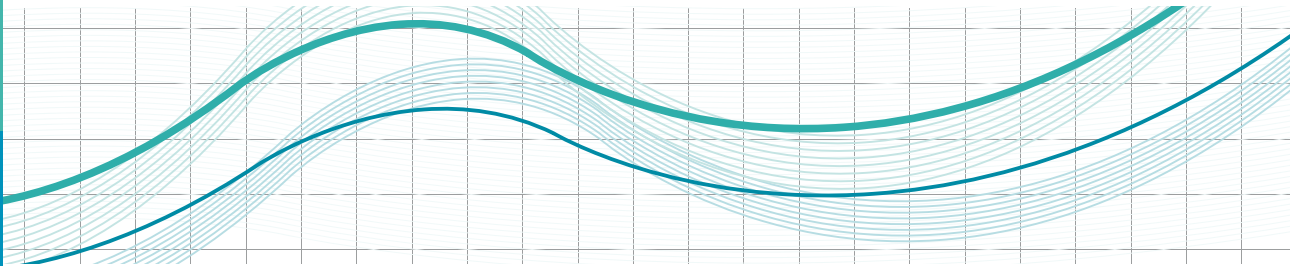


Insights into Care

Technical Supplement
Research Methods and Statistical Analyses

May 2010



SUMMARY

This supplement summarises the research methods and statistical analyses used to create the Bureau of Health Information's report *Insights into Care: Patients' Perspectives on NSW Public Hospitals*. It contains the technical details and is written for audiences interested in the creation of health information.

Insights into Care: Patients' Perspectives on NSW Public Hospitals is based on analyses of survey data derived from a random sample of adults 17 years or older who were overnight (stayed in a hospital one or more nights) or day only patients (received hospital care for one day to get a test, surgery or other procedure). Responses cover 175 public hospitals for overnight patients and 141 public hospitals for day only patients in NSW in February 2009.

The survey analyses were conducted in order to:

- Identify the care experiences that matter most to patients so healthcare workers can focus efforts to improve care.
- Assess the performance of area health services and large* public hospitals in giving care so the system can learn from above average performers.
- Inform the people of NSW about patients' perspectives on their care experiences in public hospitals in NSW and hospitals' performance in giving care.
- Help healthcare workers identify ways they can improve patients' care experiences.

The Bureau focused first on identifying care experiences underlying excellent patient ratings of overall care to learn what people working in hospitals did well and should continue to do. Then, it focused on people who offered fair or poor ratings of care to identify circumstances healthcare workers should avoid if they are to improve care experiences for all patients. Finally, the Bureau focused on making the fairest possible comparisons of area health services and hospitals in NSW.

This supplement describes:

- NSW Health Patient Survey Program 2009,
- Statistical methods: Analyses undertaken by the Bureau to identify the care experiences that underlie positive and negative patient ratings of overall care, as well as the methods used to standardise patient ratings to compare area health services and large public hospitals in NSW fairly.

* Large public hospitals refers to principal referral, major metropolitan and major non metropolitan hospital peer groups.

NSW HEALTH PATIENT SURVEY PROGRAM 2009

In 2009 the NSW Department of Health commissioned IPSOS/Eureka to conduct a cross-sectional mailed survey to estimate patients' experiences with care at state, area health service and hospital levels.

Seven patient groups were surveyed separately – overnight patients, day only patients, paediatric patients, adult rehabilitation patients, non-admitted emergency patients, non-admitted outpatients and community health patients. Each group received a slightly different survey, though many questions were the same (e.g. overall ratings of care).

Overnight patients

People deemed eligible to receive the survey given to overnight patients had a hospital admission date that was different from their discharge date. Therefore, an overnight patient might not have been in hospital for 24 hours but would have spent one or more nights in hospital. Overnight patients admitted for mental health, cancer or rehabilitation care were not eligible to participate as they were eligible to receive a different survey.

In 2009 11,431 overnight patients who met these criteria completed a survey (46% response rate), but analysis in the Bureau's report is limited to 9,660 people. The Bureau excluded 284 overnight patients who did not answer the survey question to rate overall care. It also excluded 1,487 women admitted to deliver a baby because of the different nature of their hospital experience and because most survey questions did not apply to them. It also excluded three patients over the age of 17 years who received care at the Children's Hospital at Westmead when performance was compared across area health services.

Day only patients

People deemed eligible to receive the survey given to day only patients had a hospital admission date that was the same as their discharge date. Day only patients admitted for mental health, cancer or rehabilitation were not eligible to participate as they were eligible to receive a different survey.

In 2009 8,805 day only patients who met these criteria completed a survey (49% response rate) but analysis in the Bureau's report is limited to 8,646 people.

The Bureau excluded 159 day only patients who did not answer the survey question to rate overall care. Four patients were excluded when performance was compared across area health services as these adults received care at the Children's Hospital at Westmead.

Overnight and day only surveys and sampling

The NSW Department of Health used patient survey questionnaires developed by NRC+Picker from the United States. The questionnaires are based on qualitative research which identifies eight dimensions of care important to patients. These dimensions include:

- Access to care,
- Co-ordination and integration of care,
- Information and education,
- Physical comfort,
- Emotional support and alleviation of fear and anxiety,
- Family and friends,
- Transitions and continuity of care, and
- Respect for preferences including values and expressed needs.

The surveys used for overnight and day only patients include 99 and 88 questions, respectively.

A stratified random sampling strategy was used to select overnight and day only patients eligible to participate. Sample size estimates were based on historic variations in care experiences and information on hospital volumes. The age or gender structure of the population was not used in the stratification process and the sampling frame did not include information on age or gender. Case weights were calculated by IPSOS/Eureka to account for differences in response rates and hospital volumes but not for age or gender response bias. The Bureau's staff verified the case weight data before conducting analyses.

An assessment of the scientific rigour of the 2009 NSW Health Patient Survey Program is available in *Insights into Care: Data Quality Supplement* at www.bhi.nsw.gov.au.

STATISTICAL METHODS

To focus efforts of healthcare workers so care can improve, the Bureau used statistical methods to identify the care experiences that matter most to patients. The following outlines the analyses undertaken to identify the care experiences that underlie excellent and fair or poor patient ratings of overall care.

We used Proc Survey Logistic in SAS V9.1.3 for all statistical analyses. All analyses allowed for the stratified sampling and the finite population size. Hospitals that had only one respondent were pooled into a single stratum (11 overnight and 23 day only patients).

Results are reported for large public hospitals. The Bureau was able to calculate reliable estimates for large public hospitals because these hospitals had large sample sizes and low standard errors of hospital parameters within the statistical models. Hospitals with fewer respondents are reported as a group for each area health service.

Independent and dependent variables and bivariate analyses

The analyses centred on the question: "Overall, how would you rate the care you received at the hospital?" The response options were "excellent", "very good", "good", "fair" and "poor". The Bureau focused on identifying care experiences that were statistically significant determinants of excellent ratings ("positive") and determinants of fair or poor ("negative") patient ratings of care.

The two analyses were done separately as it was assumed, prospectively, that the determinants of excellent ratings could be quite different from the determinants of fair or poor ratings.

To identify the factors underlying positive ratings, we focused on the group of patients who reported the overall care they received in hospital was excellent. Then we used statistical techniques to identify the factors and experiences which differentiated this group from patients who reported the overall care was very good, good, fair or poor (all remaining respondents).

We used the same approach to identify the factors driving negative ratings of overall care. That is, we identified the factors and experiences that differentiated the group of patients who reported fair or poor ratings of overall care from those who offered excellent, very good or good ratings (all remaining respondents). Patients who offered fair or poor ratings were considered together, since few patients offered poor ratings and it was considered poor and fair ratings both represented negative experiences.

International research evidence indicates that patients' characteristics are associated with their ratings of quality of care.¹ Therefore, the Bureau assessed the degree to which patient characteristics and presenting characteristics were statistically significant predictors of patients' ratings of overall care. It considered these statistically significant factors in tandem with information on care experiences to determine:

- Which experiences most influence the likelihood that a patient will report excellent or fair/ poor ratings of overall care;
- The magnitude of the influence that care experiences have on excellent or fair/poor patient ratings; and
- The relative magnitude of the influence of patients' and presenting characteristics as well as experiences with care.

To do this, questions on the overnight and day only survey were sorted into three groups: **patient characteristics** (age, gender, language spoken at home, etc.); their **presenting characteristics**, referring to the circumstances at the time of the hospital encounter (eg, planned or emergency admission); and their **care experiences**, referring to patient perceptions about the nature and process of their care (how well staff work as a team, staff courtesy etc.). As mentioned, grouping the variables in this way allowed the Bureau to determine the influence of each group on patients' ratings of overall care.

Multivariate analyses

Forward stepwise logistic regression was performed to identify the most important independent variables, including care experiences, for the following multivariate models:

- Overnight patients: Excellent ratings of overall care (Appendix A)
- Overnight patients: Poor/fair ratings of overall care (Appendix B)
- Day only patients: Excellent ratings of overall care (Appendix C)
- Day only patients: Poor/fair ratings of overall care (Appendix D)

At each stage of the forward stepwise regression, selection of the next variable to be included in the model was based on choosing the model with the lowest Akaike's Information Criterion (AIC). The process continued until the addition of any additional patients' characteristic variable did not benefit the model – either the AIC increased or the Wald chi square for addition of the variable was not significant at the five per cent level. Variables were added in three groups as follows:

First step – each variable in the patients' characteristics group was considered for inclusion in the model. There were 9 questions about patient characteristics in the overnight survey and 9 in the day only survey.

Second step – starting from the model developed in the first step, the presenting characteristics' variables were considered for inclusion in the model, using the same stepwise regression methods. There were two questions about presenting characteristics in the overnight survey and one in the day only survey.

Third step – starting from the model developed in the second step, care experience variables were considered for inclusion in the model. There were 71 care experience variables (i.e. survey questions) in the overnight survey and 65 in the day only survey.

For overnight patients, a total of 20 care experience variables entered the stepwise model for excellent ratings of overall care and 24 care experience variables entered the stepwise model predicting fair or poor ratings. For day only patients, 26 care experience variables entered the stepwise model for excellent patient ratings of overall care and 16 care experience variables entered the stepwise model predicting fair or poor ratings for the day only patient cohort. Figure 1 and Figure 2 in *Insights into Care: Patients' Perspectives on NSW Public Hospitals* list the care experience variables that were statistically significant in the final models.

Appendices A to D list the statistically significant patient and presenting characteristics with their corresponding p-values and odds ratios in the bivariate and multivariate models. The four care experience variables most important in determining the ratings are also shown.

Standardised patient ratings

To support fair comparisons, patients' ratings of care experiences were standardised. Standardisation illustrates how area health services or hospitals would rate if they all served the same standard patient population. The process of standardisation is important to support comparisons of care experiences as area health services and hospitals provide services to different types of people. These differences may predispose patients to offer higher or lower ratings and are not in the control of healthcare workers who provide care during an admission to hospital. Actual and standardised results for overnight and day only patients and their ratings of overall care and other care experiences are available in *Insights into Care: NSW Public Hospitals Report* at www.bhi.nsw.gov.au.

The first step in standardisation was to establish a base model. Information from the survey was used to identify the patient and presenting characteristics that influenced overall ratings of care. Then statistical analyses could be done to standardise performance measures for area health services and hospitals. There was consistency between the stepwise regression models in significant patients and presenting characteristics among patients who offered excellent or fair/poor ratings in both overnight and day only patients cohorts. Therefore, the following explanatory covariates were used to standardise area health services and hospitals.

For overnight patients the explanatory patient characteristic variables included in the models were age group, self reported health status, education, language spoken at home, Aboriginality,* gender, public or private patient and days that illness or injury kept the respondent in bed all or part of the day in February 2009. The presenting explanatory variables included whether the admission was planned or emergency and whether surgery was performed.

For day only patients the explanatory patient characteristic variables included in the models were age group, self reported health status, education, language spoken at home, public or private patient and days that illness or injury kept them in bed in February 2009. The presenting explanatory variable included whether the admission was planned or an emergency admission.

To calculate the standardised estimates for each care experience profiled in the Bureau's report, terms for area health services or for hospitals were added to the base model. The model was fitted using Proc Survey Logistic in SAS V9.1.3, as described above, using the cumulative logit link function. All respondents for NSW who were included in the analyses were used as the standard population. Appendices A to D show the proportion of respondents in each category for each variable who were included in the base model. These proportions were used to standardise area health services and hospitals.

* In this report Aboriginality refers to both Aboriginal and Torres Strait Islander Peoples in recognition of the fact that Aboriginal peoples are the original inhabitants of New South Wales.

APPENDIX A

Overnight patients: Excellent ratings of overall care

To identify what underlies positive patient ratings of overall care for overnight patients, we used statistical methods to identify factors that are associated with the likelihood that a survey respondent would rate care as excellent (34 per cent of all overnight patients).

Patient and presenting characteristics shown in this table had relatively little power to predict positive patients' ratings of care (Pseudo $R^2=0.21$). When staff teamwork came into the model it increased the Pseudo R^2 to 0.92. The next experience variable, courtesy of nurses increased it to 0.94 and then the third and fourth increased it to 0.95. The Pseudo R^2 for the full model was 0.96.

Table 1: Results of logistic regression statistical model for excellent patient ratings of overall care among overnight patients, 2009

Variable	%	Bivariate		Patient and presenting characteristics and 4 experience variables	
		Odds ratio	Overall p value	Adjusted odds ratio	Overall p value
Patient characteristics					
In general, how would you rate your health?			<.0001		0.018
Missing	2.7	0.39		0.61	
Poor	9.2	0.28		0.58	
Fair	25.5	0.31		0.67	
Good	35.4	0.36		0.74	
Very good	20.8	0.57		0.89	
Excellent*	6.4	1			
During the month of February this year, how many days did illness or injury keep you in bed all or part of the day?			<.0001		0.256
Missing	3.2	1.32		0.88	
None	16.4	1.43		1.00	
One day	7.4	1.47		1.05	
Two days	9.8	1.27		1.10	
Three days	8.9	1.04		0.93	
Four days	9.1	1.18		0.88	
Five to seven days	15.8	1.11		1.09	
Eight to ten days	8.9	0.94		0.73	
More than ten days*	20.5	1			

For this stay in hospital you have been referring to, were you treated as a:			<.0001		0.043
Missing	1.9	1.48		2.74	
Public or Medicare patient	70.4	1.76		2.59	
Private patient/claiming against private health insurance	20.2	1.41		2.30	
WorkCover patient	0.9	1.57		1.84	
Department of Veterans Affairs (DVA) patient	4.9	1.47		2.00	
Something else	0.5	0.99		1.48	
Not sure*	1.3	1			
What was the highest level of education you completed?			<.0001		0.265
Missing	8.3	1.28		1.25	
Less than Year 12 at secondary school	45.1	1.29		1.09	
Completed Year 12 at secondary school	15.1	1.19		1.30	
Trade or technical certificate or diploma	19.9	1.00		0.98	
University graduate	7.8	0.82		1.03	
Post graduate / higher degree*	3.8	1			
What language do you normally speak at home?			<.0001		0.016
Missing	5.7	0.82		1.03	
Non-English	8.2	0.42		0.64	
English*	86.1	1			
Are you of Aboriginal or Torres Straight Island background?			0.003		0.711
Missing	1.8	1.4		1.25	
No*	96.5	1			
Yes, Aboriginal	1.5	1.33		0.93	
Yes, Torres Straight Islander	0.2	2.95		1.67	
To which age group do you (the patient) belong?			<.0001		0.030
Missing	0.8	1.39		0.59	
Less than 19 years	1.3	0.63		0.50	
20 to 29 years	4.0	0.62		0.48	
30 to 39 years	6.5	1.07		0.80	
40 to 49 years	9.5	0.96		0.74	
50 to 59 years	14.5	1.07		0.79	
60 to 69 years	20.6	1.27		0.91	
70 to 79 years	23.6	1.13		0.90	
80 years or older*	19.3	1			
Presenting characteristics					
Was your hospital stay in February planned in advance or an emergency?			<.0001		0.029
Missing	4.4	1.93		2.43	
Emergency or urgent	69.1	1.13		1.75	
Waiting list or planned in advance	24.5	1.35		1.68	
Something else*	2.0	1			

Care experiences					
How would you rate how well the doctors and nurses worked together?			<.0001		<.0001
Missing	1.1	106.69		33.17	
Poor*	2.4	1			
Fair	7.9	5.64		4.52	
Good	24.3	9.14		4.63	
Very good	35.5	75.43		18.65	
Excellent	28.8	>999		290.00	
How would you rate the courtesy of your nurses?			<.0001		<.0001
Missing	1.0	23.24		5.23	
Poor*	1.3	1			
Fair	6.6	1.14		1.66	
Good	21.6	4.40		3.18	
Very good	34.3	21.26		5.30	
Excellent	35.1	257.35		16.48	
Cleanliness of the room ?			<.0001		<.0001
Missing	3.3	5.84		1.76	
Poor*	3.2	1			
Fair	9.3	1.03		0.89	
Good	27.4	1.37		0.84	
Very good	32.9	4.71		1.35	
Excellent	23.9	30.88		3.61	
How would you rate the courtesy of the staff who admitted you?			<.0001		<.0001
Missing	1.3	12.67		2.79	
Poor*	1.1	1			
Fair	4.7	0.97		0.95	
Good	20.6	1.58		1.14	
Very good	34.4	7.12		1.53	
Excellent	37.9	73.62		4.17	

* Reference category

APPENDIX B

Overnight patients: Poor/fair ratings of overall care

In order to identify what underlies negative patient ratings of care for overnight patients, we used statistical methods to identify factors that are associated with the likelihood that a survey respondent would rate care as fair or poor (11 per cent of all overnight patients).

Patient and presenting characteristics shown in this table had relatively little power to predict positive patient ratings of care (Pseudo $R^2=0.14$). When staff teamwork came into the model it increased the Pseudo R^2 to 0.80. The next experience variable, courtesy of nurses, increased it to 0.84 and then the third and fourth increased it to 0.87. The Pseudo R^2 for the full model was 0.90.

Table 2: Results of logistic regression statistical model for poor/fair patient ratings of overall care among overnight patients, 2009

Variable	%	Bivariate		Patient and presenting characteristics and 4 experience variables	
		Odds ratio	Overall p value	Adjusted odds ratio	Overall p value
Patient characteristics					
In general, how would you rate your health?			<.0001		0.359
Missing	2.7	0.88		0.50	
Poor	9.2	2.66		1.17	
Fair	25.5	1.68		0.98	
Good	35.4	1.32		1.10	
Very good	20.8	0.91		0.94	
Excellent*	6.4	1			
During the month of February this year, how many days did illness or injury keep you in bed all or part of the day?			<.0001		0.413
Missing	3.2	0.52		0.63	
None	16.4	0.39		0.78	
One day	7.4	0.42		0.78	
Two days	9.8	0.47		0.81	
Three days	8.9	0.52		0.79	
Four days	9.1	0.41		0.71	
Five to seven days	15.8	0.54		0.68	
Eight to ten days	8.9	0.59		0.64	
More than ten days*	20.5	1			

For this stay in hospital you have been referring to, were you treated as a:			0.010		0.031
Missing	1.9	0.75		1.05	
Public or Medicare patient	70.4	0.69		0.79	
Private patient/claiming against private health insurance	20.2	0.86		1.18	
WorkCover patient	0.9	1.25		0.84	
Department of Veterans Affairs (DVA) patient	4.9	0.64		1.28	
Something else	0.5	1.22		2.15	
Not sure*	1.3	1			
What was the highest level of education you completed?			<.0001		0.481
Missing	8.3	0.73		1.44	
Less than Year 12 at secondary school	45.1	0.55		1.04	
Completed Year 12 at secondary school	15.1	0.76		1.15	
Trade or technical certificate or diploma	19.9	0.76		0.99	
University graduate	7.8	0.94		0.89	
Post graduate / higher degree*	3.8	1			
What language do you normally speak at home?			0.007		0.123
Missing	5.7	1.25		1.58	
Non-English	8.2	1.51		0.91	
English*	86.1	1			
Are you of Aboriginal or Torres Straight Island background?			<.0001		<.0001
Missing	1.8	0.8		1.11	
No*	96.5	1			
Yes, Aboriginal	1.5	1.34		0.71	
Yes, Torres Straight Islander	0.2	0		0	
Are you male or female?			0.001		0.121
Missing	1.1	0.66		0.47	
Male	48.7	0.78		1.06	
Female*	50.2	1			
To which age group do you (the patient) belong?			<.0001		0.040
Missing	0.8	0.89		1.75	
Less than 19 years	1.3	3.11		3.02	
20 to 29 years	4.0	2.43		1.80	
30 to 39 years	6.5	1.94		1.95	
40 to 49 years	9.5	1.61		1.80	
50 to 59 years	14.5	1.43		1.51	
60 to 69 years	20.6	1.17		1.96	
70 to 79 years	23.6	1.08		1.44	
80 years or older*	19.3	1			
Presenting characteristics					
Did you have surgery in the hospital?			0.004		0.017
Missing	2.9	1.93		1.57	
Yes	45.5	1.56		0.67	
No	51.0	1.97		0.85	
Not sure*	0.6	1			

Care experiences					
How would you rate how well the doctors and nurses worked together?			<.0001		<.0001
Missing	1.1	156.49		25.75	
Poor	2.4	>999		535.25	
Fair	7.9	>999		220.50	
Good	24.3	79.95		19.83	
Very good	35.5	4.61		2.73	
Excellent*	28.8	1			
How would you rate the courtesy of your nurses?			<.0001		<.0001
Missing	1.0	24.72		8.26	
Poor	1.3	647.95		12.78	
Fair	6.6	177.98		7.79	
Good	21.6	17.89		2.88	
Very good	34.3	2.72		1.51	
Excellent*	35.1	1			
Did you feel like you were treated with respect and dignity while you were in the hospital?			<.0001		<.0001
Missing	1	6.30		2.50	
Yes, always*	79.9	1			
Yes, sometimes	15.9	17.93		2.64	
No	3.2	186.52		14.12	
How would you rate the availability of your nurses?			<.0001		<.0001
Missing	1.5	19.02		0.59	
Poor	4.3	401.76		3.49	
Fair	13.2	78.18		1.64	
Good	29.7	11.46		0.74	
Very good	30.7	2.42		0.61	
Excellent*	20.7	1			

* Reference category

APPENDIX C

Day only patients: Excellent ratings of overall care

In order to identify what underlies positive patient ratings of care for day only patients, we used statistical methods to identify factors that are associated with the likelihood that a survey respondent would rate care as excellent (42 per cent of all day only patients).

Patient and presenting characteristics shown in this table had relatively little power to predict positive patient ratings of care (Pseudo $R^2=0.19$). When staff teamwork came into the model it increased the Pseudo R^2 to 0.86. The next experience variable, courtesy of nurses, increased it to 0.91 and then the third and fourth increased it to 0.92. The Pseudo R^2 for the full model was 0.94.

Table 3: Results of logistic regression statistical model for excellent patient ratings of overall care among day only patients, 2009

Variable	%	Bivariate		Patient and presenting characteristics and 4 experience variables	
		Odds ratio	Overall p value	Adjusted odds ratio	Overall p value
Patient characteristics					
In general, how would you rate your health?			<.0001		0.005
Missing	2.1	0.56		1.12	
Poor	6.0	0.33		0.90	
Fair	20.5	0.32		0.69	
Good	35.8	0.34		0.67	
Very good	27.0	0.55		0.70	
Excellent*	8.6	1			
For this stay in hospital you have been referring to, were you treated as a:			<.0001		0.002
Missing	1.7	1.20		0.69	
Public or Medicare patient	81.6	1.22		0.72	
Private patient / claiming against private health insurance	13.2	0.95		0.52	
WorkCover patient	0.4	1.09		2.13	
Department of Veterans Affairs (DVA) patient	1.7	0.92		0.83	
Something else	0.4	0.43		0.40	
Not sure*	0.9	1			
What was the highest level of education you completed?			<.0001		0.336
Missing	6.6	1.17		0.70	
Less than Year 12 at secondary school	44.8	1.30		0.79	
Completed Year 12 at secondary school	15.5	1.17		0.81	
Trade or technical certificate or diploma	20.0	1.15		0.70	
University graduate	8.8	0.89		0.81	
Post graduate / higher degree*	4.3	1			
What language do you normally speak at home?			<.0001		0.400
Missing	7.0	0.58		0.87	
Non-English	8.5	0.42		0.85	
English*	84.5	1			

During the month of February this year, how many days did illness or injury keep you in bed all or part of the day?			<.0001		0.144
Missing	2.2	1.42		1.44	
None	47.9	1.94		1.52	
One day	15.5	1.59		1.65	
Two days	9.6	1.26		1.27	
Three days	5.9	1.24		1.45	
Four days	3.7	1.37		1.77	
Five-to-seven days	6.5	1.15		1.38	
Eight-to-ten days	2.5	1.43		1.79	
More than ten days*	6.1	1			
To which age group do you (the patient) belong?			<.0001		0.024
Missing	0.7	0.81		0.87	
Less than 19 years	1.1	0.95		1.10	
20 to 29 years	5.0	0.74		0.78	
30 to 39 years	8.9	0.72		0.69	
40 to 49 years	11.6	0.91		0.72	
50 to 59 years	16.2	1.10		0.92	
60 to 69 years	21.6	1.20		1.04	
70 to 79 years	24.3	1.24		1.08	
80 years or older*	10.6	1			
Presenting characteristics					
Was your hospital day admission in February planned in advance or an emergency?			<.0001		0.396
Missing	5.5	1.66		1.15	
Emergency or urgent	17.4	1.16		1.38	
Waiting list or planned in advance	73.7	1.83		1.31	
Something else*	3.4	1			
Care experiences					
How would you rate how well the doctors and nurses worked together?			<.0001		<.0001
Missing	1.0	19.64		9.81	
Poor*	1.0	1			
Fair	4.2	0.73		1.11	
Good	20.4	1.73		1.85	
Very good	35.9	10.21		4.91	
Excellent	37.4	338.55		56.17	
How would you rate the courtesy of your nurses?			<.0001		<.0001
Missing	1.7	71.14		17.47	
Poor*	1.0	1			
Fair	3.7	1.76		2.75	
Good	17.5	5.05		4.24	
Very good	33.3	27.62		7.79	
Excellent	42.8	492.51		36.56	

Cleanliness of the room			<.0001		<.0001
Missing	2.9	3.35		1.01	
Poor*	1.3	1			
Fair	5.1	0.33		0.28	
Good	23.8	0.94		0.78	
Very good	36.3	2.93		1.17	
Excellent	30.6	21.96		2.91	
How would you rate the courtesy of the person who admitted you?			<.0001		<.0001
Missing	1.0	5.38		1.04	
Poor*	1.0	1			
Fair	3.9	0.48		0.71	
Good	19.5	0.72		0.63	
Very good	35.2	2.84		0.89	
Excellent	39.4	34.24		2.42	

* Reference category

APPENDIX D

Day only patients: Poor/fair ratings of overall care

In order to identify what underlies negative patient ratings of care for day only patients, we used statistical methods to identify factors associated with the likelihood that a survey respondent would rate care as fair or poor (5 per cent of all overnight patients).

Patient and presenting characteristics shown in this table had relatively little power to predict positive patient ratings of care (Pseudo $R^2=0.16$). When courtesy of nurses came into the model it increased the Pseudo R^2 to 0.55. The next experience variable, staff teamwork, increased it to 0.75 and then the third and fourth increased it to 0.80. The Pseudo R^2 for the full model was 0.84.

Table 4: Results of logistic regression statistical model for poor/fair patient ratings of overall care among day only patients, 2009

Variable	%	Bivariate		Patient and presenting characteristics and 4 experience variables	
		Odds ratio	Overall p value	Adjusted odds ratio	Overall p value
Patient characteristics					
In general, how would you rate your health?			<.0001		0.253
Missing	2.1	1.66		1.15	
Poor	6.0	2.93		0.88	
Fair	20.5	1.65		0.92	
Good	35.8	1.10		0.92	
Very good	27.0	0.68		0.57	
Excellent*	8.6	1			
For this stay in hospital you have been referring to, were you treated as a:			<.0001		0.007
Missing	1.7	0.40		0.85	
Public or Medicare patient	81.6	0.29		0.54	
Private patient / claiming against private health insurance	13.2	0.33		0.59	
WorkCover patient	0.4	0.26		0.19	
Department of Veterans Affairs (DVA) patient	1.7	0.27		1.13	
Something else	0.4	2.06		3.19	
Not sure*	0.9	1			
What language do you normally speak at home?			<.0001		0.069
Missing	7.0	1.93		1.11	
Non-English	8.5	2.30		1.59	
English*	84.5	1			

During the month of February this year, how many days did illness or injury keep you in bed all or part of the day?			<.0001		<.0001
Missing	2.2	0.36		0.21	
None	47.9	0.25		0.67	
One day	15.5	0.28		0.55	
Two days	9.6	0.51		0.92	
Three days	5.9	0.59		0.48	
Four days	3.7	0.67		0.86	
Five to seven days	6.5	1.02		1.35	
Eight to ten days	2.5	0.77		2.01	
More than ten days*	6.1	1			
To which age group do you (the patient) belong?			<.0001		0.984
Missing	0.7	3.28		1.55	
Less than 19 years	1.1	2.15		0.75	
20 to 29 years	5.0	2.61		1.23	
30 to 39 years	8.9	2.07		0.98	
40 to 49 years	11.6	1.88		1.08	
50 to 59 years	16.2	1.21		0.94	
60 to 69 years	21.6	1.06		1.05	
70 to 79 years	24.3	0.82		1.04	
80 years or older*	10.6	1			
Presenting characteristics					
Was your hospital day admission in February planned in advance or an emergency?			<.0001		0.035
Missing	5.5	0.55		1.18	
Emergency or urgent	17.4	0.82		0.63	
Waiting list or planned in advance	73.7	0.28		0.55	
Something else*	3.4	1			
Care experiences					
How would you rate the courtesy of your nurses?			<.0001		<.0001
Missing	1.7	25.35		8.57	
Poor	1.0	751.11		15.69	
Fair	3.7	308.84		10.86	
Good	17.5	25.16		3.43	
Very good	33.3	4.51		2.51	
Excellent*	42.8	1			
How would you rate how well the doctors and nurses worked together?			<.0001		<.0001
Missing	1.0	15.53		10.76	
Poor	1.0	>999		246.82	
Fair	4.2	>999		59.79	
Good	20.4	2.88		3.71	
Very good	35.9	0.95		1.18	
Excellent*	37.4	1			
How well organised was the hospital or department where you had your procedure?			<.0001		<.0001
Missing	0.9	12.57		1.38	
Not at all organised	1.6	471.16		35.48	
Somewhat organised	20.5	41.03		6.03	
Very organised*	76.9	1			

Did you feel like you were treated with respect and dignity while you were in the hospital?			<.0001		<.0001
Missing	1.7	4.32		1	
Yes, always*	85.7	1			
Yes, sometimes	10.9	29.01		2.98	
No	1.7	183.09		12.70	

* Reference category

REFERENCES

1 Crow R, Gage H, Hampson S. The measurement of satisfaction with healthcare: Implications for practice from a systematic review of the literature. *Health Technology Assessment 2002*: 6:1-250.