

# Tasmanian Acute Public Hospitals Healthcare Associated Infection Surveillance Report

June 2010

Report No: 5 (Period ending 30<sup>th</sup> March 10)

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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](http://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](http://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 remained steady
- The rate of *Clostridium difficile* infection has remained steady. Rates of *Clostridium difficile* infection can fluctuate considerably each quarter. Tasmania is using the national definitions for CDI surveillance.
- The number of people identified with VRE has reduced this quarter
- 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 has continued to increase.



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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.

# Staphylococcus aureus bacteraemia (bloodstream infection)

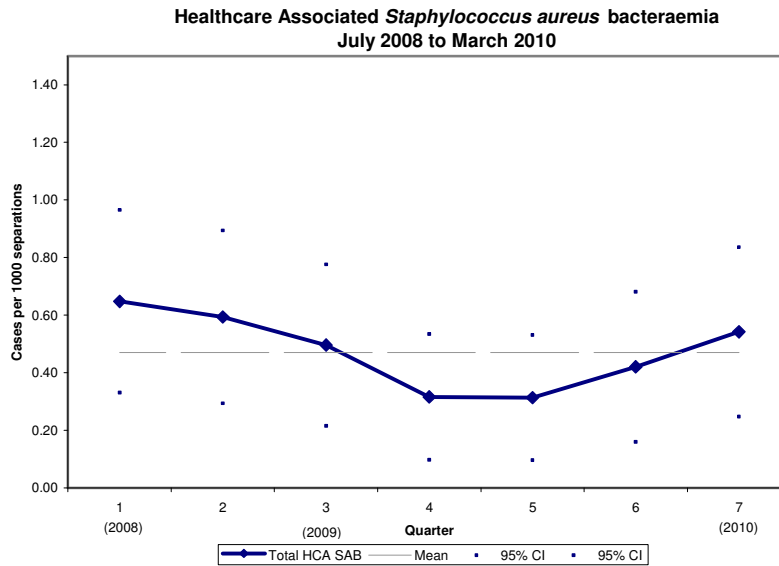
## Tasmanian Rate

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

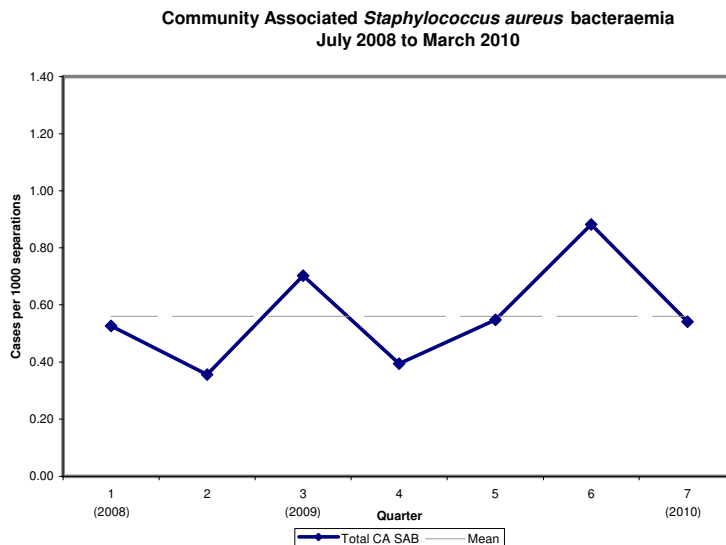
The average (mean) rate of Healthcare Associated *Staphylococcus aureus* bacteraemia is 0.47 per 1000 separations (95% CI 0.37-0.), (Figure 1).

The average (mean) rate of Community Associated *Staphylococcus aureus* bacteraemia is 0.56 per 1000 separations (95% CI 0.45-0.67), (Figure 2).

**Figure 1 - Healthcare Associated *Staphylococcus aureus* bacteraemia**



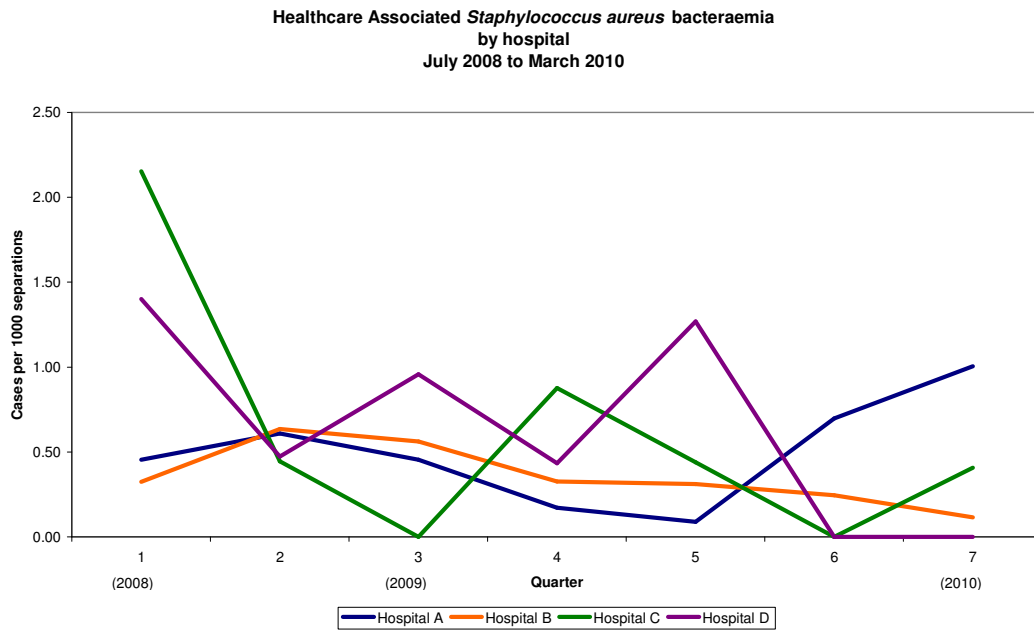
**Figure 2 – Community Associated *Staphylococcus aureus* bacteraemia**



## 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**



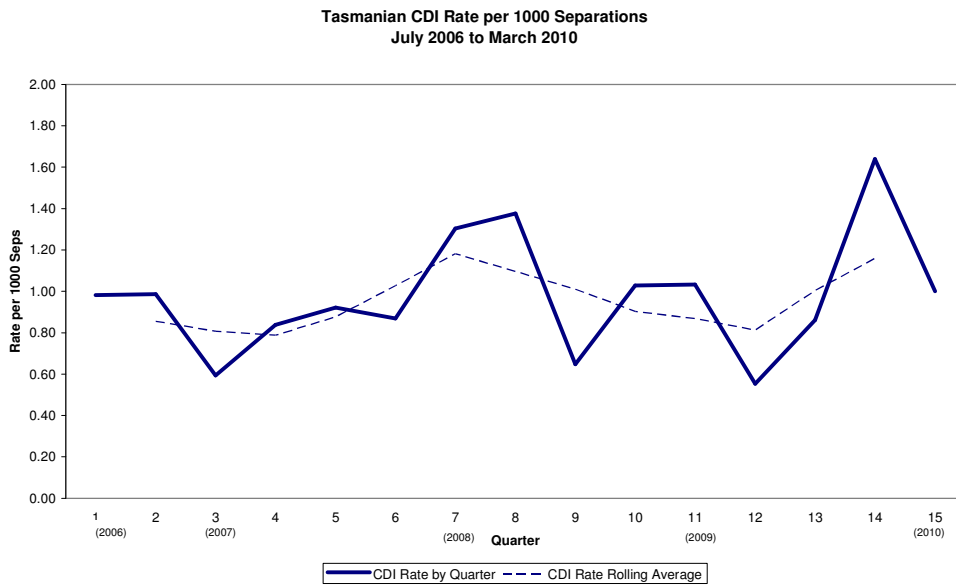
# Clostridium difficile Infection

## Tasmanian Rate

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

The average (mean) rate of *Clostridium difficile* infection is 0.97 per 1000 separations (95% CI 0.94-1.00), (Figure 4).

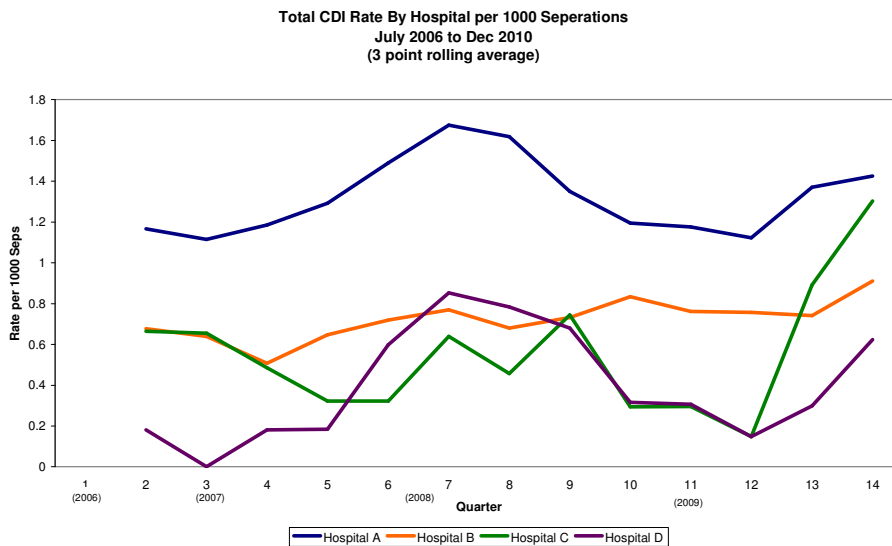
**Figure 4 – Clostridium difficile Infection**



## 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 <sup>^</sup>	N/A	Unknown	Unknown	1
2007 <sup>^</sup>	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

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

<sup>^</sup> 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	-	-	-	-	-

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)	

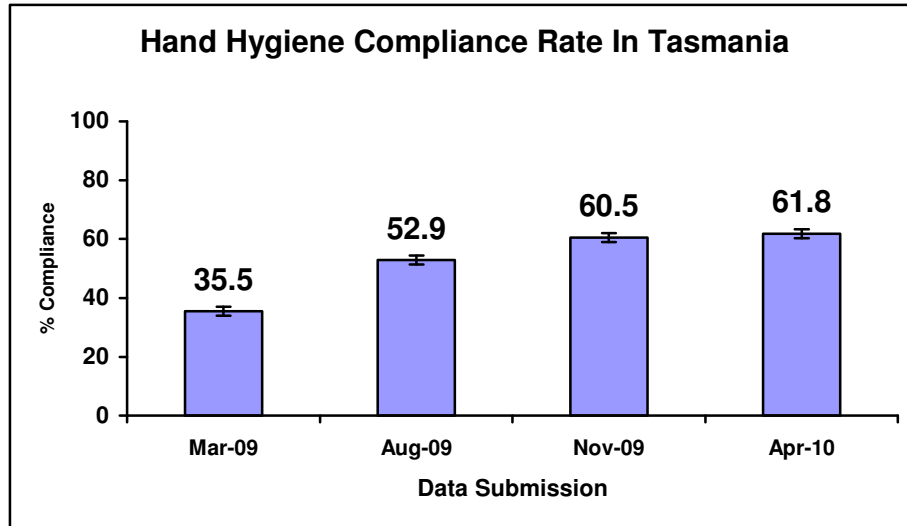
\* 100 consecutive isolates were included or 6 months of continuous data, whichever occurred first

# Hand Hygiene Compliance Data

Data is based on the 4<sup>th</sup> Hand Hygiene Data Submission, April 2010.

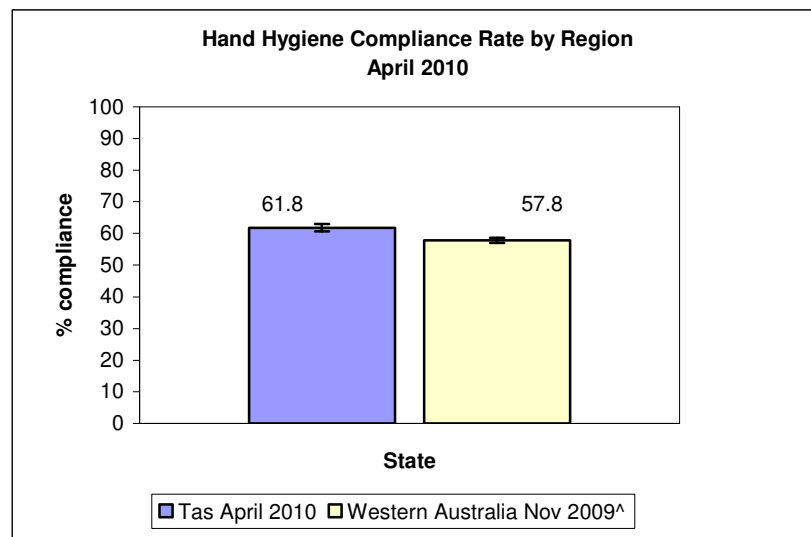
## Tasmanian Rates

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



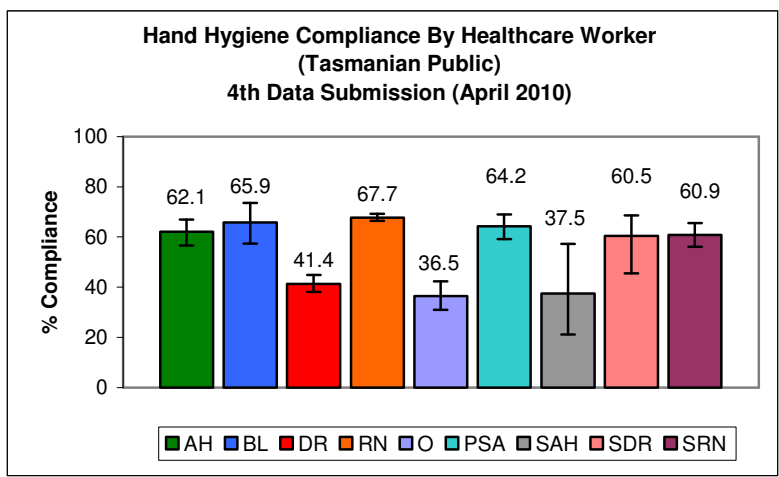
(all Tasmanian Public Hospitals)

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



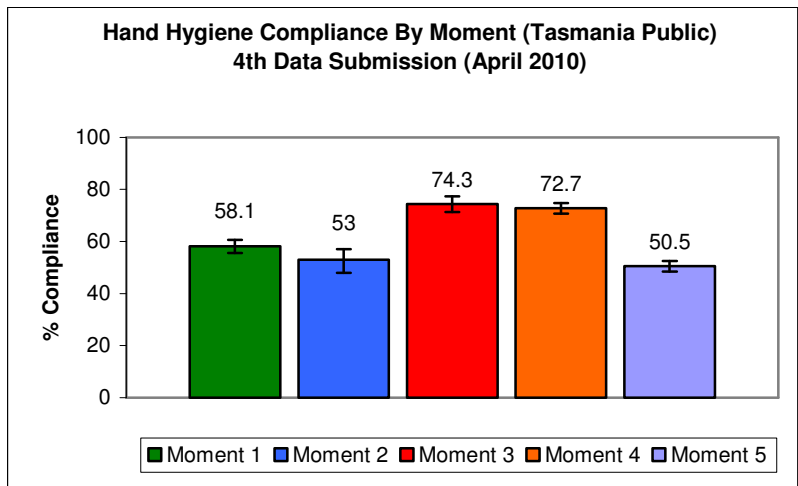
^ HISWA Report No.4 – includes all hospitals (including private)  
Tasmanian rate is for public hospitals only.

### 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)

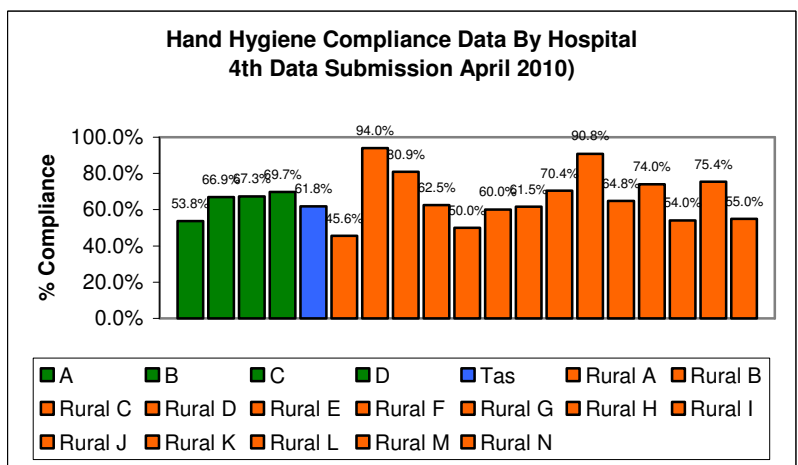


**Key**  
 Moment 1 – Before touching a patient  
 Moment 2 – Before a procedure  
 Moment 3 – After a procedure or body fluid exposure  
 Moment 4- After touching a patient  
 Moment 5- After touching a patients' surroundings

## Hospital Rates

### Hand Hygiene Compliance Rate by Hospital (Figure 10)

Please Note – Rural hospitals audit considerably less moments



# **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 March 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	1	0.04	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

\* Rate is the number of patients per 1000 Separations

**Table 2 – Hospital A - Numbers and Rates of *Staphylococcus aureus* bacteraemia  
(July 2008 to March 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	0	0.00	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

\* Rate is the number of patients per 1000 Separations

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

\* Rate is the number of patients per 1000 Separations

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

\* Rate is the number of patients per 1000 Separations

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

\* Rate is the number of patients per 1000 Separations

## ***Clostridium difficile* Infection**

**Table 6 – Numbers and Rates of *Clostridium difficile* infection  
(July 2006 to March 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

\* Rate is the number of patients per 1000 Separations



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

## ***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 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 (April 2010)

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

<b>Hospital</b>	<b>Hand Hygiene Compliance Rate</b>	<b>Lower 95% Confidence</b>	<b>Upper 95% Confidence</b>
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%
<b>Tasmanian Rate</b>	<b>61.8%</b>	<b>60.6%</b>	<b>63.0%</b>

**Table 9 – Tasmanian hand hygiene compliance rates by healthcare worker**

<b>Healthcare Worker</b>	<b>Hand Hygiene Compliance Rate</b>	<b>Lower 95% confidence</b>	<b>Upper 95% Confidence</b>
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**

<b>Moment</b>	<b>Hand Hygiene Compliance Rate</b>	<b>Lower 95% confidence</b>	<b>Upper 95% Confidence</b>
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**  
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