

Tasmanian Acute Public Hospitals Healthcare Associated Infection Surveillance Report

August 2010

Report No: 6 (Period ending 30th June 2010)

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Notes

- **Commonly used terms and acronyms are defined in the Glossary section at the end of this report**
- **This report does not contain the methodology used to collect the data. Protocols relating to the surveillance programs are published on the TIPCU website, www.dhhs.tas.gov.au**
- **An explanatory document is available on the TIPCU website. This document provides insight into understanding the surveillance report**

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Executive Summary

This surveillance report describes data relating to a number of key Healthcare Associated Infection (HAI) 'indicators'. It is the intention of the Tasmanian Infection Prevention & Control Unit (TIPCU) to publish this report quarterly.

The TIPCU website (www.dhhs.tas.gov.au) contains details of the surveillance program, including the rationale for the indicators surveyed and the methodologies used in data collection, validation and analysis. These details are not contained in this report but are freely available online should further information be required. In addition, an explanatory document has been developed to accompany this surveillance report. The explanatory document provides insight into how to interpret data contained in this report.

The Appendices contain more detailed information.

The key findings of this report are:

- There have been no healthcare associated MRSA bacteraemias in the past 9 months (Oct 09-July 10), compared to 4 cases in the 9 months preceding this. As MRSA bacteraemia has a high mortality, this is an important positive trend. The same phenomenon was seen in Victoria following the introduction of a state-wide Hand Hygiene campaign and it may be that the Tasmanian experience is mirroring that of Victoria.
- The number of cases of *Clostridium difficile* infection has increased significantly between 2008-09 and 2009-10. The TIPCU is undertaking further work to determine whether this observation is a result of changes in laboratory testing practices or reflects a real increase in the incidence of disease.
 - 2008-09 there were a total of 81 cases of CDI equating to a rate of 0.81 per 1000 separations (95%CI 0.76-0.86)
 - 2009-10 there were a total of 120 cases of CDI equating to a rate of 1.24 per 1000 separations (95%CI 1.17-1.32)
- The percentage of clinical *Staphylococcus aureus* isolates that are methicillin resistant (MRSA) is only measured once a year. Therefore data in this report is the same as the previous report (No.2)
- The rate of hand hygiene compliance is measured three times per year. The data in this report is the same as the data in Surveillance Report No.5.



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* Bed day activity data used is correct at the time of printing. It is however, subject to change, due to the implementation of a new patient administration system. The bed day data used is consistent with previous quarters and therefore if any change is required, it is expected to be very minor.

* Bed day data for Hospital A for June 2010 is unavailable at the time of developing the report. The average separations over the past 12 months has been used to calculate the separation data for Hospital A in June. When data becomes available, the report will be updated.

Staphylococcus aureus bacteraemia (bloodstream infection)

Tasmanian Rate

Figure 1 and 2 (and tables contained in the Appendix) outline the Tasmanian rates of *Staphylococcus aureus* bacteraemia (all acute public hospitals combined).

The average (mean) rate of Healthcare Associated *Staphylococcus aureus* bacteraemia is 0.45 per 1000 separations (95% CI 0.36-0.55) (Figure 1).

The average (mean) rate of Community Associated *Staphylococcus aureus* bacteraemia is 0.56 per 1000 separations (95% CI 0.45-0.66) (Figure 2).

Figure 1 - Healthcare Associated *Staphylococcus aureus* bacteraemia

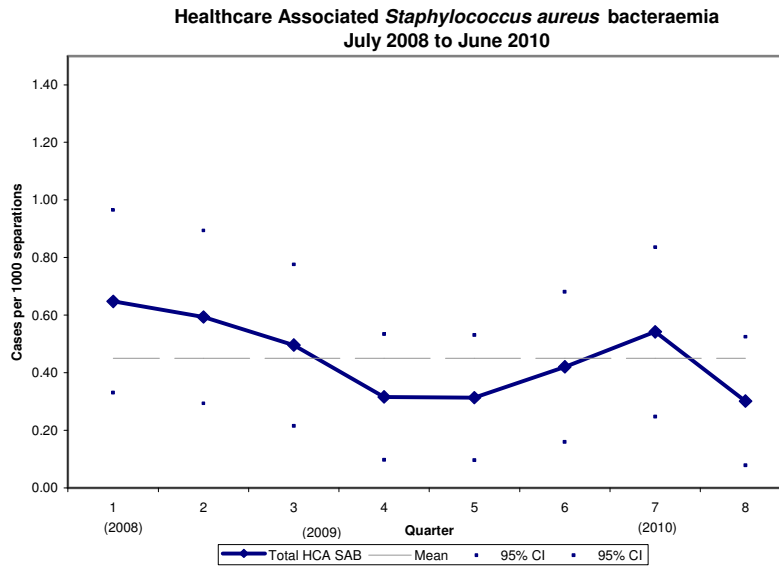
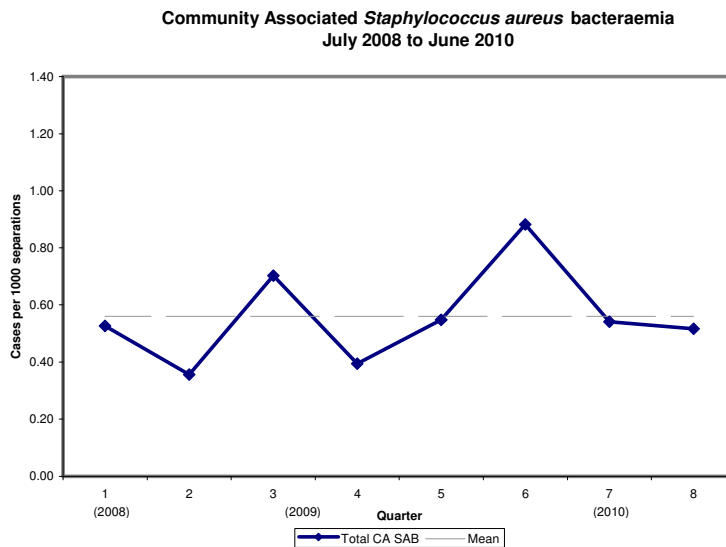


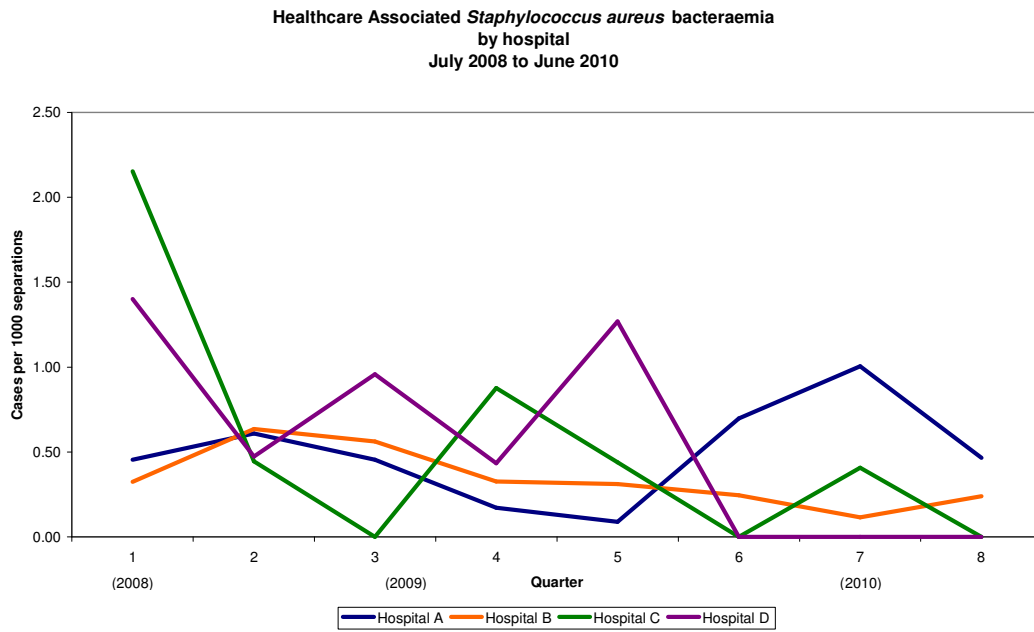
Figure 2 – Community Associated *Staphylococcus aureus* bacteraemia



Hospital Rates

Figure 3 (and tables contained in the Appendix) outlines the rate of *Staphylococcus aureus* bacteraemia in each of Tasmania's acute public hospitals.

Figure 3 - Healthcare Associated *Staphylococcus aureus* bacteraemia



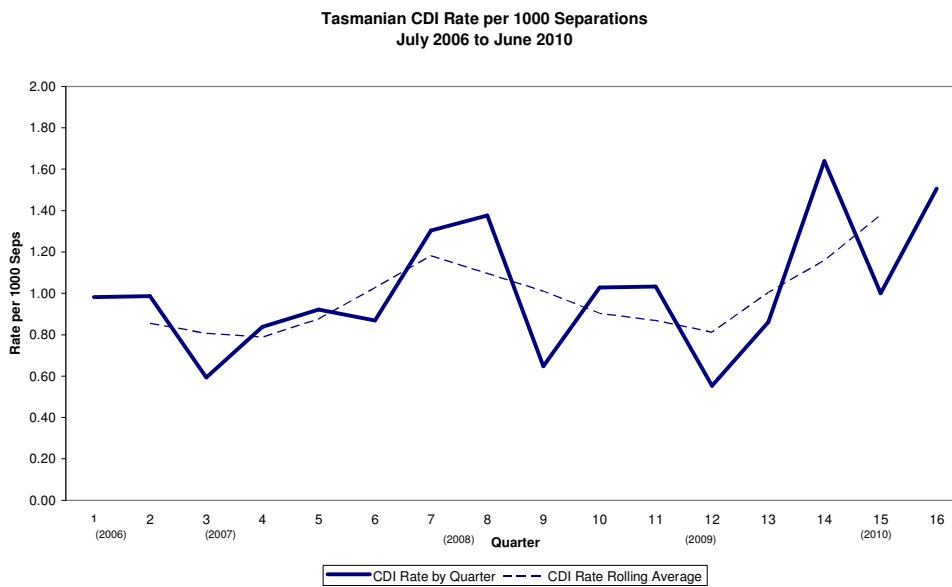
Clostridium difficile Infection

Tasmanian Rate

Figure 4 (and tables contained in the Appendix) outlines the rate of *Clostridium difficile* infection for patients presenting to or in each of Tasmania's acute public hospitals.

The average (mean) rate of *Clostridium difficile* infection is 1.01 per 1000 separations (95% CI 0.97-1.04), (Figure 4).

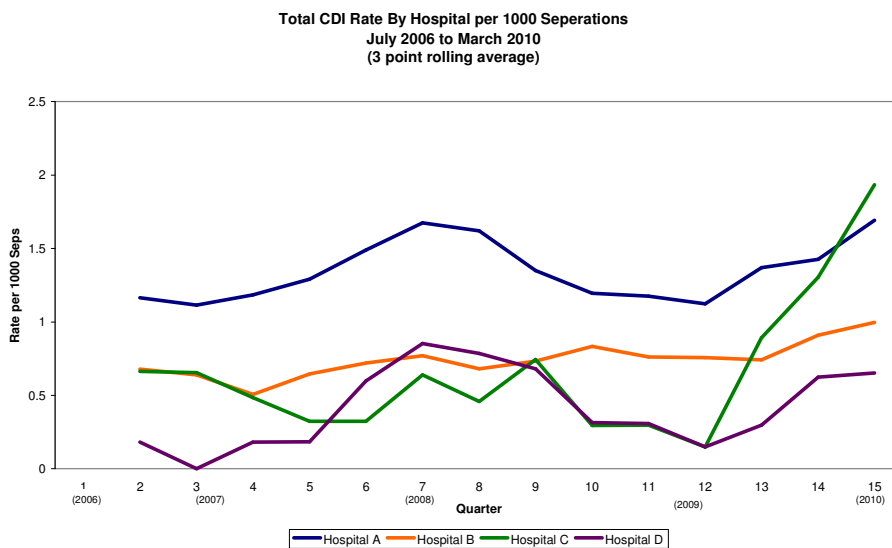
Figure 4 – Clostridium difficile Infection



Hospital Rates

Figure 5 (and tables contained in the Appendix) outlines the rate of *Clostridium difficile* infection in each of Tasmania's acute public hospitals, (Figure 5).

Figure 5 – Hospital Rates of Clostridium difficile Infection



Vancomycin Resistant Enterococcus (VRE)

Tasmanian Numbers

Table 1 – Number of People Identified with VRE per Quarter

Year	Quarter	Colonisation	Infection	Total*
2006 [^]	N/A	Unknown	Unknown	1
2007 [^]	N/A	Unknown	Unknown	7
2008	1	12	1	13
	2	27	4	32
	3	10	2	12
	4	16	2	18
2009	5	7	0	9
	6	13	1	14
	7	3	1	4
	8	5	0	5
2010	9	2	0	2
	10	4	1	5

* Total does not necessarily equal colonisation plus infection due to unknown cases; [^] Calendar year.

Hospital Numbers

Table 2 – Number of People Identified with VRE by Acute Public Hospital

Quarter		Hospital A		Hospital B		Hospital C		Hospital D	
		Col.	Inf.	Col.	Inf.	Col.	Inf.	Col.	Inf.
2008	1	10	1	-	-	-	-	-	-
	2	15	2	6	-	6	1	-	-
	3	1	-	1	-	8	2	-	-
	4	2	1	8	1	5	-	-	-
2009	5	-	-	4	-	3	-	2	-
	6	7	1	-	-	2	-	4	-
	7	1	-	-	-	-	1	2	-
	8	2	-	2	-	1	-	-	-
2010	9	1	-	1	-	-	-	-	-
	10	4	-	-	-	-	-	-	1

Col=Colonisation, Inf=Infection; * Total does not necessarily equal colonisation plus infection due to unknown cases

Staphylococcus aureus Sensitivity

(NOT UPDATED FROM SURVEILLANCE REPORT NO 2)

Tasmanian Rate

Table 3 - Patients in Hospital > 48 hours

	2008	2009	2010
Total Number of Isolates Examined	295	268	To be undertaken mid 2010
Percentage of Staphylococcus aureus isolates that were MRSA	19.7 %	22.8%	
Number MSSA	237	207	
Number MRSA	58	61	
Mean Age	70.6 years	59.3 years	
Mean Time between Admission Date and Specimen Collection Date	19 days	15 days	

Table 4 - Patients in Hospital < 48 hours (all patients)

	2008	2009	2010
Total Number of Isolates Examined	1337	1228	To be undertaken mid 2010
Percentage of Staphylococcus aureus isolates that were MRSA	7.1%	9.9%	
Number MSSA	1242	1107	
Number MRSA	95	121	
Mean Age	52.9 years	46.5 years	

Hospital Rates

Table 5 - Patients in Hospital > 48 hours

	2008 % Isolates MRSA (total number examined in brackets*)	2009 % Isolates MRSA (total number examined in brackets*)	2010 % Isolates MRSA (total number examined in brackets*)
Hospital A	6% (100)	13% (100)	To be undertaken mid 2010
Hospital B	36% (100)	35% (100)	
Hospital C	19.7% (61)	26% (38)	
Hospital D	11.8% (34)	10.0%(30)	

* 100 consecutive isolates were included or 6 months of continuous data, whichever occurred first

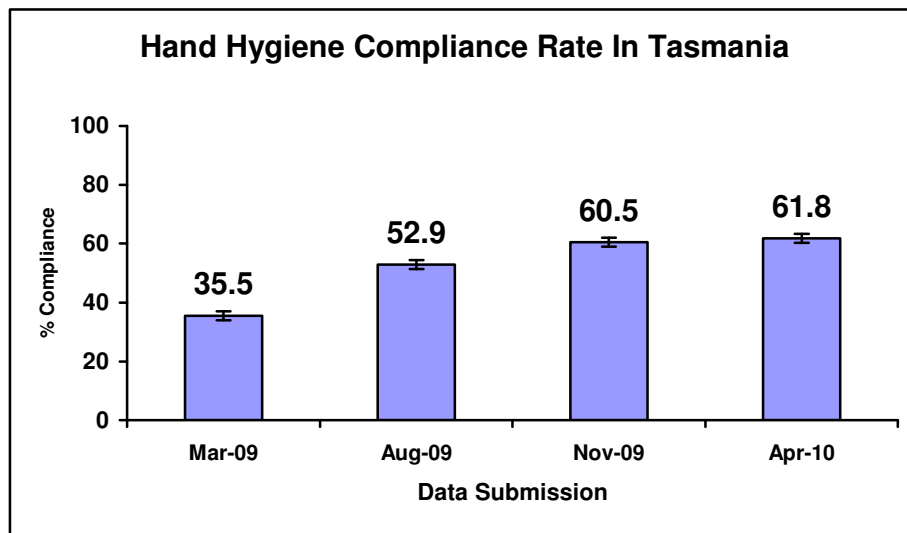
Hand Hygiene Compliance Data

(NOT UPDATED FROM SURVEILLANCE REPORT NO 5)

Data is based on the 4th Hand Hygiene Data Submission, April 2010.

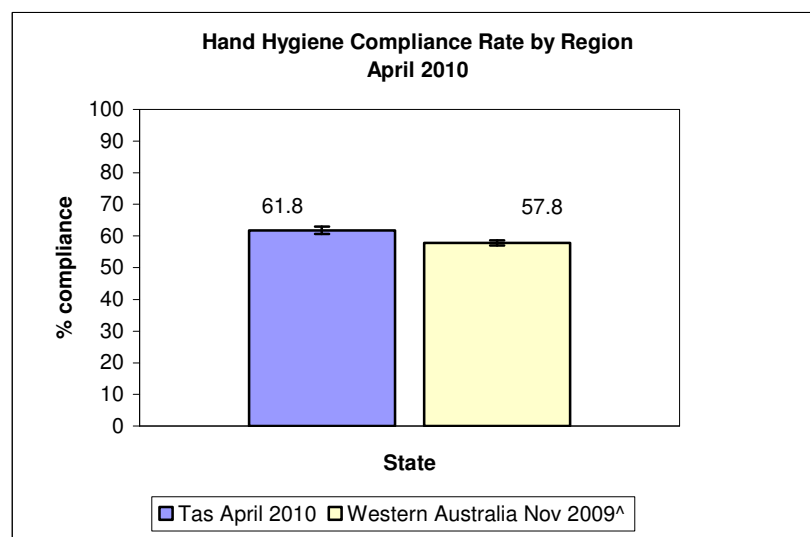
Tasmanian Rates

Hand Hygiene Compliance Rate in Tasmanian Public Hospitals (Figure 6)



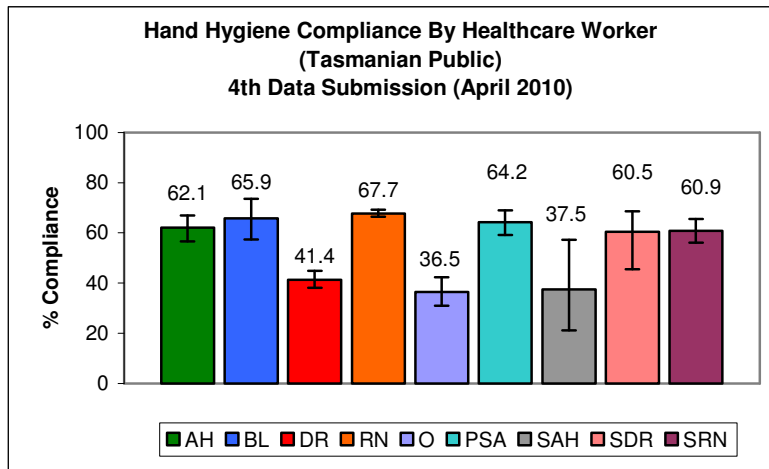
(all Tasmanian Public Hospitals)

Hand Hygiene Compliance Rate by State/Territory (Figure 7)



[^] HISWA Report No.4 – includes all hospitals (including private)
Tasmanian rate is for public hospitals only.

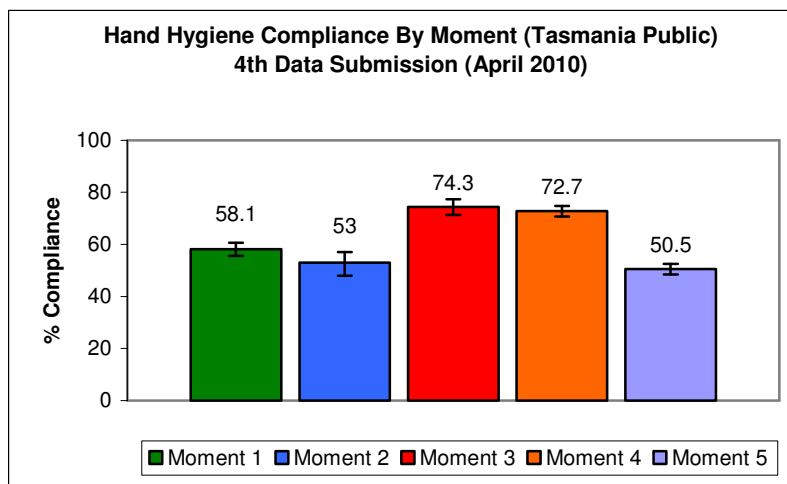
Hand Hygiene Compliance by Healthcare Worker (Figure 8)



Key

AH – Allied Health
 BL – Blood letter (phlebotomist)
 DR – Doctor
 RN – Registered/Enrolled Nurse
 O – Other
 PSA – Patient Service Assistant
 SAH – Student Allied Health
 SDR – Student doctor
 SRN – Student Nurse

Hand Hygiene Compliance by Moment (Figure 9)



Key

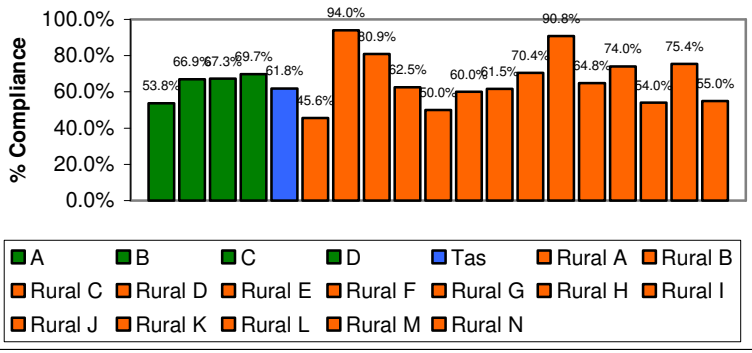
Moment 1 – Before touching a patient
 Moment 2 – Before a procedure
 Moment 3 – After a procedure or body fluid exposure
 Moment 4- After touching a patient
 Moment 5- After touching a patients' surroundings

Hospital Rates

Hand Hygiene Compliance Rate by Hospital (Figure 10)

Please Note – Rural hospitals audit considerably less moments

**Hand Hygiene Compliance Data By Hospital
4th Data Submission April 2010)**



Antibiotic Utilisation Surveillance

Future Reports

Future reports will also include the rates of antibiotic utilisation in acute hospitals.

Acknowledgements

The production of this report is the culmination of work from a number of different organisations. In particular, we would like to acknowledge:

- Launceston General Hospital Infection Control Team and Director of Nursing
- Royal Hobart Hospital Infection Control Team and Executive Director of Nursing
- North West Area Health Service Infection Control Team and Executive Director of Nursing
- Microbiology Departments at the Royal Hobart Hospital, Launceston General Hospital, DSPL and Gribbles Pathology
- Hand Hygiene Australia
- Communicable Disease Prevention Unit, Population Health
- Contributing Primary Health Sites
- Epidemiology Unit, Population Health

Appendix

Staphylococcus aureus bacteraemia

**Table 1 – Tasmanian Numbers and Rates of *Staphylococcus aureus* bacteraemia
(July 2008 to June 2010)**

Quarter	HCA Total		HCA Inpatients		HCA Non Inpatients		HCA MRSA		Community	
	Total patients	Rate*	Total patients	Rate	Total patients	Rate*	Total patients	Rate*	Total patients	Rate*
Q3 2008	16	0.65	11	0.45	5	0.20	3	0.12	13	0.53
Q4 2008	15	0.59	10	0.40	5	0.20	2	0.08	9	0.36
Q1 2009	12	0.50	6	0.25	6	0.25	2	0.08	17	0.70
Q2 2009	8	0.32	3	0.12	5	0.20	1	0.04	10	0.39
Q3 2009	8	0.31	5	0.20	3	0.12	1	0.04	14	0.55
Q4 2009	10	0.42	7	0.29	3	0.13	0	0.00	21	0.88
Q1 2010	13	0.54	8	0.33	5	0.21	0	0.00	13	0.54
Q2 2010	7	0.30	5	0.22	2	0.09	0	0.00	12	0.52

* Rate is the number of patients per 1000 Separations

**Table 2 – Hospital A - Numbers and Rates of *Staphylococcus aureus* bacteraemia
(July 2008 to June 2010)**

Quarter	HCA Total		HCA Inpatients		HCA Non Inpatients		HCA MRSA		Community	
	Total patients	Rate*	Total patients	Rate	Total patients	Rate*	Total patients	Rate*	Total patients	Rate*
Q3 2008	5	0.45	5	0.45	0	0.00	2	0.18	6	0.55
Q4 2008	7	0.61	5	0.44	2	0.17	1	0.09	4	0.35
Q1 2009	5	0.46	2	0.18	3	0.27	1	0.09	4	0.36
Q2 2009	2	0.17	2	0.17	0	0.00	1	0.09	1	0.09
Q3 2009	1	0.09	1	0.09	0	0.00	0	0.00	7	0.62
Q4 2009	8	0.70	5	0.44	3	0.26	0	0.00	6	0.52
Q1 2010	11	1.01	6	0.55	5	0.46	0	0.00	2	0.18
Q2 2010	5	0.44	3	0.28	2	0.19	0	0.00	5	0.47

* Rate is the number of patients per 1000 Separations

**Table 3 – Hospital B - Numbers and Rates of *Staphylococcus aureus* bacteraemia
(July 2008 to June 2010)**

Quarter	HCA Total		HCA Inpatients		HCA Non Inpatients		HCA MRSA		Community	
	Total patients	Rate*	Total patients	Rate	Total patients	Rate*	Total patients	Rate*	Total patients	Rate*
Q3 2008	3	0.32	0	0.00	3	0.32	1	0.11	3	0.32
Q4 2008	6	0.63	3	0.32	3	0.32	1	0.11	2	0.21
Q1 2009	5	0.56	3	0.34	2	0.22	1	0.11	8	0.90
Q2 2009	3	0.33	1	0.11	2	0.22	0	0.00	6	0.65
Q3 2009	3	0.31	1	0.10	2	0.21	1	0.10	4	0.42
Q4 2009	2	0.25	2	0.25	0	0.00	0	0.00	12	1.47
Q1 2010	1	0.12	1	0.12	0	0.00	0	0.00	8	0.93
Q2 2010	2	0.24	2	0.24	0	0.00	0	0.00	2	0.24

* Rate is the number of patients per 1000 Separations

**Table 4 – Hospital C - Numbers and Rates of *Staphylococcus aureus* bacteraemia
(July 2008 to June 2010)**

Quarter	HCA Total		HCA Inpatients		HCA Non Inpatients		HCA MRSA		Community	
	Total patients	Rate*	Total patients	Rate	Total patients	Rate*	Total patients	Rate*	Total patients	Rate*
Q3 2008	5	2.15	3	1.29	2	0.86	0	0.00	1	0.43
Q4 2008	1	0.44	1	0.44	0	0.00	0	0.00	1	0.44
Q1 2009	0	0.00	0	0.00	0	0.00	0	0.00	4	1.80
Q2 2009	2	0.88	0	0.00	2	0.88	0	0.00	3	1.32
Q3 2009	1	0.44	0	0.00	1	0.44	0	0.00	2	0.88
Q4 2009	0	0.00	0	0.00	0	0.00	0	0.00	2	0.92
Q1 2010	1	0.41	1	0.41	0	0.00	0	0.00	2	0.81
Q2 2010	0	0.00	0	0.00	0	0.00	0	0.00	2	0.96

* Rate is the number of patients per 1000 Separations

**Table 5 – Hospital D - Numbers and Rates of *Staphylococcus aureus* bacteraemia
(July 2008 to June 2010)**

Quarter	HCA Total		HCA Inpatients		HCA Non Inpatients		HCA MRSA		Community	
	Total patients	Rate*	Total patients	Rate	Total patients	Rate*	Total patients	Rate*	Total patients	Rate*
Q3 2008	3	1.40	3	1.40	0	0.00	0	0.00	3	1.40
Q4 2008	1	0.47	1	0.47	0	0.00	0	0.00	2	0.95
Q1 2009	2	0.96	1	0.48	1	0.48	0	0.00	1	0.48
Q2 2009	1	0.43	0	0.00	1	0.43	0	0.00	0	0.00
Q3 2009	3	1.27	3	1.27	0	0.00	0	0.00	1	0.42
Q4 2009	0	0.00	0	0.00	0	0.00	0	0.00	1	0.50
Q1 2010	0	0.00	0	0.00	0	0.00	0	0.00	1	0.49
Q2 2010	0	0.00	0	0.00	0	0.00	0	0.00	3	1.44

* Rate is the number of patients per 1000 Separations

***Clostridium difficile* Infection**

**Table 6 – Numbers and Rates of *Clostridium difficile* infection
(July 2006 to June 2010)**

Quarter	Total patients	Rate*
Q3 2006	22	0.98
Q4 2006	22	0.99
Q1 2007	13	0.59
Q2 2007	19	0.84
Q3 2007	22	0.92
Q4 2007	20	0.87
Q1 2008	29	1.30
Q2 2008	32	1.38
Q3 2008	16	0.65
Q4 2008	26	1.03
Q1 2009	25	1.03
Q2 2009	14	0.55
Q3 2009	22	0.9
Q4 2009	39	1.6
Q1 2010	24	1.0
Q2 2010	35	1.5

* Rate is the number of patients per 1000 Separations

**Table 7 – Hospital Numbers and Rates of *Clostridium difficile* infection
(July 2006 to June 2010)**

Quarter	Hospital A		Hospital B		Hospital C		Hospital D	
	Total patients	Rate*	Total patients	Rate*	Total patients	Rate*	Total patients	Rate*
Q3 2006	15	1.5	6	0.7	0	0.0	1	0.5
Q4 2006	14	1.4	6	0.7	2	1.0	0	0.0
Q1 2007	6	0.6	5	0.6	2	1.0	0	0.0
Q2 2007	14	1.3	5	0.6	0	0.0	0	0.0
Q3 2007	17	1.6	3	0.3	1	0.5	1	0.5
Q4 2007	10	0.9	9	1.0	1	0.5	0	0.0
Q1 2008	20	2.0	7	0.8	0	0.0	2	1.5
Q2 2008	23	2.1	4	0.5	3	1.4	2	1.2
Q3 2008	9	0.8	7	0.8	0	0.0	0	0.0
Q4 2008	13	1.1	9	1.0	2	0.9	2	0.9
Q1 2009	18	1.6	7	0.8	0	0.0	0	0.0
Q2 2009	9	0.8	5	0.5	0	0.0	0	0.0
Q3 2009	11	1.0	9	0.9	1	0.4	1	0.4
Q4 2009	27	2.4	6	0.7	5	2.3	1	0.5
Q1 2010	10	0.9	9	1.0	3	1.2	2	1.0
Q2 2010	19	1.8	10	1.2	5	2.4	1	0.5

***Staphylococcus aureus* Sensitivity Data**

(NOT UPDATED FROM SURVEILLANCE REPORT NO 2)

A range of analysis was undertaken on the *Staphylococcus aureus* sensitivity data. A summary of other findings include:

- There is a significant variation between hospitals and the in proportion of MRSA isolates. Isolates from Hospital A were more likely to be MSSA ($p=0.004$) whereas isolates from Hospital B were more likely to be MRSA ($p<0.001$)
- A patient's place of residence within Tasmania was also associated with the type of isolate detected, with patients from the Northern region being more likely to be positive for MRSA ($p<0.001$)
- Specimens taken from males were about twice as likely to be MRSA positive than those from females ($p=0.017$)
- Comparing specimens in patients who were in hospital less than and more than 48 hours, revealed that patients resident in hospital less than 48 hours were statistically less likely to be positive for MRSA than patients in hospital greater than 48 hours ($p<0.001$)
 - Data from patients in hospital less than 48 hours was de-duplicated using the same methodology as those in hospital more than 48 hours

Hand Hygiene Compliance Data (April 2010)

Table 8 – Hand hygiene compliance rates by Tasmanian hospital and State level

Hospital	Hand Hygiene Compliance Rate	Lower 95% Confidence	Upper 95% Confidence
A	53.8%	51.8%	55.7%
B	66.9%	64.9%	68.8%
C	67.3%	63.5%	70.9%
D	69.7%	63.0%	75.6%
Rural A	45.6%	33.4%	58.4%
Rural B	94.0%	83.8%	97.9%
Rural C	80.9%	67.5%	89.6%
Rural D	62.5%	49.4%	74.0%
Rural E	50.0%	36.6%	63.4%
Rural F	60.0%	46.2%	72.4%
Rural G	61.5%	48.0%	73.5%
Rural H	70.4%	57.2%	80.9%
Rural I	90.8%	81.3%	95.7%
Rural J	64.8%	51.5%	76.2%
Rural K	74.0%	60.4%	84.1%
Rural L	54.0%	40.4%	67.0%
Rural M	75.4%	62.9%	84.8%
Rural N	55.0%	42.5%	66.9%
Tasmanian Rate	61.8%	60.6%	63.0%

Table 9 – Tasmanian hand hygiene compliance rates by healthcare worker

Healthcare Worker	Hand Hygiene Compliance Rate	Lower 95% confidence	Upper 95% Confidence
AH – Allied Health	62.1%	56.5%	67.4%
BL – Blood Letter	65.9%	57.4%	73.5%
DR - Doctor	41.4%	38.1%	44.8%
RN- Registered Nurse	67.7%	66.3%	69.2%
O - Other	36.5%	31.0%	42.3%
PSA – Patient Services Assistant (includes cleaners, orderlies)	64.2%	59.1%	68.9%
SAH – Student Allied Health	37.5%	21.2%	57.3%
SDR – Student Doctor	60.5%	45.6%	73.6%
SRN – Student Registered Nurse	60.9%	56.1%	65.6%

Table 10 – Tasmanian hand hygiene compliance rates by moment

Moment	Hand Hygiene Compliance Rate	Lower 95% confidence	Upper 95% Confidence
1	58.1%	55.6%	60.6%
2	53.0%	48.3%	57.6%
3	74.3%	70.9%	77.5%
4	72.7%	70.7%	74.7%
5	50.5%	48.1%	52.8%



Tasmania
Explore the possibilities

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