Quarterly Report

Healthcare Infection Surveillance Western Australia (HISWA)

Quarter 4, April to June 2018
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Data Quality Statement

Date Extracted: 9/08/2018  Publication Date:  22/08/2018

The following data was not received at time of data extraction for this report and may impact on aggregated rates:

2017-18

Since publication of this report 3 MRSA HAIs, 1 HA-SABSI have been declassified, and one additional SSI following arthroplasty has been identified that are not reflected in this report. HISWA database will be updated at the end of our reporting period.

Mount: Several n/a risk procedures submitted this quarter and are under review
Joondalup: Feb 2018 ICU bed days under review.

Newman: No data submitted (December 2017) denominator data entered by HAIU
Kununurra: No data submitted (December 2017) denominator data entered by HAIU
Merriden: No data submitted (September 2017) denominator data entered by HAIU
Moora: No data submitted (August 2017) denominator data entered by HAIU

2016-17

Moora: No data submitted (March 2017) denominator data entered by HAIU
Margaret River: No data submitted (December 2016) denominator data entered by HAIU
Derby: No data submitted (November and December 2016) denominator data entered by HAIU
Merredin: No data submitted (September 2016; Qrt 4 2016-17) denominator data entered by HAIU

2015-16

Moora: No data submitted (June 2016) denominator data entered by HAIU
Moora: No data submitted (November 2015) denominator data entered by HAIU
Merredin: No data submitted (December 2015) denominator data entered by HAIU
Attadale: No data submitted (December 2015) denominator data entered by HAIU
Merredin: No data submitted (September 2015) denominator data entered by HAIU.

2014-15:

Rockingham: data not received for unqualified newborns and patients < 2 years of age.
Moora: No data submitted Qtr 4, 2014-15, denominator data entered by HAIU.

All surveillance enquiries

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HAIU News

- The HAIU warmly welcomes Michelle Stirling to the team. Michelle commenced with us at the end of June and has hit the ground running! Michelle comes to us with a strong background in safety & quality, infection prevention & control, a love of data and a passion for learning. Hopefully the IP&C team at PCH have now forgiven us for poaching her away!

- The contract for the state-wide electronic infection prevention and control surveillance (IPACS) system was awarded to Baxter Healthcare on 15 August 2018. The system is the ICNet system many of you will be familiar with and will be rolled out to HISWA hospitals over the next 5 years. Exciting times ahead!

HISWA Forum

The next forum is scheduled for 5 September 2018, 1500 – 1630. Afternoon tea and beverages will be available from 1430. If you have any issues you would like discussed please email us at hiswa@health.wa.gov.au. Contributors wishing to participate via video-conference, please contact Simone Tempone.

This quarter we will have presentations from:

- KEMH and SCGH on Serratia.
- Simone Tempone on Data 101 - how to download data, pivot table hints, simple rate calculations.

Reminders

- Email communications

Please can all email communications relating to HISWA be directed to hiswa@health.wa.gov.au. This ensures one of us will always be available to respond to your query in a timely manner.

- Assigning risk index to surgical procedures

A reminder to those performing 100 or more procedures per year to commence assigning a risk index score as of 1 July 2018 to enhance comparability of data.

Report Highlights

- The MRSA HAI rate decreased for the 2nd consecutive Qtr and is below the comparator.
- The HA-SABSI MRSA rate decreased for the 2nd consecutive Qtr and is the lowest since Qtr 4 2015-16.

Report Concerns

- SSI rates following both hip and knee arthroplasty increased.
- The deep SSI rate following cesarean section increased.
- 46 HA-SABSI were reported, of which, 26 (57%) were attributable to IVDs.
- The CLABSI rate increased across all indicators – haematology, ICU and oncology.
- 37% (15) of the patients acquiring an MRSA HAI were known to be colonised with MRSA prior to onset of their infection.
- 258 higher-risk parenteral exposures were reported (doctors: 120; nurses: 114).
Surgical site infection following hip arthroplasty

Key Points

- There were 1,244 procedures were reported (1,142 primary; 102 revision).
- A total of 14 SSI (six superficial and eight deep) were reported of which 10 were following primary hip arthroplasty.
- 12 SSI were detected on readmission to hospital and two during the initial admission.
- The total SSI rate following hip arthroplasty increased to 1.13 infections per 100 procedures from 0.93 reported in Qtr 3 2017-18.
- The deep SSI hip rate decreased to 0.64 infections per 100 procedures from 0.84 reported in Qtr 3 2017-18 (table 3 and figure 3).

Table 1 Hip arthroplasty SSI rate, by risk index

<table>
<thead>
<tr>
<th>Risk Index</th>
<th>Number of contributing hospitals</th>
<th>Number of procedures</th>
<th>Number of SSI</th>
<th>Aggregate rate (95% CI)</th>
<th>Cumulative aggregate rate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk All *</td>
<td>5</td>
<td>85</td>
<td>1</td>
<td>1.18 [0.00 – 7.12]</td>
<td>0.85 [0.57 – 1.26]</td>
</tr>
<tr>
<td>Risk N/A</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>0.00 [0.00 – 49.38]</td>
<td>0.00 [0.00 – 22.08]</td>
</tr>
<tr>
<td>Risk index 0</td>
<td>17</td>
<td>644</td>
<td>4</td>
<td>0.62 [0.19 – 1.66]</td>
<td>0.76 [0.66 - 0.87]</td>
</tr>
<tr>
<td>Risk index 1</td>
<td>17</td>
<td>432</td>
<td>6</td>
<td>1.39 [0.58 – 3.09]</td>
<td>1.84 [1.63 – 2.08]</td>
</tr>
<tr>
<td>Risk index 2</td>
<td>17</td>
<td>73</td>
<td>3</td>
<td>4.11 [0.99 – 12.00]</td>
<td>3.63 [2.82 – 4.67]</td>
</tr>
<tr>
<td>Risk index 3</td>
<td>17</td>
<td>5</td>
<td>0</td>
<td>0.00 [0.00 – 49.38]</td>
<td>4.76 [1.82 – 11.02]</td>
</tr>
<tr>
<td><strong>Total hip arthroplasty</strong></td>
<td>22</td>
<td><strong>1,244</strong></td>
<td>14</td>
<td><strong>1.13 [0.66 – 1.91]</strong></td>
<td><strong>1.22 [1.12 – 1.33]</strong></td>
</tr>
</tbody>
</table>

*Refer to Appendix 1- SSI Data Notes

Figure 1 Hip arthroplasty SSI rate
Surgical site infection following knee arthroplasty

Key Points

- There were 1,825 procedures reported (1,695 primary; 130 revision).
- A total of 13 SSI (six superficial and seven deep) reported of which 10 were following primary knee arthroplasty.
- 10 SSI were detected on readmission to hospital and three during the initial admission.
- The total SSI rate following knee arthroplasty increased to 0.71 infections per 100 procedures from 0.44 reported in Qtr 3 2017-18.
- The deep SSI knee rate increased to 0.38 per 100 procedures from 0.28 infections (table 3 and figure 4).

Table 2 Knee arthroplasty SSI rate, by risk index

<table>
<thead>
<tr>
<th>Risk Index</th>
<th>Number of contributing hospitals</th>
<th>Number of procedures</th>
<th>Number of SSI</th>
<th>Aggregate rate (95% CI)</th>
<th>Cumulative aggregate rate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk all *</td>
<td>5</td>
<td>93</td>
<td>0</td>
<td>0.00 [0.00 – 4.89]</td>
<td>1.43 [1.12 – 1.83]</td>
</tr>
<tr>
<td>Risk N/A</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0.00 [0.00 – 71.05]</td>
<td>0.00 [0.00 – 35.00]</td>
</tr>
<tr>
<td>Risk index 0</td>
<td>17</td>
<td>911</td>
<td>6</td>
<td>0.66 [0.27 – 1.48]</td>
<td>0.69 [0.60 – 0.78]</td>
</tr>
<tr>
<td>Risk index 1</td>
<td>17</td>
<td>676</td>
<td>5</td>
<td>0.74 [0.27 – 1.79]</td>
<td>1.16 [1.02 – 1.31]</td>
</tr>
<tr>
<td>Risk index 2</td>
<td>17</td>
<td>139</td>
<td>2</td>
<td>1.44 [0.09 – 5.50]</td>
<td>2.87 [2.32 – 3.56]</td>
</tr>
<tr>
<td>Risk index 3</td>
<td>17</td>
<td>4</td>
<td>0</td>
<td>0.00 [0.00-55.01]</td>
<td>7.26 [3.74-13.45]</td>
</tr>
<tr>
<td>Total knee arthroplasty</td>
<td>22</td>
<td>1,825*</td>
<td>13</td>
<td>0.71 [0.41 – 1.23]</td>
<td>1.00 [0.93 – 1.09]</td>
</tr>
</tbody>
</table>

*Refer to Appendix 1- SSI Data Notes

*includes 2 procedures classed as NA

Figure 2 Knee arthroplasty SSI rate
Table 3 SSI rates, by superficial and deep or organ/ space infections

<table>
<thead>
<tr>
<th></th>
<th>Number of superficial SSI</th>
<th>Number of deep SSI</th>
<th>Total number of SSI</th>
<th>Number of procedures</th>
<th>Aggregate superficial SSI rate (95% CI)</th>
<th>Aggregate deep SSI rate (95% CI)</th>
<th>Aggregate total SSI rate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip arthroplasty</td>
<td>6</td>
<td>8</td>
<td>14</td>
<td>1,244</td>
<td>0.48 [0.20 – 1.08]</td>
<td>0.64 [0.31 – 1.30]</td>
<td>1.13 [0.66 – 1.91]</td>
</tr>
<tr>
<td>Knee arthroplasty</td>
<td>6</td>
<td>7</td>
<td>13</td>
<td>1,825</td>
<td>0.33 [0.13 – 0.74]</td>
<td>0.38 [0.17 – 0.81]</td>
<td>0.71 [0.41 – 1.23]</td>
</tr>
<tr>
<td>Total arthroplasty</td>
<td>12</td>
<td>15</td>
<td>27</td>
<td>3,069</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Figure 3 Hip arthroplasty SSI rate, by superficial and deep

Figure 4 Knee arthroplasty SSI rate, by superficial and deep
Surgical site infection following caesarean section

Key Points

- 2,469 caesarean section procedures were reported, of which 1,100 (45%) were elective and 1,369 (55%) were emergency procedures.
- A total of 20 SSIs were reported, nine (45%) were detected on readmission to hospital, three (15%) during the initial admission, and eight (40%) were detected post-discharge.
- 13 (65%) of all SSI reported were superficial infections.
- 17 (85%) of all SSI were following emergency procedures and includes 5 deep SSIs.
- The inpatient SSI rate (includes readmissions and excludes post-discharge) decreased to 0.49 infections per 100 procedures from 0.89 reported in Qrt 3 2017-18.

Table 4 Caesarean section SSI rate per 100 procedures, by risk index

<table>
<thead>
<tr>
<th></th>
<th>Number of contributing hospitals</th>
<th>Number of procedure</th>
<th>Number of superficial SSI</th>
<th>Number of deep SSI</th>
<th>Total number of SSI</th>
<th>Total aggregate rate (95% CI)</th>
<th>Cumulative aggregate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk All *</td>
<td>13</td>
<td>298</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1.01 [0.22 – 3.09]</td>
<td>0.73 [0.58 – 0.91]</td>
</tr>
<tr>
<td>Risk index 0</td>
<td>14</td>
<td>1,187</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>0.34 [0.10 – 0.91]</td>
<td>0.32 [0.26 – 0.39]</td>
</tr>
<tr>
<td>Risk index 1</td>
<td>14</td>
<td>771</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.13 [0.00 – 0.82]</td>
<td>0.85 [0.72 – 1.00]</td>
</tr>
<tr>
<td>Risk index 2</td>
<td>14</td>
<td>198</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2.02 [0.63 – 5.31]</td>
<td>1.94 [1.51 – 2.51]</td>
</tr>
<tr>
<td>Risk index 3</td>
<td>14</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00 [0.00 – 24.33]</td>
<td>1.61 [0.36 – 4.91]</td>
</tr>
<tr>
<td>Inpatient total</td>
<td>27</td>
<td>2,469</td>
<td>5</td>
<td>7</td>
<td>12</td>
<td>0.49 [0.27 – 0.86]</td>
<td>0.62 [0.56 – 0.69]</td>
</tr>
<tr>
<td>Post-discharge</td>
<td>NA</td>
<td>2,469</td>
<td>8</td>
<td>0</td>
<td>8</td>
<td>0.32* [0.15 – 0.65]</td>
<td>0.29* [0.25 - 0.34]</td>
</tr>
<tr>
<td>Total SSI</td>
<td>27</td>
<td>2,469</td>
<td>13</td>
<td>7</td>
<td>20</td>
<td>0.81* [0.52 – 1.26]</td>
<td>0.91* [0.84 – 0.99]</td>
</tr>
</tbody>
</table>

* These rates are not to be used for benchmarking purposes.
Figure 5 Caesarean section SSI rates (inpatient only)

Figure 6 Caesarean section SSI rates (inpatient only) by elective and emergency procedures
Healthcare associated *Staphylococcus aureus* bloodstream infection

**Key Points**

- The total HA-SABSI rate of 0.72 infections per 10,000 bed-days increased from 0.67 reported in Qtr 3, 2017-18 however remains below the comparator rate of 0.76.
- The MSSA HA-SABSI rate of 0.65 infections per 10,000 bed-days increased from 0.57 reported in Qtr 3, 2017-18 and is above the comparator rate of 0.61.
- The MRSA HA-SABSI rate of 0.06 infections per 10,000 bed-days decreased from 0.10 reported in Qtr 3, 2017-18 and is below the comparator rate of 0.15.
- Of the 46 HA-SABSI reported, 26 (57%) were attributable to IVDs. A further five (11%) were related to procedures. The IVD SABSI rate increased to 0.40 infections per 10,000 bed-days from 0.25 reported in Qtr 3 2017-18.

**Table 5 HA-SABSI rates per 10,000 bed-days**

<table>
<thead>
<tr>
<th></th>
<th>Number of contributing hospitals</th>
<th>Number of bed-days</th>
<th>Number of HA-SABSI</th>
<th>Aggregate rate (95% CI)</th>
<th>Cumulative aggregate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total methicillin-sensitive Staphylococcus aureus (MSSA) bloodstream infection</strong></td>
<td>49</td>
<td>642,443</td>
<td>42</td>
<td>0.65 [0.48 – 0.89]</td>
<td>0.59 [0.56 – 0.62]</td>
</tr>
<tr>
<td><strong>Total methicillin-resistant Staphylococcus aureus (MRSA) bloodstream infection</strong></td>
<td>49</td>
<td>642,443</td>
<td>4</td>
<td>0.06 [0.02 – 0.17]</td>
<td>0.12 [0.11 – 0.14]</td>
</tr>
<tr>
<td><strong>Total Staphylococcus aureus bloodstream infection</strong></td>
<td>49</td>
<td>642,443</td>
<td>46</td>
<td>0.72 [0.54- 0.96]</td>
<td>0.72 [0.69 – 0.75]</td>
</tr>
</tbody>
</table>

**Figure 7 HA-SABSI rates, by MRSA, MSSA and total**
Figure 8 Number of HA-SABSI, by attributable source

- IV-line related, 26, 56%
- Unknown/disseminated, 2, 4%
- Procedure related, 5, 11%
- Other (organ site focus), 6, 13%
- Non-IV device related, 4, 9%
- Neutropenia, 3, 7%

Figure 9 HA-SABSI rates, by hospital group

[Graph showing trends over time]
Figure 10 Proportion and rate of HA-SABSI attributed to intravascular devices

Figure 11 Proportion and number of HA-SABSI attributed to intravascular devices, by hospital group
Haemodialysis access-associated bloodstream infections

Key Points

☐ The majority (74%) of patients received haemodialysis via an AVF.
☐ There were six cuffed catheter and five AVF access-associated BSIs reported.
☐ The cuffed catheter (CC) BSI rate decreased to 0.74 infections per 100 patient-months from 1.33 in Qtr 3, 2017-18.
☐ The AVF BSI rate increased to 0.19 infections per 100 patient-months from zero in Qtr 3, 2017-18.
☐ The 2017-18 CC BSI rate of 0.98 is below to the HISWA 2016-17 rate of 1.25 infections per 100 patient months.
☐ The 2017-18 AVF BSI rate of 0.07 is above the HISWA 2016-17 rate of 0.03 infections per 100 patient months. This is the highest reported yearly rate since 2010-11.

Table 6  HD-BSI rate, by type of access updated

<table>
<thead>
<tr>
<th>Type of access</th>
<th>Number of contributing units</th>
<th>Aggregate utilisation ratio (%)</th>
<th>Number of BSI</th>
<th>Number of patient months</th>
<th>Aggregate rate. (95% CI)</th>
<th>Cumulative aggregate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVF</td>
<td>24</td>
<td>74.47</td>
<td>5</td>
<td>2,683</td>
<td>0.19 [0.07 – 0.45]</td>
<td>0.07 [0.05 – 0.09]</td>
</tr>
<tr>
<td>AVG</td>
<td>24</td>
<td>2.75</td>
<td>0</td>
<td>99</td>
<td>0.00 [0.00 – 4.61]</td>
<td>0.54 [0.35 – 0.83]</td>
</tr>
<tr>
<td>Cuffed catheter (CC)</td>
<td>24</td>
<td>22.48</td>
<td>6</td>
<td>810</td>
<td>0.74 [0.31 – 1.66]</td>
<td>1.56 [1.42 – 1.72]</td>
</tr>
<tr>
<td>Non-cuffed catheter</td>
<td>24</td>
<td>&lt;1</td>
<td>0</td>
<td>11</td>
<td>0.00 [0.00 – 30.54]</td>
<td>1.11 [0.56 – 2.14]</td>
</tr>
</tbody>
</table>

Figure 12  AVF and cuffed catheter BSI rate
Central line-associated bloodstream infection

**Key Points**
- Two adult ICU CLABSI were reported and the rate increased to 0.33 infections per 1,000 line days from 0.00 reported in Qtr 3, 2017-18.
- The majority (81%) of central lines utilised in adult ICUs were centrally-inserted.
- Five haematology CLABSI were reported and the rate increased to 0.68 infections per 1,000 line days from 0.66 reported in Qtr 3, 2017-18.
- Five oncology CLABSI were reported and the rate increased to 0.09 infections per 1,000 line days from 0.06 reported in Qtr 3, 2017-18.

**Table 7 Adult ICU CLABSI**

<table>
<thead>
<tr>
<th></th>
<th>Number of contributing hospitals</th>
<th>Number of line days</th>
<th>Number of CLABSI</th>
<th>Aggregate rate (95% CI)</th>
<th>Cumulative aggregate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICU peripherally inserted CLABSI</td>
<td>12</td>
<td>1,147</td>
<td>0</td>
<td>0.00 [0.00 – 4.14]</td>
<td>0.62 [0.32 – 1.17]</td>
</tr>
<tr>
<td>ICU centrally inserted CLABSI</td>
<td>12</td>
<td>4,906</td>
<td>2</td>
<td>0.41 [0.02 – 1.61]</td>
<td>0.63 [0.53 – 0.76]</td>
</tr>
<tr>
<td>Total ICU CLABSI</td>
<td>12</td>
<td>6,053</td>
<td>2</td>
<td>0.33 [0.01 – 1.31]</td>
<td>0.63 [0.53 – 0.75]</td>
</tr>
</tbody>
</table>

**Table 8 Adult ICU central line utilisation ratio (CLUR)**

<table>
<thead>
<tr>
<th></th>
<th>Number of contributing hospitals</th>
<th>Number of line days</th>
<th>Number of bed-days</th>
<th>Tertiary Aggregate CLUR (%)</th>
<th>Total Aggregate CLUR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult ICU peripherally inserted CLUR</td>
<td>12</td>
<td>1,147</td>
<td>11,291</td>
<td>16</td>
<td>10.16</td>
</tr>
<tr>
<td>Adult ICU centrally inserted CLUR</td>
<td>12</td>
<td>4,906</td>
<td>11,291</td>
<td>63</td>
<td>43.45</td>
</tr>
</tbody>
</table>

**Table 9 Haematology Unit CLABSI**

<table>
<thead>
<tr>
<th></th>
<th>Number of contributing hospitals</th>
<th>Number of line days</th>
<th>Number of CLABSI</th>
<th>Aggregate rate (95% CI)</th>
<th>Cumulative aggregate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haematology peripherally inserted CLABSI</td>
<td>2</td>
<td>5,161</td>
<td>3</td>
<td>0.58 [0.12 – 1.82]</td>
<td>1.18 [1.00 – 1.40]</td>
</tr>
<tr>
<td>Haematology centrally inserted CLABSI</td>
<td>2</td>
<td>2,202</td>
<td>2</td>
<td>0.91 [0.04 – 3.59]</td>
<td>2.25 [1.89 – 2.69]</td>
</tr>
<tr>
<td>Total haematology CLABSI</td>
<td>2</td>
<td>7,363</td>
<td>5</td>
<td>0.68 [0.25 – 1.65]</td>
<td>1.53 [1.35 – 1.72]</td>
</tr>
</tbody>
</table>

**Table 10 Oncology Unit CLABSI**

<table>
<thead>
<tr>
<th></th>
<th>Number of contributing hospitals</th>
<th>Number of line days</th>
<th>Number of CLABSI</th>
<th>Aggregate rate (95% CI)</th>
<th>Cumulative aggregate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oncology peripherally inserted CLABSI</td>
<td>5</td>
<td>10,984</td>
<td>2</td>
<td>0.18 [0.01 – 0.72]</td>
<td>0.11 [0.08 – 0.15]</td>
</tr>
<tr>
<td>Oncology centrally inserted CLABSI</td>
<td>5</td>
<td>45,545</td>
<td>3</td>
<td>0.07 [0.01 – 0.21]</td>
<td>0.03 [0.02 – 0.04]</td>
</tr>
<tr>
<td>Total oncology CLABSI</td>
<td>5</td>
<td>56,529</td>
<td>5</td>
<td>0.09 [0.03 – 0.22]</td>
<td>0.05 [0.04 – 0.07]</td>
</tr>
</tbody>
</table>

All rates per 1,000 central line days.
Figure 13 ICU, haematology, and oncology unit CLABSI rates
Methicillin-resistant *Staphylococcus aureus* healthcare associated infection

**Key Points**

- The total MRSA HAI rate of 0.72 infections per 10,000 bed-days decreased from 0.91 reported in Qtr 3, 2017-18 and is below the comparator rate of 0.88.
- 39 of the 41 MRSA HAIs reported were identified from the inpatient setting (35 non-ICU, 4 ICU) and 15 (37%) were known to have prior MRSA colonisation.
- Of the 41 MRSA HAIs, 4 (10%) were BSIs and 17 (41%) were related to surgical wounds. Four ICU MRSA HAIs were reported.
- The majority (61%) of MRSA HAIs were caused by micro-B PVL negative strains.
- The 2017-18 MRSA HAI rate of 0.84 is below the HISWA 2016-17 rate of 0.92 infections per 10,000 procedures.

**Table 11 MRSA HAI rate per 10,000 bed-days (inpatient and non-inpatient)**

<table>
<thead>
<tr>
<th></th>
<th>Number of contributing hospitals</th>
<th>Number of MRSA HAI</th>
<th>Number of bed-days</th>
<th>Aggregate rate (95% CI)</th>
<th>Cumulative aggregate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRSA ICU sterile site</td>
<td>12</td>
<td>0</td>
<td>19,857</td>
<td>0.00 [0.00 – 2.40]</td>
<td>0.37 [0.26 – 0.52]</td>
</tr>
<tr>
<td>MRSA ICU non-sterile site</td>
<td>12</td>
<td>4</td>
<td>19,857</td>
<td>2.01 [0.60 – 5.44]</td>
<td>1.47 [1.24 – 1.76]</td>
</tr>
<tr>
<td>MRSA Non-ICU sterile site</td>
<td>48</td>
<td>8</td>
<td>419,169</td>
<td>0.19 [0.09 – 0.39]</td>
<td>0.23 [0.21 – 0.25]</td>
</tr>
<tr>
<td>MRSA Non-ICU non-sterile site</td>
<td>48</td>
<td>27</td>
<td>419,169</td>
<td>0.64 [0.44 – 0.94]</td>
<td>0.65 [0.62 – 0.69]</td>
</tr>
<tr>
<td>Total inpatient MRSA HAI</td>
<td>48</td>
<td>39</td>
<td>439,026</td>
<td>0.89 [0.65 – 1.22]</td>
<td>0.92 [0.88 – 0.96]</td>
</tr>
<tr>
<td>MRSA HAI non-inpatient</td>
<td>48</td>
<td>2</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Total MRSA healthcare associated infection</td>
<td>48</td>
<td>41</td>
<td>573,204</td>
<td>0.72* [0.53 – 0.97]</td>
<td>0.82 [0.78 – 0.85]</td>
</tr>
</tbody>
</table>

* Rate per 10,000 multi and same-day bed-days

**Table 12 MRSA HAI, by strain group, site and place of acquisition**

<table>
<thead>
<tr>
<th></th>
<th>Micro-B PVL negative MRSA</th>
<th>Micro-B PVL positive MRSA</th>
<th>Micro-C MRSA</th>
<th>Not typed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICU sterile</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ICU non-sterile</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Non ICU Sterile</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Non ICU non-sterile</td>
<td>17</td>
<td>3</td>
<td>7</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>Non-inpatient sterile</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Non-inpatient non-sterile</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Proportion</td>
<td>61%</td>
<td>17%</td>
<td>22%</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Strain</td>
<td>Not characterised</td>
<td>Qld clone (10), WA121 (4)</td>
<td>UK 15 (8)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>TOTAL</td>
<td>25</td>
<td>7</td>
<td>9</td>
<td>0</td>
<td>41</td>
</tr>
</tbody>
</table>
Figure 14 Total MRSA HAI rate per 10,000 multi and same day bed-days (inpatient and same-day patient)

Figure 15 Proportion of MRSA HAIs, by specimen site
Figure 16 Rate of MRSA HAI, by strain group

Figure 17 Proportion of MRSA HAI, by strain group
Hospital-identified *Clostridium difficile* infection

**Key Points**

- The HISWA aggregate HI-CDI rate decreased to 5.35 infections per 10,000 bed-days from 5.44 reported in Qtr 3 2017-18.
- There was an increase in the rate reported from the WACHS hospital group. There was a decrease in the rate reported from the metropolitan non-tertiary, tertiary, and private hospital groups.
- The majority (47%) of HI-CDI were reported from the tertiary hospitals.
- The 2017-18 HI-CDI rate of 5.15 is above the HISWA 2016-17 rate of 4.20 infections per 10,000 procedures.

**Table 13 HI-CDI rates, by hospital group**

<table>
<thead>
<tr>
<th>Hospital Group</th>
<th>Number of contributing hospitals</th>
<th>Number of HI-CDI</th>
<th>Number of bed-days</th>
<th>Aggregate rate (95% CI)</th>
<th>Cumulative aggregate (95% CI)</th>
</tr>
</thead>
</table>

**Figure 18 HI-CDI rates, by hospital group**
Vancomycin-resistant enterococci sterile-site infections

Key Points

- Eight VRE sterile site infections were reported this quarter. Three of these were isolated from blood culture samples, three from peritoneal samples, one from bone/joint samples and one from other internal body sites. All infections were classified as HAIs.
- Five isolates were *Enterococcus faecium* Van A and three were *Enterococcus faecium* Van B.
- No patient had known VRE colonisation prior to onset of infection.
- Refer to *Data Notes* for information on categorisation of sterile specimen sites.

![Figure 19 Number of VRE HAIs, by sterile body sites](image)

Carbapenemase-producing *Enterobacteriaceae*

Key Points

- Surveillance of CPE is performed by the HAIU in liaison with the PathWest Gram-negative Reference Laboratory located at the QE11 site.
- Since active surveillance commenced in November 2009, there have been 202 confirmed CPE isolates in Western Australia.
- For this Qtr, 19 patient isolates were confirmed CPE, of which 10 carried an IMP-4, seven a NDM-1 and two OXA-48.
- All non-IMP CPE had a history of overseas travel.
Occupational exposures

Key Points

- The total occupational exposure rate decreased to 5.54 exposures per 10,000 bed-days from 5.65 reported in Qtr 3, 2017-18.
- The parenteral rate increased to 4.02 exposures per 10,000 bed-days from 3.87 in Qtr 3, 2017-18.
- The non-parenteral rate decreased to 1.53 exposures per 10,000 bed-days from 1.78 in Qtr 3, 2017-18.
- The majority of parenteral exposures were reported by doctors (47%) and the majority of non-parenteral exposures were reported by nurses (55%).
- The 2017-18 occupational exposure of 5.40 is below the HISWA 2016-17 rate of 5.70 exposures per 10,000 procedures.

Table 14 Occupational exposures, by parenteral and non-parenteral

<table>
<thead>
<tr>
<th>Exposure Type</th>
<th>Number of contributing hospitals</th>
<th>Number of Exposures this Qtr</th>
<th>Number of bed-days</th>
<th>Aggregate rate (95% CI)</th>
<th>Cumulative aggregate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Parenteral</td>
<td>49</td>
<td>98</td>
<td>642,443</td>
<td>1.53 [1.25 – 1.86]</td>
<td>1.47 [1.43 – 1.52]</td>
</tr>
<tr>
<td>Total Exposures</td>
<td>49</td>
<td>356</td>
<td>642,443</td>
<td>5.54 [5.00 – 6.15]</td>
<td>5.67 [5.58 – 5.77]</td>
</tr>
</tbody>
</table>

Figure 20 Occupational exposure rate per 10,000 bed-days, by parenteral and non-parenteral
Figure 21 Parenteral occupational exposures, by HCW category

- Doctor, 120, 47%
- Nurse, 114, 44%
- Environmental Services, 9, 3%
- Patient Support Services, 15, 6%

Figure 22 Non-parenteral occupational exposures, by HCW category

- Doctor, 20, 21%
- Nurse, 54, 55%
- Other, 14, 14%
- Patient Support Services, 7, 7%
- Allied health, 3, 3%
Data Notes

Data Refresh
All data changes requested by HISWA contributors or late submissions are refreshed each quarter in the HISWA reporting schedules and therefore data from previous reports may not reflect current data.

Data Comparators
We continue to seek suitable up-to-date comparators for the surveillance indicators. Refer to specific indicator notes for information on available comparators.

Mandatory Indicators
Mandatory Indicators were introduced for public hospitals and those health service providers who provide contracted services to public patients in 2007. Mandatory Indicators are those marked with an asterisk.

HISWA Indicators

Surgical Site Infections

Arthroplasty*
- All private (11) and public (11) hospitals in WA that perform hip and knee arthroplasty procedures submit data to HISWA. NB one Regional Resource Centre is currently not performing procedures.
- The follow up period for surveillance on implanted devices changed from 365 days to 90 days in July 2014.
- Risk stratification:
  - Risk stratification is based on the CDC-NHSN (USA) risk index.
  - Risk 'All' applies to HISWA hospitals that perform less than 100 procedures annually and are not required to assign a risk index score.

Caesarean section
- 27 (5 private and 22 public) hospitals in WA that perform caesarean section procedures submit data to HISWA.
- Risk stratification:
  - Risk stratification is based on the CDC-NHSN (USA) risk index.
  - Risk 'All' applies to HISWA hospitals that perform less than 100 procedures annually and are not required to assign a risk index score.
  - Procedure type: elective and non elective procedures.
- Caesarean section SSI are frequently superficial infections that are treated outside the hospital setting. There is no standardised post-discharge surveillance methodology used in WA. SSI detected and treated post-discharge (i.e. as outpatients or by primary care provider) are likely to be an under-estimation and are not included in HISWA rate calculations or used for benchmarking purposes.
Bloodstream Infections

HA-SABSI*
- The HA-SABSI rate has been included as an indicator in National Healthcare Agreements since 2009 and reported on the MyHospitals website.
- Data collection is in accordance with the Australian national definition.
- Data is included from North Metropolitan Mental Health Service since 2014-15.
- From 1 July 2017, unqualified newborn bed-day data was excluded from denominator data to align with changes to National definitions. This was also retrospectively applied to reporting periods and therefore previously published data will not align.
- All data is validated by the Healthcare Associated Infection Unit.
- The comparator is the Australian national public hospital aggregate 2016-17 rate. Refer to Australian Institute Health and Welfare 2017- Staphylococcus aureus bacteraemia in Australian hospitals 2016-17.

Haemodialysis*
- All 24 units that provide haemodialysis services in WA submit data to HISWA, including two home dialysis units.
- The rate per 100 pt-months can be interpreted as: the average % of dialysis patients acquiring an access associated BSI per month.
- Arterio-venous grafts (AVG) – synthetic and native vessel grafts are combined in data.
- There is currently no suitable comparator.

CLABSI
- Adult ICU CLABSI*
  - Data from all 12 adult ICUs in WA are submitted to HISWA.
- Oncology and haematology
  - Data from five oncology and two haematology units are submitted to HISWA.
  - CLABSI definitions changed in July 2014. The new definitions identify BSI that are likely related to mucosal barrier injury as a result of neutropenia or graft versus host disease and exclude them from CLABSI data.

Multi-resistant Organism HAIs

NB: Currently Carbapenem-resistant *Enterobacteriacea* (CRE) HAIs are collected separately to the HISWA data collection.

Methicillin-resistant *Staphylococcus aureus* (MRSA)*
- Since 1 July 2014 there have been three MRSA strain reporting groups in WA:
  - Micro-alert B PVL negative (strain not characterised).
  - Micro-alert B PVL positive (strain characterised).
  - Micro-alert C (strain characterised).
- The comparator is SA Health, Infection Prevention and Control Service, 2016-17 (personal communication).
Vancomycin-resistant enterococci (VRE)*

- VRE clinical isolate data is notified to the Healthcare Associated Infection Unit (HAIU) and a review is undertaken to determine HAI or CAI status. Data is obtained from the following sources:
  - HISWA Surveillance – VRE sterile site infections.
  - Notification of VRE clinical isolates referred to the PathWest Gram-Positive Typing Laboratory and laboratory downloads from PathWest.

- Categories for sterile site specimens:
  - Blood
  - Peritoneal = fluid and tissue from peritoneal space / peritoneum (includes abdominal fluid and ascites)
  - Other sterile sites = specimens from body sites that are normally sterile where a specimen has been obtained surgically or by aspirate – e.g. sterile tissue, bone and joint fluid, specimens from liver, pancreas, kidney, spleen, vascular tissue, heart, brain, lymph node, ovary, pleural.

Hospital-identified Clostridium difficile Infection (HI-CDI)*

- Data collection is in accordance with the Australian national definition.
- The purpose of this indicator is to describe the burden of disease presenting at hospitals and includes both community and healthcare associated infections.
- Metropolitan non-tertiary group includes Graylands Hospital data since July 2014 and Fremantle Hospital since January 2015.

Healthcare Worker Exposures

Occupational Exposures*

- 49 WA hospitals submit data on parenteral (percutaneous) and non-parenteral (mucous membrane or non-intact skin) exposures.
- Participation in this indicator includes mental health facilities in WA.