy during your visit to the ED? | 1.9 | | 1.9 |
| 38 | Were your cultural or religious beliefs respected by the ED staff? | 3.3 | | 3.3 |
| 39 | Did you have worries or fears about your condition or treatment while in the ED? | 2.2 | | 2.2 |
| 40 | Did an ED health professional discuss your worries or fears with you? | 5.3 | | 5.3 |
| 41 | Were you ever in pain while in the ED? | 3.1 | | 3.1 |
| 42 | Do you think the ED health professionals did everything they could to help manage your pain? | 2.7 | | 2.7 |
| 43 | Did you see ED health professionals wash their hands, or use hand gel to clean their hands, before touching you? | 1.9 | 14.5 | 16.4 |
| 44 | How clean was the treatment area in the ED | 1.3 | | 1.3 |
| 45 | While you were in the ED, did you feel threatened by other patients or visitors? | 2.2 | | 2.2 |
| 46 | Were there things for your child to do (such as books, games and toys)? | 3.1 | 5.1 | 8.2 |
| 47 | Was the area in which your child was treated suitable for someone of their age group? | 3.1 | | 3.1 |
| 48 | Did the ED staff provide care and understanding appropriate to the needs of your child? | 2.4 | | 2.4 |
| 49 | During your visit to the ED, did you have any tests, X-rays or scans? | 12.3 | 3.0 | 15.3 |
| 50 | Did an ED health professional discuss the purpose of these tests, X-rays or scans with you? | 1.6 | 1.9 | 3.5 |
| 51 | Did an ED health professional explain the test, X-ray or scan results in a way that you could understand? | 2.2 | | 2.2 |
| 52 | What happened at the end of your ED visit? | 2.7 | | 2.7 |
| 53 | Did you feel involved in decisions about your discharge from hospital? | 1.9 | | 1.9 |

| Question number | Question text | Missing % | Don't know % | Missing + Don't know %* |
|-----------------|---|-----------|--------------|-------------------------|
| 54 | Thinking about when you left the ED, were you given enough information about how to manage your care at home? | 1.1 | | 1.1 |
| 55 | Did ED staff take your family and home situation into account when planning your discharge? | 1.7 | 1.7 | 3.4 |
| 56 | Thinking about when you left the ED, were adequate arrangements made by the hospital for any services you needed? | 1.7 | | 1.7 |
| 57 | Did ED staff tell you who to contact if you were worried about your condition or treatment after you left hospital? | 1.9 | 6.6 | 8.5 |
| 58 | Thinking about your illness or treatment, did an ED health professional tell you about what signs or symptoms to watch out for after you went home? | 2.8 | | 2.8 |
| 59 | Were you given or prescribed any new medication to take at home? | 1.7 | | 1.7 |
| 60 | Did an ED health professional explain the purpose of this medication in a way you could understand? | 2.7 | | 2.7 |
| 61 | Did an ED health professional tell you about medication side effects to watch for? | 3.9 | | 3.9 |
| 62 | Did you feel involved in the decision to use this medication in your ongoing treatment? | 2.6 | | 2.6 |
| 63 | Did an ED health professional tell you when you could resume your usual activities, such as when you could go back to work or drive a car? | 2.4 | | 2.4 |
| 64 | Did the ED staff provide you with a document that summarised the care you received (e.g. a copy of the letter to your GP, a discharge summary)? | 4.5 | 15.4 | 19.9 |
| 65 | Was your departure from the ED delayed - that is, before leaving the ED to go to a ward, another hospital, home, or elsewhere? | 3.7 | | 3.7 |
| 66 | Did a member of staff explain the reason for the delay? [in discharge] | 6.3 | | 6.3 |
| 67 | What were the main reasons for the delay? [in discharge] | 6.1 | 3.6 | 9.7 |
| 68 | Overall, how would you rate the care you received while in the ED? | 2.2 | | 2.2 |
| 69 | If asked about your experience in the ED by friends and family how would you respond? | 2.4 | | 2.4 |
| 70 | Did the care and treatment you received in the ED help you? | 2.8 | | 2.8 |
| 71 | In total, how long did you spend in the ED? (From the time you entered the ED until the time you left the ED to go to a ward, another hospital, home, or elsewhere) | 3.4 | 6.7 | 10.0 |
| 72 | Did you want to make a complaint about something that happened in the ED? | 3.0 | | 3.0 |
| 73 | Were you ever treated unfairly for any of the reasons below? | 6.5 | | 6.5 |
| 74 | Not including the reason you went to the ED, during your visit or soon afterwards, did you experience any of the following complications or problems? | 5.2 | | 5.2 |
| 75 | Was the impact of this complication or problem...? | 3.4 | | 3.4 |
| 76 | In your opinion, were members of the hospital staff open with you about this complication or problem? | 4.3 | | 4.3 |
| 77 | What year were you born? | 2.7 | | 2.7 |
| 78 | What is your gender? | 2.3 | | 2.3 |

| Question number | Question text | Missing % | Don't know % | Missing + Don't know %* |
|-----------------|---|-----------|--------------|-------------------------|
| 79 | Highest level of education completed | 5.3 | | 5.3 |
| 80 | Which, if any, of the following longstanding conditions do you have (including age-related conditions)? | 5.2 | | 5.2 |
| 81 | Does this condition(s) cause you difficulties with your day-to-day activities? | 3.3 | | 3.3 |
| 82 | Are you a participant of the National Disability Insurance Scheme (NDIS)? | 4.4 | 8.2 | 12.6 |
| 83 | In general, how would you rate your health? | 2.9 | | 2.9 |
| 84 | Language mainly spoken at home | 2.6 | | 2.6 |
| 85 | Aboriginal and/or Torres Strait Islander | 4.3 | | 4.3 |
| 86 | Did you receive support, or the offer of support, from an Aboriginal Health Worker while you were in the ED? | 2.4 | 6.4 | 8.8 |
| 87 | In the month before visiting the ED, did you...? | 4.7 | 7.9 | 12.6 |
| 88 | Before your visit to the ED, had you previously been to an ED about the same condition or something related to it? | 4.2 | | 4.2 |
| 89 | Who completed this survey? | 3.2 | | 3.2 |
| 90 | Do you give permission for the Bureau of Health Information to link your answers from this survey to health records related to you (the patient)? | 4.6 | | 4.6 |

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

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 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 refer to the *Data Dictionary: Quintile of disadvantage* on BHI's website at bhi.nsw.gov.au/nsw_patient_survey_program

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/s 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 usually 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 10 Derived measures for the Rural Hospital Emergency Care Patient Survey 2019 questionnaire

| Derived measure | Question | Derived measure categories | Response options |
|--|---|-------------------------------|--|
| Needed parking near the ED | Q2. Was there a problem in finding a parking place near the ED? | Needed parking | Yes, a big problem Yes, a small problem No problem |
| | | Didn't need parking | I did not need to park |
| Needed to wait for treatment after meeting reception staff | Q9. Did the ED staff you met on arrival tell you how long you would have to wait for treatment? | Needed to wait | Yes No |
| | | Didn't need to wait | I didn't need to wait for treatment |
| Experienced issues with seating, safety, noise, temperature or odour in the waiting area | Q11. Did you experience any of the following issues when in the waiting area? | Spent time in waiting area | I couldn't find somewhere to sit The seats were uncomfortable It was too noisy I did not feel safe It was too hot It was too cold There were bad or unpleasant smells No, I did not experience these issues |
| | | Wasn't in waiting area | I did not spend time in the waiting area |
| Triage by a nurse | Q12. From the time you first arrived at the ED, how long did you wait before being triaged by a nurse – that is, before an initial assessment of your condition was made? | Saw a triage nurse | I was triaged immediately 1–15 minutes 16–30 minutes 31–59 minutes 1 hour to less than 2 hours 2 hours or more |
| | | Didn't see a triage nurse | I did not see a triage nurse |
| Triage by a doctor | Q18. Did you have enough time to discuss your health or medical problem with doctors? | Not treated by a doctor | I wasn't treated by a doctor Yes, definitely Yes, to some extent |
| | | Treated by a doctor | No |
| Received treatment from an ED nurse | Q22. In your opinion, did the ED nurses who treated you know enough about your care and treatment? | Treated by an ED nurse | Yes, definitely Yes, to some extent No |
| | | Wasn't treated by an ED nurse | I wasn't treated by a nurse |

| Derived measure | Question | Derived measure categories | Response options |
|---|---|--|--|
| Needed information about condition or treatment | Q28. How much information about your condition or treatment was given to you by ED health professionals? | Needed information | Not enough The right amount Too much |
| | | Didn't need information | Not applicable to my situation |
| Wanted or were well enough to be involved in decisions about care and treatment | Q29. Were you involved, as much as you wanted to be, in decisions about your care and treatment? | Wanted involvement and was well enough | Yes, definitely Yes, to some extent No |
| | | Not well enough or didn't want involvement | I was not well enough to be involved I did not want or need to be involved |
| Had family/someone close who wanted to talk to staff | Q30. If your family members, carer or someone else close to you wanted to talk to the ED staff, did they get the opportunity to do so? | Wanted to talk to staff | Yes, definitely Yes, to some extent No, they did not get the opportunity |
| | | Not applicable | Not applicable to my situation |
| Had family/someone close who wanted information about condition or treatment | Q31. How much information about your condition or treatment was given to your family, carer or someone else close to you? | Wanted information | Not enough The right amount Too much |
| | | Not applicable | It was not necessary to provide information to any family or friends |
| Needed assistance or advice from ED staff for personal needs | Q32. Were you able to get assistance or advice from ED staff for your personal needs (e.g. for eating, drinking, going to the toilet, contacting family)? | Needed assistance | Yes, always Yes, sometimes No |
| | | Didn't need assistance | I did not need assistance or advice |
| Had religious or cultural beliefs to consider | Q38. Were your cultural or religious beliefs respected by the ED staff? | Had beliefs to consider | Yes, always Yes, sometimes No, my beliefs were not respected |
| | | Beliefs not an issue | My beliefs were not an issue |

| Derived measure | Question | Derived measure categories | Response options |
|---|---|----------------------------|--|
| Needed things for child to do (such as books, games and toys) | Q46. Were there things for your child to do (such as books, games and toys)? | Child needed things to do | There were plenty of things for my child to do |
| | | | There were some things, but not enough |
| | | | There was nothing for my child's age group |
| | | | There was nothing for children to do |
| | | Not applicable | Not applicable to my child's visit |
| Received results of test, X-ray or scan results while in ED | Q51. Did an ED health professional explain the test, X-ray or scan results in a way that you could understand? | Told results | Yes, completely |
| | | | Yes, to some extent |
| | | | No |
| | | Not told results in ED | I was not told the results while in the ED |
| Wanted or needed to be involved in decisions about discharge | Q53. Did you feel involved in decisions about your discharge from hospital? | Wanted involvement | Yes, definitely |
| | | | Yes, to some extent |
| | | | No, I did not feel involved |
| | | Didn't want involvement | I did not want or need to be involved |
| Needed information on how to manage care at home | Q54. Thinking about when you left the ED, were you given enough information about how to manage your care at home? | Needed information | Yes, completely |
| | | | Yes, to some extent |
| | | | No, I was not given enough information |
| | | Didn't need information | I did not need this type of information |
| Needed family and home situation taken into account when planning discharge | Q55. Did ED staff take your family and home situation into account when planning your discharge? | Had situation to consider | Yes, completely |
| | | | Yes, to some extent |
| | | | No, staff did not take my situation into account |
| | | Not necessary | It was not necessary |
| Wanted or needed to be involved in decisions about medication | Q62. Did you feel involved in the decision to use this medication in your ongoing treatment? | Wanted involvement | Yes, definitely |
| | | | Yes, to some extent |
| | | | No, I did not feel involved |
| | | Didn't want involvement | I did not want or need to be involved |
| Needed information on when could resume usual activities | Q63. Did an ED health professional tell you when you could resume your usual activities, such as when you could go back to work or drive a car? | Needed information | Yes, definitely |
| | | | Yes, to some extent |
| | | | No |
| | | Didn't need information | Not applicable |

| Derived measure | Question | Derived measure categories | Response options |
|--|--|----------------------------|--|
| Treated unfairly in the ED | Q73. Were you ever treated unfairly for any of the reasons below? | Treated unfairly | Age Sex Aboriginal background Ethnic background Religion Sexual orientation A disability that you have Marital status Something else |
| | | Not treated unfairly | I was not treated unfairly |
| Experienced complication or problem during or shortly after ED visit | Q74. Not including the reason you went to the ED, during your visit or soon afterwards, did you experience any of the following complications or problems? | Had complication | An infection Uncontrolled bleeding A negative reaction to medication A complication as a result of tests or procedures Severe pain due to the treatment A blood clot A fall Any other complication or problem |
| | | None reported | None of these Missing |
| Complication or problem occurred during ED visit | Q76. In your opinion, were members of the hospital staff open with you about this complication or problem? | Occurred in ED | Yes, completely Yes, to some extent No |
| | | Occurred after left | Not applicable, as it happened after I left |

References

1. Burnham, K. P., & Anderson, D. R. (2002). Model selection and multimodel inference: a practical information-theoretic approach (2nd ed.) New York: Springer.

About the Bureau of Health Information

The Bureau of Health Information (BHI) is a board-governed organisation that provides independent information about the performance of the NSW healthcare system.

BHI was established in 2009 and 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.

BHI manages the NSW Patient Survey Program, gathering information from patients about their experiences and outcomes of care in public hospitals and other healthcare facilities.

BHI publishes a range of reports and information products, including interactive tools, that provide objective, accurate and meaningful information about how the health system is performing.

BHI's work relies on the efforts of a wide range of healthcare, data and policy experts. All of our assessment efforts leverage the work of hospital coders, analysts, technicians and healthcare providers who gather, codify and supply data. Our public reporting of performance information is enabled and enhanced by the infrastructure, expertise and stewardship provided by colleagues from NSW Health and its pillar organisations.

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