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Tasmanian Acute Public Hospitals
Healthcare Associated Infection Surveillance Report
Report 23 – Quarter 3 2014
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Executive summary

This annual report provides an overview of the Tasmanian acute public hospitals healthcare associated infection surveillance. This complements the quarterly surveillance data reports that the Tasmanian Infection Prevention and Control Unit (TIPCU) has been publishing since March 2009. The TIPCU website (www.dhhs.tas.gov.au/tipcu) contains details of the surveillance program 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.

Any form of comparison between hospitals should be done with extreme caution and direct comparisons are not recommended. Information about how Tasmanian rates compare with those of other Australian states (where available), are provided in the Key Points sections of this report. The Appendices in this report contain more detailed information.

Compared to the quarterly reports published by the TIPCU, this report contains some additional detail, such as infection rates by financial year and antimicrobial use. From this report, the following findings can be made:

- The rate of healthcare associated Staphylococcus aureus bacteraemia remains low.
- The rate and number of both hospital identified Clostridium difficile infection (CDI) and healthcare associated – healthcare facility onset Clostridium difficile infection (HCA – HCF CDI) are similar to those in the previous quarter.
- The occurrence of vancomycin resistant enterococcus remains low.

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Specialist Medical Advisor, TIPCU
**Staphylococcus aureus bacteraemia (SAB)**

**Tasmanian rates**

Figure 1 outlines the Tasmanian combined acute public hospital rates of healthcare associated *Staphylococcus aureus* bacteraemia (HCA SAB).

The rate of healthcare associated *Staphylococcus aureus* bacteraemia for Q3 2014 was 0.68 per 10 000 patient days (95% CI 0.14-1.13) and the mean (average) rate of healthcare associated *Staphylococcus aureus* bacteraemia over the past 12 months (October 1st 2013 – September 30th 2014) is 1.04 per 10 000 patient days (95% CI 0.70 – 1.39).

**Figure 1** Healthcare associated *Staphylococcus aureus* bacteraemia rate.

![Tasmanian acute public hospitals Healthcare associated SAB rate by quarter](image-url)
**Hospital rates**

Figure 2 outlines the individual acute public hospitals rates of healthcare associated *Staphylococcus aureus* bacteraemia (HCA SAB). This information is also contained in tables within the Appendix.

**Figure 2** Healthcare associated *Staphylococcus aureus* bacteraemia - rate by quarter.

![Healthcare associated SAB by Tasmanian acute public hospital by quarter](chart)

**Key points**

- Mersey Community Hospital had a rate of 3.21 HCA SAB/10 000 patient days. This represents 2 cases of HCA SAB for the quarter.
  - Due to the lower denominator (patient days), the rate at both Mersey Community Hospital and North West Regional Hospital will be greater than the National Healthcare Agreement target if more than 1 HCA SAB is identified in a quarter.
- The Tasmanian HCA SAB rate is comparable to the most recently published data reported in other Australian states and territories.
  - The HCA SAB aggregate rate in Q2 2014 in Western Australia was 0.91 per 10 000 bed days (multi-day and same-day bed days).\(^1\)
  - The rate of HCA SAB at The Canberra Hospital in 2012-2013 is reported as 1.72 cases per 10,000 days of patient care\(^2\).

---

1. HISWA Quarterly Aggregate Report Quarter 2, 2014 – Number 36
**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 nationally agreed surveillance definitions published by the ACSQHC. Hospital identified CDI includes both healthcare facility and community associated infections while healthcare associated – healthcare facility onset (HCA-HCF) CDI are those infections that occurred 48 hours or more after a patient was admitted to hospital. A 3 point rolling average is used to report Tasmanian CDI rates to detect changes in trends in CDI rates over time.

**Tasmanian rates**

*Figure 3* outlines the Tasmanian combined acute public hospital rates of both hospital identified CDI and HCA-HCF CDI.

The rate of hospital identified CDI for Q3 2014 was 3.4/10 000 patient days (95% CI 2.1-4.6) and the rate of HCA-HCF over the same time period was 1.9/10 000 patient days (95% CI 0.9-2.8).

The mean (average) rate of hospital identified CDI for the previous 12 months (October 1st 2013 - September 30th 2014) is 4.6 per 10 000 patient days (95% CI 3.8-5.3) while the mean rate of HCA-HCF CDI over the same time period is 2.2 per 10 000 patient days (95% CI 1.6 – 2.7).

*Figure 3* Hospital identified and HCA-HCF CDI - rate by quarter.
Hospital rates

Figure 4 and Figure 5 outlines the individual acute public hospital rates by quarter of hospital identified CDI and healthcare associated -healthcare facility onset (HCA-HCF) CDI.

Figure 4 Individual hospital identified CDI - rate by quarter.

![Graph of Tasmanian acute public hospitals Hospital identified CDI rate by quarter (3 point rolling average)](image)

Figure 5 Individual hospital HCA-HCF CDI - rate by quarter.

![Graph of Tasmanian acute public hospitals HCA-HCF CDI rate by quarter (3 point rolling average)](image)
Key points

- Hospital identified CDI includes both healthcare facility and community associated infections.
- The HCA – HCF rate excludes persons who present to hospital with symptoms of CDI and/or develop symptoms within 2 days of admission.
- The three point rolling average calculates the average rate of the previous, current and next quarter thus this rate will always be reported up to the end of the previous quarter.
- The Tasmanian number and rate of both hospital identified and HCA-HCF CDI have remained stable over the last two quarters.
Vancomycin resistant enterococcus (VRE)

Enterococci are bacteria that are 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 than those caused by Enterococci sensitive to vancomycin. Factors that are believed to contribute to the transmission of VRE in hospitals are ineffective infection control practices, a lack of an antimicrobial stewardship program and suboptimal environmental cleanliness.

Identification of VRE is a notifiable condition in Tasmania pursuant to the Public Health Act 1997 and as such, all isolates of VRE are notified to TIPCU.

**Tasmanian numbers**

Table 1 VRE isolates identified per quarter within 1) acute public hospitals and 2) total Tasmanian isolates identified.

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<th>MCH</th>
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</tbody>
</table>
**Key points**

- This table provides information on both new VRE isolates identified in acute public hospitals and the total number of new VRE isolates identified across Tasmania.

- The isolates that have been identified within hospitals do not necessarily mean that VRE was acquired at that hospital. Numbers of VRE isolates identified are affected by the amount of screening undertaken by hospitals. Some hospitals may be more aggressive in their approach and hence may identify more VRE.

- The ‘total isolates identified’ includes all new cases identified in Tasmania and includes isolates from public and private hospitals, GP clinics and long term and residential care facilities.
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 THO North
- Executive Director of Nursing THO North West
- Executive Director of Nursing THO South
- Launceston General Hospital Infection Control Unit
- North West Regional Hospital Infection Control Team
- Mersey Community Hospital Infection Control Team
- Royal Hobart Hospital Infection Prevention and Control Unit
- The National Antimicrobial Utilisation Surveillance Program (NAUSP)
- Microbiology Departments at the Royal Hobart Hospital, Launceston General Hospital and DSPL
- Hand Hygiene Australia
- Communicable Diseases Prevention Unit, Population Health
- Contributing Primary Health Sites
Appendix I
Explanatory notes

What healthcare associated infection (HAI) indicators are used in Tasmania?

TIPCU undertakes surveillance of the following indicators:

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

What do the rates mean?

The rates of infections presented in the TIPCU report are presented as a rate per 10 000 patient days (SAB and CDI) or as a percentage (hand hygiene compliance).

What are the definitions for healthcare associated SAB?

TIPCU use the national surveillance definitions published by the Australian Commission on Safety and Quality in Health Care (ACSQHC) to classify SAB. There are two categories of HCA SAB. A SAB is considered to be healthcare associated if it fits one of the following two criteria:

**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 (e.g. Intravascular line, haemodialysis vascular access, CSF shunt, urinary catheter)
2. SAB occurs within 30 days of a surgical procedure 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 10⁹/L) contributed to by cytotoxic therapy
**Confidence intervals**

Confidence intervals are used to calculate the range in which the true rate lies. As an example, when looking at the hand hygiene compliance 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. HHA calculate 95% confidence intervals, indicating the intervals in which 95% of the time the true compliance level lies”. (HHA 2011).

**Patient Care Days**

Patient days is the term given 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 per 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?**

It is important to be wary when comparing data between hospitals. 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.

There are other reasons why hospitals should not be directly compared. These include:

- Some hospitals may look for infections more than others. This can affect rates for CDI and VRE.
- Hospital laboratories may use different ways of identifying organisms. A laboratory that has a very sensitive way of looking for organisms may find more.
- For hand hygiene, rural hospitals do not collect as much data as the four acute public hospitals, so comparisons between rural and acute hospitals are not recommended.
Appendix 2

*Staphylococcus aureus* bacteraemia (SAB)

Data which classifies healthcare associated *Staphylococcus aureus* bacteraemia into Criterion A (>48 after admission or <48 hours after discharge) OR Criterion B (≤ 48 hours after hospital admission and one of more key clinical criteria met) is available upon request.

Table 2 Tasmanian numbers and rate/10 000 patient days of healthcare associated SAB (HCA-SAB).

<table>
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<tr>
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<th>Number MRSA</th>
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### Table 3 Royal Hobart Hospital numbers and rates/10 000 patient days of healthcare associated SAB.

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<th>Number MRSA</th>
<th>HCA SAB Rate</th>
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## Clostridium difficile infection (CDI)

**Table 7** Tasmanian numbers and rates/10 000 patient days of CDI.

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