

Tasmanian Acute Public Hospitals Healthcare Associated Infection Surveillance Report

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Report No: 2

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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

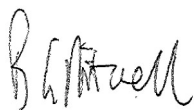
This surveillance report describes data relating to a number of key Healthcare Associated Infection (HAI) 'indicators'. It is the intention of the Tasmanian Infection Prevention & Control Unit (TIPCU) to publish this report quarterly.

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:

- The quarterly rate of healthcare associated *Staphylococcus aureus* bacteraemia has reduced each quarter for the last three quarters
- The rate of *Clostridium difficile* infection appears to remain constant. The higher rate seen at Hospital A is likely to reflect differences in specimen testing criteria and the sensitivity of diagnostic tests used at this institution.
- The number of people identified with VRE during 2009 has stabilised, compared to increases seen between 2007 and 2008.
- The percentage of clinical *Staphylococcus aureus* isolates that are methicillin resistant (MRSA) has increased from 19.7% to 22.8%. Consistent with the previous report (March 2009), there are significant regional variations in rates. Of potential concern, the percentage of isolates that were MRSA at Hospital A has doubled (from 6% to 13%) between 2008 and 2009
- The rate of hand hygiene compliance is increasing and comparable to Western Australia who is at a similar stage of their hand hygiene campaign. Victoria has had previous hand hygiene campaigns, therefore when making comparisons with Victorian data this should be considered. The trend is also consistent with that seen in other Australian states and internationally. Hand hygiene compliance varies between healthcare worker and by facility. Variations in facilities rates of hand hygiene compliance can be affected by the number of individual audits undertaken and should be interpreted with caution.



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Staphylococcus aureus bacteraemia (blood stream 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 0.51 per 1000 separations (95% CI 0.37-0.65), (Figure 1).

The average (mean) rate of Community Associated *Staphylococcus aureus* bacteraemia is 0.49 per 1000 separations (95% CI 0.33-0.67), (Figure 2).

Figure 1 - Healthcare Associated *Staphylococcus aureus* bacteraemia

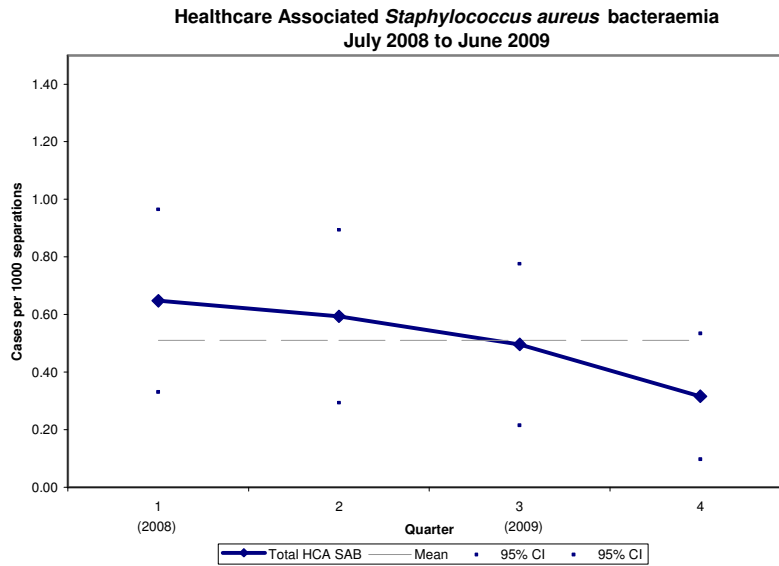
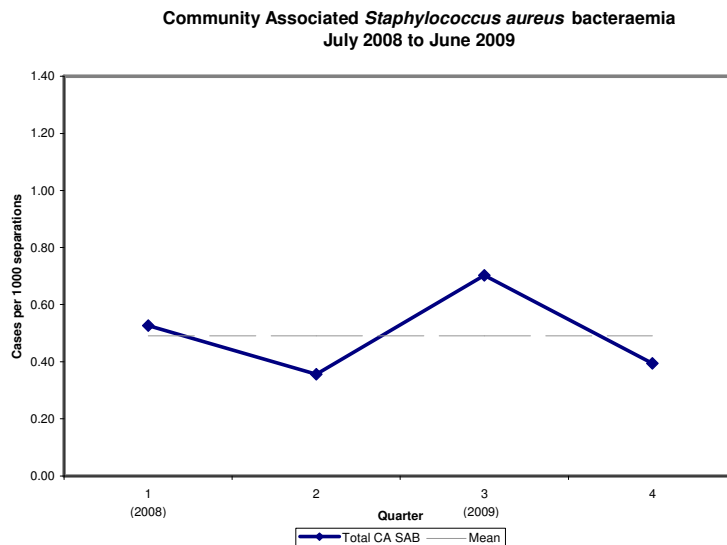


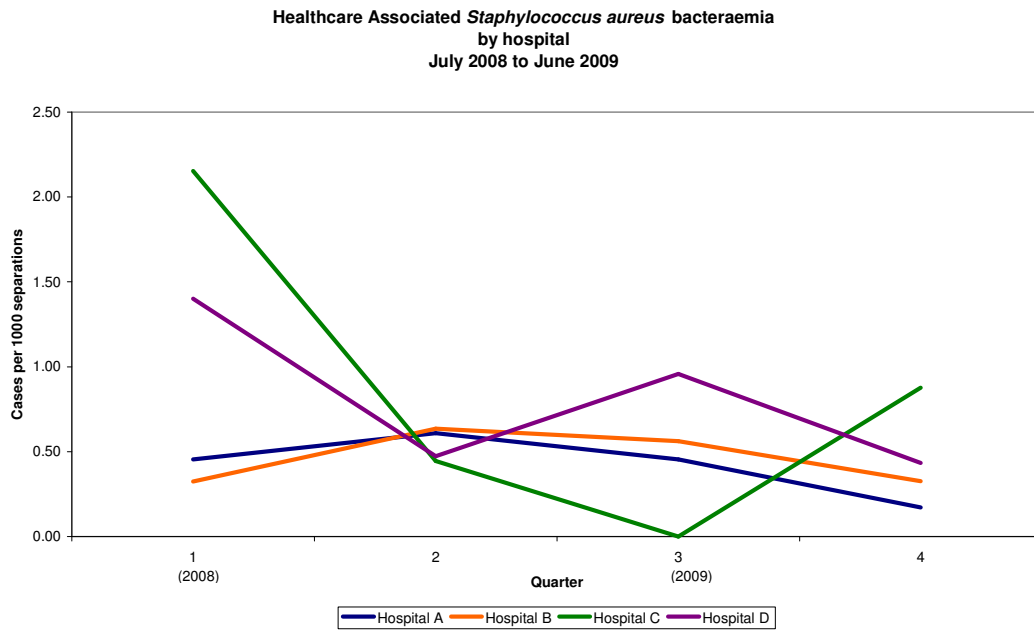
Figure 2 – Community Associated *Staphylococcus aureus* bacteraemia



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



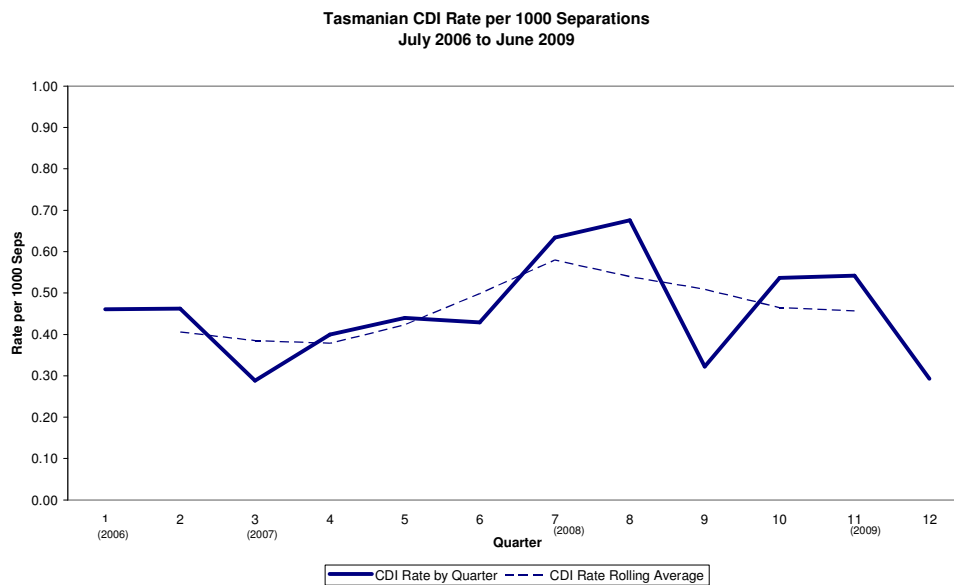
Clostridium difficile Infection

Tasmanian Rate

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

The average (mean) rate of *Clostridium difficile* infection is 0.46 per 1000 separations (95% CI 0.39-0.52), (Figure 4).

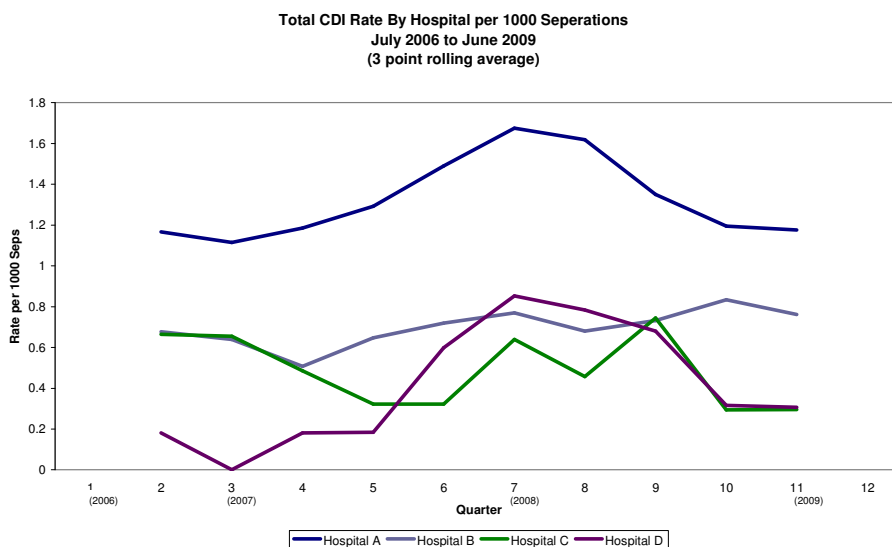
Figure 4 – Clostridium difficile Infection



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

* Total does not necessarily equal colonisation plus infection due to unknown cases

[^] Calendar year. 2009 up until June 30th 2009.

Hospital Numbers

Table 2 – Number of People Identified with VRE by 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	-

Col=Colonisation, Inf=Infection

* Total does not necessarily equal colonisation plus infection due to unknown cases

[^] Calendar year. 2009 up until June 30th 2009.

Staphylococcus aureus Sensitivity

Tasmanian Rate

Table 3 - Patients in Hospital > 48 hours

	2008	2009
Total Number of Isolates Examined	295	268
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
Total Number of Isolates Examined	1337	1228
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 <small>(total number examined in brackets*)</small>	2009 % Isolates MRSA <small>(total number examined in brackets*)</small>
Hospital A	6% (100)	13% (100)
Hospital B	36% (100)	35% (100)
Hospital C	19.7% 9 (61)	26% (38)
Hospital D	11.8% (34)	10.0%(30)

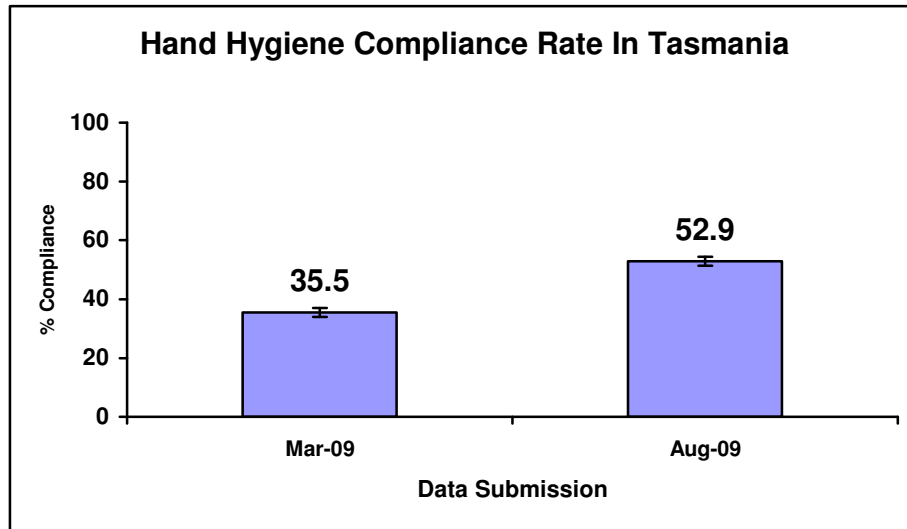
* 100 consecutive isolates were included or 6 months of continuous data, whichever occurred first

Hand Hygiene Compliance Data

Data is based on the 2nd Hand Hygiene Data Submission, August 2009

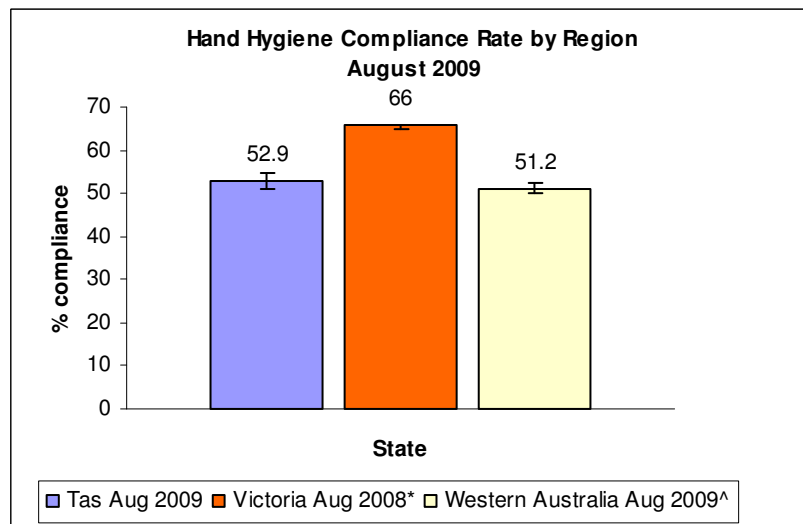
Tasmanian Rates

Hand Hygiene Compliance Rate in Tasmania (Figure 6)



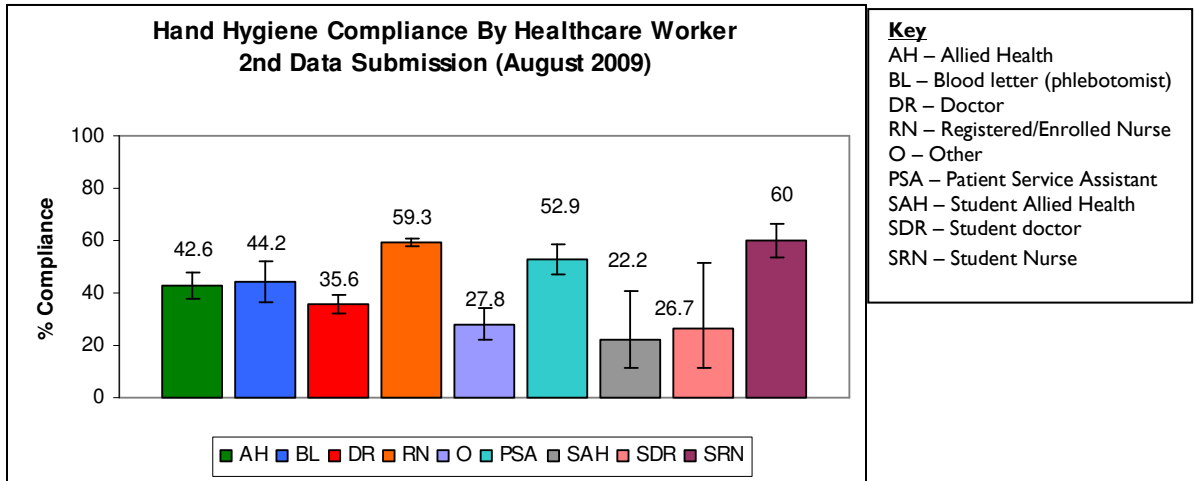
(all Tasmanian Public Hospitals)

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

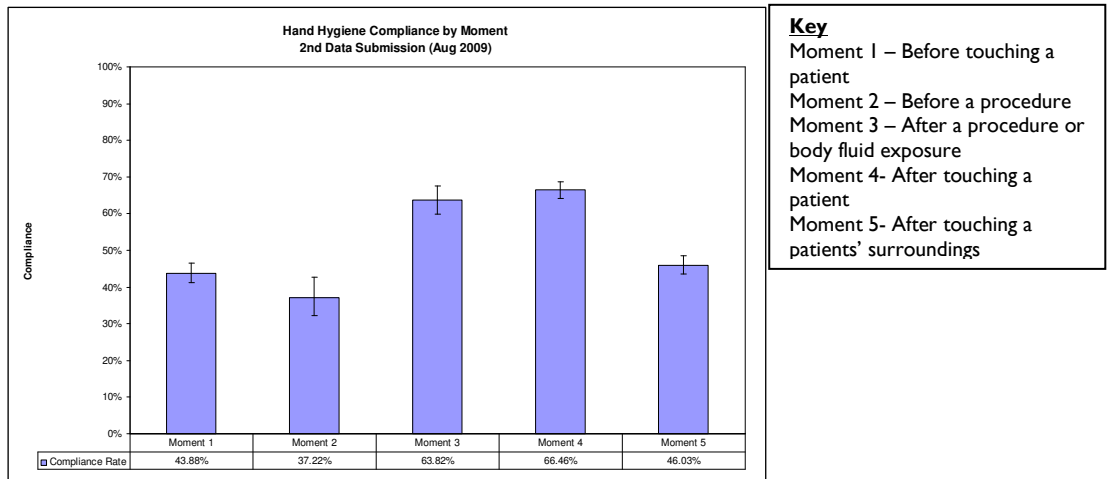


*Following a successful pilot, Victoria undertook a state wide rollout of the HH program during 2006-07. ^ HISWA Surveillance Report, No.16

Hand Hygiene Compliance by Healthcare Worker (Figure 8)



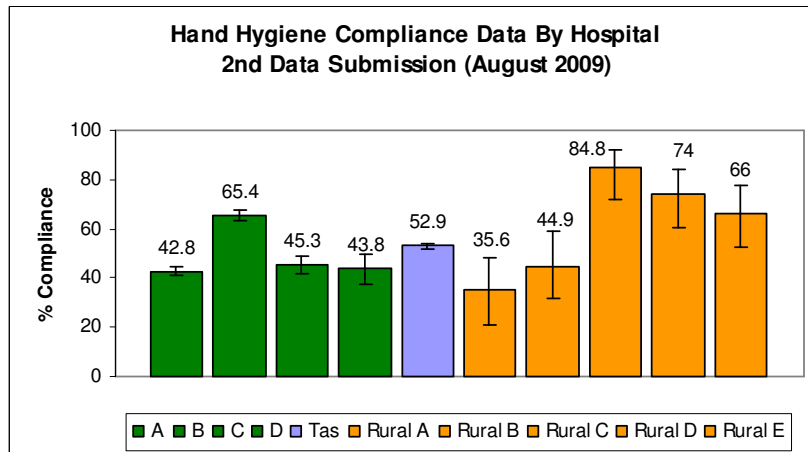
Hand Hygiene Compliance by Moment (Figure 9)



Hospital Rates

Hand Hygiene Compliance Rate by Hospital (Figure 10)

Please Note – Rural hospitals audit considerably less moments



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 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
- 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 2009)**

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*
1	16	0.65	11	0.45	5	0.20	6	0.24	13	0.53
2	15	0.59	10	0.40	5	0.20	2	0.08	9	0.36
3	12	0.50	6	0.25	6	0.25	4	0.17	17	0.70
4	8	0.32	3	0.12	5	0.20	2	0.08	10	0.39

* Rate is the number of patients per 1000 Separations

**Table 2 – Hospital A - Numbers and Rates of *Staphylococcus aureus* bacteraemia
(July 2008 to June 2009)**

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*
1	5	0.45	5	0.45	0	0.00	3	0.27	6	0.55
2	7	0.61	5	0.44	2	0.17	1	0.09	4	0.35
3	5	0.46	2	0.18	3	0.27	1	0.09	4	0.36
4	2	0.17	2	0.17	0	0.00	1	0.09	1	0.09

* Rate is the number of patients per 1000 Separations

**Table 3 – Hospital B - Numbers and Rates of *Staphylococcus aureus* bacteraemia
(July 2008 to June 2009)**

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*
1	3	0.32	0	0.00	3	0.32	2	0.22	3	0.32
2	6	0.63	3	0.32	3	0.32	1	0.11	2	0.21

3	5	0.56	3	0.34	2	0.22	2	0.22	8	0.90
4	3	0.33	1	0.11	2	0.22	0	0.00	6	0.65

* Rate is the number of patients per 1000 Separations

**Table 4 – Hospital C - Numbers and Rates of *Staphylococcus aureus* bacteraemia
(July 2008 to June 2009)**

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*
1	5	2.15	3	1.29	2	0.86	0	0.00	1	0.43
2	1	0.44	1	0.44	0	0.00	0	0.00	1	0.44
3	0	0.00	0	0.00	0	0.00	1	0.45	4	1.80
4	2	0.88	0	0.00	2	0.88	1	0.44	3	1.32

* Rate is the number of patients per 1000 Separations

**Table 5 – Hospital D - Numbers and Rates of *Staphylococcus aureus* bacteraemia
(July 2008 to June 2009)**

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*
1	3	1.40	3	1.40	0	0.00	1	0.47	3	1.40
2	1	0.47	1	0.47	0	0.00	0	0.00	2	0.95
3	2	0.96	1	0.48	1	0.48	0	0.00	1	0.48
4	1	0.43	0	0.00	1	0.43	0	0.00	0	0.00

* 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 2009)**

Quarter	Total patients	Rate*
1	22	0.46
2	22	0.46
3	13	0.29
4	19	0.40
5	22	0.44
6	20	0.43
7	29	0.63
8	32	0.68
9	16	0.32
10	26	0.54
11	25	0.54
12	14	0.29

**Table 7 – Hospital Numbers and Rates of *Clostridium difficile* infection
(July 2006 to June 2009)**

Quarter	Hospital A		Hospital B		Hospital C		Hospital D	
	Total patients	Rate*	Total patients	Rate*	Total patients	Rate*	Total patients	Rate*
1	15	1.5	6	0.7	0	0.0	1	0.5
2	14	1.4	6	0.7	2	1.0	0	0.0
3	6	0.6	5	0.6	2	1.0	0	0.0
4	14	1.3	5	0.6	0	0.0	0	0.0
5	17	1.6	3	0.3	1	0.5	1	0.5
6	10	0.9	9	1.0	1	0.5	0	0.0
7	20	2.0	7	0.8	0	0.0	2	1.5
8	23	2.1	4	0.5	3	1.4	2	1.2
9	9	0.8	7	0.8	0	0.0	0	0.0
10	13	1.1	9	1.0	2	0.9	2	0.9
11	18	1.6	7	0.8	0	0.0	0	0.0
12	9	0.8	5	0.5	0	0.0	0	0.0

Staphylococcus aureus Sensitivity Data

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 ($p<0.001$)
- Patients 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 48hours, revealed that patients resident in hospital less than 48hours were statistically less likely to be positive for MRSA than patients patient 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

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

Hospital	Hand Hygiene Compliance Rate	Lower 95% confidence	Upper 95% Confidence
A	42.8	40.8	44.9
B	65.4	63.4	67.4
C	45.3	41.6	49
D	43.8	37.2	50.5
Rural A	35.6	23.2	50.2
Rural B	44.9	31.9	58.7
Rural C	84.8	71.8	92.4
Rural D	74	60.4	84.1
Rural E	66	52.2	77.6
Tasmanian Rate	52.9	51.5	54.2

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	42.7%	37.7%	47.8%
BL – Blood Letter	44.3%	36.1%	52.8%
DR - Doctor	35.6%	32.2%	39.1%
RN- Registered Nurse	59.3%	57.7%	61.0%
O - Other	27.8%	22.2%	34.2%
PSA – Patient Services Assistant (includes cleaners, orderlies)	52.9%	47.0%	58.7%
SAH – Student Allied Health	22.2%	10.6%	40.8%
SDR – Student Doctor	26.7%	10.9%	52.0%
SRN – Student Registered Nurse	60.1%	53.5%	66.3%

Table 10 – Tasmanian hand hygiene compliance rates by moment

Moment	Hand Hygiene Compliance Rate	Lower 95% confidence	Upper 95% Confidence
1	43.9%	41.2%	46.6%
2	37.2%	32.1%	42.7%
3	63.8%	59.9%	67.6%
4	66.5%	64.1%	68.7%
5	46.0%	43.6%	48.4%



Tasmania

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**TASMANIAN INFECTION
PREVENTION & CONTROL UNIT**

**Division of Population Health
Department of Health and
Human Services**

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