

Healthcare-associated *Staphylococcus aureus* bloodstream infections in 2012–13

Published March 2014

Information in this report has been updated in February 2017: see www.myhospitals.gov.au

This report presents rates of healthcare-associated bloodstream infections in Australia's biggest public hospitals caused by a bacterium called *Staphylococcus aureus*.

Although commonly found on the skin of healthy people, *Staphylococcus aureus* (*S. aureus*) can cause serious illness if it gets into the bloodstream. Evidence suggests 20% to 35% of people with this sort of infection die from it or a related cause.^{1–4} *S. aureus* is sometimes also known as Golden Staph, a term that refers to the majority of cases that can be treated with antibiotics, as well as to the more dangerous cases that are resistant to antibiotics. This report covers both types. *S. aureus* bloodstream infections contracted while in hospital are considered potentially preventable and hospitals aim to have as few of these infections as possible.

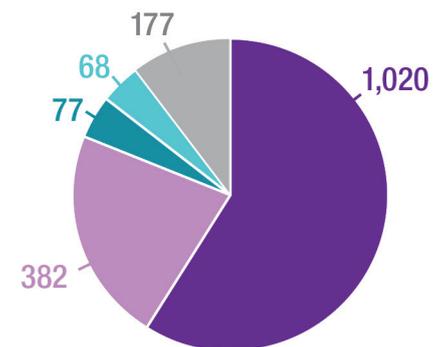
In 2012–13 there were 1,724 cases of healthcare-associated *S. aureus* bloodstream infection reported as being acquired while receiving care in a public hospital. The number of cases has declined since 2011–12 in major hospitals that have a larger proportion of patients more vulnerable to these infections.

The report highlights variation in infection rates across major and large hospitals. Among major hospitals with more vulnerable patients the rate of infection varied more than three-fold. At major hospitals with fewer vulnerable patients, rates were 11 times higher at some hospitals than others.

Healthcare-associated *Staphylococcus aureus* bloodstream infections reported in Australian public hospitals

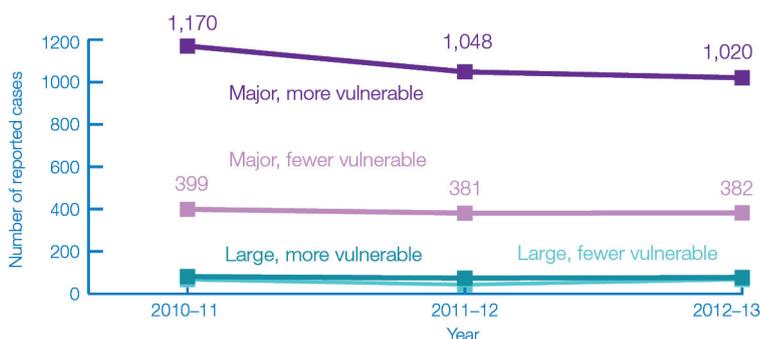
Total cases in 2012–13:

1,724



- Major hospitals, more vulnerable patients
- Major hospitals, fewer vulnerable patients
- Large hospitals, more vulnerable patients
- Large hospitals, fewer vulnerable patients
- Other hospitals

Number of reported cases of healthcare-associated *Staphylococcus aureus* bloodstream infections, by peer group, 2010–2013



MyHospitals

Information on healthcare-associated *S. aureus* bloodstream infections for 132 private and 586 public hospitals is available at www.myhospitals.gov.au

Sources and references can be found in the Technical Note at www.myhospitals.gov.au/publications

Visit www.myhospitals.gov.au for more detailed results

Key findings

In 2012–13, 1,547 cases of healthcare-associated *S. aureus* bloodstream infection were reported by the 115 major and large public hospitals covered in this report. This represents nearly 90% of the 1,724 cases of this infection reported by public hospitals nationally.

Bigger hospitals report more infections

Major hospitals reported a disproportionate share of healthcare-associated *S. aureus* bloodstream infections. These hospitals accounted for 81% of all reported cases and 62% of all patient bed days monitored.

- At the 36 **major hospitals with more vulnerable patients**, there were 1,020 cases of *S. aureus* bloodstream infection. The average rate of infection was 1.35 per 10,000 patient bed days.
- At the 40 **major hospitals with fewer vulnerable patients**, there were 382 cases of *S. aureus* bloodstream infection. The average rate of infection was 0.92 per 10,000 patient bed days.

Large hospitals accounted for about 8% of all reported cases and 11% of all patient bed days monitored.

- At the 16 **large hospitals with more vulnerable patients**, there were 77 cases of *S. aureus* bloodstream infection. The average rate of infection was 1.05 per 10,000 patient bed days.
- At the 23 **large hospitals with fewer vulnerable patients**, there were 68 cases of *S. aureus* bloodstream infection. The average rate of infection was 0.55 per 10,000 patient bed days.

Variation in infection rates and counts across similar hospitals

All **major hospitals** reported at least one case of healthcare-associated *S. aureus* bloodstream infection.

- At **major hospitals with more vulnerable patients** the rate of infection was more than three times higher at some hospitals than others (range: 0.53 to 1.93 per 10,000 patient bed days). Seven of these hospitals reported more than 40 cases.
- At **major hospitals with fewer vulnerable patients** the rate of infection was 11 times higher at some hospitals than others (range: 0.20 to 2.29 per 10,000 patient bed days).

Among **large hospitals**, 36 of the 39 hospitals reported at least one case of healthcare-associated *S. aureus* bloodstream infection.

- At **large hospitals with more vulnerable patients** the rate of infection ranged from 0 to 3.14 per 10,000 patient bed days.
- At **large hospitals with fewer vulnerable patients**, the rate of infection ranged from 0 to 1.87 per 10,000 patient bed days.

Fair comparisons

To allow fairer comparisons, the Authority has allocated hospitals to one of four peer groups based on a combination of hospital size, type of services provided and the percentage of patients more at risk of acquiring a healthcare-associated infection. Hospitals with more vulnerable patients have a higher percentage of patients admitted for the treatment of conditions such as cancer, HIV/AIDS, burns or surgery than other hospitals.

There are uncertainties about the completeness and national consistency of the data across all hospitals. This means that results could be affected by some degree of under-reporting.

Higher rates cannot definitively indicate that patients at those hospitals are at greater risk of harm compared to patients at other hospitals. High values are however a cause for further investigation.

Table 1: Healthcare-associated *S. aureus* bloodstream infections in major and large public hospitals, by reported cases and rate per 10,000 patient bed days, 2012–13

Major hospitals, more vulnerable patients*				Major hospitals, fewer vulnerable patients*				Large hospitals, more vulnerable patients*				Large hospitals, fewer vulnerable patients*			
Total number of hospitals in peer group		36		Total number of hospitals in peer group		40		Total number of hospitals in peer group		16		Total number of hospitals in peer group		23	
All cases reported nationally (%)		59%		All cases reported nationally (%)		22%		All cases reported nationally (%)		4%		All cases reported nationally (%)		4%	
All patient bed days monitored (%)		40%		All patient bed days monitored (%)		22%		All patient bed days monitored (%)		4%		All patient bed days monitored (%)		7%	

State	Hospital	Cases	Rate	State	Hospital	Cases	Rate	State	Hospital	Cases	Rate	State	Hospital	Cases	Rate						
NSW	Nepean	35	1.82	NSW	Port Macquarie	17	2.29	NSW	Calvary Mater [Newcastle]	19	3.14	NSW	Bathurst	5	1.36						
	Gosford	31	1.77		Dubbo	11	1.95		Maitland	7	1.12		Goulburn	4	1.26						
	John Hunter	45	1.70		Sutherland	18	1.56		Canterbury	3	0.48		Shellharbour	5	0.80						
	Prince of Wales	31	1.67		Lismore	13	1.40		Ryde	1	0.23		Manly	3	0.49						
	Westmead	46	1.61		The Tweed	11	1.25		Peter MacCallum†	13	2.71		Mona Vale	2	0.34						
	Royal North Shore	37	1.61		Coffs Harbour	11	1.11		Wimmera [Horsham]	4	1.59		Grafton	1	0.30						
	Wollongong	27	1.48		Blacktown	13	1.08		Albury	5	1.15		Fairfield	2	0.25						
	St George	31	1.46		Wyong	12	1.06		Northeast Health [Wangaratta]	5	1.13		Hornsby	2	0.25						
	St Vincent's	19	1.34		Shoalhaven	6	1.04		Mildura	4	0.78		Auburn	0	0.00						
	Liverpool	34	1.22		Concord	21	0.95		Monash [Moorabbin]	3	0.77		Vic	Wodonga	6	1.20					
	Royal Prince Alfred	26	0.93		Bankstown	13	0.85		West Gippsland [Warragul]	2	0.70			Central Gippsland [Sale]	3	0.97					
	Vic	Monash [Clayton]	41		1.76	Wagga Wagga	7		0.79	Victorian Eye & Ear†	0			0.00	Werribee Mercy Public	4	0.60				
		Royal Melbourne	41		1.69	Campbelltown	11		0.77	Qld	Hervey Bay		7	1.48	Sandringham	2	0.56				
Western		20	1.46	Manning	4	0.77	Queen Elizabeth II	1	0.17		Angliss	2	0.31								
The Alfred		34	1.39	Tamworth	6	0.75	SA	Modbury	2	0.29	Qld	Mount Isa	2	1.21							
Dandenong		22	1.28	Orange	4	0.39	Tas	North West Regional [Burnie]	1	0.30		Redland	4	0.70							
The Northern		18	1.28	Vic	Frankston	15	0.95	Peer result	77	1.05	WA	Kalgoorlie	5	1.87							
Geelong		22	1.26		Maroondah	10	0.92		Peer result	68		0.55	Armadale-Kelmscott	5	0.64						
Austin		27	1.21		Bendigo	7	0.77			Peer result		68	0.55	Albany	2	0.54					
Box Hill		18	1.18		Goulburn Valley [Shepparton]	5	0.67					Peer result	68	0.55	Rockingham	3	0.48				
Ballarat		10	1.15		South West [Warrnambool]	3	0.56						Peer result	68	0.55	Swan District	3	0.39			
St Vincent's	18	1.01	Latrobe Regional [Traralgon]		4	0.42	Peer result							68	0.55	Geraldton	0	0.00			
Qld	Royal Brisbane & Women's	65	1.93		Casey	3								0.42	Peer result	68	0.55	SA	Repatriation General	3	0.27
	Mater Adult	10	1.81		Sunshine	6								0.38		Peer result	68		0.55	Peer result	68
	Princess Alexandra	42	1.39		Qld	Gold Coast University								26			1.50	Peer result	68		0.55
	Townsville	22	1.11			Rockhampton								12			1.47		Peer result		68
	Prince Charles	10	0.53	Cairns		21		1.35			Peer result			68			0.55				
WA	Sir Charles Gairdner	37	1.33	Nambour		16		1.03	Peer result					68			0.55				
	Royal Perth	38	1.14	Ipswich		10		0.91		Peer result				68			0.55				
	Fremantle	18	0.82	Toowoomba		9		0.89				Peer result		68			0.55				
SA	Royal Adelaide	39	1.37	Logan		6		0.52					Peer result	68			0.55				
	Flinders	22	0.95	Mackay		3	0.44	Peer result						68			0.55				
	Queen Elizabeth	11	0.79	Redcliffe		4	0.39							Peer result	68		0.55				
Tas	Royal Hobart	13	0.85	Caboolture		3	0.39								Peer result	68	0.55				
	ACT	Canberra	41	1.72	Bundaberg	2	0.28									Peer result	68	0.55			
NT		Royal Darwin	19	1.07	WA	South West [Bunbury]	5										1.04	Peer result	68	0.55	
	Peer result	1,020	1.35	SA		Lyell McEwin	13				0.88						Peer result		68	0.55	
Peer result		382	0.92		Tas	Launceston	16		1.47		Peer result								68	0.55	
	Peer result	382	0.92	ACT		Calvary Public	3		0.33	Peer result									68	0.55	
Peer result		382	0.92		NT	Alice Springs	2		0.20			Peer result							68	0.55	
	Peer result	382	0.92	Peer result		382	0.92		Peer result				68						0.55		

About the data

Cases of healthcare-associated *S. aureus* bloodstream infection are identified when a medical professional notices the symptoms and orders a blood test. If this blood test identifies a bloodstream infection by *S. aureus*, the infection control officer for the hospital is notified. These experts judge if the infection is healthcare-associated and if it is attributable to a hospital. Many steps are necessary for a case of healthcare-associated *S. aureus* bloodstream infection to be recorded. Failure of any of these steps can interrupt this sequence and lead to under-reporting of this infection.

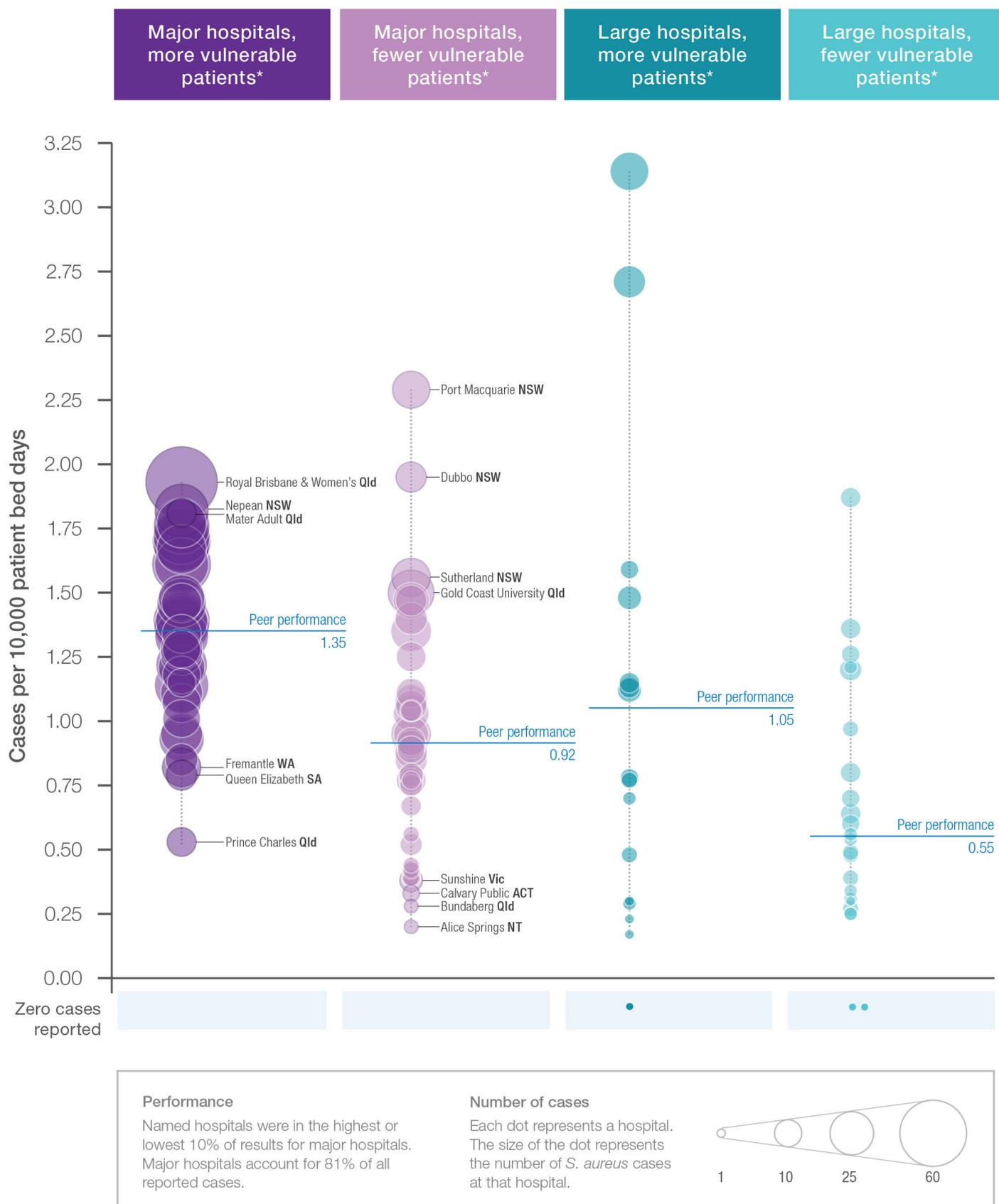
* More and fewer vulnerable patients refers to hospitals deemed to have, for their peer group, a high or low percentage of patient bed days under surveillance attributable to patients with one or more of the identified risk factors. Risk factors were not weighted to account for differences in the degree to which each factor contributes to risk of *S. aureus* infection. For more information on measures and peer groups, see the Technical Note www.myhospitals.gov.au

† The percentage of vulnerable patients at this hospital was much higher than other hospitals in this peer group; this was due to the high percentage of cancer patients at Peter MacCallum, and surgery patients at Victorian Eye & Ear hospital.

Note: The government-agreed target calls for a rate of no more than 2.0 healthcare-associated *S. aureus* bloodstream infections per 10,000 patient bed days for each state and territory.

Sources: Australian Institute of Health and Welfare. National *Staphylococcus aureus* Bacteraemia Data Collection 2012–13, data extracted 17 December 2013. Australian Institute of Health and Welfare. Admitted Patient Care National Minimum Dataset 2011–12, data extracted 26 March 2012.

Figure 1: Healthcare-associated *S. aureus* bloodstream infections in public hospitals, by major and large hospitals, 2012–13



The government-agreed target calls for a rate of no more than 2.0 healthcare-associated *S. aureus* bloodstream infections per 10,000 patient bed days for each state and territory.

* More and fewer vulnerable patients refers to hospitals deemed to have, for their peer group, a high or low percentage of patient bed days under surveillance attributable to patients with one or more of the identified risk factors. Risk factors were not weighted to account for differences in the degree to which each factor contributes to risk of *S. aureus* infection. For more information on measures and peer groups, see the Technical Note www.myhospitals.gov.au

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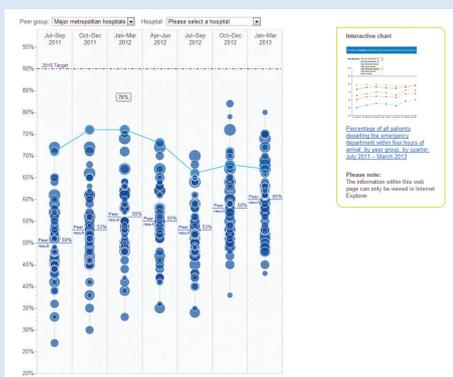


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On this interactive website you can view the latest performance information for more than 1,000 public and private hospitals throughout Australia.

See performance information for measures such as:

- Surgery waiting times
- Hand hygiene and infection rates
- Time spent in emergency departments.



Compare your local hospital with other similar hospitals. Look for this icon  to view comparative results across hospitals.

This website not only enables the public to make informed decisions, it empowers clinicians and service providers to drive improvements in health care services.

Acknowledgements

The Authority established an expert group to provide advice around the clinical and technical aspects of this report. The group did not have a direct role in writing the report. The group was comprised of:

- Associate Professor Eugene Athan, Australasian Society for Infectious Diseases nominee and Department of Infectious Diseases, Barwon Health, Vic
- Dr Craig Boutlis, Infectious Diseases Physician
- Professor Peter Collignon, Infectious Diseases Physician and Microbiologist
- Professor Graeme Nimmo, Director of Microbiology, Pathology Queensland
- Ms Irene Wilkinson, Manager Infection Control Service, SA Health.

What is the National Health Performance Authority?

We are an independent government agency that provides information on health care organisations at a local level across Australia. We produce regular reports and publish data online. The Performance Authority's activities are guided by the Performance and Accountability Framework agreed by the Council of Australian Governments. The framework contains 48 indicators that form the basis for the Performance Authority's reports.



National Health Performance Authority

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ISSN: 2201-3091

Suggested citation: National Health Performance Authority 2014, *Hospital Performance: Healthcare-associated Staphylococcus aureus bloodstream infections in 2012-13 (In Focus)*

Please note that there is the potential for minor revisions of this document.