bureau of health information

Mona Vale and District Hospital

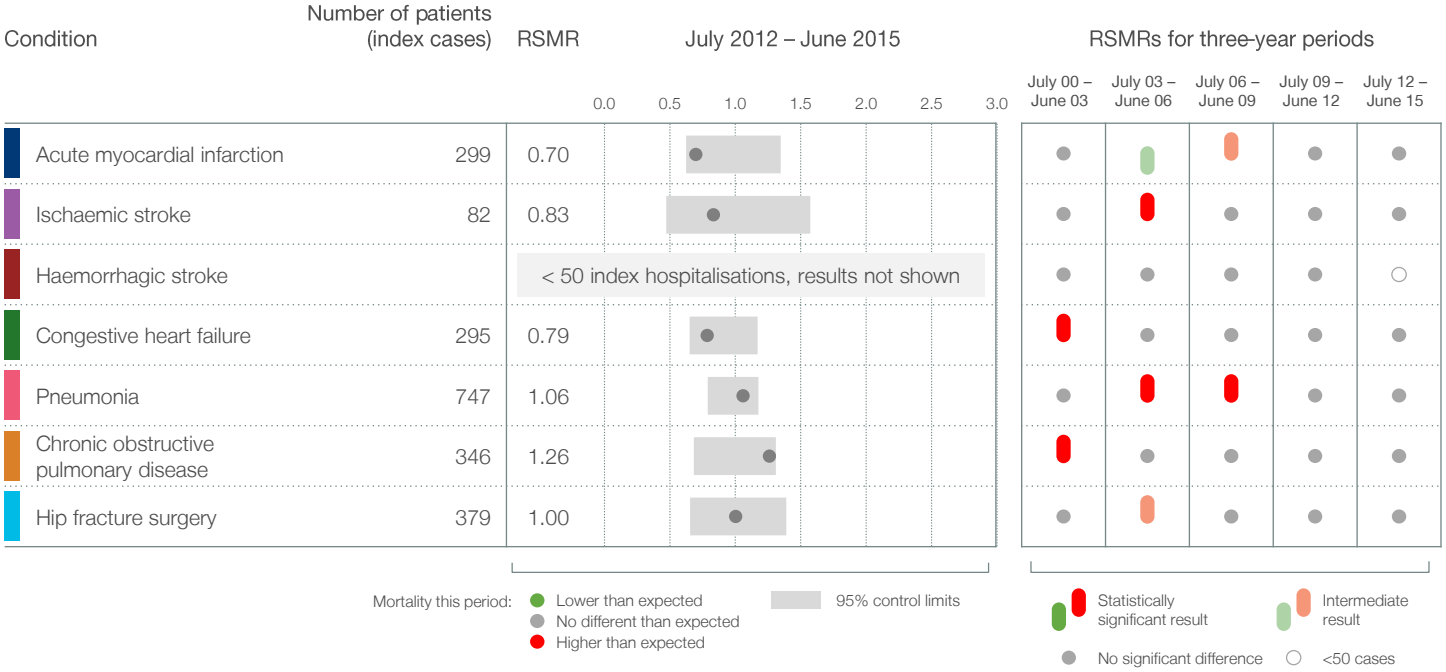
30-day mortality following hospitalisation for seven conditions

The risk-standardised mortality ratio (RSMR) is an indicator that describes, for each hospital's patient cohort, the 'observed' number of deaths divided by the 'expected' number of deaths[1]. The 'expected' number of deaths takes account of the hospital's case mix and is estimated using a statistical model built using the NSW patient population characteristics and outcomes. A ratio of less than 1.0 indicates lower than expected mortality while a ratio greater than 1.0 indicates higher than expected mortality. Small deviations from 1.0 are not considered to be meaningful.

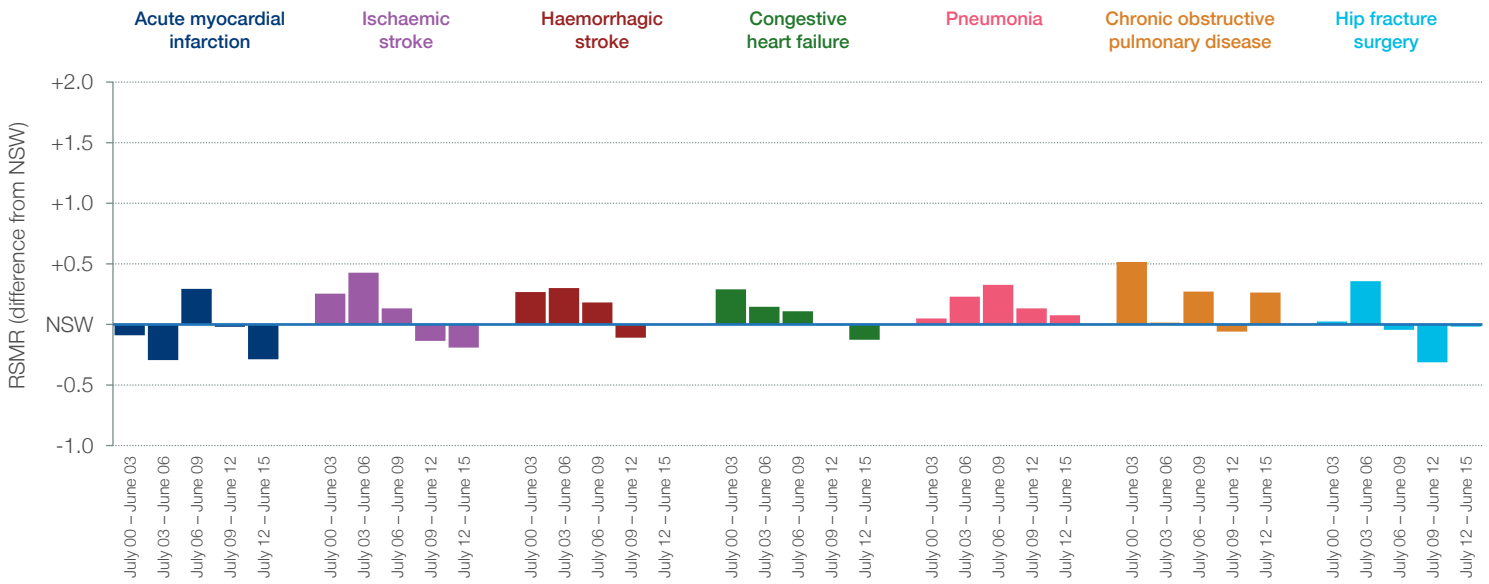
Funnel plots with 95% and 99.8% control limits around the NSW rate are used to identify outlier hospitals – those with 'special cause' variation that may warrant further investigation.

The measure is not designed to enable direct comparisons between hospitals. It assesses each hospital's results given its particular case mix. RSMRs do not distinguish deaths that are avoidable from those that are a reflection of the natural course of illness.

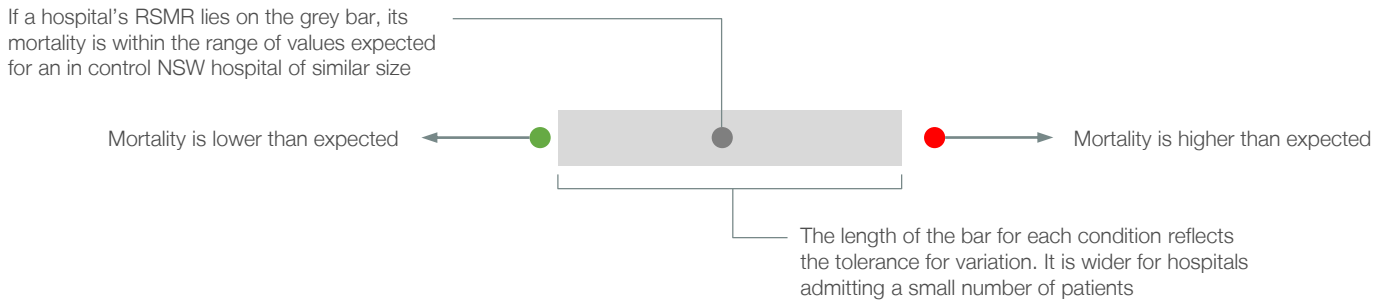
Risk-standardised mortality ratios (RSMRs) for seven conditions



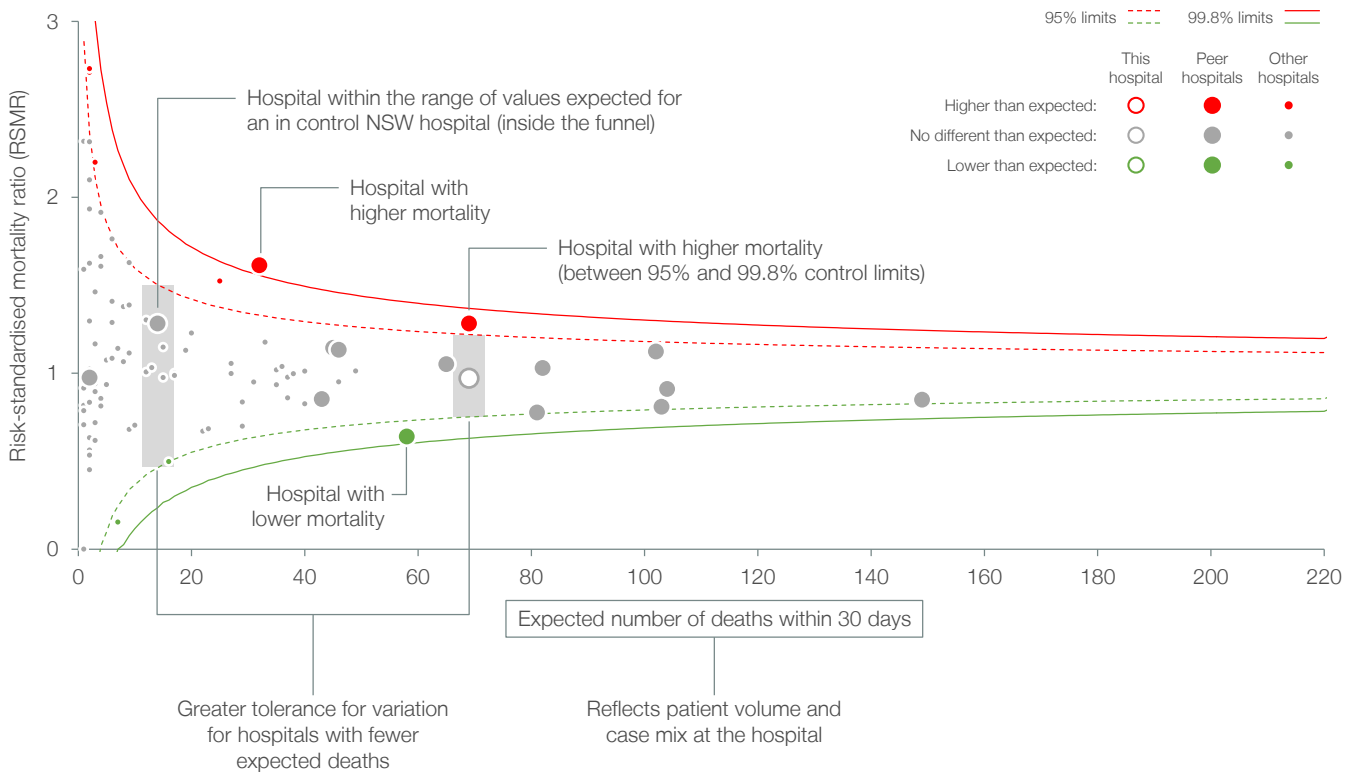
RSMRs for three-year periods, seven clinical conditions



How to interpret the dashboard



How to interpret a funnel plot

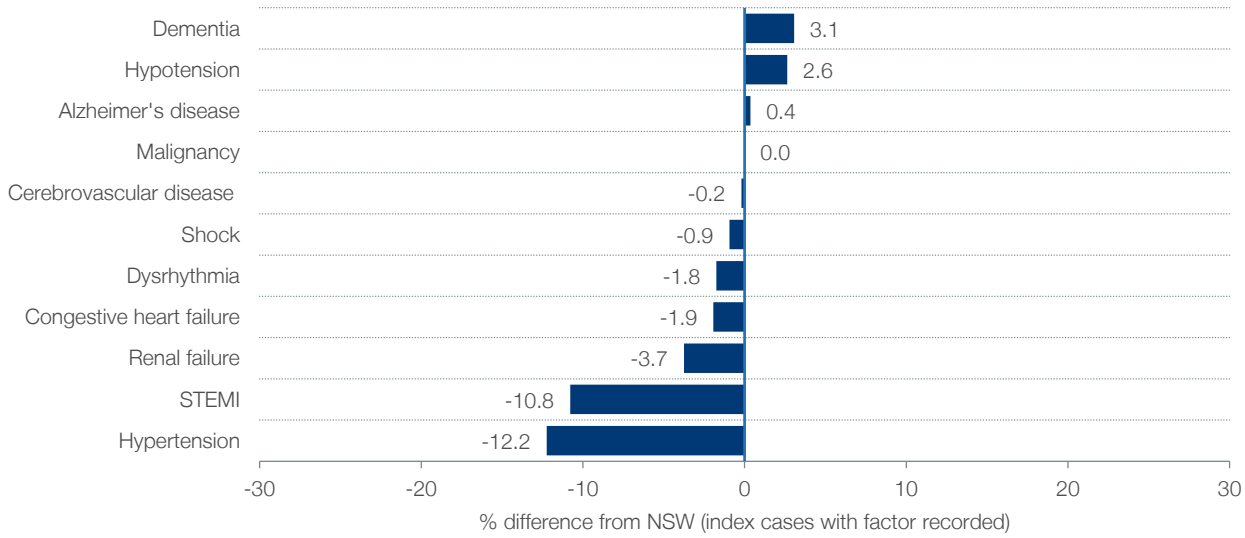


Mona Vale and District Hospital

30-day mortality following hospitalisation for acute myocardial infarction, July 2012 – June 2015

	This hospital	NSW
Total acute myocardial infarction hospitalisations	355	38,352
Acute myocardial infarction patients		
Presenting patients (index cases)[1]	299	30,488
Patients transferred to another hospital within 30 days	231	14,797
Percentage of patients aged 65+ years*[2]	75.6%	62.3%
Percentage of patients aged 75+ years*[2]	57.5%	38.7%

Significant patient factors and comorbidities, this hospital, index cases[3]



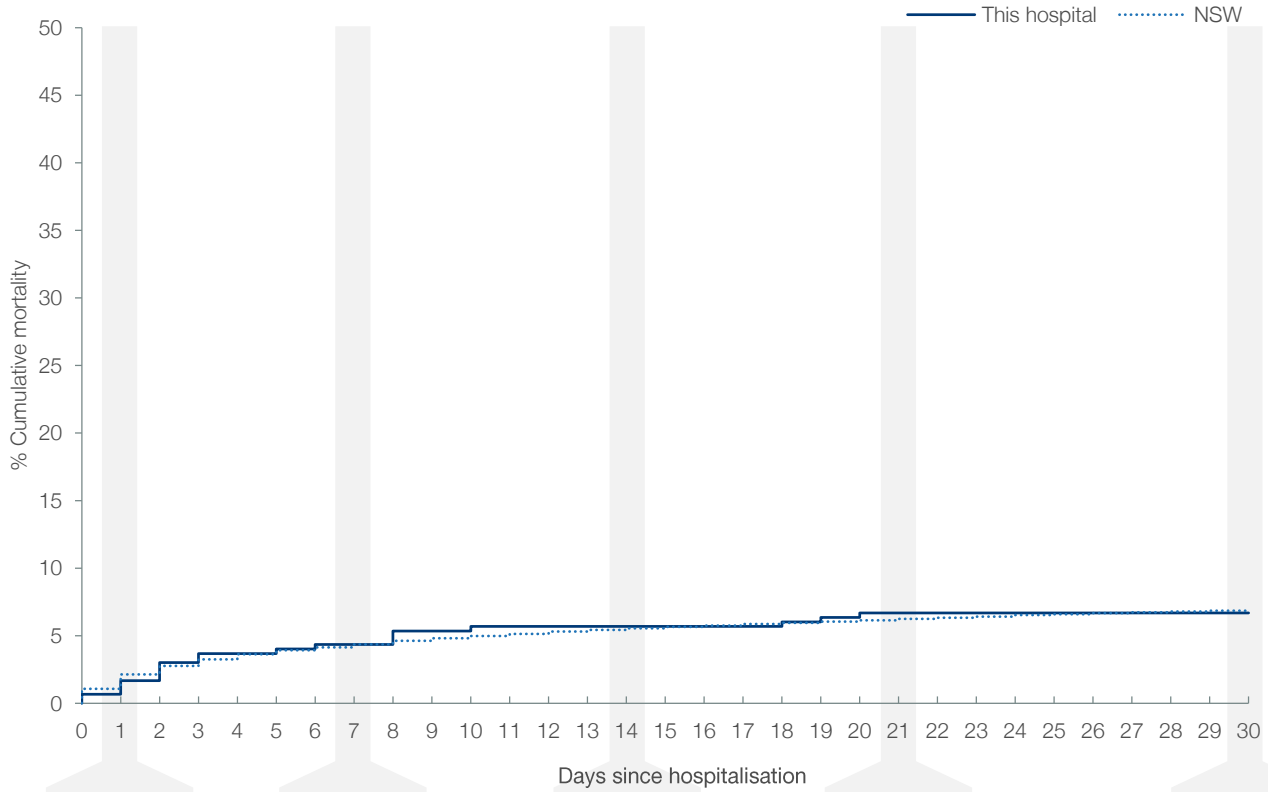
*Age was a significant factor in the final model of 30-day mortality following hospitalisation for acute myocardial infarction.

Mona Vale and District Hospital

30-day mortality following hospitalisation for acute myocardial infarction, July 2012 – June 2015

	This hospital	NSW
Mortality (all causes) among 299 acute myocardial infarction index cases	20 (6.7%)	2,108 (6.9%)
Percentages: index cases who died within 30 days of hospitalisation		
Where deaths occurred:		
Percentage in this hospital	75.0%	63.4%
Percentage in another hospital following transfer	0.0%	4.6%
Percentage after discharge	25.0%	31.9%
When deaths occurred:		
Percentage on day of admission	10.0%	15.4%
Percentage within seven days	65.0%	63.1%

Cumulative mortality following hospitalisation for acute myocardial infarction, this hospital and NSW[4]

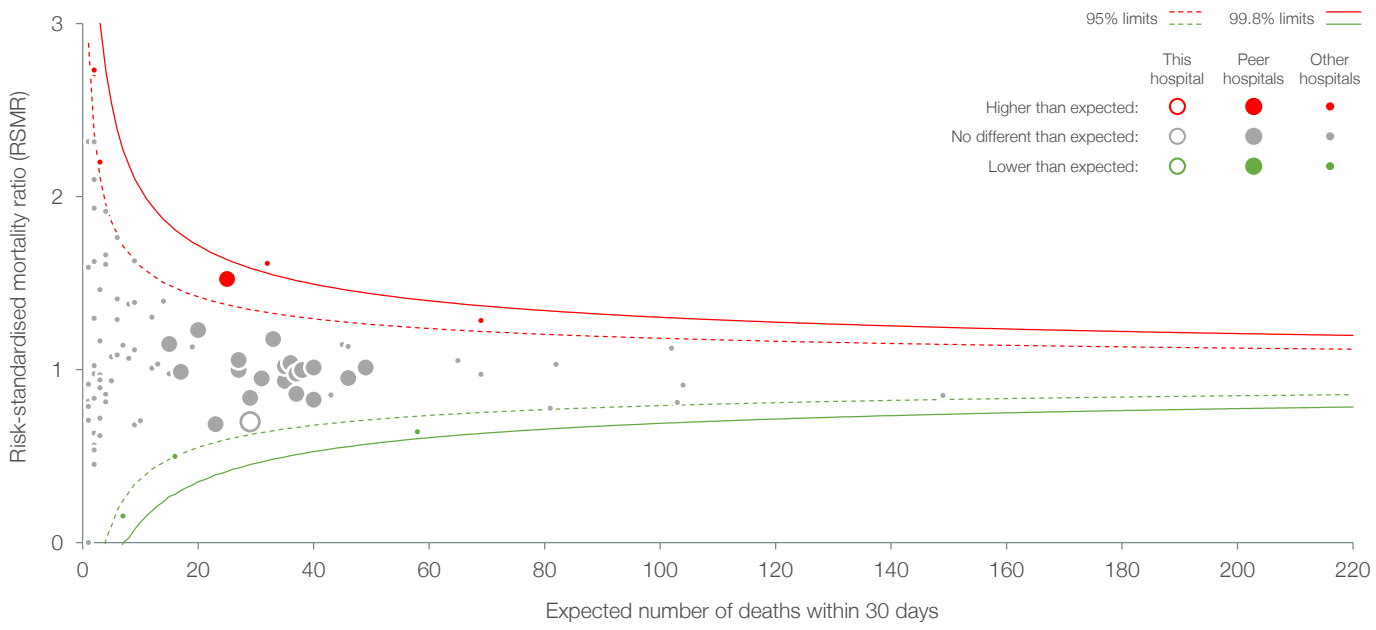


This hospital	Day 1	Day 7	Day 14	Day 21	Day 30
Cumulative number of deaths	5	13	17	20	20
Patients still alive	294	286	282	279	279

Mona Vale and District Hospital

30-day mortality following hospitalisation for acute myocardial infarction, July 2012 – June 2015

Acute myocardial infarction risk-standardised mortality ratio by number of expected deaths, NSW public hospitals[5]



Illustrating the effect of standardisation, July 2012 – June 2015

In order to make fair comparisons, a number of risk adjustments are made to mortality data. These take into account patient factors that influence the likelihood of dying. The table below illustrates the effect of statistical adjustments on this hospital's results.

Unadjusted ratio	Age and sex standardised ratio	Risk-standardised mortality ratio
0.97	0.66	0.70

Ratio: Lower than expected; No different than expected; Higher than expected

The extent to which comorbidities are coded in the patient record may affect risk adjustment. Therefore the 'depth of coding'[6] has been assessed across NSW hospitals. In July 2009 – June 2012, the average depth of coding was 3.8 diagnoses in this hospital and 4.3 in NSW; and in July 2012 – June 2015, there were 3.5 diagnoses in this hospital and 4.8 in NSW.

Three-yearly RSMR and annual unadjusted mortality rates

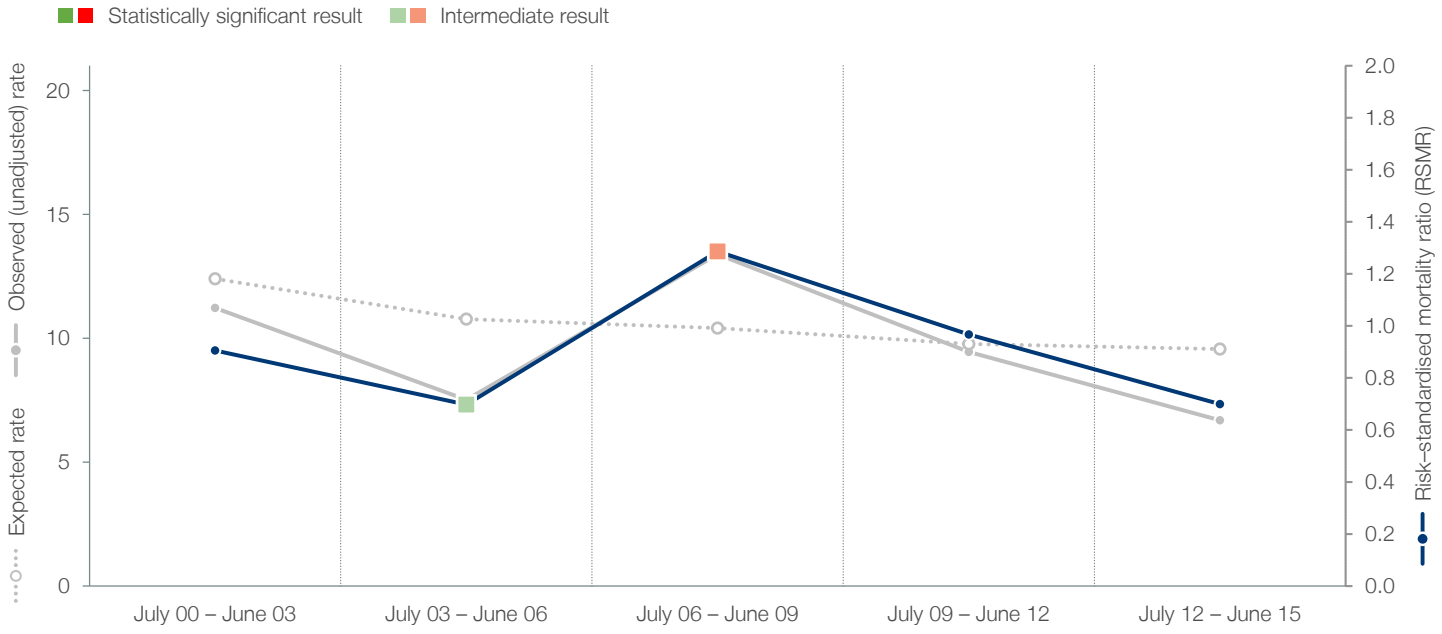
The RSMR is calculated on the basis of three years of data. It takes account of differences in patient characteristics so that assessments of hospital performance are fair. To give an indication of results within the three-year period, the figure below shows the RSMR result for July 2012 – June 2015 alongside differences between this hospital and the NSW result for annual unadjusted mortality rates.

RSMR: Lower than expected; No different than expected; Higher than expected

Mona Vale and District Hospital

30-day mortality following hospitalisation for acute myocardial infarction, July 2012 – June 2015

Acute myocardial infarction, this hospital's risk-standardised mortality ratio, expected mortality rates and observed (unadjusted) mortality rates, July 2000 – June 2015



Notes

1. Data refer to patients who were discharged between July 2012 and June 2015 who were initially admitted to this hospital (regardless of whether they were subsequently transferred) in their last period of care, for an acute and emergency hospitalisation with AMI as principal diagnosis (ICD-10-AM codes I21, excluding I21.9). Deaths are from any cause, in or out of hospital within 30 days of the hospitalisation admission date.
2. Age at admission date.
3. Comorbidities as recorded on patient record, with one year look back from the admission date of the index case. Many are a result of end-organ damage resulting from comorbidities, such as diabetes. The Australian Commission on Safety and Quality in Healthcare comorbidity list was used for acute myocardial infarction, ischaemic stroke, haemorrhagic stroke, pneumonia and hip fracture surgery. The Elixhauser comorbidity list was used for congestive heart failure and chronic obstructive pulmonary disease. STEMI refers to ST-elevation myocardial infarction. Only those conditions that were shown to have a significant impact on mortality ($P<0.05$) are shown.
4. Cumulative percentage of deaths over the 30 days following admission to hospital for the relevant condition.
5. Results for hospitals with expected deaths <1 are not shown. Peer hospitals are identified according to the NSW Ministry of Health's peer grouping as of April 2012.
6. The depth of coding has been defined as the average number of secondary diagnosis coded for the index cases. The one year look back method which is used for risk adjustment, to some extent accounts for possible lower depth of coding in some hospitals.

Details of analyses are available in *Spotlight on Measurement: Measuring 30-day mortality following hospitalisation, 2nd edition*.

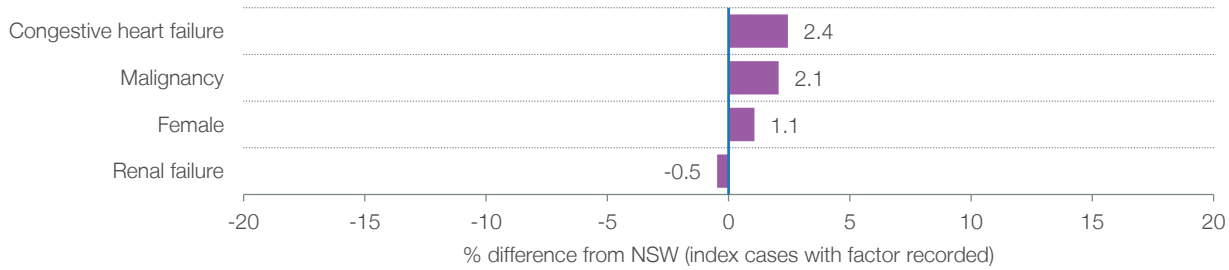
Data source: SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health.

Mona Vale and District Hospital

30-day mortality following hospitalisation for ischaemic stroke, July 2012 – June 2015

	This hospital	NSW
Total ischaemic stroke hospitalisations	85	16,655
Ischaemic stroke patients		
Presenting patients (index cases)[1]	82	15,475
Patients transferred to another hospital within 30 days	52	3,847
Percentage of patients aged 65+ years*[2]	91.5%	77.3%
Percentage of patients aged 75+ years*[2]	69.5%	55.3%

Significant patient factors and comorbidities, this hospital, index cases[3]



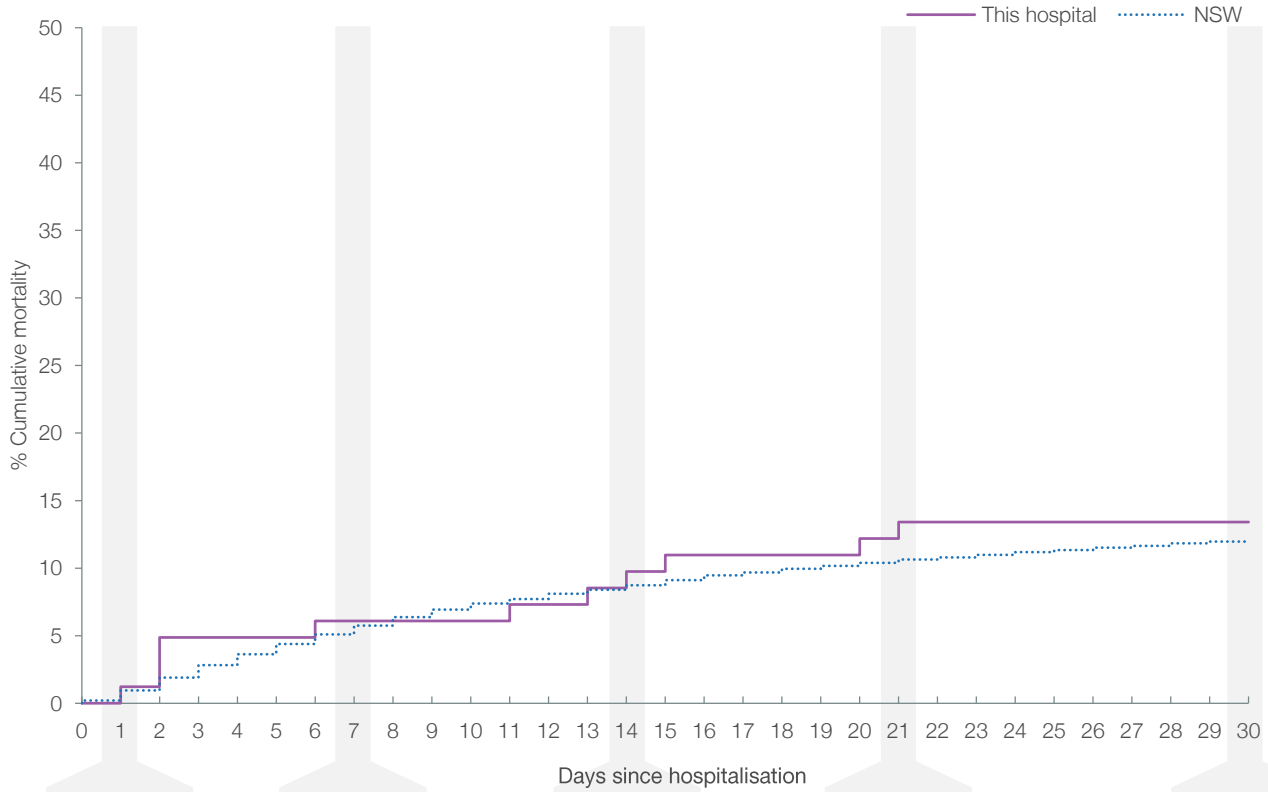
*Age was a significant factor in the final model of 30-day mortality following hospitalisation for ischaemic stroke.

Mona Vale and District Hospital

30-day mortality following hospitalisation for ischaemic stroke, July 2012 – June 2015

	This hospital	NSW
Mortality (all causes) among 82 ischaemic stroke index cases	11 (13.4%)	1,861 (12.0%)
Percentages: index cases who died within 30 days of hospitalisation		
Where deaths occurred:		
Percentage in this hospital	45.5%	55.8%
Percentage in another hospital following transfer	9.1%	1.7%
Percentage after discharge	45.5%	42.6%
When deaths occurred:		
Percentage on day of admission	0.0%	1.7%
Percentage within seven days	45.5%	47.8%

Cumulative mortality following hospitalisation for ischaemic stroke, this hospital and NSW[4]

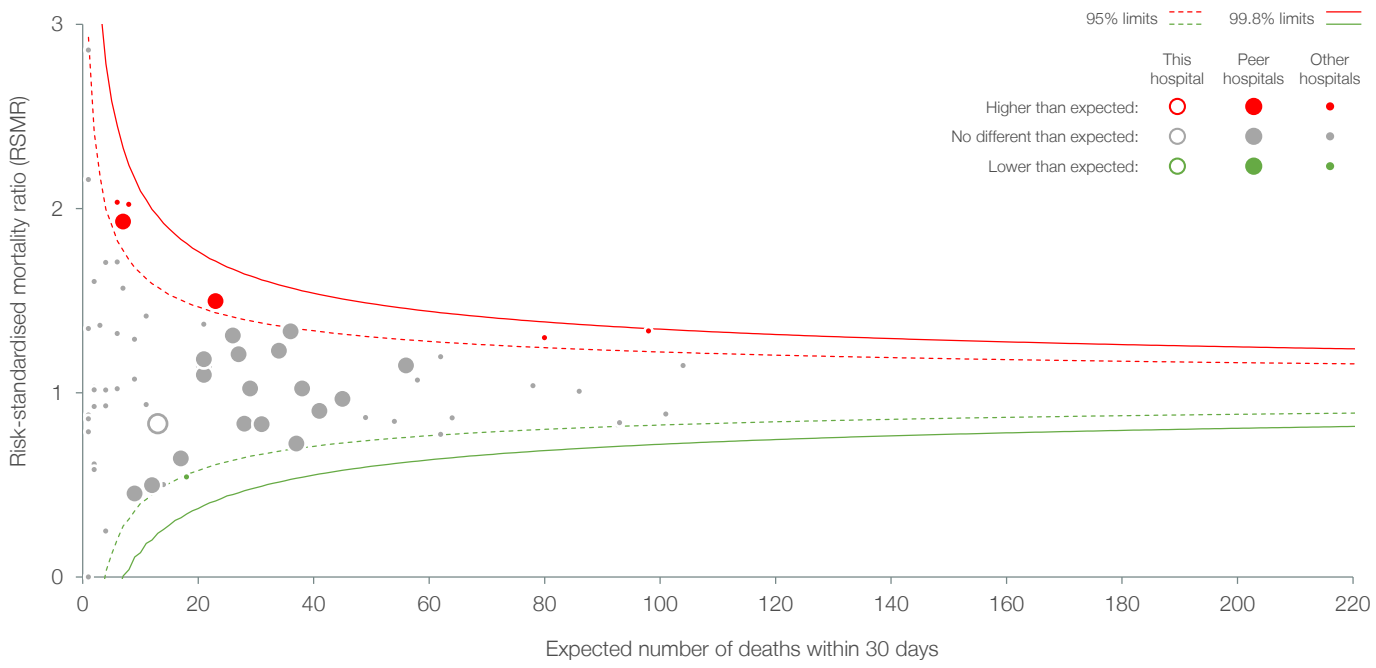


This hospital	Day 1	Day 7	Day 14	Day 21	Day 30
Cumulative number of deaths	1	5	8	11	11
Patients still alive	81	77	74	71	71

Mona Vale and District Hospital

30-day mortality following hospitalisation for ischaemic stroke, July 2012 – June 2015

Ischaemic stroke risk-standardised mortality ratio by number of expected deaths, NSW public hospitals[5]



Illustrating the effect of standardisation, July 2012 – June 2015

In order to make fair comparisons, a number of risk adjustments are made to mortality data. These take into account patient factors that influence the likelihood of dying. The table below illustrates the effect of statistical adjustments on this hospital's results.

Unadjusted ratio	Age and sex standardised ratio	Risk-standardised mortality ratio
1.12	0.85	0.83

Ratio: Lower than expected | No different than expected | Higher than expected

The extent to which comorbidities are coded in the patient record may affect risk adjustment. Therefore the 'depth of coding'[6] has been assessed across NSW hospitals. In July 2009 – June 2012, the average depth of coding was 6.4 diagnoses in this hospital and 6.3 in NSW; and in July 2012 – June 2015, there were 4.5 diagnoses in this hospital and 7.0 in NSW.

Three-yearly RSMR and annual unadjusted mortality rates

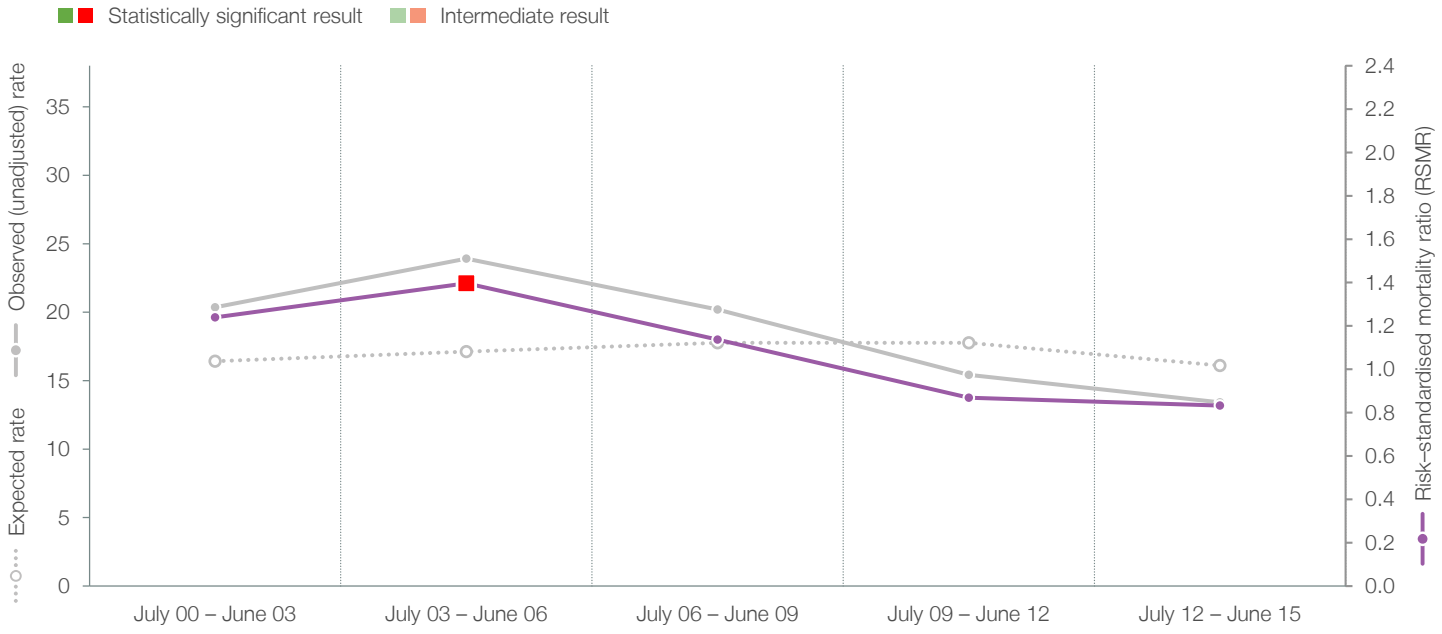
The RSMR is calculated on the basis of three years of data. It takes account of differences in patient characteristics so that assessments of hospital performance are fair. To give an indication of results within the three-year period, the figure below shows the RSMR result for July 2012 – June 2015 alongside differences between this hospital and the NSW result for annual unadjusted mortality rates.

RSMR: Lower than expected | No different than expected | Higher than expected

Mona Vale and District Hospital

30-day mortality following hospitalisation for ischaemic stroke, July 2012 – June 2015

Ischaemic stroke, this hospital's risk-standardised mortality ratio, expected mortality rates and observed (unadjusted) mortality rates, July 2000 – June 2015



Notes

1. Data refer to patients who were discharged between July 2012 and June 2015 who were initially admitted to this hospital (regardless of whether they were subsequently transferred) in their last period of care, for an acute and emergency hospitalisation with ischaemic stroke as principal diagnosis (ICD-10-AM code I63). Deaths are from any cause, in or out of hospital within 30 days of the hospitalisation admission date.
2. Age at admission date.
3. Comorbidities as recorded on patient record, with one year look back from the admission date of the index case. Many are a result of end-organ damage resulting from comorbidities, such as diabetes. The Australian Commission on Safety and Quality in Healthcare comorbidity list was used for acute myocardial infarction, ischaemic stroke, haemorrhagic stroke, pneumonia and hip fracture surgery. The Elixhauser comorbidity list was used for congestive heart failure and chronic obstructive pulmonary disease. STEMI refers to ST-elevation myocardial infarction. Only those conditions that were shown to have a significant impact on mortality ($P<0.05$) are shown.
4. Cumulative percentage of deaths over the 30 days following admission to hospital for the relevant condition.
5. Results for hospitals with expected deaths <1 are not shown. Peer hospitals are identified according to the NSW Ministry of Health's peer grouping as of April 2012.
6. The depth of coding has been defined as the average number of secondary diagnosis coded for the index cases. The one year look back method which is used for risk adjustment, to some extent accounts for possible lower depth of coding in some hospitals.

Details of analyses are available in *Spotlight on Measurement: Measuring 30-day mortality following hospitalisation, 2nd edition*.

Data source: SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health.

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Mona Vale and District Hospital

30-day mortality following hospitalisation for haemorrhagic stroke, July 2012 – June 2015

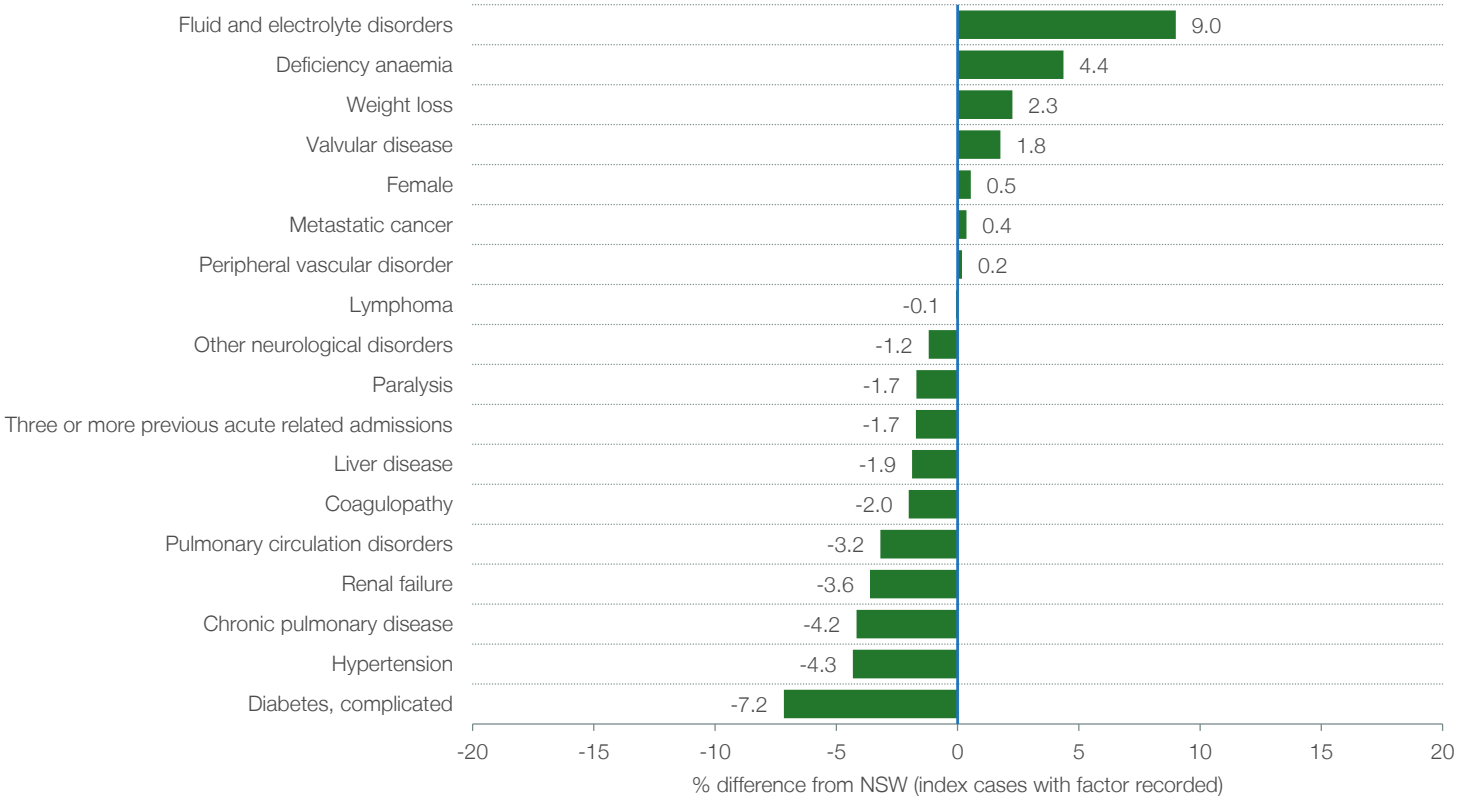
<50 index hospitalisations, results not shown

Mona Vale and District Hospital

30-day mortality following hospitalisation for congestive heart failure, July 2012 – June 2015

	This hospital	NSW
Total congestive heart failure hospitalisations	408	40,670
Congestive heart failure patients		
Presenting patients (index cases)[1]	295	27,484
Patients transferred to another hospital within 30 days	57	4,200
Percentage of patients aged 65+ years*[2]	97.3%	90.2%
Percentage of patients aged 75+ years*[2]	87.5%	73.0%

Significant patient factors and comorbidities, this hospital, index cases[3]



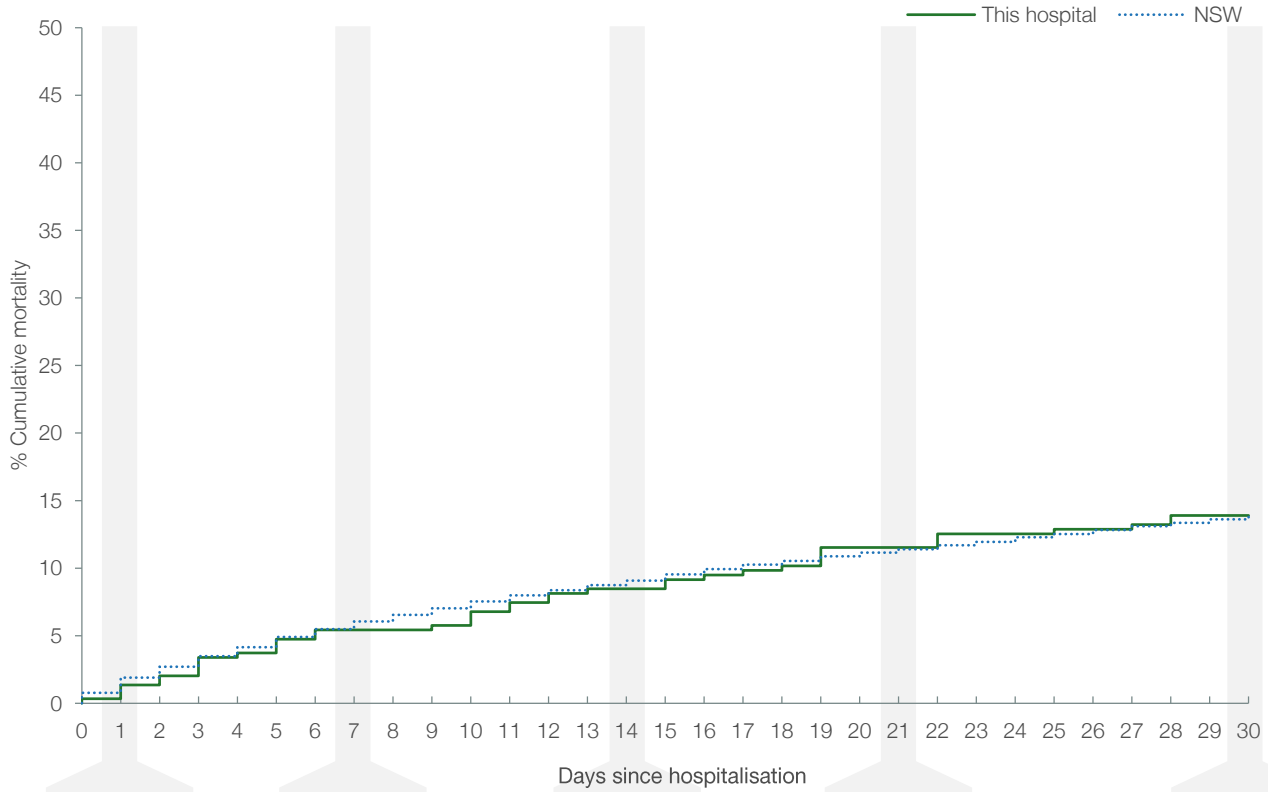
*Age was a significant factor in the final model of 30-day mortality following hospitalisation for congestive heart failure.

Mona Vale and District Hospital

30-day mortality following hospitalisation for congestive heart failure, July 2012 – June 2015

	This hospital	NSW
Mortality (all causes) among 295 congestive heart failure index cases	41 (13.9%)	3,793 (13.8%)
Percentages: index cases who died within 30 days of hospitalisation		
Where deaths occurred:		
Percentage in this hospital	56.1%	57.2%
Percentage in another hospital following transfer	0.0%	1.5%
Percentage after discharge	43.9%	41.3%
When deaths occurred:		
Percentage on day of admission	2.4%	5.5%
Percentage within seven days	39.0%	43.9%

Cumulative mortality following hospitalisation for congestive heart failure, this hospital and NSW[4]

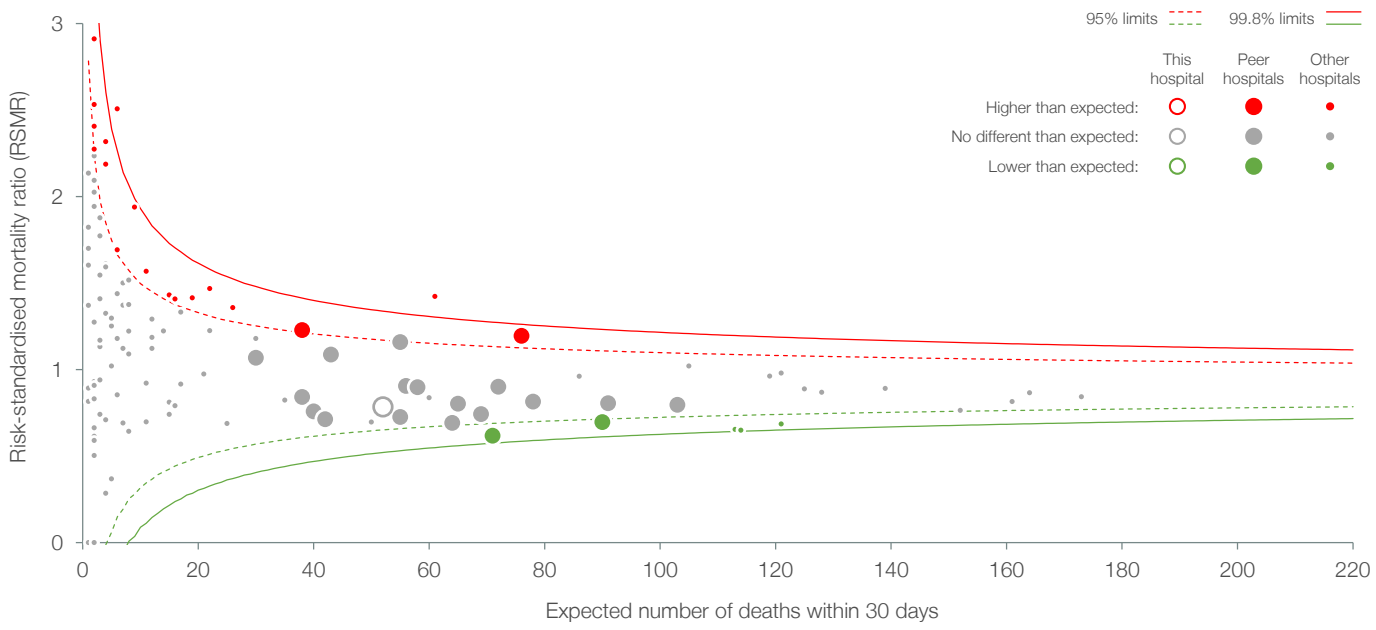


This hospital	Day 1	Day 7	Day 14	Day 21	Day 30
Cumulative number of deaths	4	16	25	34	41
Patients still alive	291	279	270	261	254

Mona Vale and District Hospital

30-day mortality following hospitalisation for congestive heart failure, July 2012 – June 2015

Congestive heart failure risk-standardised mortality ratio by number of expected deaths, NSW public hospitals[5]



Illustrating the effect of standardisation, July 2012 – June 2015

In order to make fair comparisons, a number of risk adjustments are made to mortality data. These take into account patient factors that influence the likelihood of dying. The table below illustrates the effect of statistical adjustments on this hospital's results.

Unadjusted ratio	Age and sex standardised ratio	Risk-standardised mortality ratio
1.01	0.85	0.79

Ratio: Lower than expected | No different than expected | Higher than expected

The extent to which comorbidities are coded in the patient record may affect risk adjustment. Therefore the 'depth of coding'[6] has been assessed across NSW hospitals. In July 2009 – June 2012, the average depth of coding was 5.7 diagnoses in this hospital and 5.1 in NSW; and in July 2012 – June 2015, there were 5.8 diagnoses in this hospital and 6.0 in NSW.

Three-yearly RSMR and annual unadjusted mortality rates

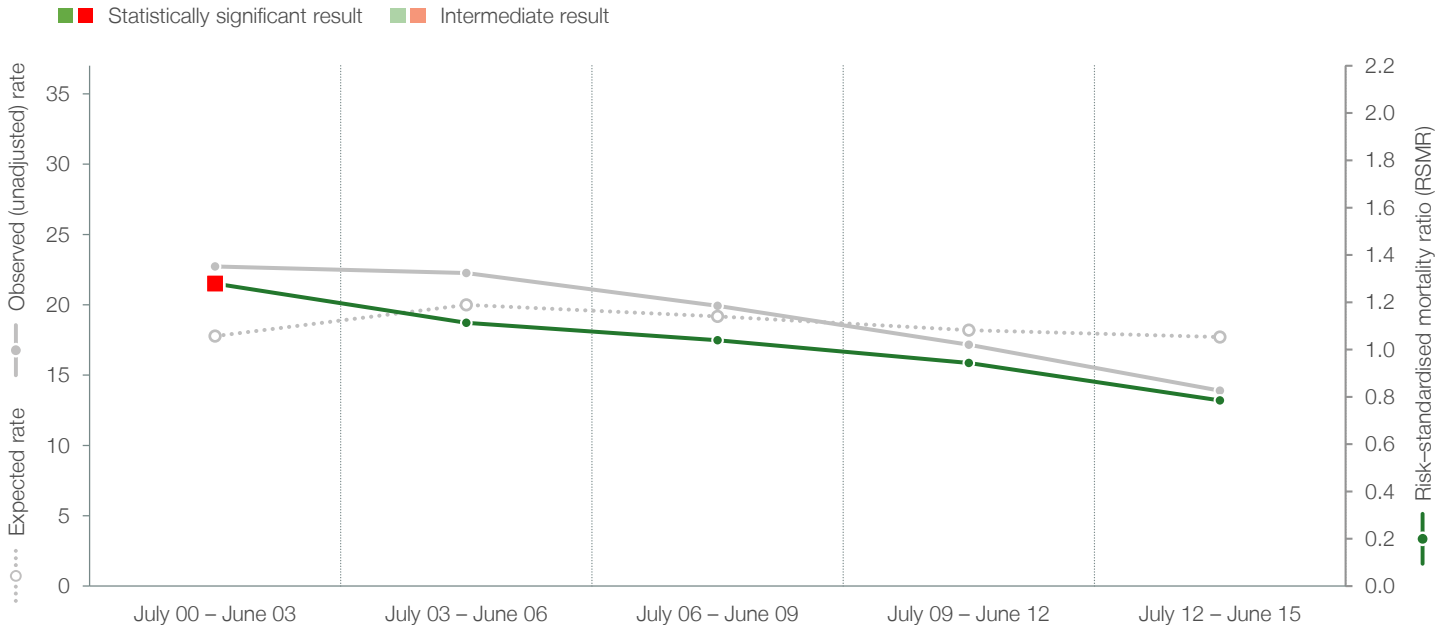
The RSMR is calculated on the basis of three years of data. It takes account of differences in patient characteristics so that assessments of hospital performance are fair. To give an indication of results within the three-year period, the figure below shows the RSMR result for July 2012 – June 2015 alongside differences between this hospital and the NSW result for annual unadjusted mortality rates.

RSMR: Lower than expected | No different than expected | Higher than expected

Mona Vale and District Hospital

30-day mortality following hospitalisation for congestive heart failure, July 2012 – June 2015

Congestive heart failure, this hospital's risk-standardised mortality ratio, expected mortality rates and observed (unadjusted) mortality rates, July 2000 – June 2015



Notes

1. Data refer to patients who were discharged between July 2012 and June 2015 who were initially admitted to this hospital (regardless of whether they were subsequently transferred) in their last period of care, for an acute and emergency hospitalisation with congestive heart failure as principal diagnosis (ICD-10-AM codes I11.0, I13.0, I13.2, I50.0, I50.1, I50.9). Deaths are from any cause, in or out of hospital within 30 days of the hospitalisation admission date.
2. Age at admission date.
3. Comorbidities as recorded on patient record, with one year look back from the admission date of the index case. Many are a result of end-organ damage resulting from comorbidities, such as diabetes. The Australian Commission on Safety and Quality in Healthcare comorbidity list was used for acute myocardial infarction, ischaemic stroke, haemorrhagic stroke, pneumonia and hip fracture surgery. The Elixhauser comorbidity list was used for congestive heart failure and chronic obstructive pulmonary disease. STEMI refers to ST-elevation myocardial infarction. Only those conditions that were shown to have a significant impact on mortality ($P<0.05$) are shown.
4. Cumulative percentage of deaths over the 30 days following admission to hospital for the relevant condition.
5. Results for hospitals with expected deaths <1 are not shown. Peer hospitals are identified according to the NSW Ministry of Health's peer grouping as of April 2012.
6. The depth of coding has been defined as the average number of secondary diagnosis coded for the index cases. The one year look back method which is used for risk adjustment, to some extent accounts for possible lower depth of coding in some hospitals.

Details of analyses are available in *Spotlight on Measurement: Measuring 30-day mortality following hospitalisation, 2nd edition*.

Data source: SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health.

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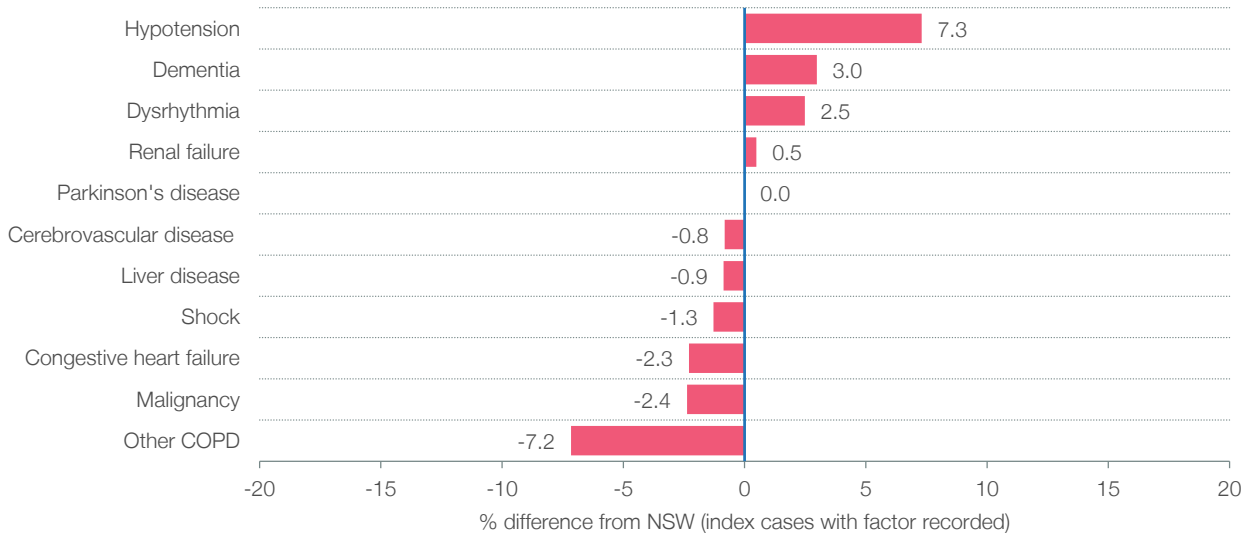
Mona Vale and District Hospital

30-day mortality following hospitalisation for pneumonia, July 2012 – June 2015

	This hospital	NSW
Total pneumonia hospitalisations	844	54,478
Pneumonia patients		
Presenting patients (index cases)[1]	747	47,133
Patients transferred to another hospital within 30 days	142	6,564
Percentage of patients aged 65+ years*[2]	82.1%	69.1%
Percentage of patients aged 75+ years*[2]	68.8%	50.0%

Significant patient factors and comorbidities, this hospital, index cases[3]



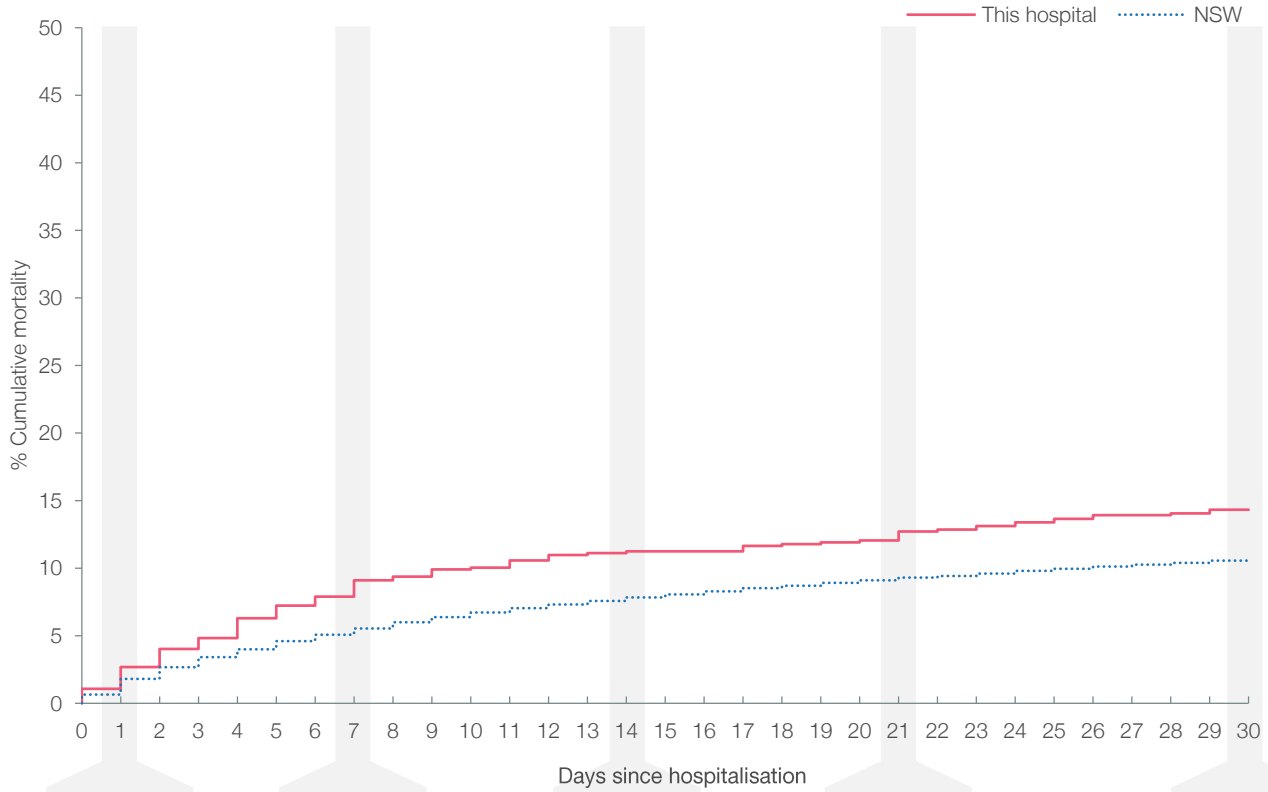
*Age was a significant factor in the final model of 30-day mortality following hospitalisation for pneumonia.

Mona Vale and District Hospital

30-day mortality following hospitalisation for pneumonia, July 2012 – June 2015

	This hospital	NSW
Mortality (all causes) among 747 pneumonia index cases	107 (14.3%)	5,037 (10.7%)
Percentages: index cases who died within 30 days of hospitalisation		
Where deaths occurred:		
Percentage in this hospital	67.3%	60.3%
Percentage in another hospital following transfer	0.9%	1.4%
Percentage after discharge	31.8%	38.3%
When deaths occurred:		
Percentage on day of admission	7.5%	6.0%
Percentage within seven days	63.6%	51.8%

Cumulative mortality following hospitalisation for pneumonia, this hospital and NSW[4]

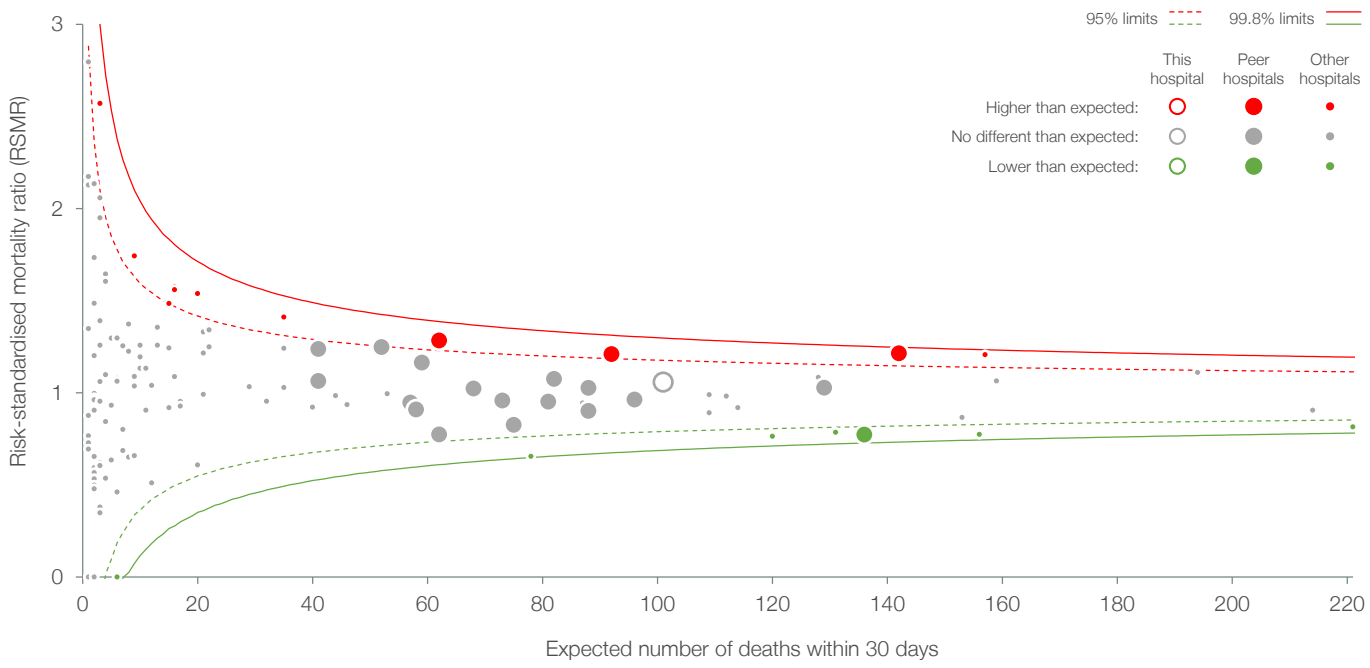


This hospital	Day 1	Day 7	Day 14	Day 21	Day 30
Cumulative number of deaths	20	68	84	95	107
Patients still alive	727	679	663	652	640

Mona Vale and District Hospital

30-day mortality following hospitalisation for pneumonia, July 2012 – June 2015

Pneumonia risk-standardised mortality ratio by number of expected deaths, NSW public hospitals[5]



Illustrating the effect of standardisation, July 2012 – June 2015

In order to make fair comparisons, a number of risk adjustments are made to mortality data. These take into account patient factors that influence the likelihood of dying. The table below illustrates the effect of statistical adjustments on this hospital's results.

Unadjusted ratio	Age and sex standardised ratio	Risk-standardised mortality ratio
1.34	1.06	1.06

Ratio: Lower than expected | No different than expected | Higher than expected

The extent to which comorbidities are coded in the patient record may affect risk adjustment. Therefore the 'depth of coding'[6] has been assessed across NSW hospitals. In July 2009 – June 2012, the average depth of coding was 4.8 diagnoses in this hospital and 3.8 in NSW; and in July 2012 – June 2015, there were 4.6 diagnoses in this hospital and 4.8 in NSW.

Three-yearly RSMR and annual unadjusted mortality rates

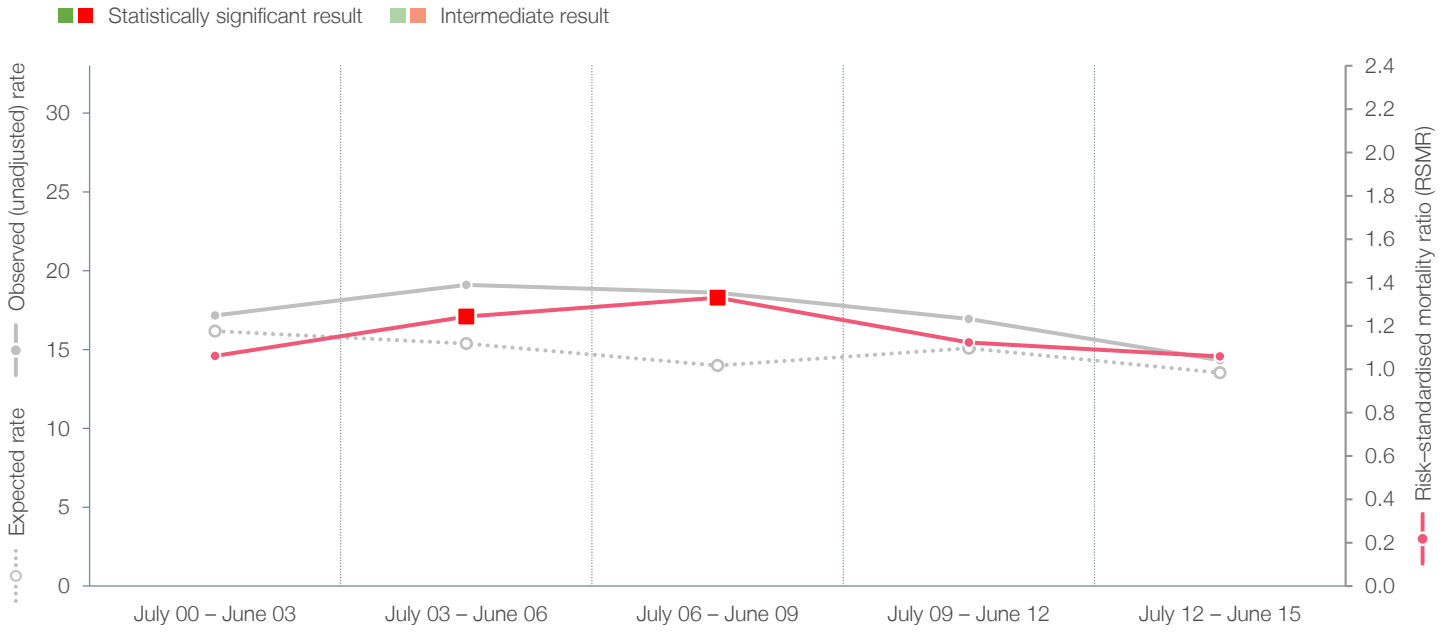
The RSMR is calculated on the basis of three years of data. It takes account of differences in patient characteristics so that assessments of hospital performance are fair. To give an indication of results within the three-year period, the figure below shows the RSMR result for July 2012 – June 2015 alongside differences between this hospital and the NSW result for annual unadjusted mortality rates.

RSMR: Lower than expected | No different than expected | Higher than expected

Mona Vale and District Hospital

30-day mortality following hospitalisation for pneumonia, July 2012 – June 2015

Pneumonia, this hospital's risk-standardised mortality ratio, expected mortality rates and observed (unadjusted) mortality rates, July 2000 – June 2015



Notes

1. Data refer to patients who were discharged between July 2012 and June 2015 who were initially admitted to this hospital (regardless of whether they were subsequently transferred) in their last period of care, for an acute and emergency hospitalisation with pneumonia as principal diagnosis (ICD-10-AM codes J13, J14, J15, J16, J18). Deaths are from any cause, in or out of hospital within 30 days of the hospitalisation admission date.
2. Age at admission date.
3. Comorbidities as recorded on patient record, with one year look back from the admission date of the index case. Many are a result of end-organ damage resulting from comorbidities, such as diabetes. The Australian Commission on Safety and Quality in Healthcare comorbidity list was used for acute myocardial infarction, ischaemic stroke, haemorrhagic stroke, pneumonia and hip fracture surgery. The Elixhauser comorbidity list was used for congestive heart failure and chronic obstructive pulmonary disease. STEMI refers to ST-elevation myocardial infarction. Only those conditions that were shown to have a significant impact on mortality ($P<0.05$) are shown.
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6. The depth of coding has been defined as the average number of secondary diagnosis coded for the index cases. The one year look back method which is used for risk adjustment, to some extent accounts for possible lower depth of coding in some hospitals.

Details of analyses are available in *Spotlight on Measurement: Measuring 30-day mortality following hospitalisation, 2nd edition*.

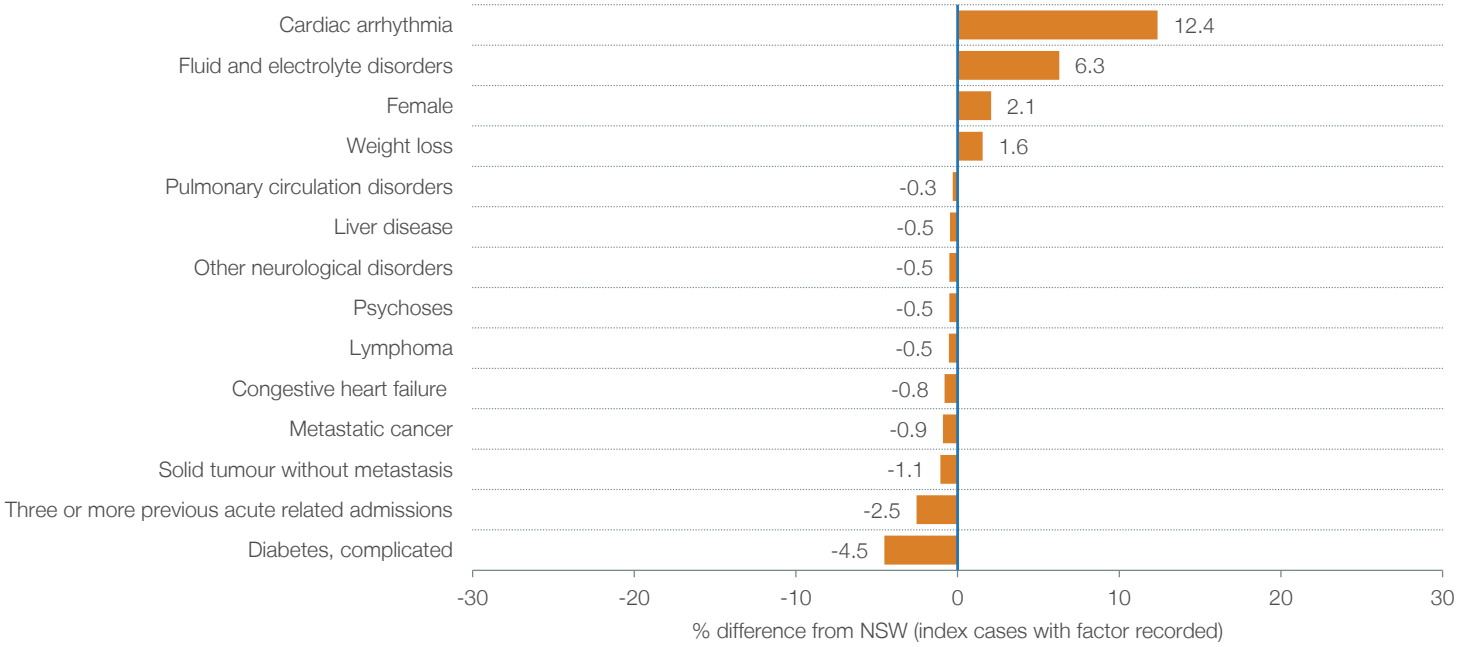
Data source: SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health.

Mona Vale and District Hospital

30-day mortality following hospitalisation for chronic obstructive pulmonary disease, July 2012 – June 2015

	This hospital	NSW
Total chronic obstructive pulmonary disease hospitalisations	529	58,675
Chronic obstructive pulmonary disease patients		
Presenting patients (index cases)[1]	346	30,525
Patients transferred to another hospital within 30 days	38	3,337
Percentage of patients aged 65+ years*[2]	89.0%	79.5%
Percentage of patients aged 75+ years*[2]	67.3%	50.7%

Significant patient factors and comorbidities, this hospital, index cases[3]



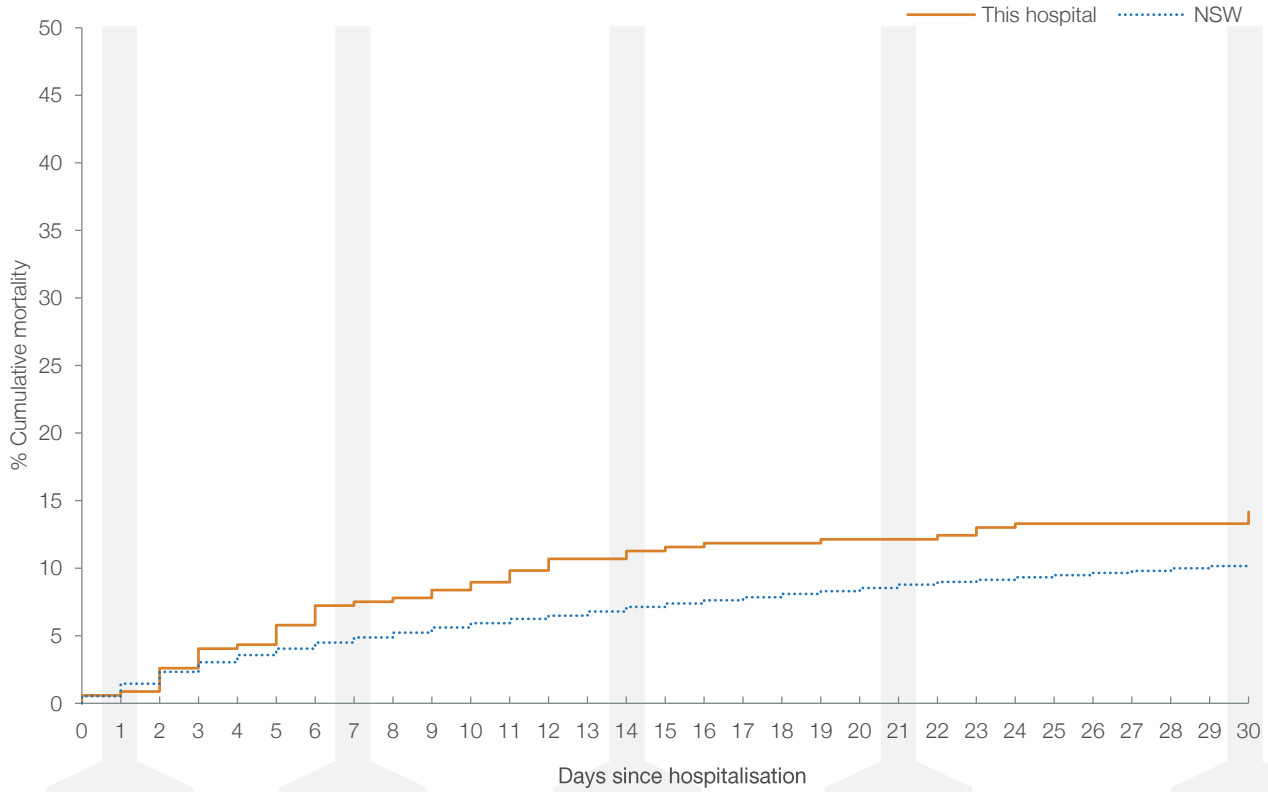
*Age was a significant factor in the final model of 30-day mortality following hospitalisation for chronic obstructive pulmonary disease.

Mona Vale and District Hospital

30-day mortality following hospitalisation for chronic obstructive pulmonary disease, July 2012 – June 2015

	This hospital	NSW
Mortality (all causes) among 346 chronic obstructive pulmonary disease index cases	49 (14.2%)	3,160 (10.4%)
Percentages: index cases who died within 30 days of hospitalisation		
Where deaths occurred:		
Percentage in this hospital	83.7%	55.8%
Percentage in another hospital following transfer	0.0%	1.4%
Percentage after discharge	16.3%	42.8%
When deaths occurred:		
Percentage on day of admission	4.1%	5.1%
Percentage within seven days	53.1%	47.1%

Cumulative mortality following hospitalisation for chronic obstructive pulmonary disease, this hospital and NSW[4]

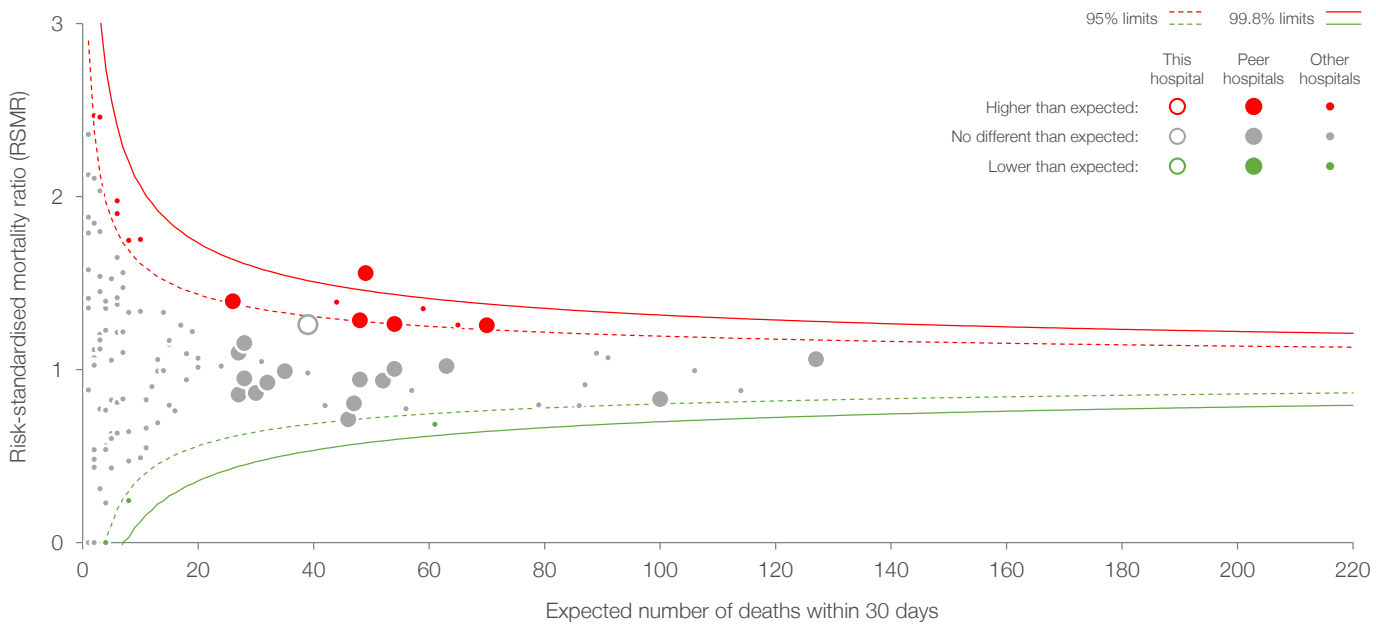


This hospital	Day 1	Day 7	Day 14	Day 21	Day 30
Cumulative number of deaths	3	26	39	42	49
Patients still alive	343	320	307	304	297

Mona Vale and District Hospital

30-day mortality following hospitalisation for chronic obstructive pulmonary disease, July 2012 – June 2015

Chronic obstructive pulmonary disease risk-standardised mortality ratio by number of expected deaths, NSW public hospitals[5]



Illustrating the effect of standardisation, July 2012 – June 2015

In order to make fair comparisons, a number of risk adjustments are made to mortality data. These take into account patient factors that influence the likelihood of dying. The table below illustrates the effect of statistical adjustments on this hospital's results.

Unadjusted ratio	Age and sex standardised ratio	Risk-standardised mortality ratio
1.37	1.27	1.26

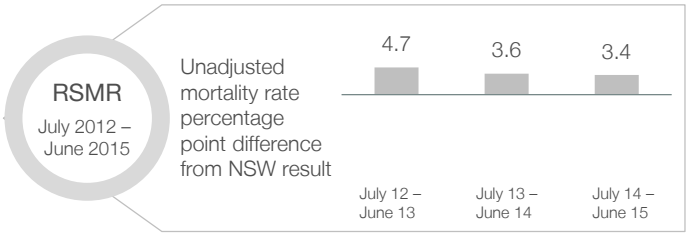
Ratio: Lower than expected; No different than expected; Higher than expected

The extent to which comorbidities are coded in the patient record may affect risk adjustment. Therefore the 'depth of coding'[6] has been assessed across NSW hospitals. In July 2009 – June 2012, the average depth of coding was 5.1 diagnoses in this hospital and 3.6 in NSW; and in July 2012 – June 2015, there were 4.6 diagnoses in this hospital and 4.3 in NSW.

Three-yearly RSMR and annual unadjusted mortality rates

The RSMR is calculated on the basis of three years of data. It takes account of differences in patient characteristics so that assessments of hospital performance are fair. To give an indication of results within the three-year period, the figure below shows the RSMR result for July 2012 – June 2015 alongside differences between this hospital and the NSW result for annual unadjusted mortality rates.

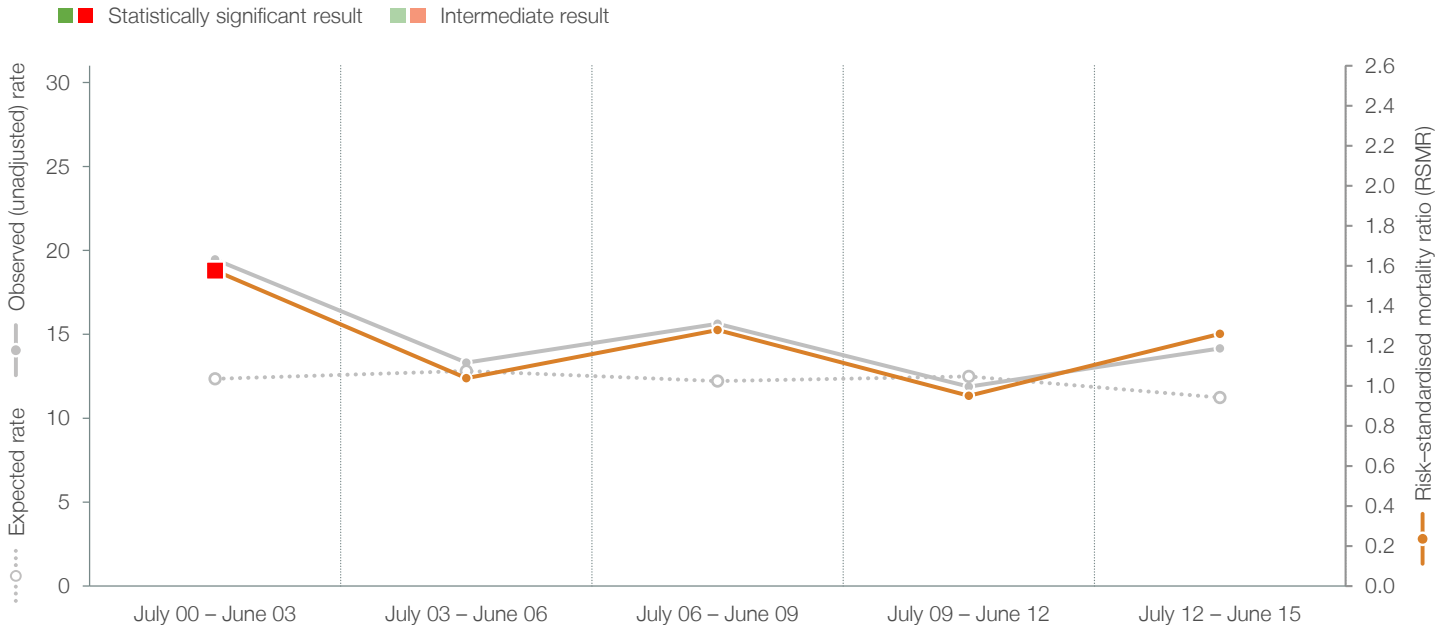
RSMR: Lower than expected; No different than expected; Higher than expected



Mona Vale and District Hospital

30-day mortality following hospitalisation for chronic obstructive pulmonary disease, July 2012 – June 2015

Chronic obstructive pulmonary disease, this hospital's risk-standardised mortality ratio, expected mortality rates and observed (unadjusted) mortality rates, July 2000 – June 2015



Notes

1. Data refer to patients who were discharged between July 2012 and June 2015 who were initially admitted to this hospital (regardless of whether they were subsequently transferred) in their last period of care, for an acute and emergency hospitalisation with COPD as principal diagnosis (ICD-10-AM code J41, J42, J43, J44, J47, and J20 and J40 if accompanied by J41, J42, J43, J44 and J47 in any secondary diagnoses). Deaths are from any cause, in or out of hospital within 30 days of the hospitalisation admission date.
2. Age at admission date.
3. Comorbidities as recorded on patient record, with one year look back from the admission date of the index case. Many are a result of end-organ damage resulting from comorbidities, such as diabetes. The Australian Commission on Safety and Quality in Healthcare comorbidity list was used for acute myocardial infarction, ischaemic stroke, haemorrhagic stroke, pneumonia and hip fracture surgery. The Elixhauser comorbidity list was used for congestive heart failure and chronic obstructive pulmonary disease. STEMI refers to ST-elevation myocardial infarction. Only those conditions that were shown to have a significant impact on mortality ($P<0.05$) are shown.
4. Cumulative percentage of deaths over the 30 days following admission to hospital for the relevant condition.
5. Results for hospitals with expected deaths <1 are not shown. Peer hospitals are identified according to the NSW Ministry of Health's peer grouping as of April 2012.
6. The depth of coding has been defined as the average number of secondary diagnosis coded for the index cases. The one year look back method which is used for risk adjustment, to some extent accounts for possible lower depth of coding in some hospitals.

Details of analyses are available in *Spotlight on Measurement: Measuring 30-day mortality following hospitalisation, 2nd edition*.

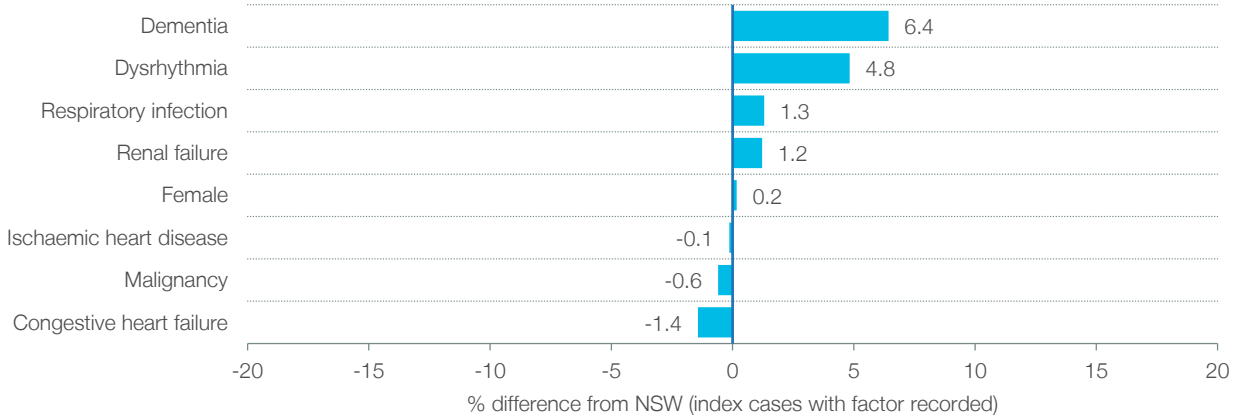
Data source: SAPHaRI, Centre for Epidemiology and Evidence, NSW Ministry of Health.

Mona Vale and District Hospital

30-day mortality following hospitalisation for hip fracture surgery, July 2012 – June 2015

	This hospital	NSW
Total hip fracture surgery hospitalisations	510	23,914
Hip fracture surgery patients		
Presenting patients (index cases)[1]	379	16,193
Patients transferred to another hospital within 30 days	111	6,987
Percentage of patients aged 65+ years*[2]	98.2%	94.3%
Percentage of patients aged 75+ years*[2]	89.7%	81.6%

Significant patient factors and comorbidities, this hospital, index cases[3]



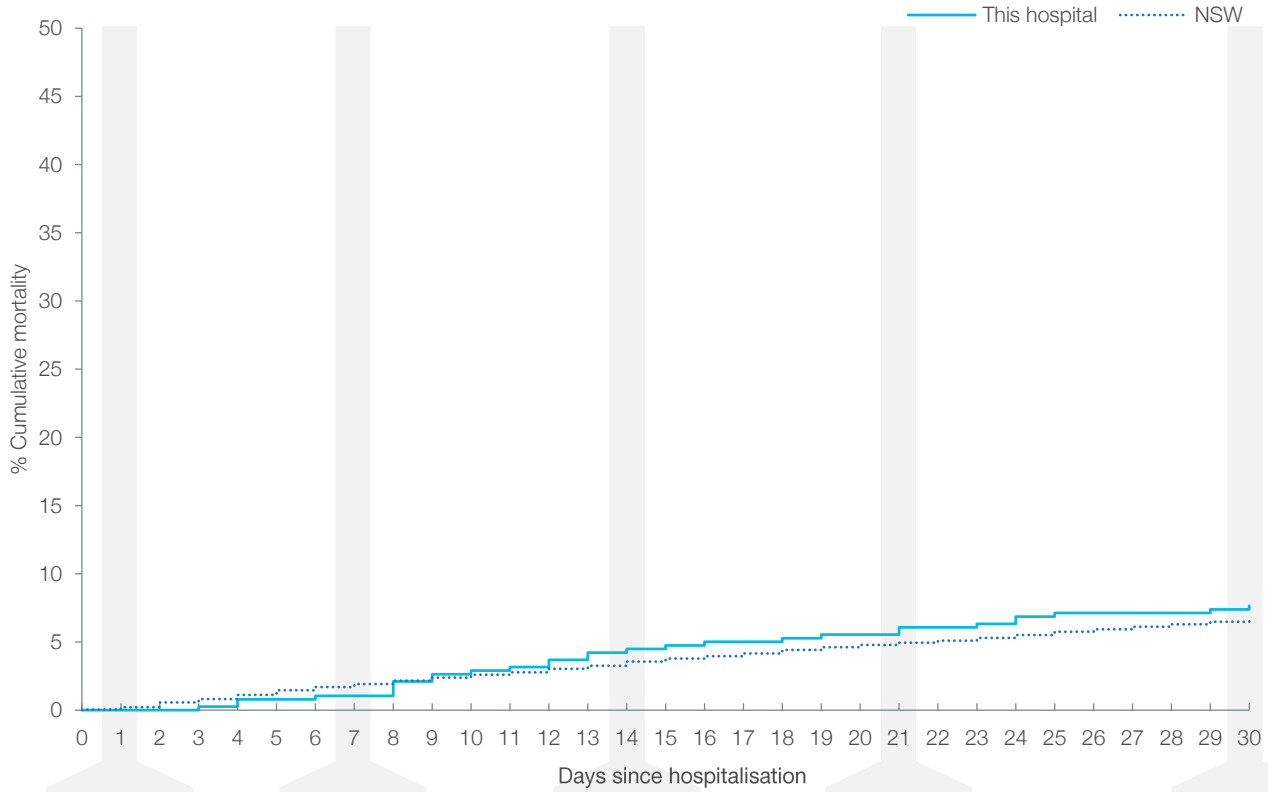
*Age was a significant factor in the final model of 30-day mortality following hospitalisation for hip fracture surgery.

Mona Vale and District Hospital

30-day mortality following hospitalisation for hip fracture surgery, July 2012 – June 2015

	This hospital	NSW
Mortality (all causes) among 379 hip fracture surgery index cases	29 (7.7%)	1,093 (6.7%)
Percentages: index cases who died within 30 days of hospitalisation		
Where deaths occurred:		
Percentage in this hospital	44.8%	46.9%
Percentage in another hospital following transfer	0.0%	0.4%
Percentage after discharge	55.2%	52.7%
When deaths occurred:		
Percentage on day of admission	0.0%	0.5%
Percentage within seven days	13.8%	28.4%

Cumulative mortality following hospitalisation for hip fracture surgery, this hospital and NSW[4]

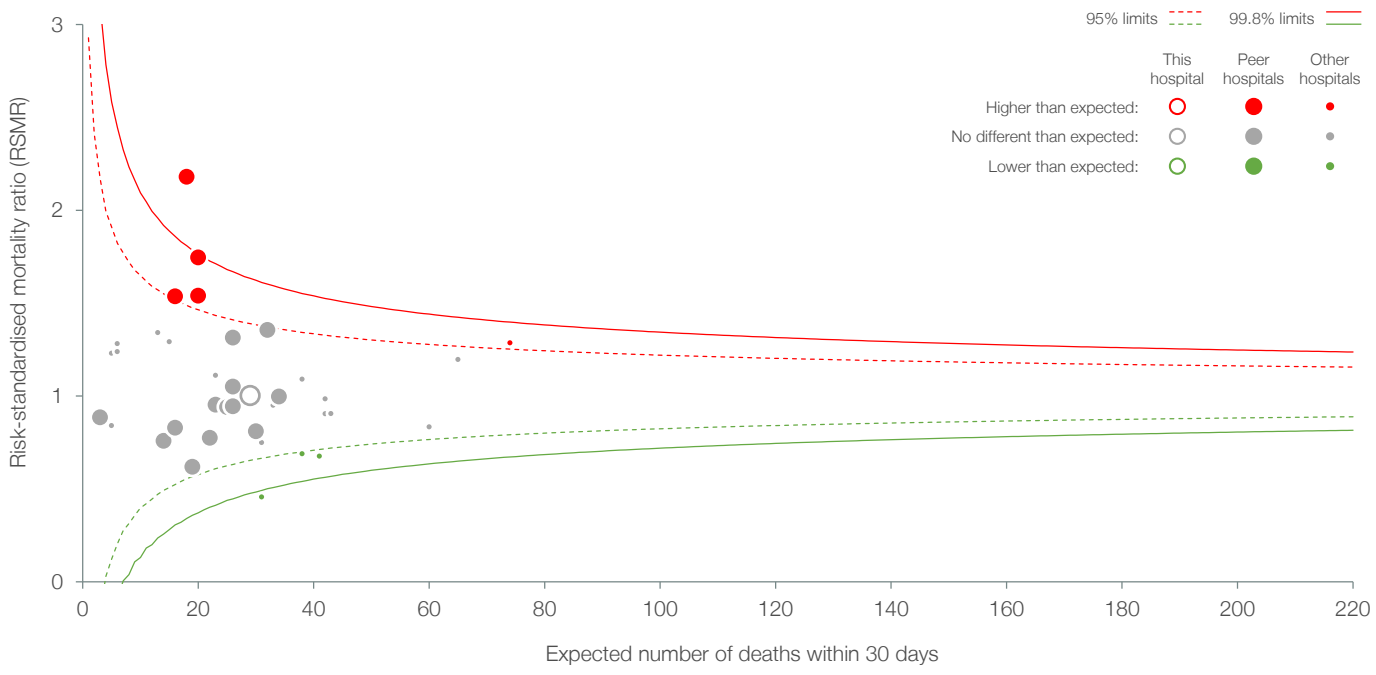


This hospital	Day 1	Day 7	Day 14	Day 21	Day 30
Cumulative number of deaths	0	4	17	23	29
Patients still alive	379	375	362	356	350

Mona Vale and District Hospital

30-day mortality following hospitalisation for hip fracture surgery, July 2012 – June 2015

Hip fracture surgery risk-standardised mortality ratio by number of expected deaths, NSW public hospitals[5]



Illustrating the effect of standardisation, July 2012 – June 2015

In order to make fair comparisons, a number of risk adjustments are made to mortality data. These take into account patient factors that influence the likelihood of dying. The table below illustrates the effect of statistical adjustments on this hospital's results.

Unadjusted ratio	Age and sex standardised ratio	Risk-standardised mortality ratio
1.13	0.99	1.00

Ratio: Lower than expected; No different than expected; Higher than expected

The extent to which comorbidities are coded in the patient record may affect risk adjustment. Therefore the 'depth of coding'[6] has been assessed across NSW hospitals. In July 2009 – June 2012, the average depth of coding was 9.1 diagnoses in this hospital and 8.5 in NSW; and in July 2012 – June 2015, there were 9.8 diagnoses in this hospital and 9.4 in NSW.

Three-yearly RSMR and annual unadjusted mortality rates

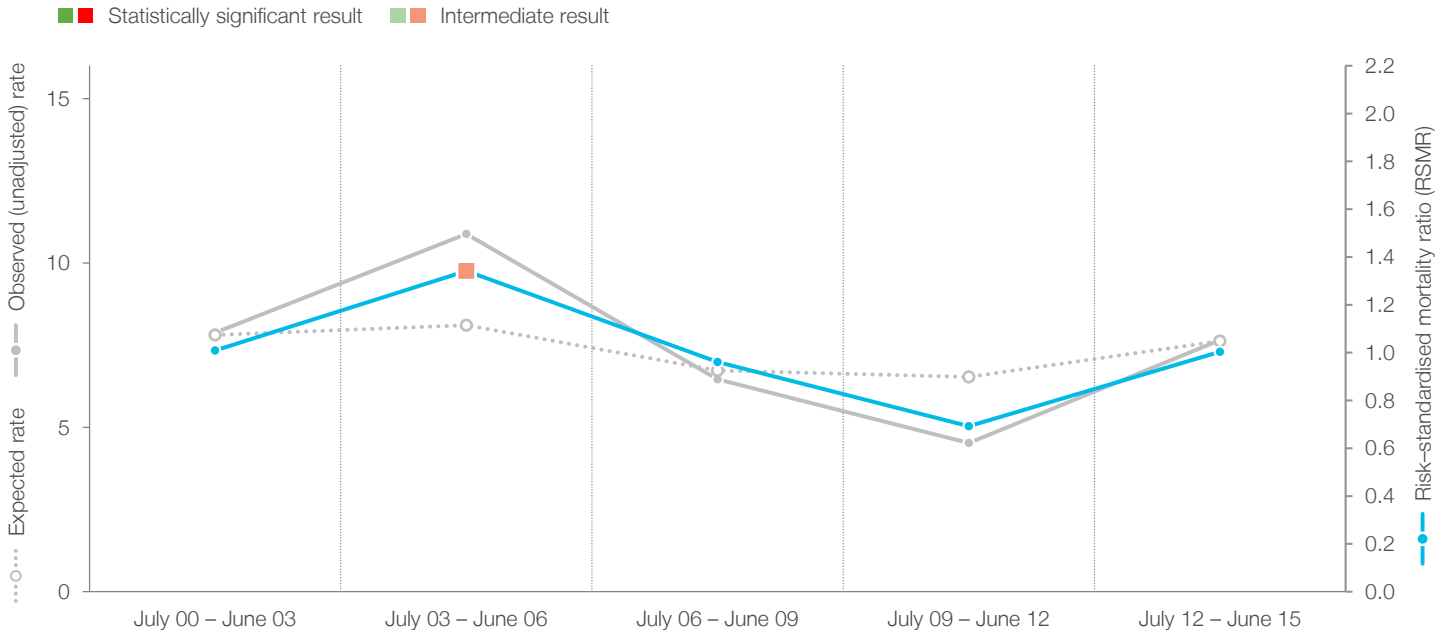
The RSMR is calculated on the basis of three years of data. It takes account of differences in patient characteristics so that assessments of hospital performance are fair. To give an indication of results within the three-year period, the figure below shows the RSMR result for July 2012 – June 2015 alongside differences between this hospital and the NSW result for annual unadjusted mortality rates.

RSMR: Lower than expected; No different than expected; Higher than expected

Mona Vale and District Hospital

30-day mortality following hospitalisation for hip fracture surgery, July 2012 – June 2015

Hip fracture surgery, this hospital's risk-standardised mortality ratio, expected mortality rates and observed (unadjusted) mortality rates, July 2000 – June 2015



Notes

1. Data refer to patients who were discharged between July 2012 and June 2015 who were initially admitted to this hospital (regardless of whether they were subsequently transferred) in their last period of care, for an acute hospitalisation with hip fracture as principal diagnosis and treated with surgery (ICD-10-AM codes for hip fracture S72.0, S72.1, S72.2 accompanied with a fall codes W00-W19 and R29.6 and treated with a surgical procedure). Deaths are from any cause, in or out of hospital within 30 days of the hospitalisation admission date.
2. Age at admission date.
3. Comorbidities as recorded on patient record, with one year look back from the admission date of the index case. Many are a result of end-organ damage resulting from comorbidities, such as diabetes. The Australian Commission on Safety and Quality in Healthcare comorbidity list was used for acute myocardial infarction, ischaemic stroke, haemorrhagic stroke, pneumonia and hip fracture surgery. The Elixhauser comorbidity list was used for congestive heart failure and chronic obstructive pulmonary disease. STEMI refers to ST-elevation myocardial infarction. Only those conditions that were shown to have a significant impact on mortality ($P<0.05$) are shown.
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