Mudgee Health Service

30-day mortality following hospitalisation for seven conditions

Measures that assess how healthcare affects patient outcomes, such as risk-standardised mortality ratios (RSMRs), make a crucial contribution to informing efforts to improve care. They should be looked at alongside other measures and used by clinicians as a tool to prompt discussion and inform the development of quality improvement initiatives.

For each hospital, the RSMR compares the 'observed' number of deaths within 30 days of admission for a specific clinical condition, with the 'expected'* number of deaths, which is calculated based on all patients admitted with that condition to any NSW hospital.

The RSMR calculation takes into account the volume and types of patients treated in each hospital (known as the case mix), as different hospitals provide care to patients who may be more or less likely, on admission, to die within 30 days.

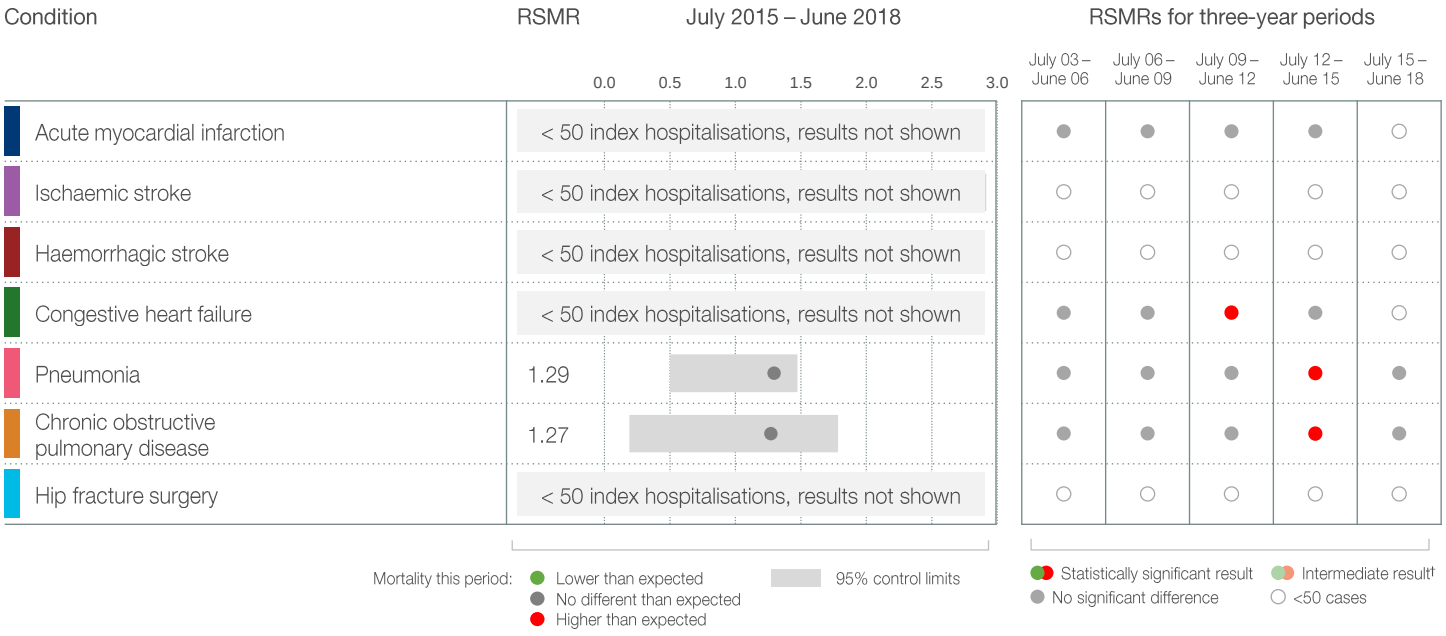
The RSMR is a ratio. A ratio of less than 1.0 indicates that mortality is lower than expected in the hospital, while a ratio of greater than 1.0 indicates that mortality is higher than expected in the hospital. Small deviations from 1.0 are not considered meaningful.

When the ratio is statistically significantly lower than 1.0 it is shaded green, and this indicates that mortality is lower than expected in the hospital. When the ratio is statistically significantly higher than 1.0 it is shaded red, and this indicates that mortality is higher than expected in the hospital.

Funnel plots with 95% and 99.8% control limits around the NSW ratio of 1.0 are used to identify outlier hospitals, which are shaded green or red.

The RSMR is not designed to compare hospitals to each other. Rather it compares each hospital's outcomes with what may have been expected given its particular case mix.

Risk-standardised mortality ratios (RSMRs) for seven conditions



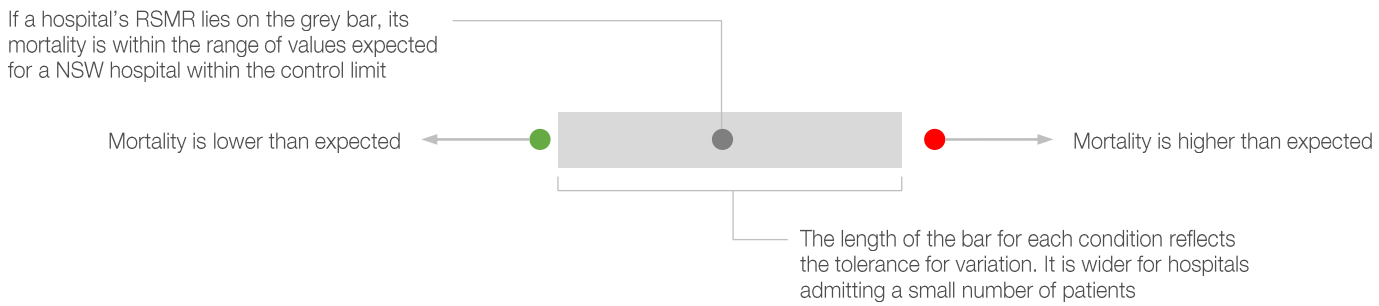
* Data refer to patients who were discharged between July 2015 and June 2018 who were initially admitted to this hospital (regardless of whether they were subsequently transferred) in their last period of care, for an acute and emergency hospitalisation for the relevant condition. Deaths are from any cause, in or out of hospital, within 30 days of the hospitalisation admission date. The 'expected' number of deaths is calculated using a statistical model. Details of analyses are available in *Spotlight on Measurement: Measuring 30-day mortality following hospitalisation, 2nd edition* and the Technical Supplement to *Mortality following hospitalisation for seven clinical conditions, July 2015 – June 2018*.

† RSMR outliers between July 2012 – June 2018 used control limits of 95% and 99.8%. Periods between July 2000 and June 2012 used control limits of 90% and 95%. Historical results that were outside the 90% control limits but did not reach significance at the 95% level are categorised as 'intermediate' results.

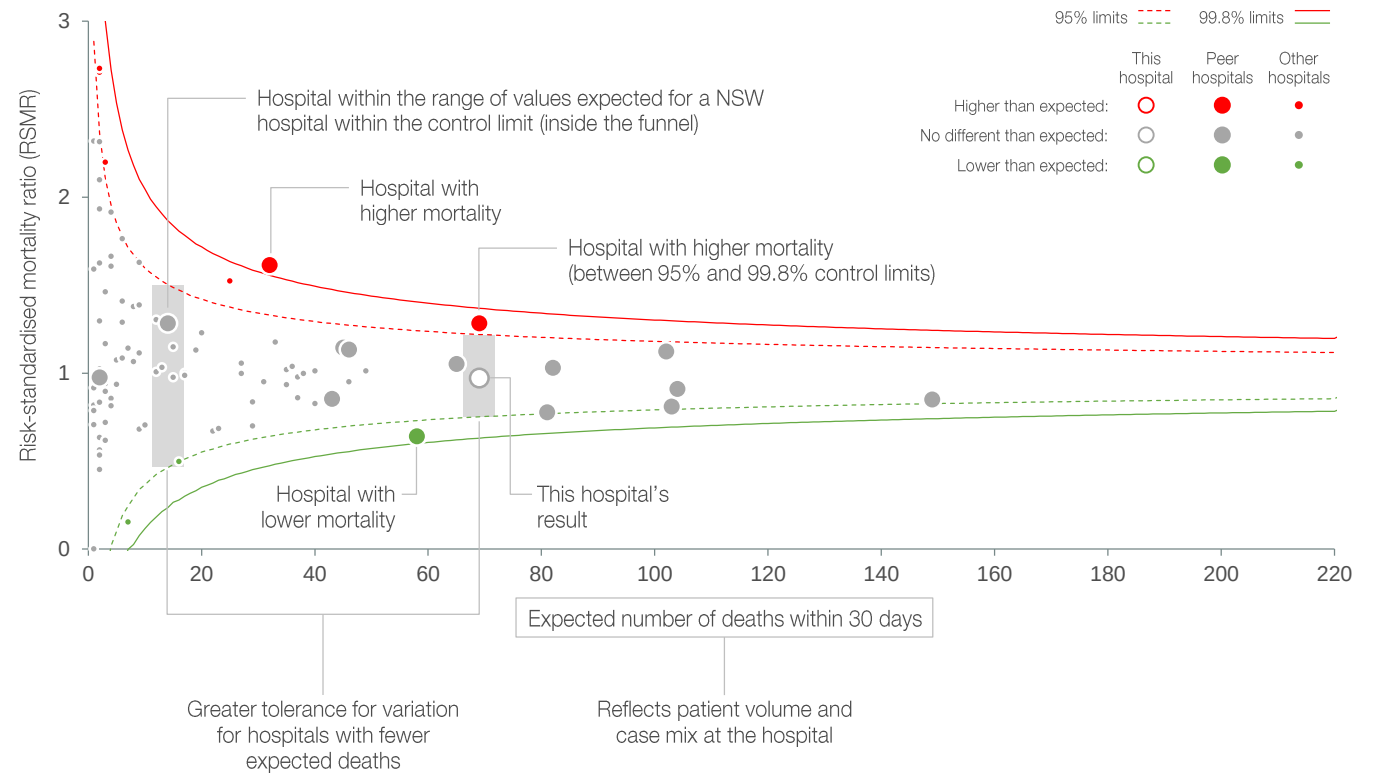
Notes: In June 2017, the *NSW Health Admission Policy* was released, stating that a patient treated in and discharged from an emergency department (ED) only, should not be recorded as an admitted patient. As a result, ED-only attendances were not included in BHI mortality analyses for the July 2015 – June 2018 period, and comparison of results before and after this time should be made with caution. For more information, see the Technical Supplement to *Mortality following hospitalisation for seven clinical conditions, July 2015 – June 2018*.

Data source: BHI analyses of Hospital Performance Dataset, NSW Ministry of Health Secure Analytics for Population Health Research and Intelligence.

How to interpret the dashboard



How to interpret a funnel plot



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30-day mortality following hospitalisation for acute myocardial infarction, July 2015 – June 2018

<50 index hospitalisations, results not shown

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30-day mortality following hospitalisation for ischaemic stroke, July 2015 – June 2018

<50 index hospitalisations, results not shown

Mudgee Health Service

30-day mortality following hospitalisation for haemorrhagic stroke, July 2015 – June 2018

<50 index hospitalisations, results not shown

Mudgee Health Service

30-day mortality following hospitalisation for congestive heart failure, July 2015 – June 2018

<50 index hospitalisations, results not shown

Mudgee Health Service

30-day mortality following hospitalisation for pneumonia, July 2015 – June 2018

	This hospital	NSW
Total pneumonia hospitalisations	216	56,247
Pneumonia patients		
Presenting patients (index cases)*	193	49,810
Patients transferred to another hospital within 30 days†	25	5,260
Percentage of patients aged 65+ years‡	74.6%	69.4%
Percentage of patients aged 75+ years‡	40.9%	50.1%

Significant patient factors and comorbidities, this hospital, index cases§

* Data refer to patients who were discharged between July 2015 and June 2018 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.

† Includes transfers for diagnostic tests, procedures and ongoing care.

‡ Age at admission date. Age was a statistical factor in the final model of 30-day mortality following hospitalisation for pneumonia.

§ Comorbidities as recorded on patient record, with one-year look-back from the admission date of the index case. 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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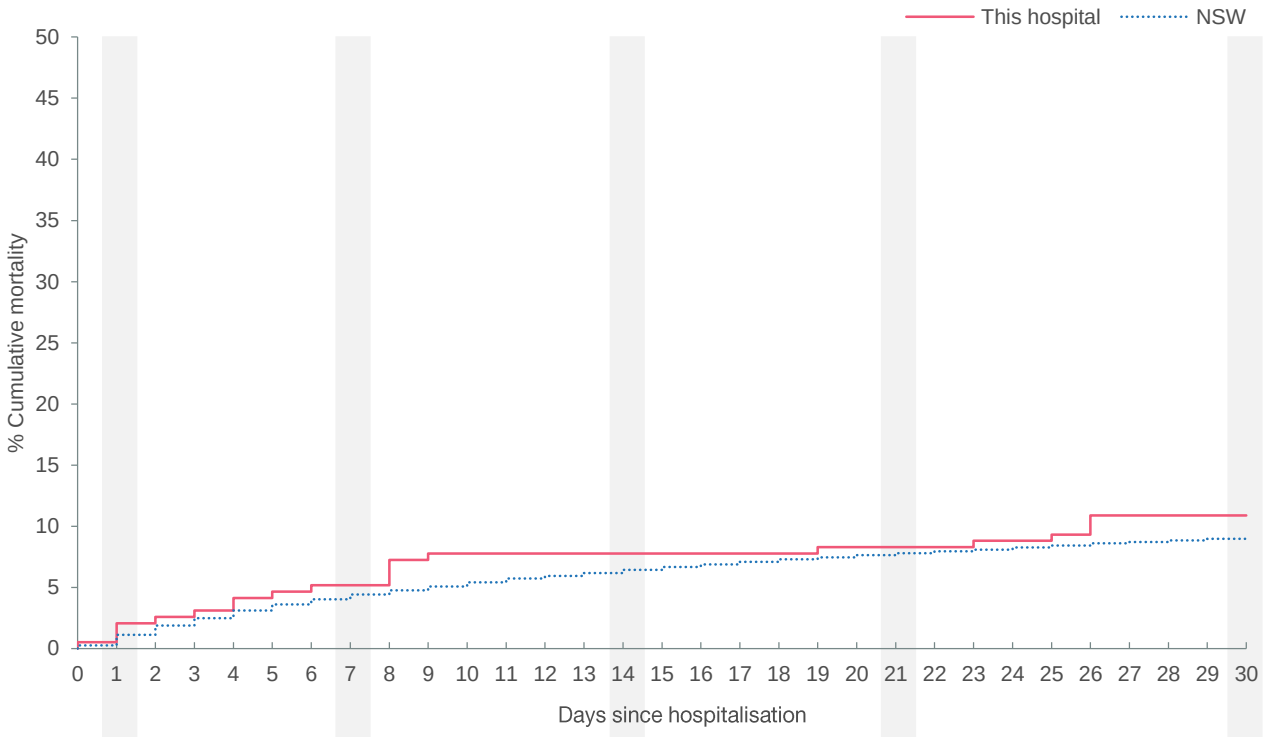
30-day mortality following hospitalisation for pneumonia, July 2015 – June 2018

	This hospital	NSW
Mortality (all causes) among 193 pneumonia index cases	21 (10.9%)	4,538 (9.1%)
Percentages: index cases who died within 30 days of hospitalisation		
Where deaths occurred:		
Percentage in this hospital	52.4%	53.9%
Percentage in another hospital following transfer	9.5%	0.6%
Percentage after discharge	38.1%	45.5%
When deaths occurred:		
Percentage on day of admission	4.8%	2.9%
Percentage within seven days	47.6%	48.4%

Cumulative mortality following hospitalisation for pneumonia, this hospital and NSW*



This hospital	Day 1	Day 7	Day 14	Day 21	Day 30
Cumulative number of deaths	4	10	15	16	21
Patients still alive	189	183	178	177	172

* Cumulative percentage of deaths over the 30 days following admission to hospital for the relevant condition.

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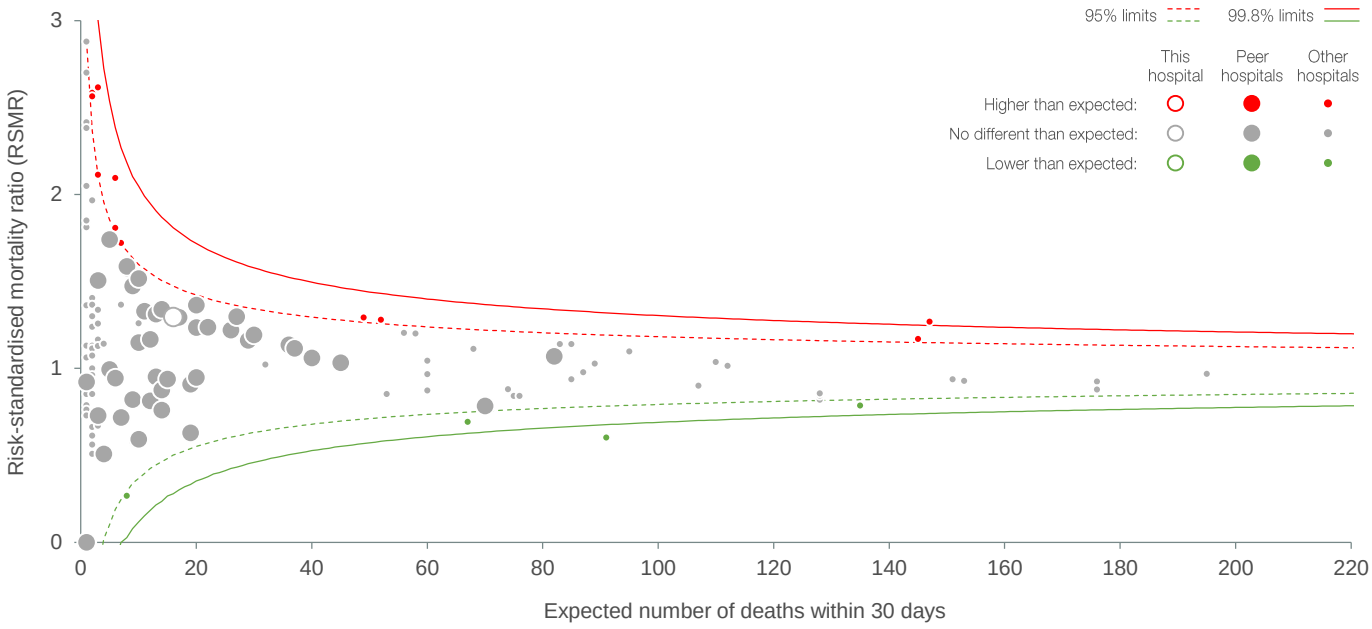
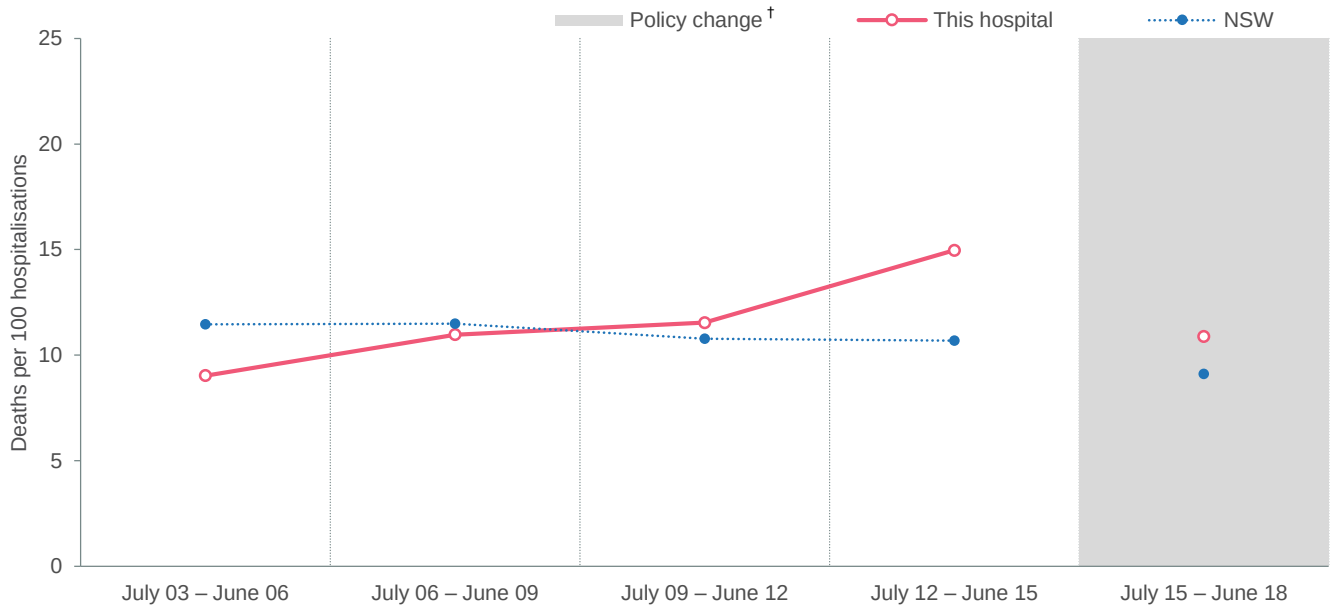
30-day mortality following hospitalisation for pneumonia, July 2015 – June 2018

Pneumonia **risk-standardised** mortality ratio by number of expected deaths, NSW public hospitals*



Pneumonia, **observed (unadjusted)** mortality rates, this hospital and NSW, July 2003 – June 2018



* 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 January 2018.

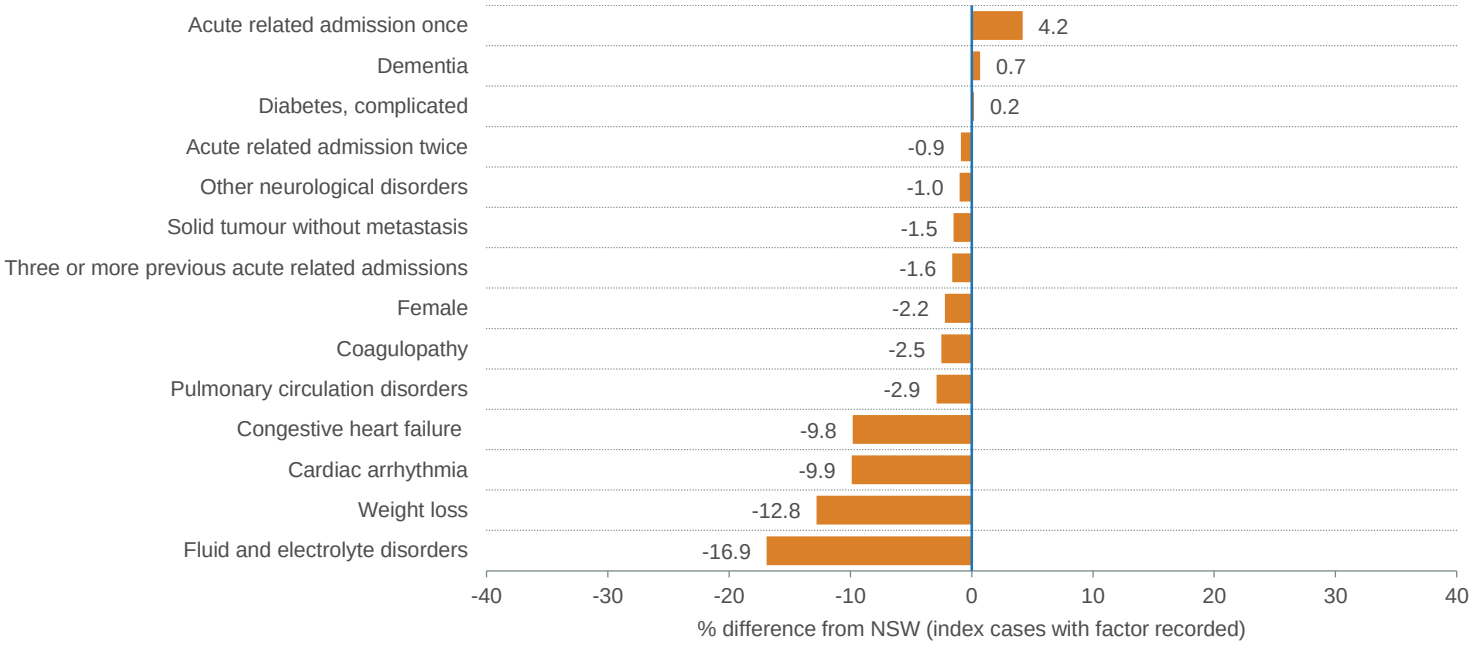
† In June 2017, the *NSW Health Admission Policy* was released, stating that a patient treated in and discharged from an emergency department only, should not be recorded as an admitted patient. As a result, ED-only attendances were not included in BHI mortality analyses from July 2015 onwards and comparison of results before and after this time should be made with caution. For more information, see the Technical Supplement to *Mortality following hospitalisation for seven clinical conditions, July 2015 – June 2018*.

Mudgee Health Service

30-day mortality following hospitalisation for chronic obstructive pulmonary disease, July 2015 – June 2018

	This hospital	NSW
Total chronic obstructive pulmonary disease hospitalisations	157	59,309
Chronic obstructive pulmonary disease patients		
Presenting patients (index cases)*	86	32,605
Patients transferred to another hospital within 30 days†	2	2,717
Percentage of patients aged 65+ years‡	79.1%	80.2%
Percentage of patients aged 75+ years‡	46.5%	50.7%

Significant patient factors and comorbidities, this hospital, index cases§



* Data refer to patients who were discharged between July 2015 and June 2018 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 chronic obstructive pulmonary disease 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.

† Includes transfers for diagnostic tests, procedures and ongoing care.

‡ Age at admission date. Age was a statistical factor in the final model of 30-day mortality following hospitalisation for chronic obstructive pulmonary disease.

§ Comorbidities as recorded on patient record, with one-year look-back from the admission date of the index case. 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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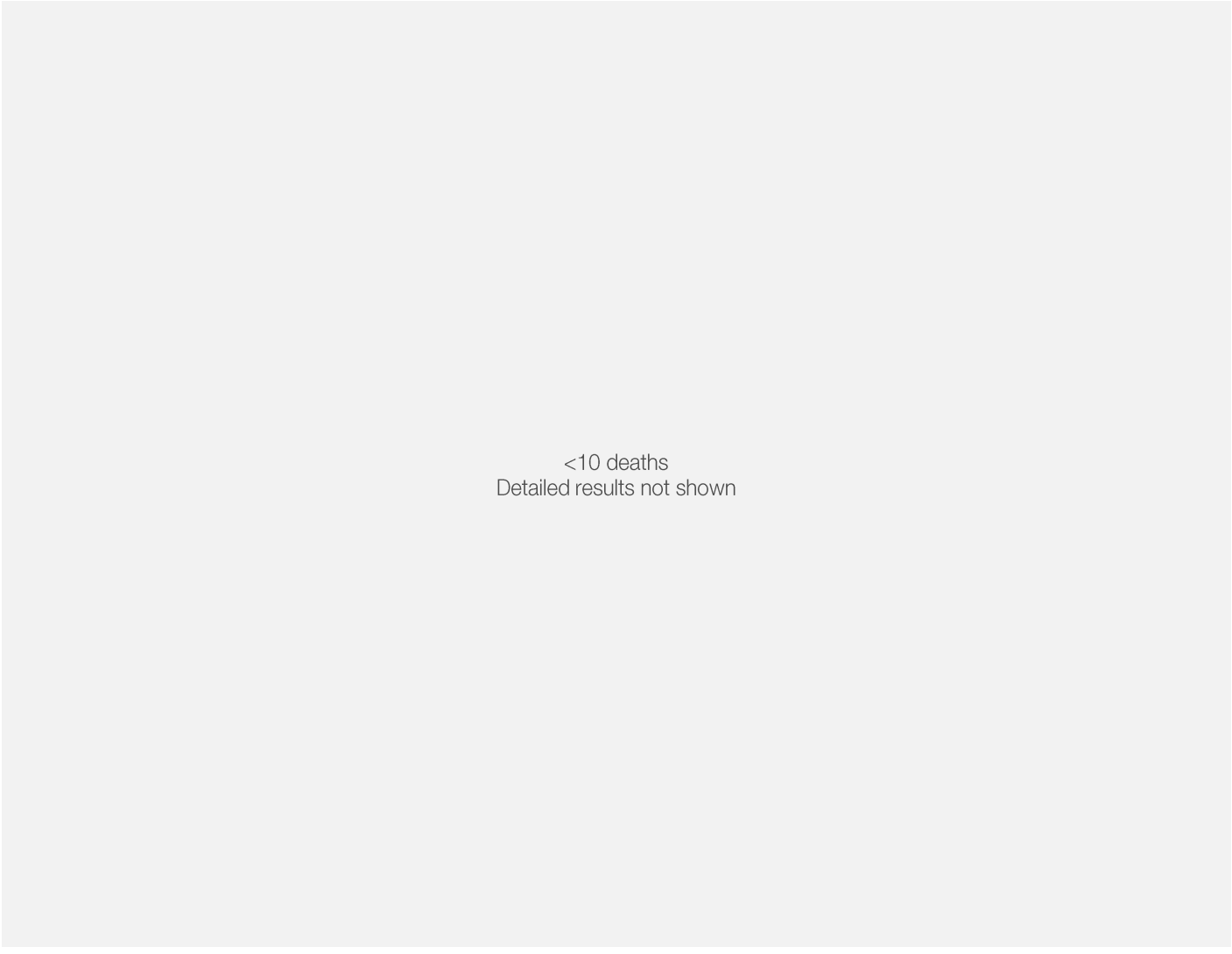
30-day mortality following hospitalisation for chronic obstructive pulmonary disease, July 2015 – June 2018

	This hospital	NSW
Mortality (all causes) among 86 chronic obstructive pulmonary disease index cases	7 (8.1%)	3,084 (9.5%)
Percentages: index cases who died within 30 days of hospitalisation		
Where deaths occurred:	<10 deaths Detailed results not shown	
Percentage in this hospital		
Percentage in another hospital following transfer		
Percentage after discharge		
When deaths occurred:		
Percentage on day of admission		
Percentage within seven days		

Cumulative mortality following hospitalisation for chronic obstructive pulmonary disease, this hospital and NSW*



* Cumulative percentage of deaths over the 30 days following admission to hospital for the relevant condition.

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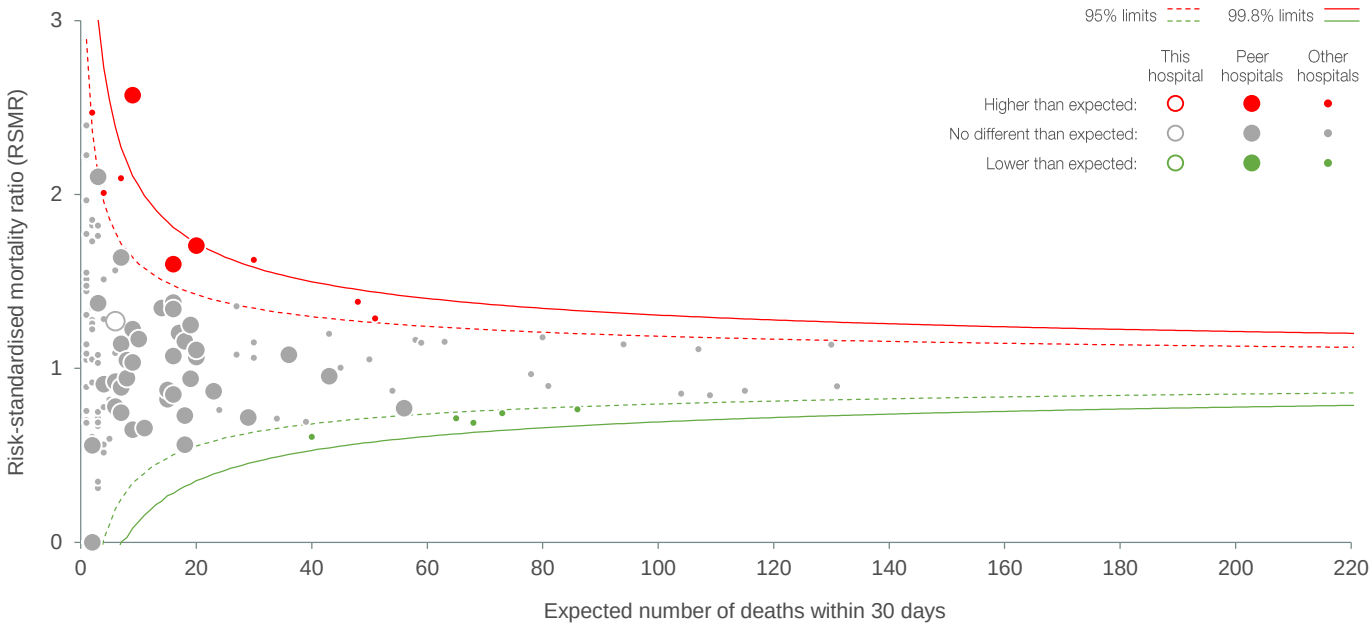
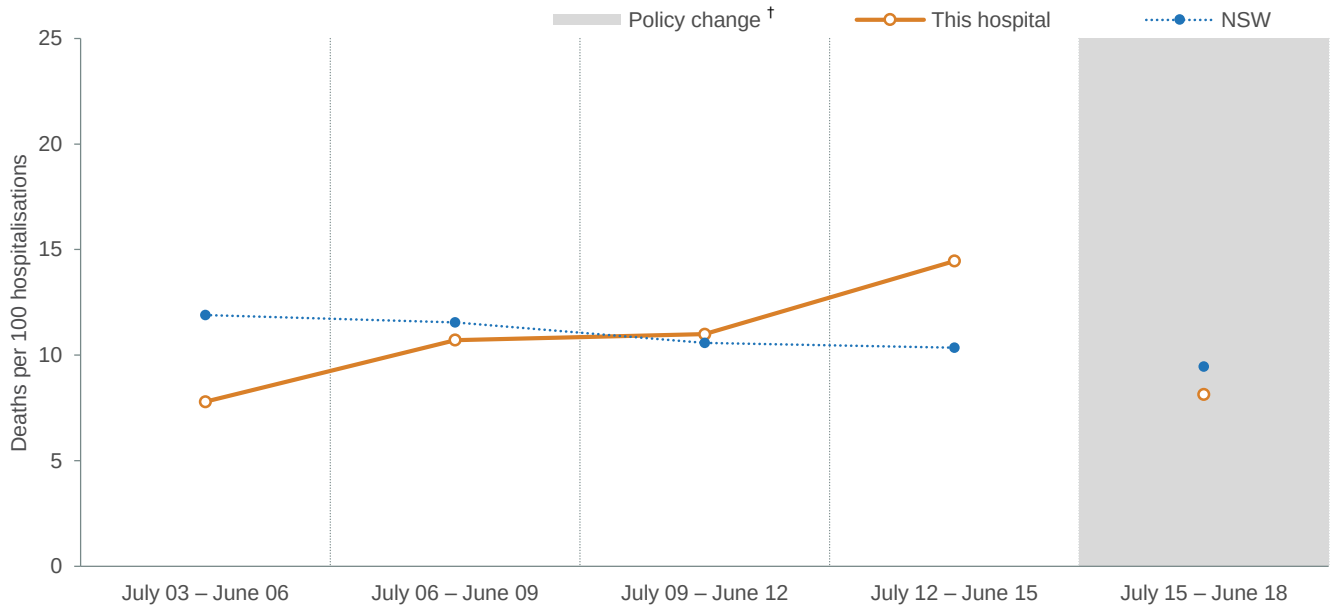
30-day mortality following hospitalisation for chronic obstructive pulmonary disease, July 2015 – June 2018

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



Chronic obstructive pulmonary disease, **observed (unadjusted)** mortality rates, this hospital and NSW, July 2003 – June 2018



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Mudgee Health Service

30-day mortality following hospitalisation for hip fracture surgery, July 2015 – June 2018

<50 index hospitalisations, results not shown