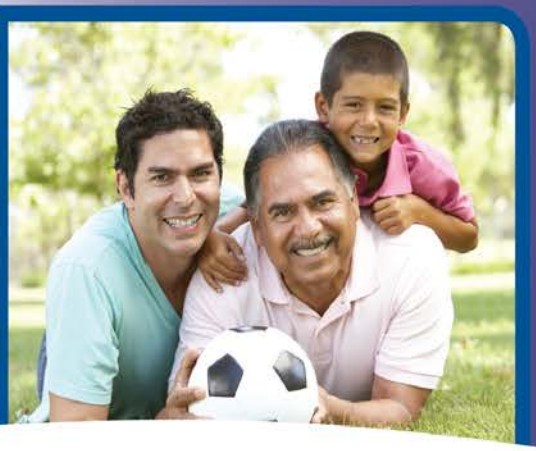
Tasmanian Acute Public Hospitals

Healthcare Associated Infection Surveillance
Report 30 – Annual Report 2015 -16







Department of Health and Human Services

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Tasmanian Acute Public Hospitals Healthcare Associated Infection Surveillance Report

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Peer reviewed and approved by the Tasmanian Healthcare Associated Infection Advisory Committee and the Acting Director of Public Health, DHHS Tasmania.

Notes

Data from previous reports should not be relied upon. Use the most up to date report when citing data.

Contents

Index of figures and tables

Executive summary

This report provides an overview of the Tasmanian acute public hospitals' healthcare associated infection (HAI) surveillance data for the period 2015 – 16 in addition to data for quarter 2, 2016. Compared to the quarterly reports, this annual report contains additional detail, such as infection rates by financial year and antimicrobial use. The TIPCU website (www.dhhs.tas.gov.au/tipcu) contains details of the surveillance program, including the rationale for the indicators surveyed and the methodologies used in data collection, validation and analysis.

Any form of comparison between hospitals should be done with caution because data are not adjusted for patient characteristics that vary between hospitals. Further, the relatively small Tasmanian population and small number of events can result in volatility of rates from time to time. The raw data in the appendices illustrate this.

This report contains the following Tasmanian findings.

- The rate of healthcare associated *Staphylococcus aureus* bacteraemia (SAB) remains low.
- The number and rate of both 'hospital identified *Clostridium difficile* infection (CDI)' and 'healthcare associated-healthcare facility onset (HCA-HCF) CDI' remains stable.
- The numbers of new isolates of VRE identified remains high and is increasing.
- Hand hygiene compliance at each of the hospitals is above the National Benchmark of 70 per cent.
- The overall Tasmanian public hospital hand hygiene compliance rate is above the National Benchmark.

Achievements

2015-16 TIPCU achievements of particular note include:

Governance

- reviewing and updating Department of Health and Human Services (DHHS) state-wide infection prevention and control policies, procedures and protocols
- continuing involvement in the work of the Australian Commission of Safety & Quality in Health Care
- working with the Communicable Diseases Prevention Unit (CDPU) within Public Health Services

Education and Training

- developing online training resources for acute, non-acute and rural hospital settings
- production of a set of personal protective equipment demonstration videos on standard and transmission based precautions applicable to all healthcare settings
- reviewing a range of guidance for healthcare workers and information for the public on key issues related to healthcare associated infections.

Surveillance

- continuation of surveillance programs based on nationally agreed methodology and Tasmanian notifiable microorganisms
- continued provision of an environmental cleaning assessment program
- implementation of a surveillance program for antimicrobial use in rural hospitals

Staphylococcus aureus bacteraemia (SAB)

Staphylococcus aureus, a common cause of serious healthcare associated bloodstream infection (bacteraemia) and causes significant patient morbidity. SAB has an estimated 30 day mortality of around 25-30 per cent. Many healthcare associated *Staphylococcus aureus* bacteraemias (SAB) are preventable. SAB was made a notifiable condition in Tasmania in 2008 pursuant to the *Public Health Act 1997*. Tasmania was the first and remains the only Australian jurisdiction to introduce this measure.

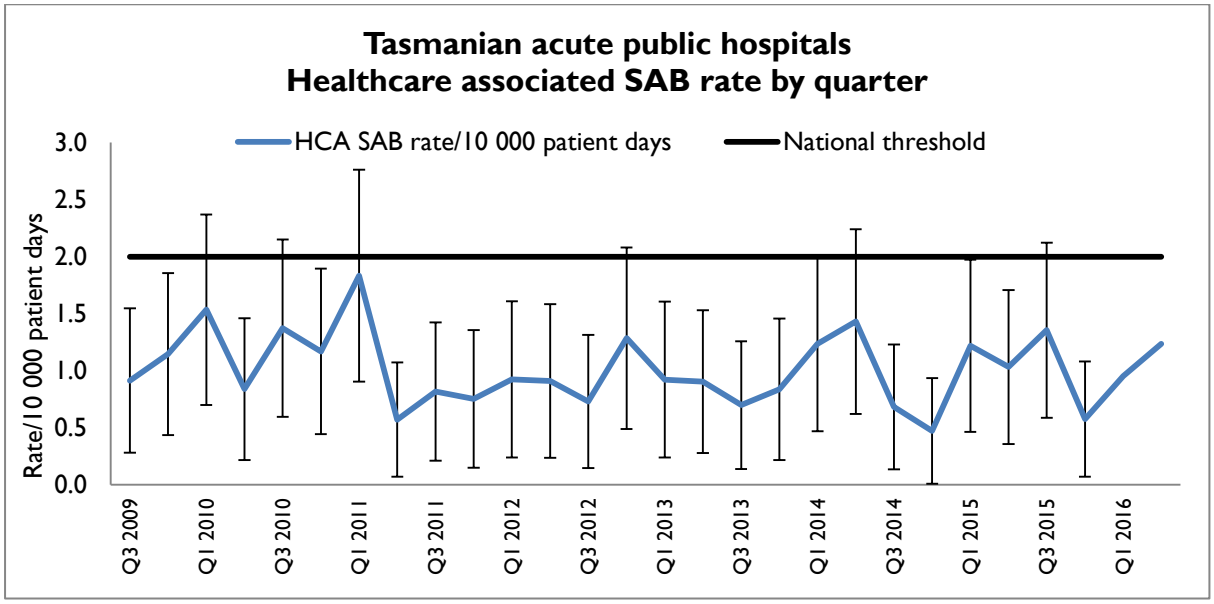
SAB surveillance is carried out in Tasmania using the nationally agreed surveillance definitions published by the Australian Commission on Safety and Quality in Health Care (ACSQHC). Under this definition a SAB is defined as healthcare associated if the patient's first SAB positive blood culture was collected either >48 hours after hospital admission or <48 hours after discharge (Criterion A) **OR** ≤48 hours after hospital admission and one of four key clinical healthcare related criteria was met (Criterion B).

The National Healthcare Agreement (2011) target is no more than two HCA SAB per10 000 patient days.

Tasmanian rates

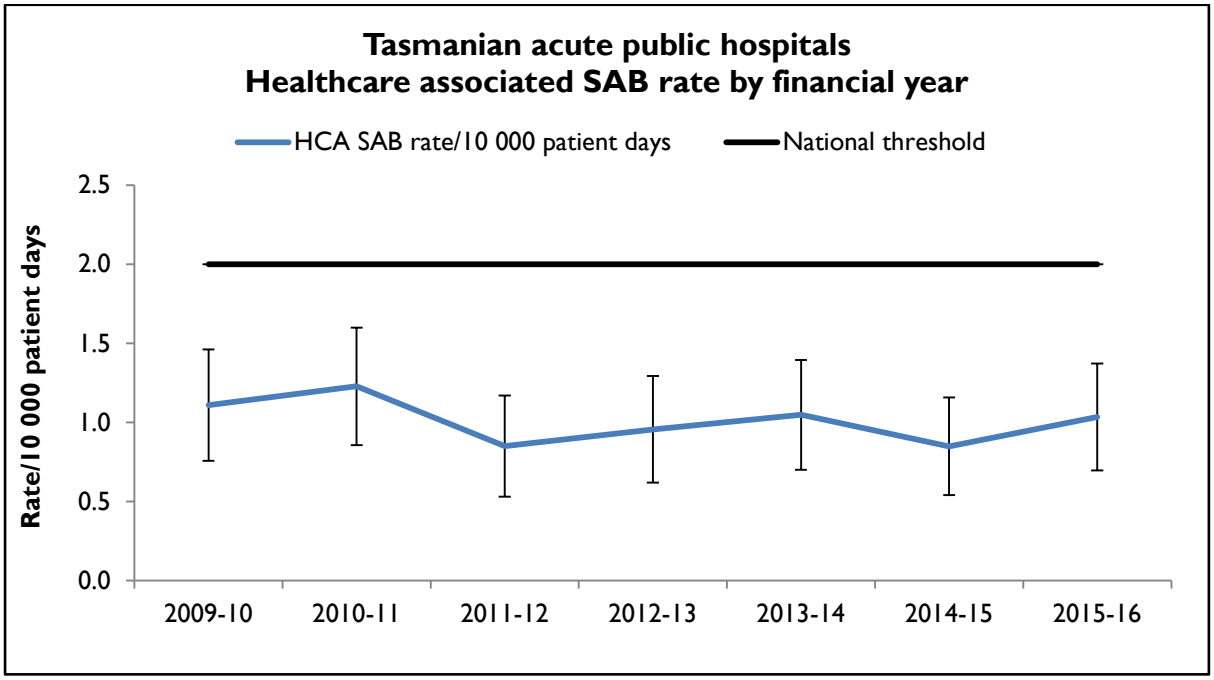
Figure 1 presents the Tasmanian combined acute public hospital rates of healthcare associated *Staphylococcus aureus* bacteraemia (HCA SAB), by quarter and Figure 2 presents HCA SAB by financial year.

Figure 1 Healthcare associated *Staphylococcus aureus* bacteraemia rate by quarter



The rate of HCA SAB for Q2 2016 was 1.2 per 10 000 patient days (95% CI 0.5 – 2.0) which met than the National Healthcare Agreement target of no more than two HCA SAB per10 000 patient days.

Figure 2 Healthcare associated *Staphylococcus aureus* bacteraemia rate by financial year

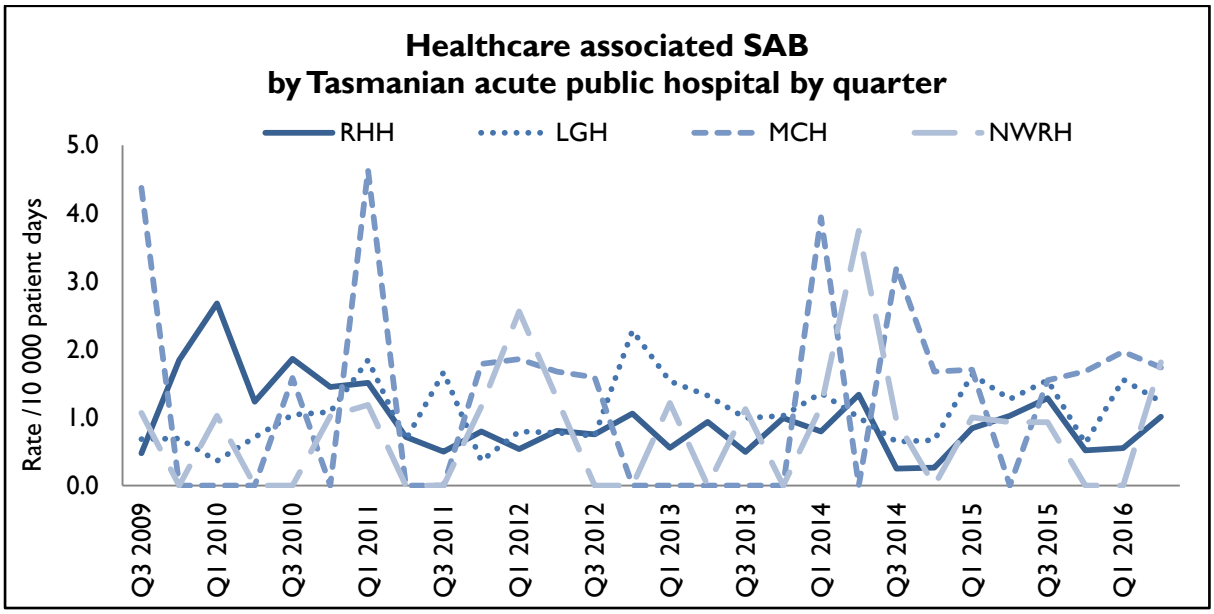


The public hospital combined rate of HCA SAB for 2015-16 was 1.0 per 10 000 patient days (95% CI 0.7 – 1.4). The annual rate of HCA SAB has remained stable for the past five years.

Hospital rates

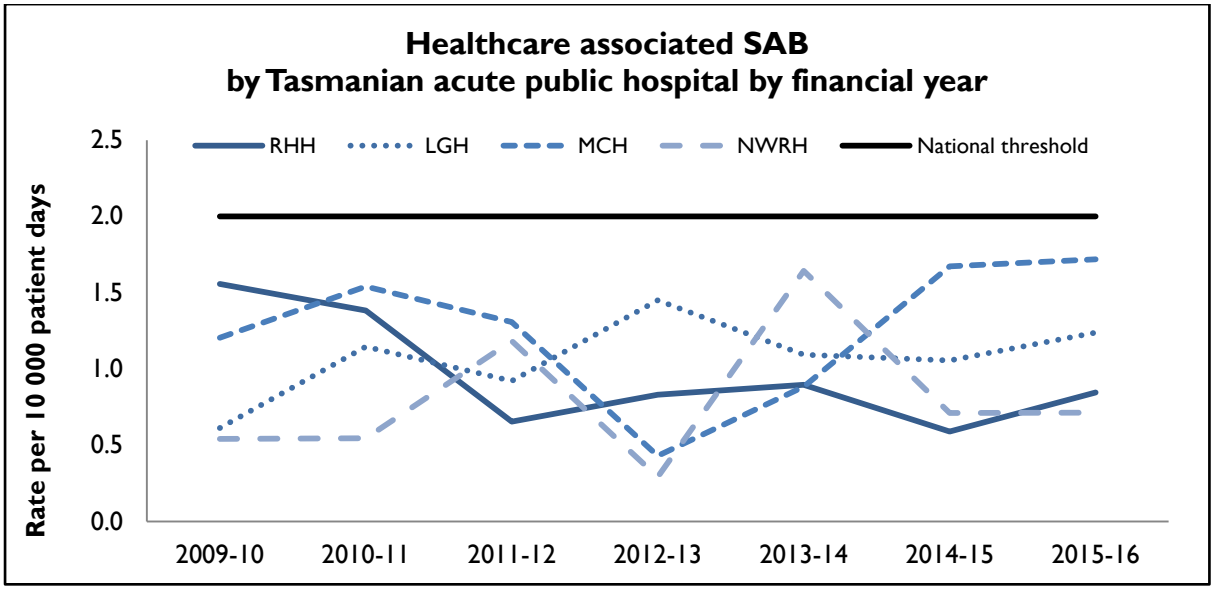
Figure 3 presents the individual acute public hospitals rates of HCA SAB by quarter and Figure 4 presents HCA SAB for the individual acute public hospitals by financial year. This information is also contained in tables within the appendix.

Figure 3 Healthcare associated *Staphylococcus aureus* bacteraemia - rate by quarter



In Q2 2016, the rate of HCA SAB for all public hospitals met the National Healthcare Agreement target of no more than two HCA SAB per10 000 patient days.

Figure 4 Healthcare associated *Staphylococcus aureus* bacteraemia - rate by financial year

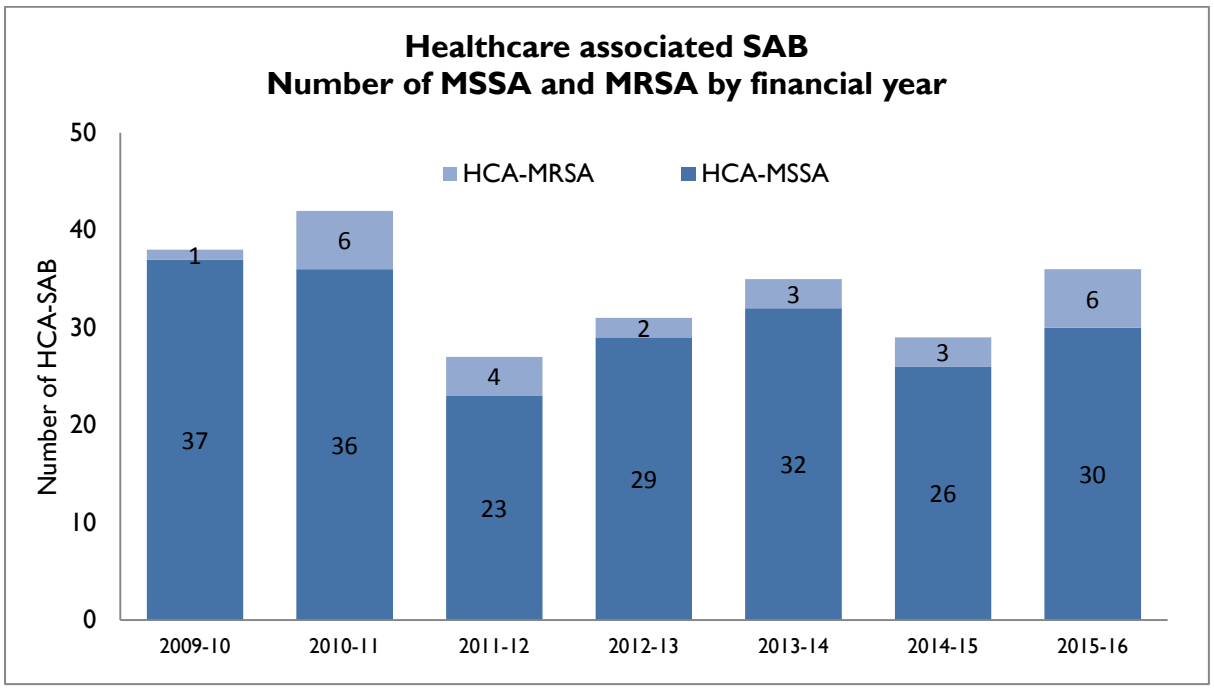


The annual HCA SAB rates for 2015 – 16 at each public hospital met than the National Healthcare Agreement target of no more than two HCA SAB per 10 000 patient days.

HCA SAB related to MSSA or MRSA

Figure 5 presents HCA SAB according to susceptibility; methicillin sensitive *Staphylococcus aureus* (HCA-MSSA) and methicillin resistant *Staphylococcus aureus* (HCA-MRSA) by financial year.

Figure 5 Healthcare associated MSSA and MRSA SAB – number by financial year

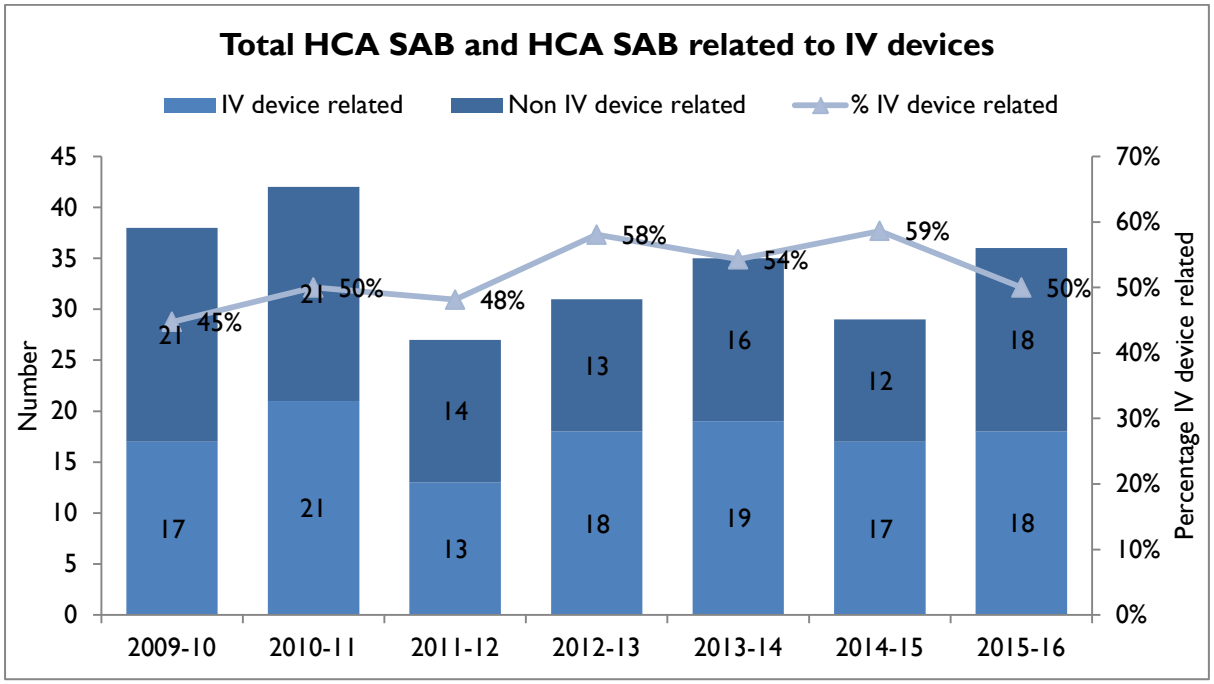


The total number of HCA SAB remains low and stable, the majority remain MSSA but the proportion of HCA SAB that are MRSA increased in 2015 – 16 financial year compared with the previous three years.

HCA SAB related to IV devices

Healthcare associated SAB are classified where possible into four categories: SAB related to an indwelling medical device, a surgical site, invasive instrumentation or cytotoxic therapy induced neutropenia. TIPCU reports annually on all HCA SAB related to one type of indwelling device – intravenous devices (IV) devices. Figure 6 presents the number and percentage of IV device related HCA SAB.

Figure 6 Total IV device related HCA SAB – number and percentage by financial year



The number of HCA SAB secondary to an IV device has relatively remained stable over the past five years.

Infection prevention strategies such as intravenous device management procedures and processes, in conjunction with good adherence to aseptic non-touch technique principles, can reduce the risk of patients developing a SAB secondary to an IV device. These strategies should be implemented and evaluated in all healthcare settings where IV devices are used.

Community associated SAB

Figure 7 and **Figure 8** present the Tasmanian number and incidence/100 000 population of community associated SAB (CA-SAB) by financial year and presents CA-SAB numbers according to antibiotic susceptibility; methicillin sensitive *Staphylococcus aureus* (CA-MSSA) and methicillin resistant *Staphylococcus aureus* (CA-MRSA).

Figure 7 Community associated CA-SAB – number and incidence/100 000 population

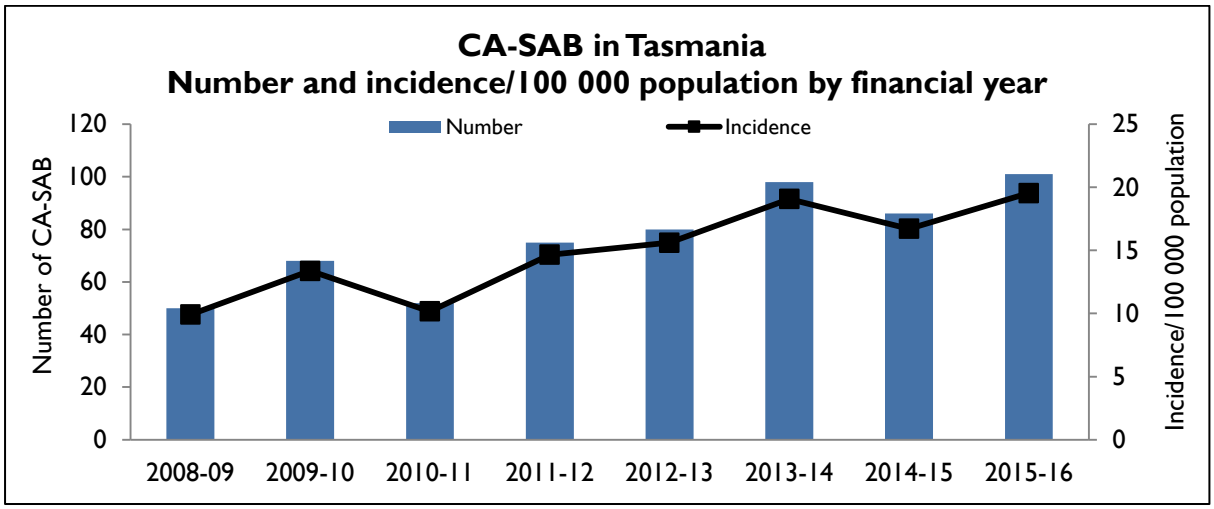
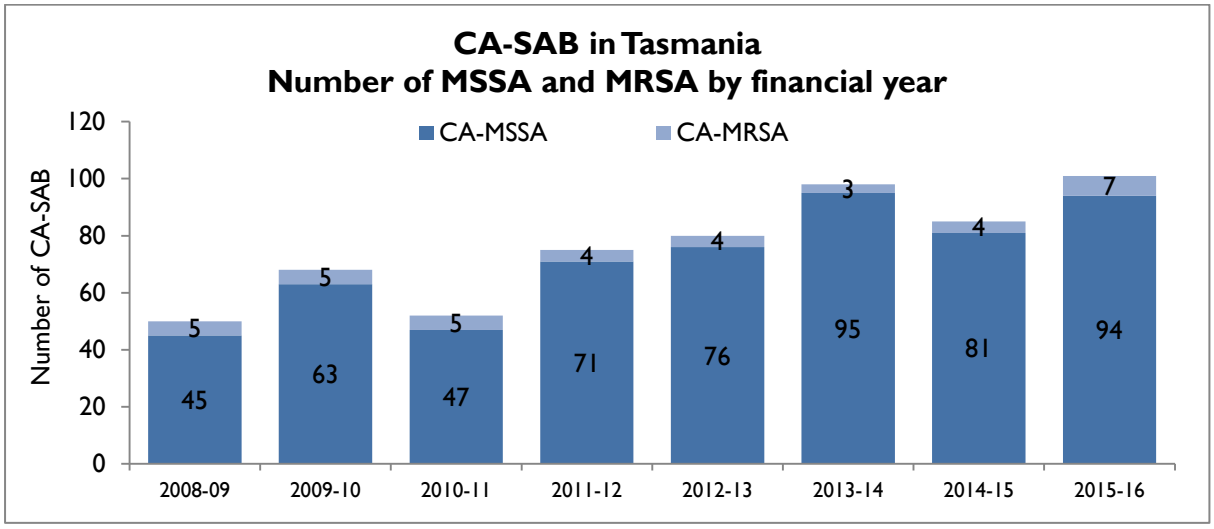


Figure 8 Community associated CA-SAB – number of MSSA and MRSA/financial year



There are three times as many CA-SAB than HCA SAB and was been an increase in both the number and incidence of CA-SAB during 2015-16 compared to 2014-15. The reason/s for the increase are unclear but it is not region or age specific. It is not possible to compare rates with other jurisdictions as Tasmania is the only state/territory where SAB is a notifiable disease.

The majority of CA-SAB is due to MSSA with the numbers of CA-SAB caused by MRSA remaining low.

Clostridium difficile infection

Clostridium difficile infection (CDI) is a bowel infection caused by the bacterium *Clostridium difficile* and is a common cause of healthcare associated diarrhoea. CDI causes significant patient morbidity and mortality and can result in increased hospital stays and costs. Factors that may contribute to higher CDI rates include the overuse of antibiotics, ineffective infection control processes and suboptimal levels of environmental cleanliness.

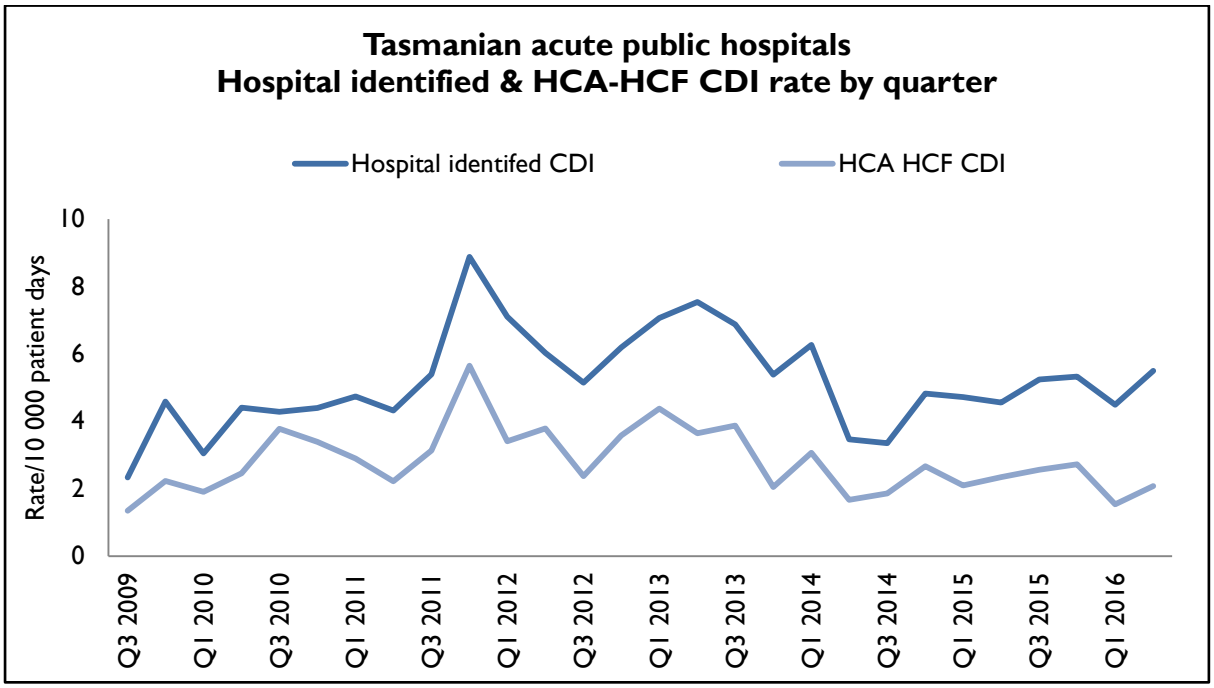
Surveillance of CDI in Tasmania uses the ACSQHC's nationally agreed surveillance definitions. **Hospital identified CDI** are CDI infections identified in a hospital; this category includes healthcare facility and community associated infections.

Healthcare associated – healthcare facility onset (HCA-HCF) CDI are a sub-group of hospital identified cases. This category only includes infections that occurred 48 hours or more after a patient was admitted to hospital. The HCA – HCF rate excludes people who present to hospital with symptoms of CDI and/or develop symptoms within two days of admission.

Tasmanian rates

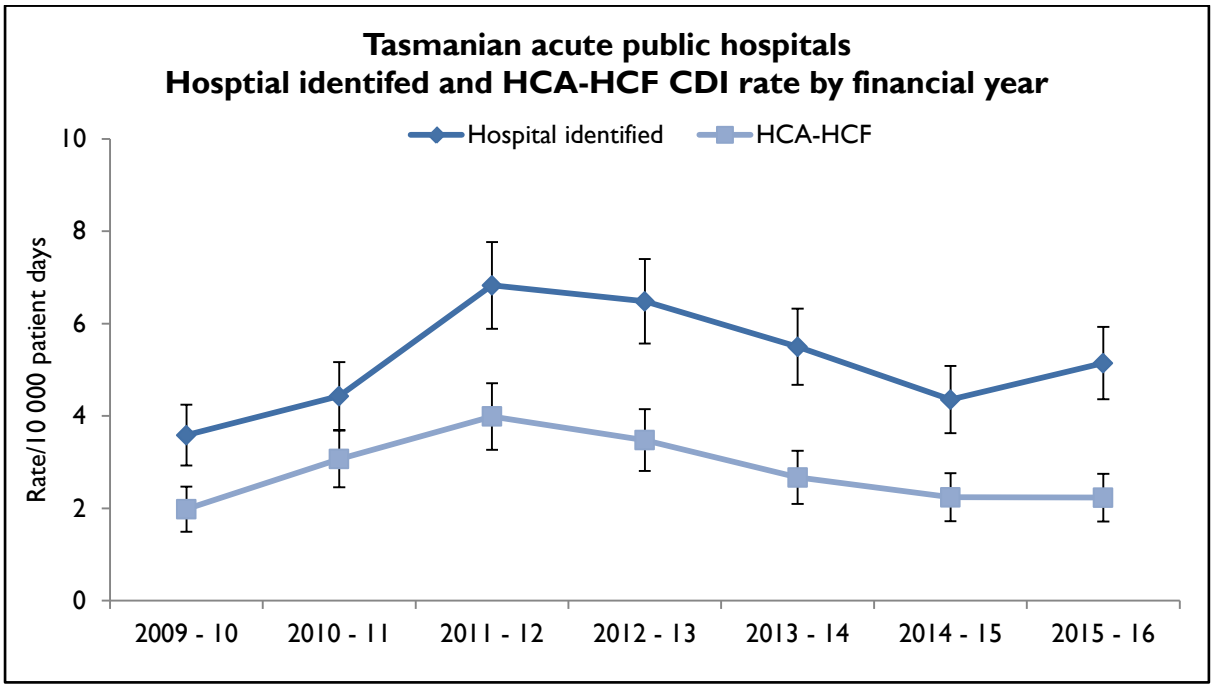
Figure 9 and Figure 10 presents the Tasmanian combined acute public hospital rates of hospital identified CDI and HCA-HCF CDI by quarter and financial year.

Figure 9 Hospital identified and HCA-HCF CDI – rate by quarter



The rate of hospital identified CDI for Q2 2016 was 5.5 per 10 000 patient days (95% CI 3.9 – 7.1) and the rate of HCA-HCF over the same period was 2.1 per10 000 patient days (95% CI 1.1 – 3.1).

Figure 10 Hospital identified and HCA-HCF CDI - rate by financial year.



The mean (average) rate of hospital identified CDI for 2015 – 16 was 5.1 per 10 000 patient days (95% CI 4.4 – 5.9) and the mean rate of HCA-HCF CDI over the same period was 2.2 per 10 000 patient days (95% CI 1.7 – 2.7).

The number and rate of hospital identified CDI remains stable. A significant achievement is that the number and rate of HCA-HCF CDI remains at the lowest level in five years.

Hospital rates – by quarter

Figure 11 and Figure 12 presents the individual acute public hospital rates of **hospital identified CDI** and **healthcare associated – healthcare facility onset (HCA-HCF) CDI** by quarter**.**

Figure 11 Hospital identified CDI by quarter

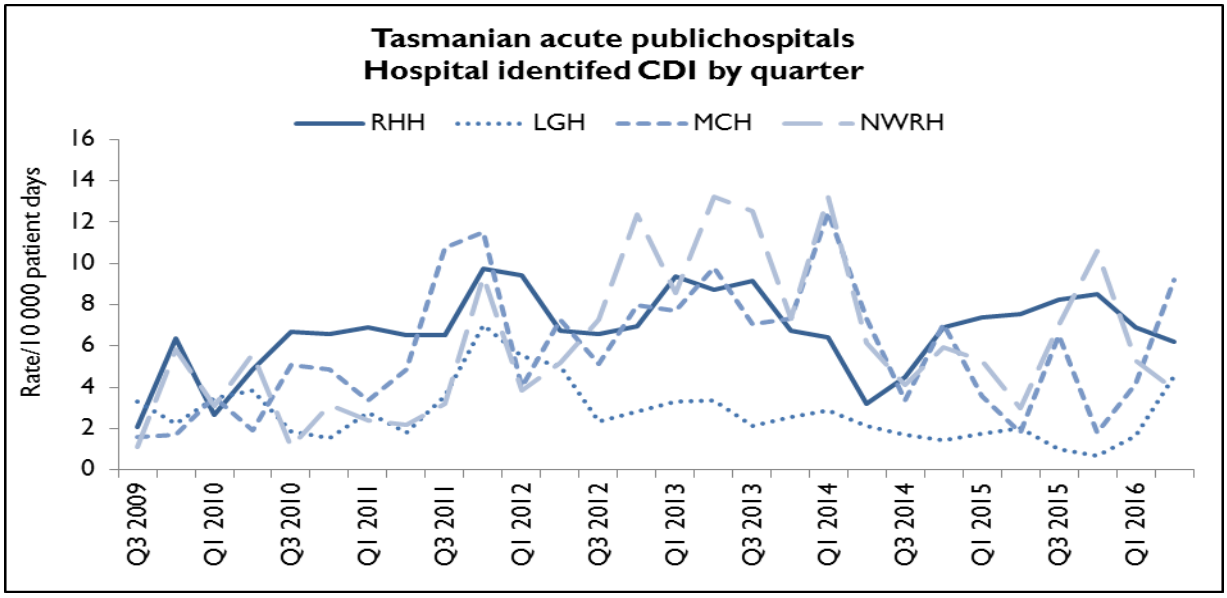
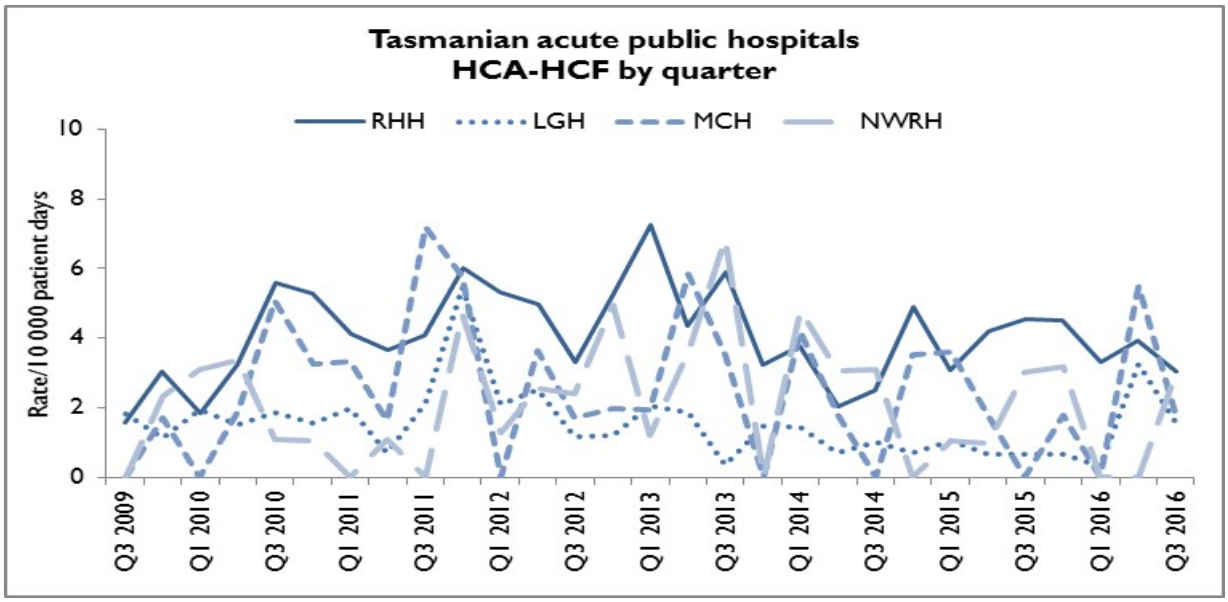


Figure 12 HCA-HCF CDI by quarter



The RHH has had a stable trend over 2015 – 16 for HCA-HCF CDI. The LGH has demonstrated an upward trend in Q2 2016 which can be explained by a change to laboratory diagnostic algorithm, with enhanced sensitivity for detection of *C. difficile* infection. The MCH and NWRH trends are difficult to interpret because of the low number of cases reported.

Hospital rates – by financial year

Figure 13 and Figure 14 presents the individual acute public hospital rates of **hospital identified CDI** and **healthcare associated – healthcare facility onset (HCA-HCF) CDI** by financial year**.**

Figure 13 Hospital identified CDI by financial year

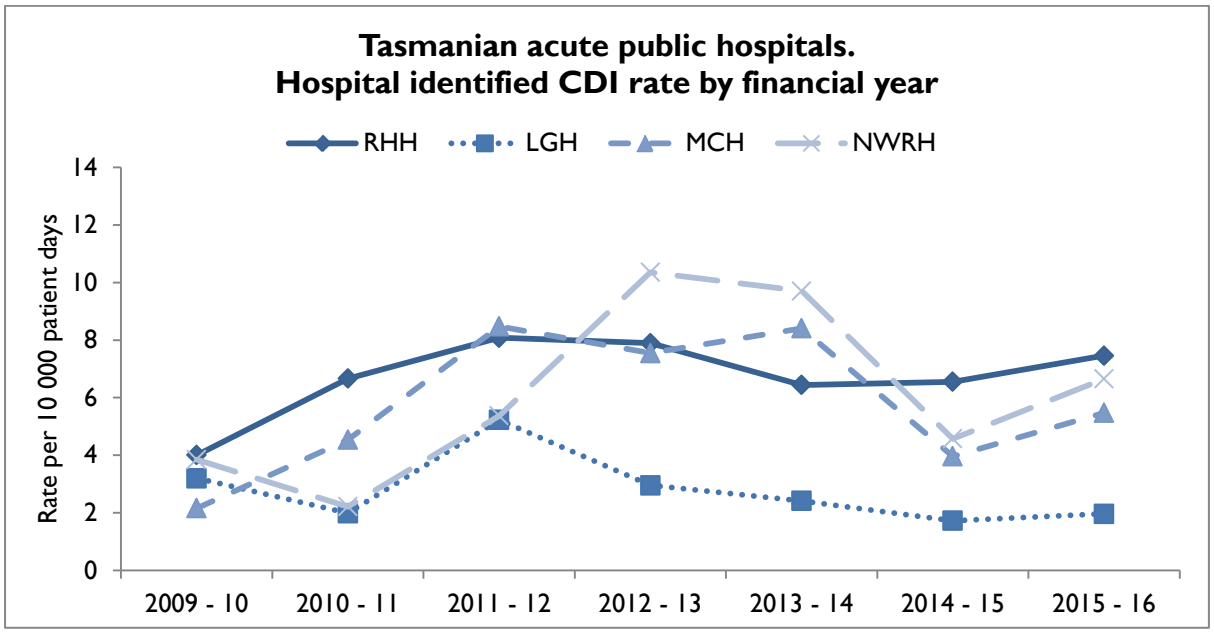
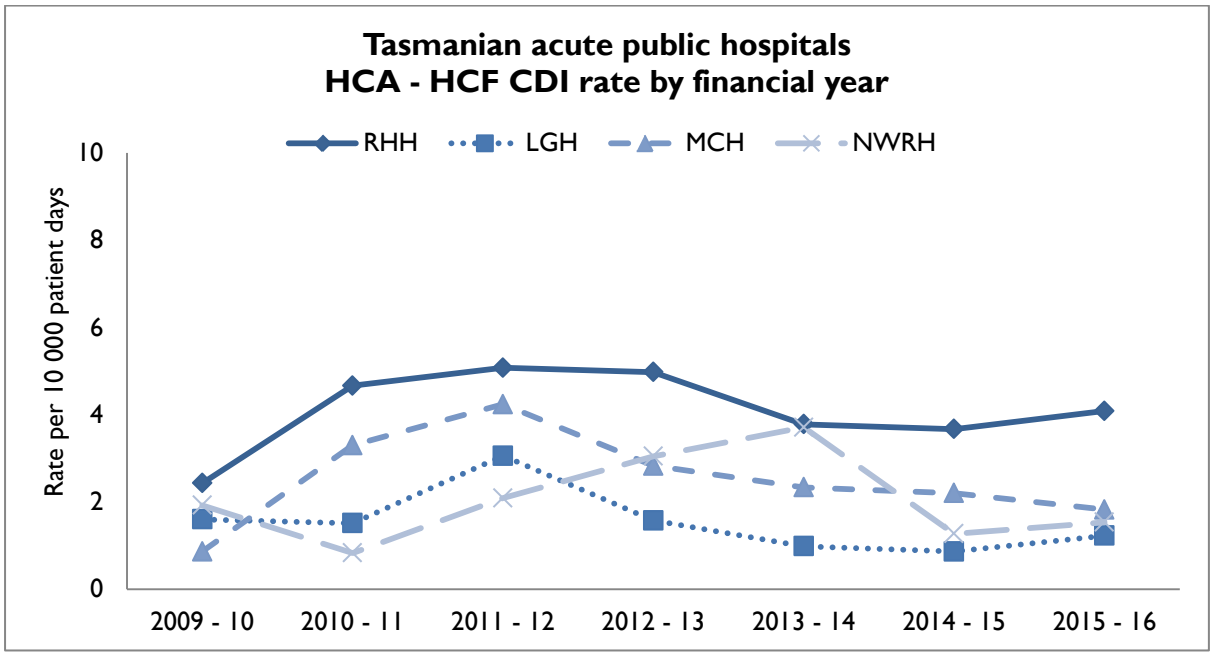


Figure 14 HCA-HCF CDI by financial year



All hospitals have a stable trend over 2015 – 16 for both hospital identified CDI and HCA-HCF CDI.

Vancomycin resistant enterococcus (VRE)

Enterococci are bacteria normally present in the human gastrointestinal and female genital tract. Enterococci can cause infections of the urinary tract, bloodstream and wounds. Enterococci that have acquired resistance to the antibiotic vancomycin are called vancomycin-resistant enterococci or VRE. VRE infections can be more difficult to treat then those caused by vancomycin sensitive enterococci. Factors that can contribute to the transmission of VRE in hospitals are ineffective infection control practices, overuse of antibiotics and suboptimal environmental cleanliness.

Identification of VRE is a notifiable condition in Tasmania pursuant to the *Public Health Act 1997*.

The number of people newly identified with VRE within hospitals does not necessarily reflect that VRE was acquired at that hospital. VRE isolates identified can be affected by the amount of screening undertaken by hospitals. Hospitals that have an intensive screening program are likely to identify more VRE.

Figure 15 presents the total of all new VRE screening and clinical isolates identified within Tasmania by quarter for the past seven quarters. This includes all new cases identified within Tasmania from public and private hospitals, rural hospitals, GP clinics and long term and residential care facilities. The patient's first VRE isolates are classified according to whether it was from a screening or clinical specimen.

Figure 15 New VRE isolates by quarter

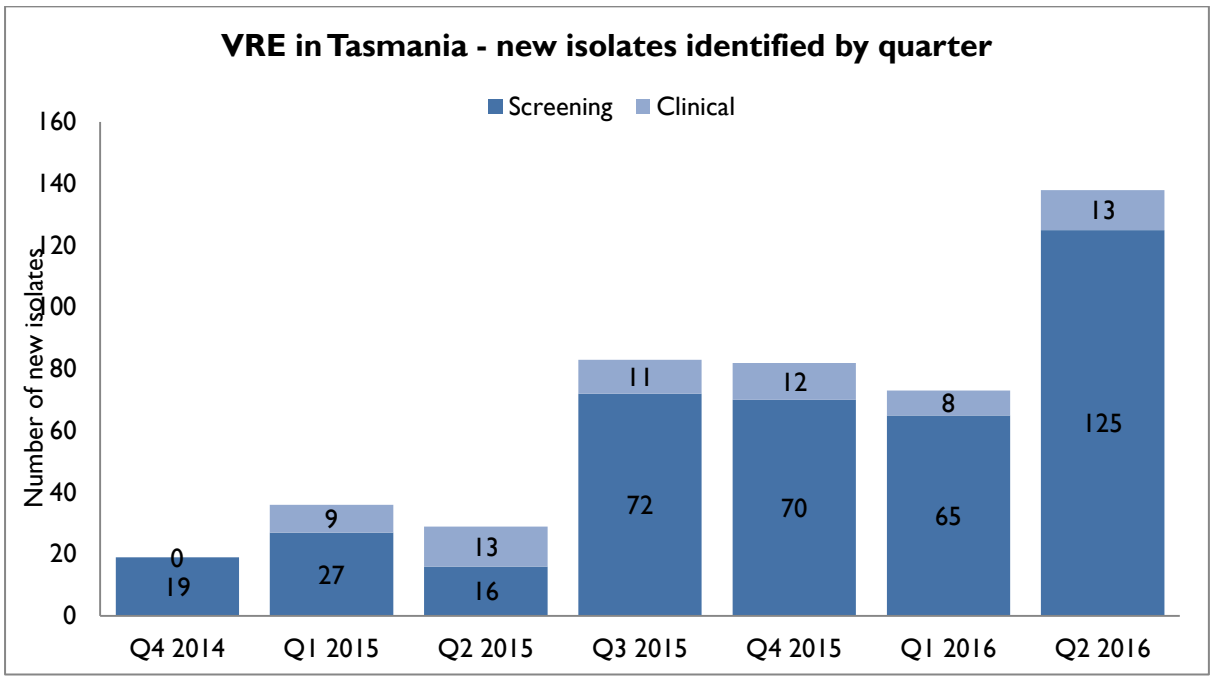


Figure 16 New VRE isolates by financial year

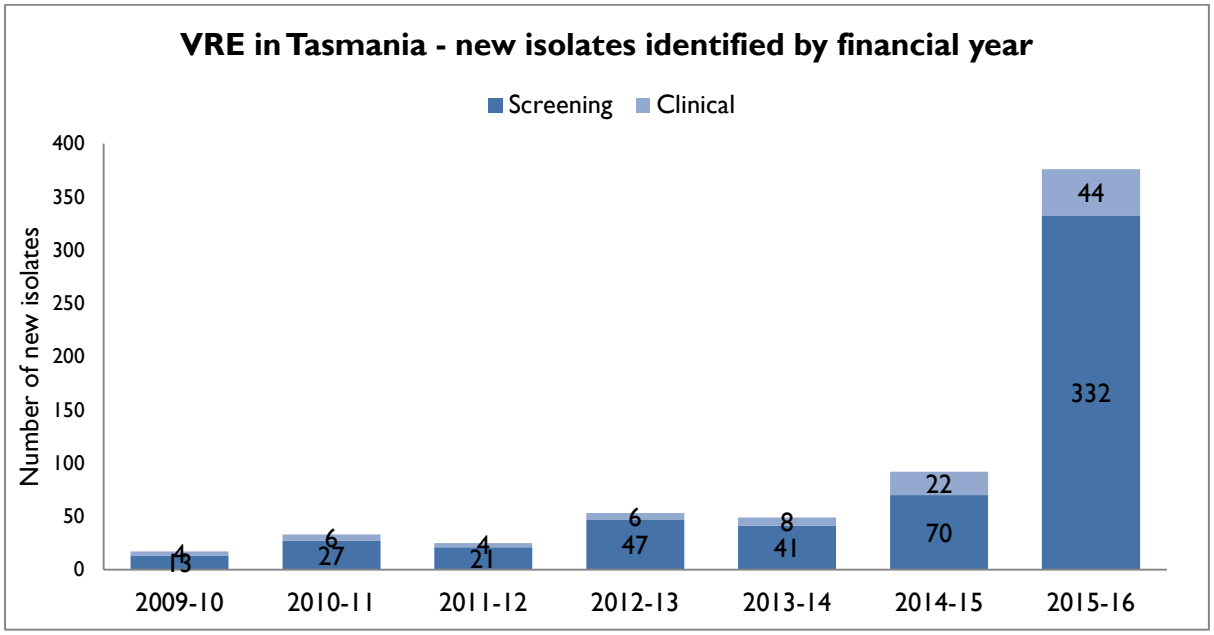
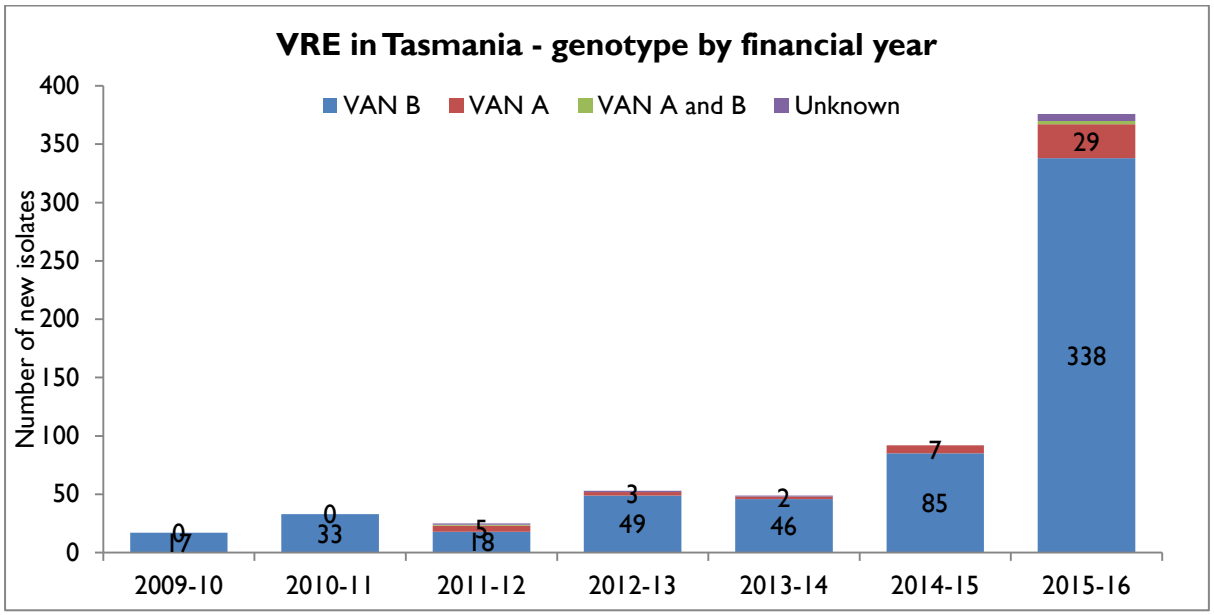


Figure 17 New VRE isolates by genotype by financial year



During the past 2 years there has been an increase in identification of VRE colonisations and infections with a significant increase in 2015-16. The majority of VRE within Tasmania remains vanB *E. faecium* but there has been a recent increase in the number of isolates with the vanA genotype which is concerning as there are limited antimicrobial choices for treatment of infection with this organism.

The reasons for the increase in new VRE isolates appear to be related to targeted screening (identifying those more at risk of VRE colonisation), transmission of VRE amongst hospitalised patients and an overall increase in VRE burden within Tasmania.

VRE screening effort

The volume of VRE screening has increased in Tasmania in response to the infection control management of VRE within acute public hospitals.

Table 1presents the VRE screening effort across the four larger acute public hospitals, demonstrating the numbers of screening specimens tested, the number of specimens that have cultured VRE and the percentage of screening specimens that cultured VRE.

Table 1 Proportion of VRE positives from screening specimens

	RHH		**LGH**		**MCH**		**NWRH**	
	Screening specimens tested	**Positive specimens**	**Screening specimens tested**	**Positive specimens**	**Screening specimens tested**	**Positive specimens**	**Screening specimens tested**	**Positive specimens**
2014	1962	12 (0.6%)	353	25 (7.1%)	544	8 (1.5%)	893	11 (1.2%)
2015	2077	91 (4.4%)	586	52 (8.9%)	404	17 (4.2%)	962	31 (3.2%)
2016*	2423	110 (4.5%)	840	73(8.7%)	216	24 (11.1%)	550	21 (3.8%)

* 6 months of data as based on calendar year

This data shows that there has been an increase in VRE screening effort at both RHH and LGH and an increase in the proportion of positive specimens found across all four larger acute public hospitals over the last two years. Please note that this data has not been de-duplicated so there will be a small number of repeat positive specimens on patients already known to have VRE included in this data set.

Hand hygiene compliance data

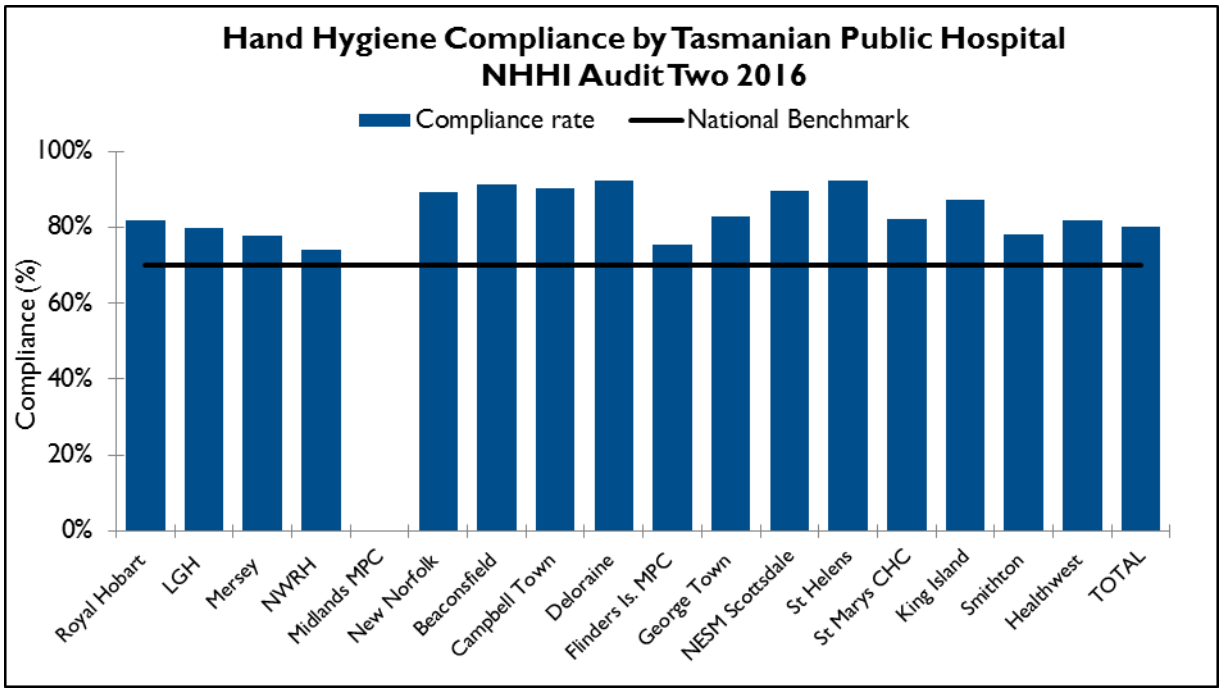
The National Hand Hygiene Initiative was introduced in Tasmania in 2009 to increase healthcare workers hand hygiene compliance and monitor its effectiveness. Hand hygiene compliance is monitored by observing if healthcare workers perform hand hygiene at the appropriate times which are known as the '5 Moments for Hand Hygiene'.

These are:

1. **Before** touching a patient
2. **Before** performing a procedure
3. **After** performing a procedure or a body fluid exposure risk
4. **After** touching a patient
5. **After** touching a patients surroundings

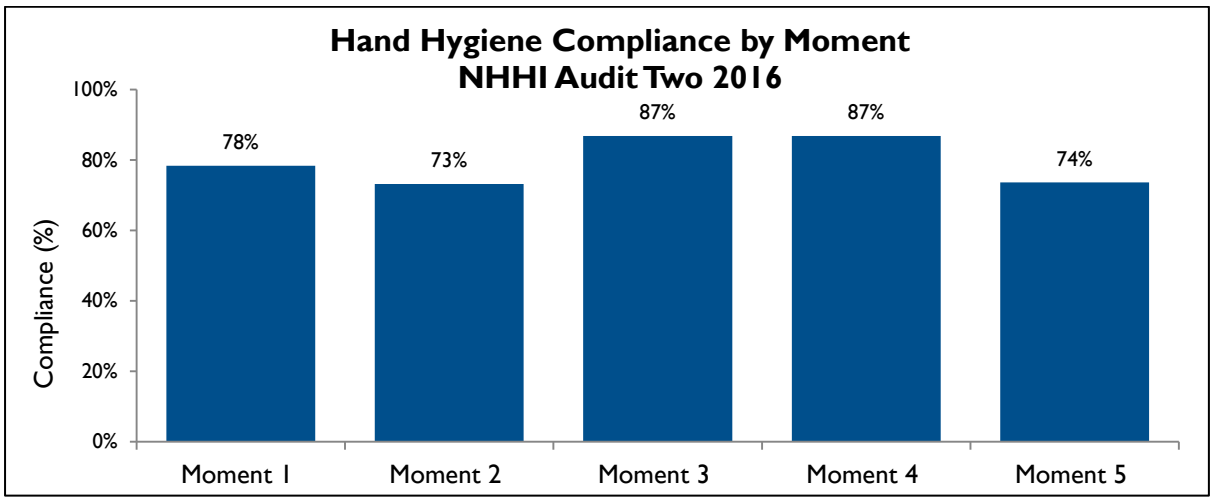
Tasmanian rates

Figure 18 Hand hygiene compliance in Tasmanian public hospitals



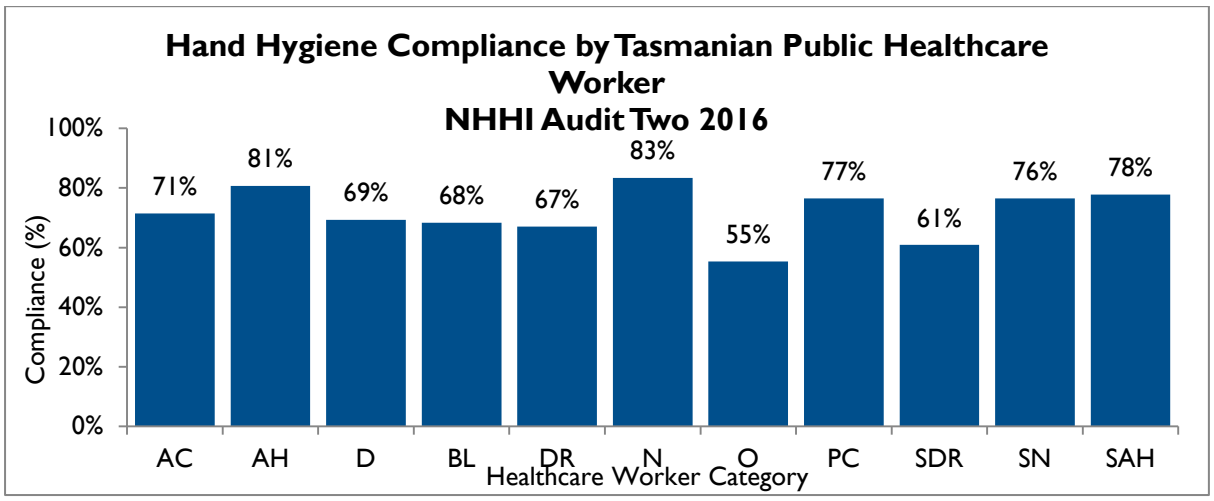
- The National Hand Hygiene Compliance Benchmark is 70 per cent and this was exceeded by all participating hospitals.
- The number of hand hygiene moments observed varies between the acute and rural hospitals. These numbers are presented in the Appendix 2 tables.
- Midlands Multi-Purpose Centre did not submit hand hygiene compliance data for Audit Period Two, 2016.

Figure 19 Hand hygiene compliance by moment



Hand hygiene compliance after touching a patient and after performing a procedure (Moments 3 and 4) are higher than hand hygiene compliance before touching a patient, before undertaking a procedure and after touching a patient surroundings (Moments 1 , 2 and 5).

Figure 20 Hand hygiene compliance by healthcare worker



AC	Clerical	DR	Doctor	SPC	Student Personal Carer
AH	Allied Health	N	Nurse/Midwife	SDR	Student Doctor
D	Domestic	O	Other	SN	Student Nurse/Midwife
BL	Invasive Technician	PC	Personal Care Staff	SAH	Student Allied Health

- The numbers of hand hygiene moments observed for each healthcare worker group vary. These numbers are presented in the Appendix 2 tables.
- The majority of hand hygiene compliance data (72 per cent in the latest report) is collected from nurse-patient interactions with the next highest being doctor-patient interactions (13 per cent).

Antibiotic use surveillance

Antimicrobial use is associated with the emergence of antimicrobial-resistant bacteria. Antimicrobial resistance is a significant and growing threat to public health worldwide. The National Antimicrobial Utilisation Surveillance Program (NAUSP) began in 2004 to conduct surveillance of hospital antimicrobials, principally antibiotic use. The program enables individual institutions to examine their own antimicrobial use rates and trends over time and provides peer group benchmarks for comparison. The data can be used to identify trends in antimicrobial use over time and develop local interventions to promote appropriate antimicrobial use.

The Royal Hobart Hospital has been contributing data to the NAUSP since July 2004 while Launceston General Hospital, North West Regional Hospital and Mersey Community Hospital have been contributing since January 2009.

Antimicrobial usage rates are calculated using the number of defined daily doses (DDDs) of specific antimicrobial agents or classes consumed each month per 1 000 occupied bed days. This is the most widely accepted method of measuring antimicrobial use in hospital settings both nationally and internationally.

Rates presented in this report are for four antimicrobials or antimicrobial classes: third and fourth generation cephalosporins (ceftriaxone, cefotaxime, ceftazidime, cefepime); fluoroquinolones (ciprofloxacin, moxifloxacin); anti-pseudomonal penicillins plus ß-lactamase inhibitors (piperacillin/tazobactam, ticarcillin/clavulanate) and vancomycin. These were chosen for their relevance to other indicators in this report. Cephalosporin use has been linked with the emergence of MRSA, cephalosporins and fluoroquinolones have been identified as risk factors for *Clostridium difficile* infection and all four classes have been associated with VRE acquisition.

The graphs show the use of the antimicrobial class or specific antimicrobial in each acute hospital. TIPCU use a three point rolling average to calculate the average rate of the current, and two previous months, and uses this to show trends over time.

Because Tasmanian hospitals vary in services provided, comparisons between Tasmanian hospitals are not recommended. For example, a hospital that has a dedicated cancer service may use more antimicrobials to combat infections in this susceptible patient group.

Figure 21 Cephalosporin use

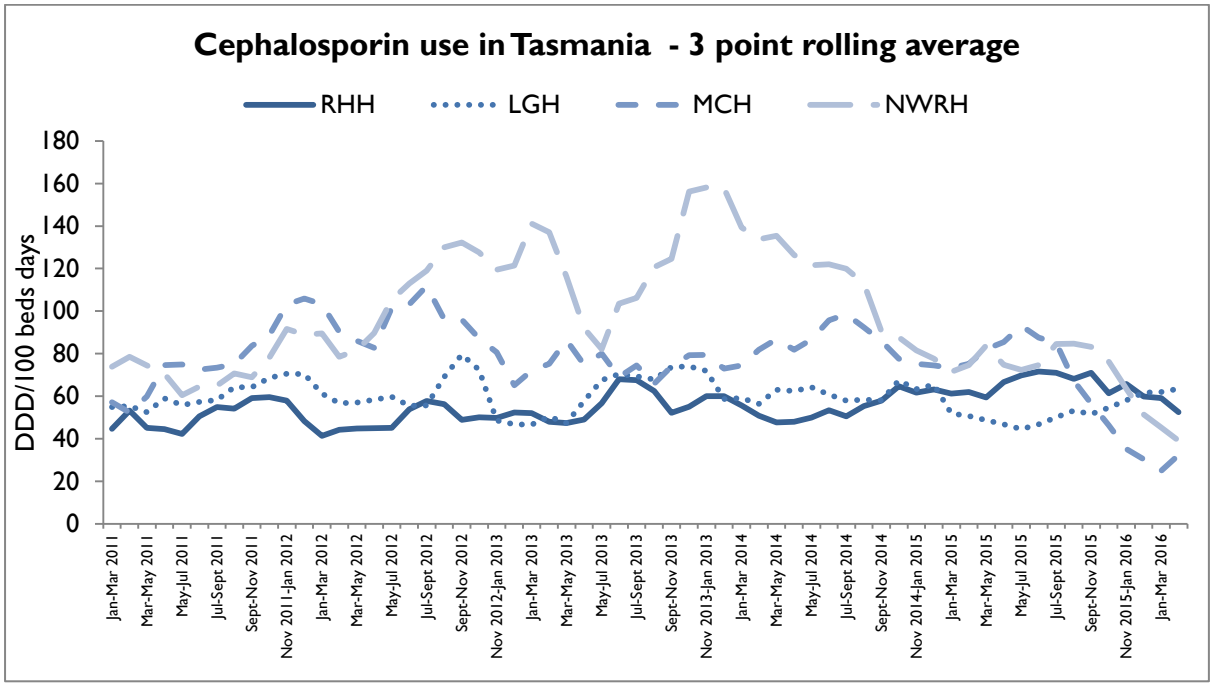


Figure 22 Fluoroquinolone use

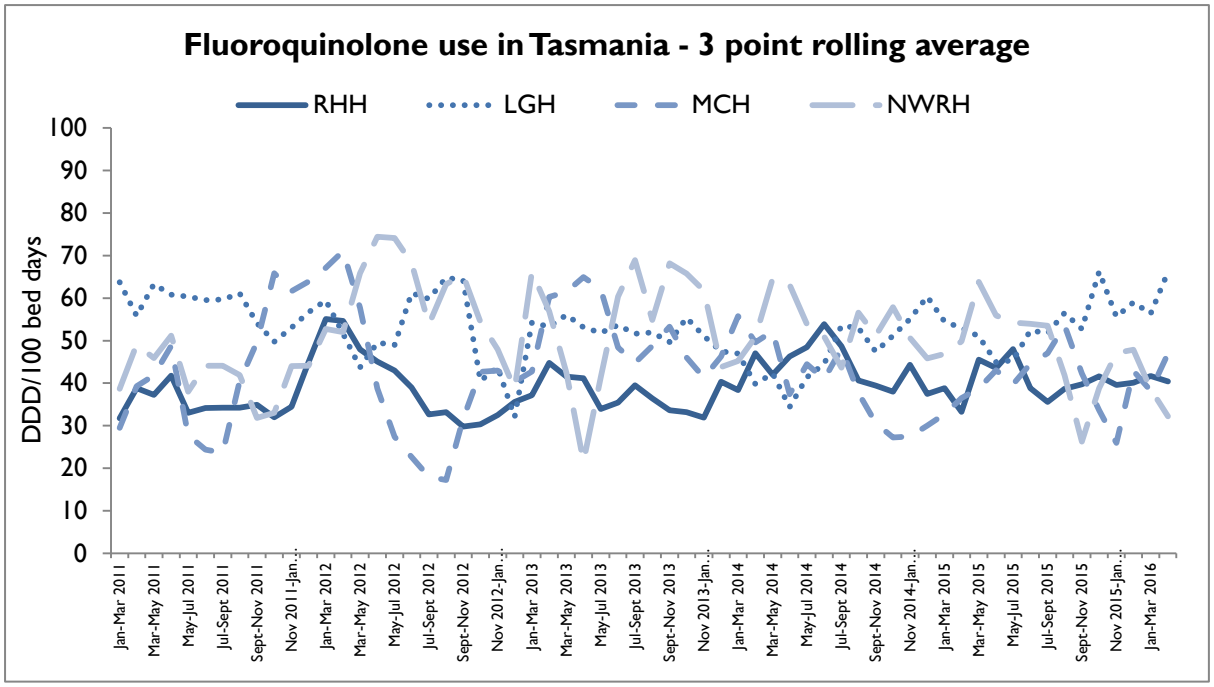


Figure 23 Anti-pseudomonal penicillins plus ß-lactamase inhibitor use

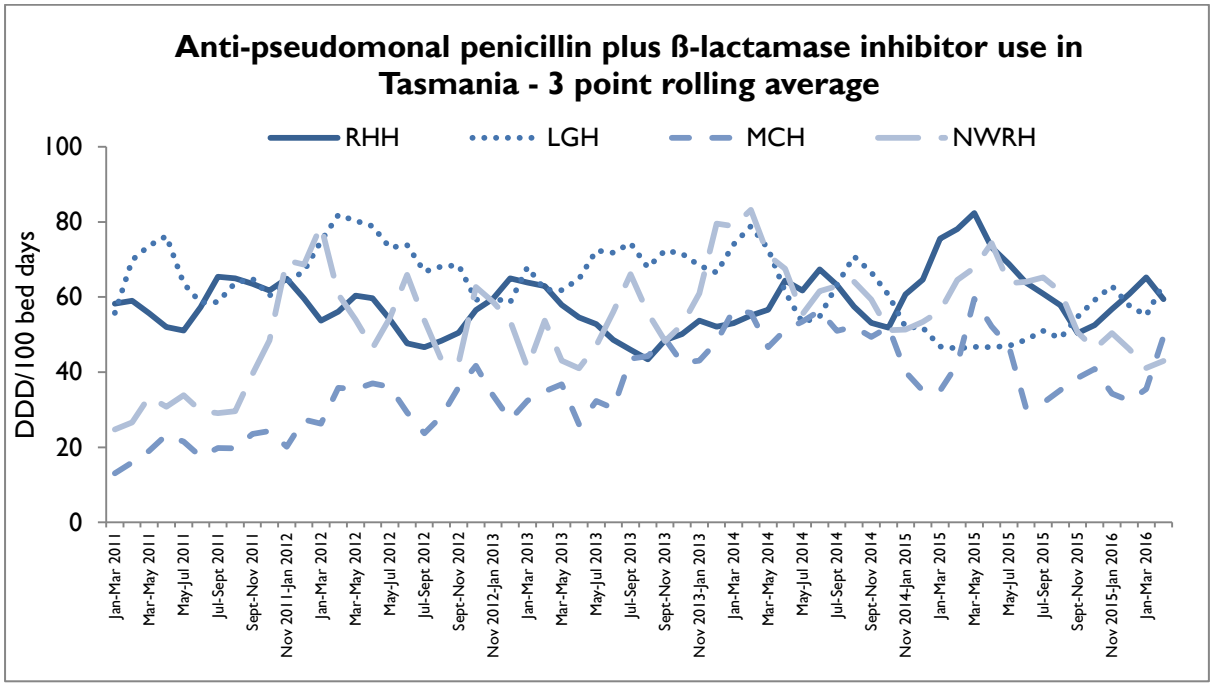
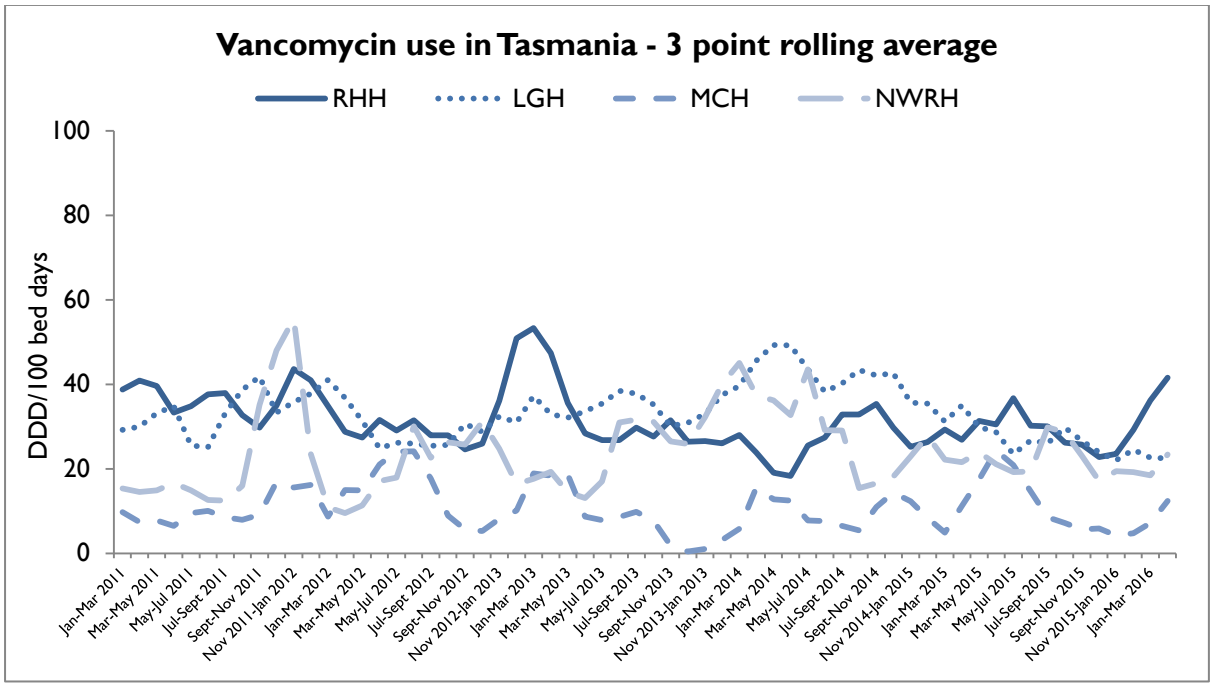


Figure 24 Vancomycin use



Acknowledgements

The production of this report is the culmination of data collection, analysis and input from a number of different organisations. In particular, we would like to acknowledge:

- Executive Director of Nursing THS North
- Executive Director of Nursing THS North West
- Executive Director of Nursing THS South
- Launceston General Hospital Infection Prevention and Control Unit
- North West Regional Hospital Infection Control Team
- Mersey Community Hospital Infection Control Team
- Royal Hobart Hospital Infection Prevention and Control Unit
- Microbiology Departments at the Royal Hobart Hospital, Launceston General Hospital and DSPL
- Hand Hygiene Australia
- Communicable Diseases Prevention Unit, Public Health Services
- Contributing Primary Health Sites

Appendix 1

Explanatory notes

What types of healthcare surveillance are done in Tasmania?

TIPCU undertakes surveillance of the following:

- *Staphylococcus aureus* bacteraemia (bloodstream infection).
- *Clostridium difficile* infection (CDI).
- Vancomycin resistant enterococci (VRE).
- Hand hygiene compliance rates.
- Antibiotic utilisation.

What do the rates mean?

The healthcare surveillance data are expressed as a rate or a raw number. SAB and CDI are expressed as a rate per 10 000 patient days, VRE is expressed as a raw number, hand hygiene compliance is expressed as a percentage and antibiotic utilisation is expressed as hospital use measured by defined daily doses, per 1 000 occupied bed days.

What are the definitions for *Clostridium difficile* infection (CDI)?

TIPCU use the national surveillance definitions published by the Australian Commission on Safety and Quality in Health Care (ACSQHC) to classify CDI. TIPCU reports on:

1. **Hospital identified CDI** is defined as a case diagnosed in a patient attending an acute care facility. This includes positive specimens obtained from admitted patients and those attending the emergency department and outpatient departments. This definition excludes patients less than two years old and cases with a positive test within the previous eight weeks.
2. **Healthcare associated – healthcare facility onset CDI** (HCA-HCF CDI) is defined as a patient with CDI symptom onset (or date and time of stool specimen collection if a laboratory system is used) more than 48 hours after admission to a healthcare facility. This definition excludes patients less than two years old and cases with a positive test within the previous eight weeks.

What are the definitions for healthcare associated *Staphylococcus aureus* bacteraemia (SAB)?

Criterion A the patient's first SAB blood culture was collected more than 48 hours after hospital admission or less than 48 hours after discharge.

OR

Criterion B the patient's first positive SAB blood culture was collected less than or equal to 48 hours after hospital admission and one or more of the following key clinical criteria was met for the patient-episode of SAB.

Key clinical criteria:

1. SAB is a complication of the presence of an indwelling medical device (eg intravascular line, haemodialysis vascular access, CSF shunt, urinary catheter).
2. SAB occurs within 30 days of a surgical procedure or 365 days for surgically implanted devices, where the SAB is related to the surgical site.
3. SAB was diagnosed within 48 hours of a related invasive instrumentation or incision.
4. SAB is associated with neutropenia (less 1 x 10^9/L) contributed to by cytotoxic therapy.

What are the definitions for vancomycin resistant enterococci (VRE)?

The definition for VRE is an isolate identified as VRE by an accredited laboratory. TIPCU reports on the total number of people with new isolates of VRE identified in Tasmania per quarter and this number includes all people with new VRE isolates from public and private hospitals, rural hospitals, GP clinics and long term and residential care facilities.

Confidence intervals

Confidence intervals are used to calculate the range in which the true rate probably lies. As an example, when looking at the hand hygiene compliance (HHC) data "confidence intervals calculate the range in which the true compliance result lies, based on the data collected and the compliance measured, thus providing an indication of the reliability of the reported HHC level. When only a small number of moments are collected, the confidence interval will be larger, as it is more difficult to establish the true compliance level from a small sample of moments. If a large number of moments are collected the confidence interval will be smaller, meaning the reliability of the result is higher. Hand Hygiene Australia (HHA) calculates 95 per cent confidence intervals, indicating the intervals in which 95 per cent of the time the true compliance level lies." (HHA 2011)

Patient care days

Patient days is the term to explain the total days patients are in hospital. In each of Tasmania's four larger acute public hospitals there are around 330 000 patient care days a year. When a rate is presented as a number per 10 000 patient days this presents the number of infections that occur for every 10 000 patient care days.

Can I compare Tasmanian hospital infection rates?

Each Tasmanian hospital provides different services and has patients with different levels of illness. This affects infection rates. For example, very sick immuno-compromised patients may be more likely to get infections. It is difficult to remove all of the factors outside the control of a hospital that can cause its infection rate to differ from other hospitals.

Other reasons for caution when comparing hospitals include:

- some hospitals may screen patients more than others. This can affect data for CDI and VRE in particular
- hospital laboratories may use different ways of identifying organisms. A laboratory that has a more sensitive way of looking for organisms may find more
- for hand hygiene, rural hospitals are not required to collect as many moments as the four acute public hospitals, so comparisons between rural and acute hospitals are not recommended.

Appendix 2

Staphylococcus aureus bacteraemia (SAB)

Table 2 Tasmanian numbers and rate per 10 000 patient days of HCA-SAB.

Quarter	Total HCA-SAB	Number MSSA	Number MRSA	HCA SAB Rate
Q3 2010	12	11	1	1.4
Q4 2010	10	7	3	1.2
Q1 2011	15	13	2	1.8
Q2 2011	5	5	0	0.6
Q3 2011	7	7	0	0.8
Q4 2011	6	4	2	0.8
Q1 2012	7	6	1	0.9
Q2 2012	7	6	1	0.9
Q3 2012	6	6	0	0.7
Q4 2012	10	9	1	1.3
Q1 2013	7	7	0	0.9
Q2 2013	8	7	1	0.9
Q3 2013	6	6	0	0.7
Q4 2013	7	7	0	0.8
Q1 2014	10	9	1	1.2
Q2 2014	12	10	2	1.4
Q3 2014	6	6	0	0.7
Q4 2014	4	4	0	0.5
Q1 2015	10	9	1	1.2
Q2 2015	9	7	2	1.0
Q3 2015	12	10	2	1.4
Q4 2015	5	4	1	0.6
Q1 2016	8	6	2	1.0
Q2 2016	11	10	1	1.2

Table 3 Royal Hobart Hospital numbers and rates per10 000 patient days of HCA-SAB

Quarter	Total HCA-SAB	Number MSSA	Number MRSA	HCA SAB Rate
Q3 2010	8	7	1	1.9
Q4 2010	6	5	1	1.4
Q1 2011	6	4	2	1.5
Q2 2011	3	3	0	0.7
Q3 2011	2	2	0	0.5
Q4 2011	3	2	1	0.8
Q1 2012	2	2	0	0.5
Q2 2012	3	3	0	0.8
Q3 2012	3	3	0	0.8
Q4 2012	4	4	0	1.1
Q1 2013	2	2	0	0.6
Q2 2013	4	4	0	0.9
Q3 2013	2	2	0	0.5
Q4 2013	4	4	0	1.0
Q1 2014	3	3	0	0.8
Q2 2014	5	4	1	1.3
Q3 2014	1	1	0	0.3
Q4 2014	1	0	0	0.3
Q1 2015	3	2	1	0.8
Q2 2015	4	4	0	1.0
Q3 2015	5	5	0	1.3
Q4 2015	2	2	0	0.5
Q1 2016	2	2	0	0.5
Q2 2016	4	4	0	1.0

Table 4 Launceston General Hospital numbers and rates per10 000 patient days of HCA-SAB

Quarter	Total HCA-SAB	Number MSSA	Number MRSA	HCA SAB Rate
Q3 2010	3	3	0	1.0
Q4 2010	3	1	2	1.1
Q1 2011	5	5	0	1.8
Q2 2011	2	2	0	0.7
Q3 2011	5	5	0	1.7
Q4 2011	1	1	0	0.4
Q1 2012	2	1	1	0.8
Q2 2012	2	2	0	0.8
Q3 2012	2	2	0	0.7
Q4 2012	6	5	1	2.3
Q1 2013	4	4	0	1.5
Q2 2013	4	3	1	1.3
Q3 2013	3	3	0	1.0
Q4 2013	3	3	0	1.0
Q1 2014	4	4	0	1.4
Q2 2014	3	2	1	1.0
Q3 2014	2	2	0	0.6
Q4 2014	2	2	0	0.7
Q1 2015	5	5	0	1.6
Q2 2015	4	2	2	1.3
Q3 2015	5	3	2	1.5
Q4 2015	2	1	1	0.6
Q1 2016	5	3	2	1.6
Q2 2016	4	4	0	1.2

Table 5 Mersey Community Hospital numbers and rates per10 000 patient days of HCA-SAB

Quarter	Total HCA-SAB	Number MSSA	Number MRSA	HCA SAB Rate
Q3 2010	1	1	0	1.6
Q4 2010	0	0	0	0.0
Q1 2011	3	3	0	4.6
Q2 2011	0	0	0	0.0
Q3 2011	0	0	0	0.0
Q4 2011	1	0	1	1.8
Q1 2012	1	1	0	1.9
Q2 2012	1	1	0	1.7
Q3 2012	1	1	0	1.6
Q4 2012	0	0	0	0.0
Q1 2013	0	0	0	0.0
Q2 2013	0	0	0	0.0
Q3 2013	0	0	0	0.0
Q4 2013	0	0	0	0.0
Q1 2014	2	2	0	3.9
Q2 2014	0	0	0	0.0
Q3 2014	2	2	0	3.2
Q4 2014	1	1	0	1.7
Q1 2015	1	1	0	1.7
Q2 2015	0	0	0	0.0
Q3 2015	1	1	0	1.5
Q4 2015	1	1	0	1.7
Q1 2016	1	1	0	2.0
Q2 2016	1	1	0	1.7

Table 6 North West Regional Hospital numbers and rates per10 000 patient days of HCA-SAB.

Quarter	Total HCA-SAB	Number MSSA	Number MRSA	HCA SAB Rate
Q3 2010	0	0	0	0.0
Q4 2010	1	1	0	1.0
Q1 2011	1	1	0	1.2
Q2 2011	0	0	0	0.0
Q3 2011	0	0	0	0.0
Q4 2011	1	1	0	1.2
Q1 2012	2	2	0	2.6
Q2 2012	1	0	1	1.3
Q3 2012	0	0	0	0.0
Q4 2012	0	0	0	0.0
Q1 2013	1	1	0	1.2
Q2 2013	0	0	0	0.0
Q3 2013	1	1	0	1.1
Q4 2013	0	0	0	0.0
Q1 2014	1	0	1	1.2
Q2 2014	4	4	0	3.7
Q3 2014	1	1	0	1.0
Q4 2014	0	0	0	0.0
Q1 2015	1	1	0	1.0
Q2 2015	1	1	0	0.9
Q3 2015	1	1	0	0.9
Q4 2015	0	0	0	0.0
Q1 2016	0	0	0	0.0
Q2 2016	2	1	1	1.8

Clostridium difficile infection (CDI)

Table 7 Tasmanian numbers and rates per10 000 patient days of CDI

Quarter	Total hospital identified CDI	Rate	Total HCA HCF	Rate
Q3 2010	34	4.3	30	3.8
Q4 2010	35	4.4	27	3.4
Q1 2011	35	4.7	22	2.9
Q2 2011	35	4.3	18	2.2
Q3 2011	43	5.4	25	3.1
Q4 2011	66	8.9	42	5.6
Q1 2012	50	7.1	24	3.4
Q2 2012	43	6.0	27	3.8
Q3 2012	39	5.1	18	2.4
Q4 2012	45	6.2	26	3.6
Q1 2013	50	7.1	31	4.4
Q2 2013	57	7.5	27	3.6
Q3 2013	55	6.9	31	3.9
Q4 2013	42	5.4	16	2.1
Q1 2014	47	6.3	23	3.1
Q2 2014	27	3.5	13	1.7
Q3 2014	27	3.4	15	1.9
Q4 2014	38	4.8	21	2.7
Q1 2015	36	4.7	16	2.1
Q2 2015	37	4.6	19	2.3
Q3 2015	43	5.2	21	2.6
Q4 2015	43	5.3	22	2.7
Q1 2016	35	4.5	12	1.5
Q2 2016	45	5.5	17	2.1

Table 8 Hospital numbers and rates per10 000 patient days of hospital identified CDI

Quarter	Royal Hobart		Launceston General		Mersey Community		NW Regional	
	Total	Rate	Total	Rate	Total	Rate	Total	Rate
Q3 2010	25	6.7	5	1.9	3	5.1	1	1.1
Q4 2010	25	6.6	4	1.5	3	4.9	3	3.1
Q1 2011	25	6.9	7	2.8	2	3.3	2	2.4
Q2 2011	25	6.5	5	1.8	3	4.9	2	2.2
Q3 2011	24	6.5	10	3.6	6	10.8	3	3.2
Q4 2011	34	9.8	18	7.0	6	11.5	8	9.4
Q1 2012	32	9.4	13	5.5	2	4.0	3	3.9
Q2 2012	23	6.7	12	5.0	4	7.3	4	5.2
Q3 2012	24	6.6	6	2.4	3	5.1	6	7.3
Q4 2012	24	6.9	7	2.8	4	7.9	10	12.3
Q1 2013	31	9.4	8	3.3	4	7.7	7	8.6
Q2 2013	32	8.7	9	3.4	5	9.8	11	13.2
Q3 2013	34	9.1	6	2.1	4	7.0	11	12.5
Q4 2013	25	6.8	7	2.6	4	7.3	6	7.3
Q1 2014	22	6.4	8	2.9	6	12.5	11	13.2
Q2 2014	11	3.2	6	2.1	4	7.3	6	6.1
Q3 2014	16	4.5	5	1.7	2	3.4	4	4.1
Q4 2014	24	6.9	4	1.4	4	7.1	6	5.9
Q1 2015	24	7.4	5	1.7	2	3.6	5	5.3
Q2 2015	27	7.5	6	2.0	1	1.8	3	3.0
Q3 2015	29	8.2	3	1.0	4	6.5	7	7.0
Q4 2015	30	8.5	2	0.7	1	1.8	10	10.6
Q1 2016	23	6.9	5	1.6	2	4.2	5	5.3
Q2 2016	22	6.2	14	4.6	5	9.2	4	3.9

Table 9 Hospital numbers and rates per10 000 patient days of HCA-HCF CDI

Quarter	Royal Hobart		Launceston General		Mersey Community		NW Regional	
	Total	Rate	Total	Rate	Total	Rate	Total	Rate
Q3 2010	21	5.6	5	1.9	3	5.1	1	1.1
Q4 2010	20	5.3	4	1.5	2	3.2	1	1.0
Q1 2011	15	4.1	5	2.0	2	3.3	0	0.0
Q2 2011	14	3.7	2	0.7	1	1.6	1	1.1
Q3 2011	15	4.1	6	2.1	4	7.2	0	0.0
Q4 2011	21	6.0	14	5.4	3	5.8	4	4.7
Q1 2012	18	5.3	5	2.1	0	0.0	1	1.3
Q2 2012	17	5.0	6	2.5	2	3.6	2	2.6
Q3 2012	12	3.3	3	1.2	1	1.7	2	2.4
Q4 2012	18	5.2	3	1.2	1	2.0	4	4.9
Q1 2013	24	7.2	5	2.1	1	1.9	1	1.2
Q2 2013	16	4.4	5	1.9	3	5.9	3	3.6
Q3 2013	22	5.9	1	0.4	2	3.5	6	6.8
Q4 2013	12	3.2	4	1.5	0	0.0	0	0.0
Q1 2014	13	3.8	4	1.4	2	4.2	4	4.8
Q2 2014	7	2.0	2	0.7	1	1.8	3	3.1
Q3 2014	9	2.5	3	1.0	0	0.0	3	3.1
Q4 2014	17	4.9	2	0.7	2	3.5	0	0.0
Q1 2015	10	3.1	3	1.0	2	3.6	1	1.1
Q2 2015	15	4.2	2	0.7	1	1.8	1	1.0
Q3 2015	16	4.5	2	0.7	0	0.0	3	3.0
Q4 2015	16	4.5	2	0.7	1	1.8	3	3.2
Q1 2016	11	3.3	1	0.3	0	0.0	0	0.0
Q2 2016	14	3.9	10	3.3	3	5.5	0	0.0

Vancomycin resistant enterococcus (VRE)

Table 10 VRE isolates identified per quarter within a) acute public hospitals, b) other healthcare settings (private hospitals, rural hospitals, GP clinics and long term and residential care facilities) and c) total Tasmanian isolates.

	RHH	LGH	MCH	NWRH	Other healthcare settings	Total
Q3 2010	10	-	2	2	-	14
Q4 2010	3	-	3	1	1	8
Q1 2011	-	-	2	1	-	3
Q2 2011	3	1	-	-	4	8
Q3 2011	1	1	-	-	1	3
Q4 2011	3	-	-	-	2	5
Q1 2012	3	2	2	2	1	10
Q2 2012	4	2	-	1	-	7
Q3 2012	3	2	2	-	1	8
Q4 2012	1	7	1	1	2	12
Q1 2013	13	0	3	-	2	18
Q2 2013	8	3	-	1	3	15
Q 3 2013	8	1	-	2	1	12
Q4 2013	5	3	-	3	5	16
Q1 2014	5	-	1	1	1	8
Q2 2014	3	6	1	1	2	13
Q3 2014	1	2	3	2	-	8
Q4 2014	1	5	1	5	7	19
Q1 2015	10	12	2	5	7	36
Q2 2015	5	13	2	1	8	29
Q3 2015	33	17	9	5	19	83
Q4 2015	36	22	0	11	13	82
Q1 2016	28	26	7	4	8	73
Q2 2016	51	48	12	14	12	138

Table 11 Classification of first VRE isolates – number of screening and clinical specimens; and of clinical specimens that indicate an infection

Quarter	Total VRE	Screening specimens	Clinical specimens
Q3 2010	14	13	1
Q4 2010	8	5	3
Q1 2011	3	3	0
Q2 2011	8	6	2
Q3 2011	3	3	0
Q4 2011	5	3	2
Q1 2012	10	8	2
Q2 2012	7	7	0
Q3 2012	8	8	0
Q4 2012	12	9	3
Q1 2013	18	17	1
Q2 2013	15	13	2
Q3 2013	12	10	2
Q4 2013	16	14	2
Q1 2014	8	6	2
Q2 2014	13	11	2
Q3 2014	8	8	0
Q4 2014	19	19	0
Q1 2015	36	27	9
Q2 2015	29	16	13
Q3 2015	83	72	11
Q4 2015	82	70	12
Q1 2016	73	65	8
Q2 2016	138	125	13

Hand hygiene compliance data June 2016

Table 12 Hand hygiene compliance rates by Tasmanian hospital and state level

Hospital	HH Correctly Performed	HH Moments	Compliance	Lower 95% confidence interval	Upper 95% confidence interval
Royal Hobart	2197	2685	82%	80%	83%
LGH	4369	5468	80%	79%	81%
Mersey	559	719	78%	75%	81%
NWRH	770	1038	74%	71%	77%
Midlands MPC	N/A	N/A	N/A	N/A	N/A
New Norfolk	51	57	89%	79%	95%
Beaconsfield	53	58	91%	81%	96%
Campbell Town	47	52	90%	79%	96%
Deloraine	121	131	92%	87%	96%
Flinders Is. MPC	40	53	75%	62%	85%
George Town	54	65	83%	72%	90%
NESM Scottsdale	61	68	90%	80%	95%
St Helens	48	52	92%	82%	97%
St Marys CHC	60	73	82%	72%	89%
King Island	48	55	87%	76%	94%
Smithton	43	55	78%	66%	87%
Healthwest	100	122	82%	74%	88%
TOTAL	**8621**	**10751**	**80.2%**	**79%**	**81%**

Table 13 Tasmanian hand hygiene compliance rates by moment

Moments	HH Correctly Performed	Total HH Moments	Compliance	Lower 95% confidence interval	Upper 95% confidence interval
Moment 1	2325	2968	78%	77%	80%
Moment 2	526	719	73%	70%	76%
Moment 3	933	1075	87%	85%	89%
Moment 4	2824	3253	87%	86%	88%
Moment 5	2013	2736	74%	72%	75%
TOTAL	**8621**	**10751**	**80%**	**79%**	**81%**

Table 14 Tasmanian hand hygiene compliance rates by healthcare worker

Staff Type	HH Correctly Performed	HH Moments	Compliance	Lower 95% confidence interval	Upper 95% confidence interval	% of total moments observed
Clerical	25	35	71%	55%	84%	0.3
Allied Health	368	456	81%	77%	84%	4.2
Domestic	115	166	69%	62%	76%	1.5
Invasive Technician	28	41	68%	53%	80%	0.4
Doctor	906	1351	67%	65%	70%	12.6
Nurse/Midwife	6502	7795	83%	83%	84%	72.5
Other	26	47	55%	41%	69%	0.4
Personal care staff	430	562	77%	73%	80%	5.2
Student Doctor	28	46	61%	46%	74%	0.4
Student Nurse/Midwife	179	234	76%	71%	81%	2.2
Student Allied Health	14	18	78%	55%	91%	0.2
TOTAL	**8621**	**10751**	**80%**	**79%**	**81%**	