Government of Western Australia
Department of Health

Healthcare Infection Surveillance Western Australia (HISWA)

Quarterly Aggregate Report

Quarter 3, January – March 2024

Infection Prevention, Policy and Surveillance Unit

Communicable Disease Control Directorate

24 May 2024

Contents

Abbreviations

AVF	Arteriovenous fistula
AVG	Arteriovenous graft
BSI	Blood stream infection
CAI	Community-associated infection
CC	Cuffed catheter
CDI	*Clostridioides difficile* infection
CI	Confidence interval
CI/PI	Centrally inserted or peripherally inserted central lines
CLABSI	Central line-associated bloodstream infection
CPO	Carbapenemase-producing organism
HAI	Healthcare-associated infection
HA-MRSA	Healthcare-associated methicillin-resistant *Staphylococcus aureus* infection
HA-SABSI	Healthcare-associated *Staphylococcus aureus* bloodstream infections
HCW	Health care worker
HD-BSI	Haemodialysis bloodstream infection
HI-CDI	Hospital-identified *Clostridioides difficile* infection
HISWA	Healthcare Infection Surveillance Western Australia
ICU	Intensive care unit
IPPSU	Infection Prevention, Policy and Surveillance Unit
IVD	Intravascular device
MRSA	Methicillin-resistant *Staphylococcus aureus*
MSSA	Methicillin-sensitive *Staphylococcus aureus*
PCR	Polymerase chain reaction
PICC	Peripherally inserted central catheter
PIVC	Peripheral intravenous cannula
SABSI	*Staphylococcus aureus* bloodstream infection
SSI	Surgical site infection
VRE	Vancomycin-resistant *Enterococci*
WACHS	Western Australia Country Health Service

Overview

Healthcare Infection Surveillance Western Australia (HISWA) is an established program for monitoring and reporting healthcare-associated infections (HAIs). It is increasingly recognised that HAIs are preventable adverse events rather than an inevitable complication of medical care. The Infection Prevention and Policy Surveillance Unit (IPPSU) provides governance over the HISWA program. Both private and public healthcare facilities (HCFs) contribute data to the HISWA.

Feedback of analysed data to key stakeholders is an important requirement of surveillance programs to drive change and improve patient outcomes and has been demonstrated to be effective in reducing infections when provided to clinicians. Surveillance results need to be communicated to appropriate committees and to the executive management who are accountable for patient safety and quality.

The *HISWA Quarterly Aggregate Report* contains de-identified aggregated data from all HISWA contributing sites, including contracted health entities and private hospitals. This aggregate report is an analysis of surveillance data reported for 1 January to 31 March 2024, with trends shown for the five-year period.

IPPSU news

Committees

Key infection prevention and control and HAI surveillance issues can be raised at the following committees:

- Healthcare Infection Council of Western Australia (HICWA)
- Infection Prevention and Control Advisory Group (IPCAG)
- Western Australia Multi Resistant Organism Expert Group (WAMRO)
- ICNet Advisory Group

Terms of reference and meeting dates of the above committees are available on the IPPSU website.

IPPSU forum

The next IPPSU forum is scheduled for 12th June 2024.

Reminders

IPPSU staff made 22 corrections to numerator data this quarter. These occurred at multiple hospital sites, and all were simple data entry errors.

Data quality is paramount to producing meaningful reports. Please ensure that data is checked prior to finalising, including date of birth, infection onset date and that the 30 and 90-day rule is applied to superficial and deep surgical site infections (SSIs) respectively. Please do not enter strain data for either methicillin-resistant *Staphylococcus aureus* (MRSA) or hospital-identified *Clostridioides difficile* infections (HI-CDIs). All HI-CDI are entered as ‘CDI Hospital’ under ‘Place of acquisition’ and the ‘Previously colonised’ fields to be entered as ‘No/Unknown’.

Check the HISWA manual for healthcare worker (HCW) categories before entering occupational exposures as ‘other’. Common mistakes include not entering student HCWs under their respective specialty or technicians not being entered as patient support services.

Report notes

Highlights

- The total HA-SABSI rate decreased for the fourth consecutive quarter and the MRSA HA-SABSI rate is the lowest (0.03 per 10,000 bed-days) in the five year reporting period.
- The total MRSA HAI rate has trended downwards over the last 5 years and remains below the comparator.
- There were no CLABSI reported from the four hospitals submitting data from oncology units.
- HI-CDI rates decreased slightly or remained stable across all hospital groups.

Concerns

- Both hip and knee arthroplasty SSI rates increased slightly, with both rates higher than the comparator rate. The deep / organ space knee arthroplasty SSI rate increased for the second consecutive quarter.
- There is an upward trend in the total caesarean section SSI rates. This increase appears to be driven by SSIs developing in patients following emergency procedures. Of the 26 SSI reported, 21 (81%) were following emergency procedures and included five deep or organ space SSIs.
- Of the 34 HA-SABSI reported 25 (73%) were classified as preventable adverse events, with 15 (44%) attributed to intravascular devices. Peripheral intravenous cannulae (PIVC) were the contributing cause of the HA-SABSI on seven occasions.
- The haemodialysis cuffed catheter access-associated BSI rate continues to demonstrate an upward trend, with the rate of 1.48 per 100 patient-months the highest in the five year reporting period.
- The total ICU CLABSI rate increased for the second consecutive quarter.
- The total occupational exposure rate increased this quarter which was due to an increase in parenteral exposures reported.

Surgical site infection following hip arthroplasty

Key points

- There were 1,433 hip arthroplasty procedures (1,329 primary and 104 revision) (Table 1), performed this quarter with 882 (61.5%) of these performed by private hospitals.
- Seven SSIs following hip arthroplasty were reported: six from primary procedures and one from a revision procedure. Six SSIs were deep or organ space infections, all of which were identified on readmission to hospital.
- The total SSI rate following hip arthroplasty of 0.49 per 100 procedures is comparable with that reported in the previous quarter (Figure 1).
- The deep SSI hip rate decreased to 0.42 from 0.47 infections per 100 procedures reported for the previous quarter (Table 3, Figure 3).

Table 1 - Hip arthroplasty SSI rate, by risk index, Quarter 3 2023-24

Risk index[1]	Number of contributing hospitals	Number of procedures	Number of SSIs	Aggregate rate this quarter [95% CI]	Cumulative aggregate rate [95% CI]
Risk index 0	22	822	2	0.24 [0-0.57]	0 [0-0]
Risk index 1	22	560	4	0.71 [0.01-1.41]	1 [0.81-1.19]
Risk index 2	22	49	1	2.04 [0-6]	3 [2.03-3.97]
Risk index 3	22	2	0	0.0 [0-0]	14 [5.15-22.85]
Total	**22**	**1,433**	**7**	**0.49 [0.13-0.85]**	**0.71 [0.61-0.81]**

*Note: Refer to Appendix 1 – Risk Index

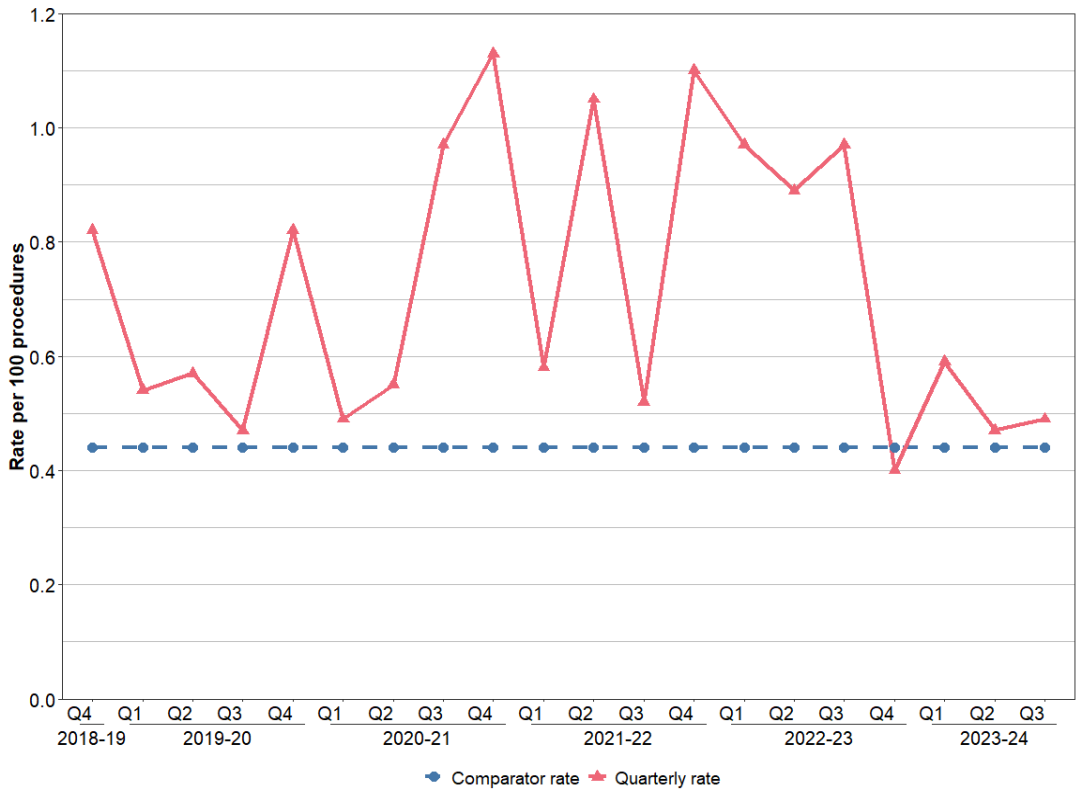


Figure 1- Hip arthroplasty SSI rate, 2018-19 to 2023-24

Surgical site infection following knee arthroplasty

Key Points

- There were 2,040 knee arthroplasty procedures (1,919 primary and 121 revision) (Table 2) performed this quarter with 1,433 (70%) of these performed by private hospitals.
- Eight SSIs following knee arthroplasty were reported: seven from primary procedures and one from a revision procedure. Seven SSIs were deep or organ space infections, all of which were identified on readmission to hospital.
- The total SSI rate following knee arthroplasty of 0.39 was comparable to 0.36 per 100 procedures reported in quarter 2, 2023-24. (Figure 2).
- The deep SSI knee rate of 0.34 was comparable to 0.32 infections per 100 procedures reported for quarter 2, 2023-24 (Table 3, Figure 4).

Table 2 - Knee arthroplasty SSI rate, by risk index, Quarter 3 2023-24

Risk index*	Number of contributing hospitals	Number of procedures	Number of SSIs	Aggregate rate this quarter [95% CI]	Cumulative aggregate rate [95% CI]
Risk index 0	22	1,121	1	0.09 [0-0.27]	0 [0-0]
Risk index 1	22	804	5	0.62 [0.08-1.16]	0 [0-0]
Risk index 2	22	113	1	0.88 [0-2.6]	1 [0.59-1.41]
Risk index 3	22	2	1	50.0 [0-119.3]	2 [0-4.96]
Total	**22**	**2,040**	**8**	**0.39 [0.12-0.66]**	**0.3 [0.25-0.35]**

Note:*Refer to Appendix 1 – Risk Index

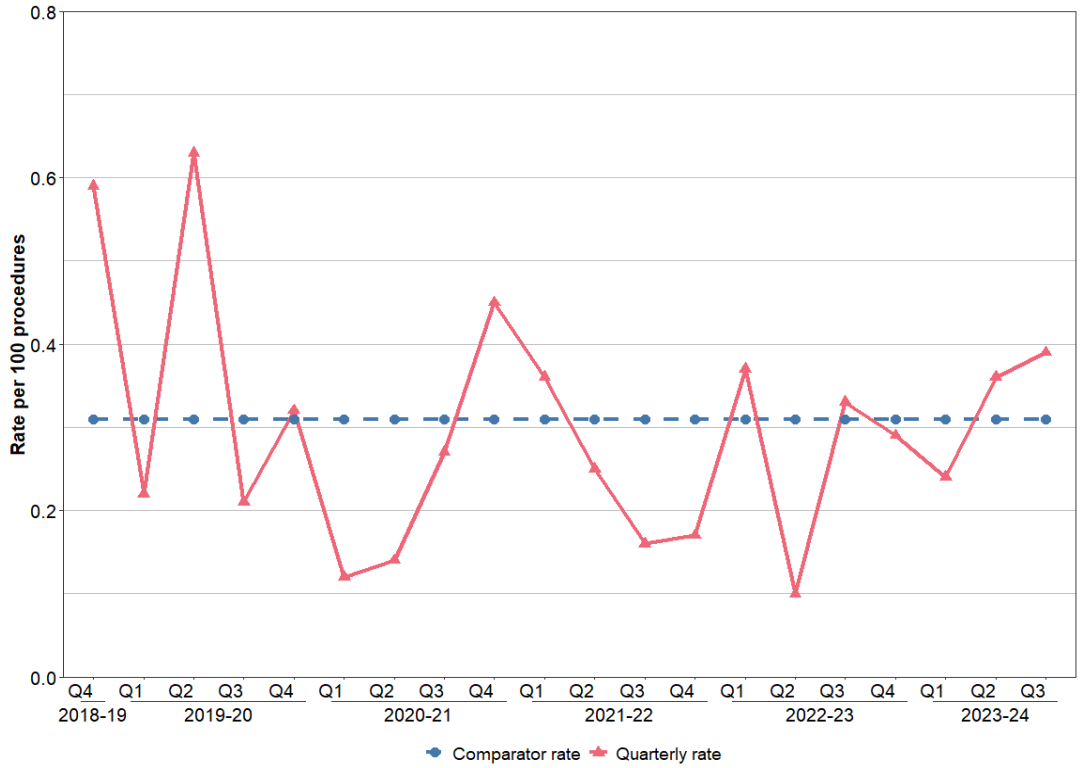


Figure 2 - Knee arthroplasty SSI rate, 2018-19 to 2023-24

Deep and superficial SSI following arthroplasty procedure

Table 3 - SSI rates, by superficial or deep/organ/space infections, Quarter 3 2023-24

Type	Number of superficial SSI	Number of deep SSI	Total Number of SSIs	Number of procedures	Aggregate superficial SSI rate (95% CI)	Aggregate deep SSI rate (95% CI)
Hip arthroplasty	1	6	7	1,433	0.07 [0-0.21]	0.42 [0.09-0.75]
Knee arthroplasty	1	7	8	2,040	0.05 [0-0.15]	0.34 [0.09-0.59]
Total	**2**	**13**	**15**	**3,473**	**0.06 [0-0.14]**	**0.37 [0.17-0.57]**

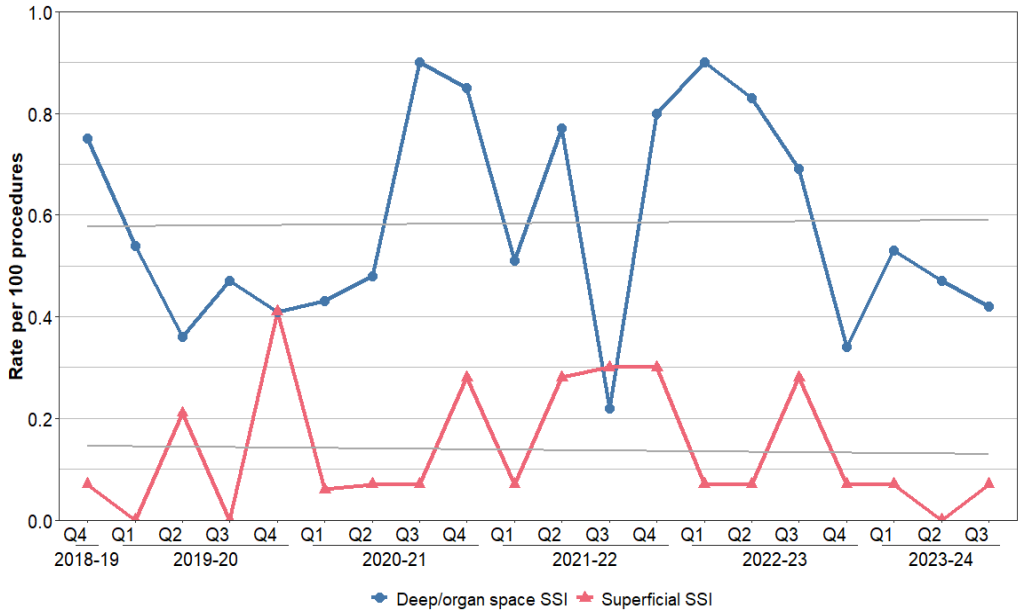


Figure 3 - Hip arthroplasty SSI rate by infection type 2018-19 to 2023-24

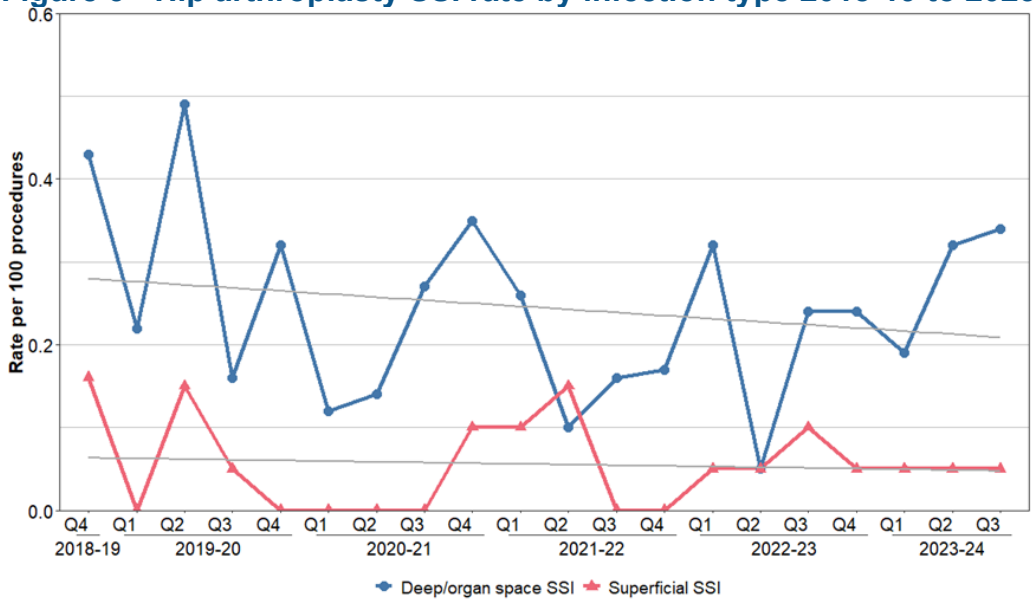


Figure 4 - Knee arthroplasty SSI rate by infection type 2018-19 to 2023-24

Surgical site infection following caesarean section

Key Points

- 2,761 caesarean section procedures were performed in quarter 3, 2023-24, of which 1,573 (57%) were emergency and 1,188 (43%) were elective procedures.
- A total of 40 SSIs were reported, of which 14 superficial SSIs were identified by post discharge surveillance* and are not included in further data analysis or in HISWA calculated rates (Table 4).
- Of the remaining 26 SSIs, 20 were categorised as superficial SSIs and six as deep/organ space SSIs (Table 4).
- The majority (65%) of SSI were identified when the patient required readmission to hospital for care.
- 21 (81%) SSIs were following emergency procedures and included five deep or organ space SSIs.
- The total inpatient SSI rate decreased to 0.94 from 1.04 infections per 100 procedures reported in quarter 2, 2023-24 (Figure 5).
- The superficial SSI rate increased from 0.64 to 0.72 infections per 100 procedures, and the deep/organ space SSI rate decreased to 0.22 from 0.39 infections per 100 procedures reported in quarter 2, 2023-24 (Figure 5).
- The elective procedure SSI rate decreased to 0.18 from 0.25 infections per 100 procedures reported in quarter 2, 2023-24. The emergency procedure SSI rate of 0.76 infections per 100 procedures was comaprable to that reported in quarter 2, 2023-24 (Figure 6).

Table 4 - Caesarean section SSI rate per 100 procedures, by risk index, quarter 3 2023-24

Item	Number of hospitals	Number of procedures	Number superficial SSI	Number deep SSI	Total Number SSIs	Total Aggregate rate [95% CI]	Cumulative aggregate rate [95% CI]
Risk index 0	25	1,174	6	3	9	0.77 [0.27-1.27]	0.46 [0.38-0.54]
Risk index 1	25	1,161	6	3	9	0.78 [0.27-1.29]	0.92 [0.78-1.06]
Risk index 2	25	388	7	0	7	1.8 [0.48-3.12]	1.99 [1.64-2.34]
Risk index 3	25	38	1	0	1	2.63 [0-7.72]	2.87 [1.48-4.26]
Total Inpatient	**25**	**2,761**	**20**	**6**	**26**	**0.94 [0.58-1.3]**	**0.85 [0.77-0.93]**
Post-discharge	NA	NA	14	0	14	NA	NA
Total SSIs	**25**	**2,761**	**34**	**6**	**40**	**NA**	**NA**

Note: *Post discharge surveillance is not performed by all hospitals. Therefore, HISWA does not include SSIs detected by active post discharge surveillance, identified in outpatient clinics or emergency departments or presentations in calculated rates.

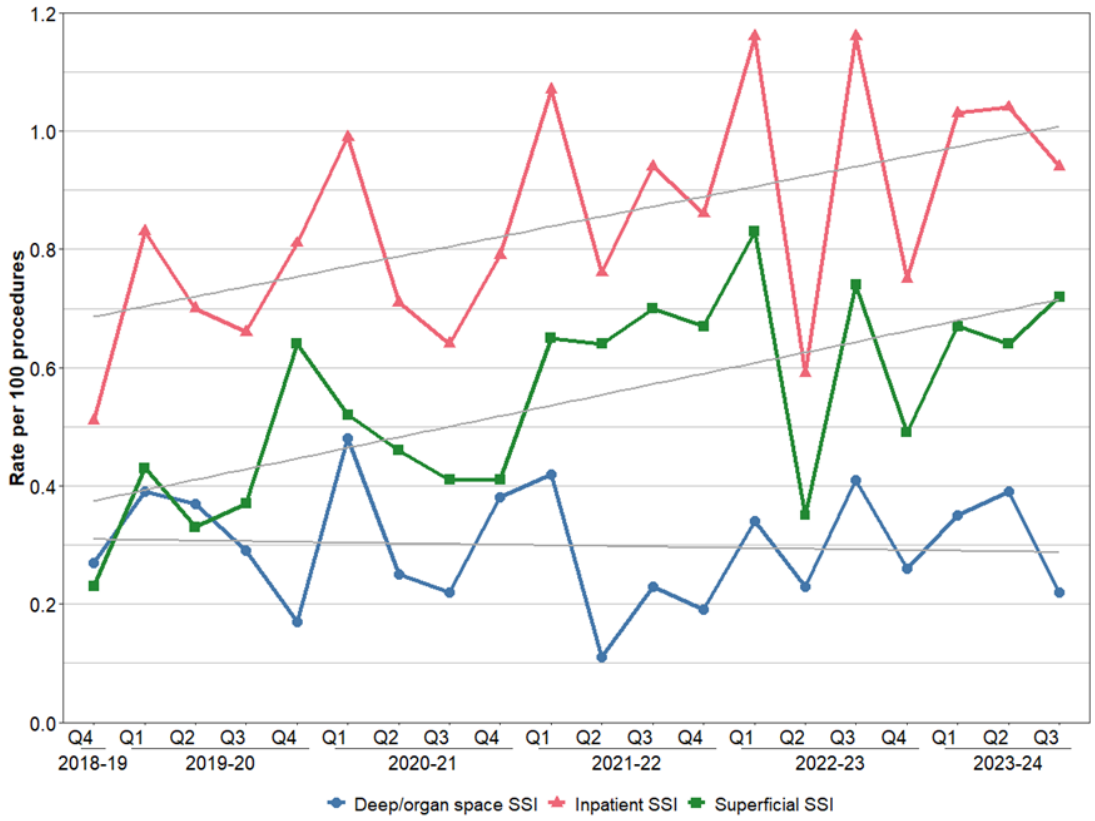


Figure 5 -Total inpatient caesarean section SSI rates and by infection type, 2018-19 to 2023-24

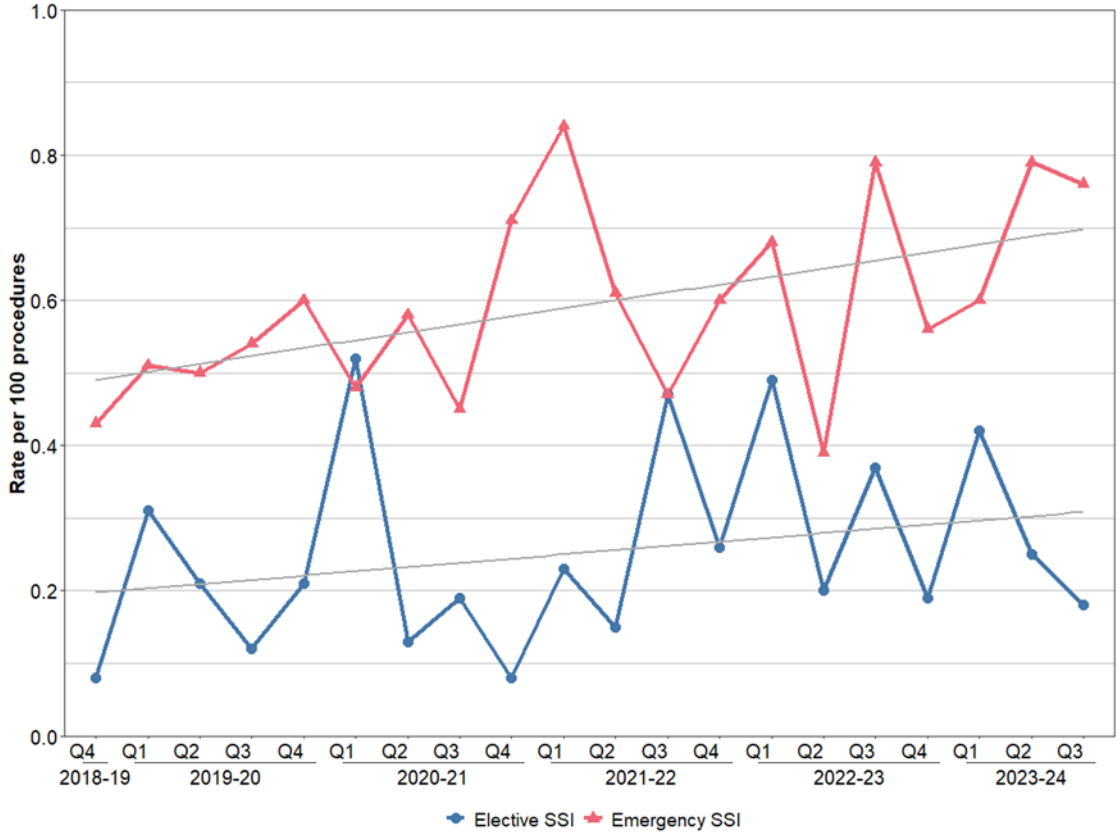


Figure 6 - Inpatient caesarean section SSI rates by procedure type, 2018-19 to 2023-24

Healthcare-associated *Staphylococcus aureus* bloodstream infection

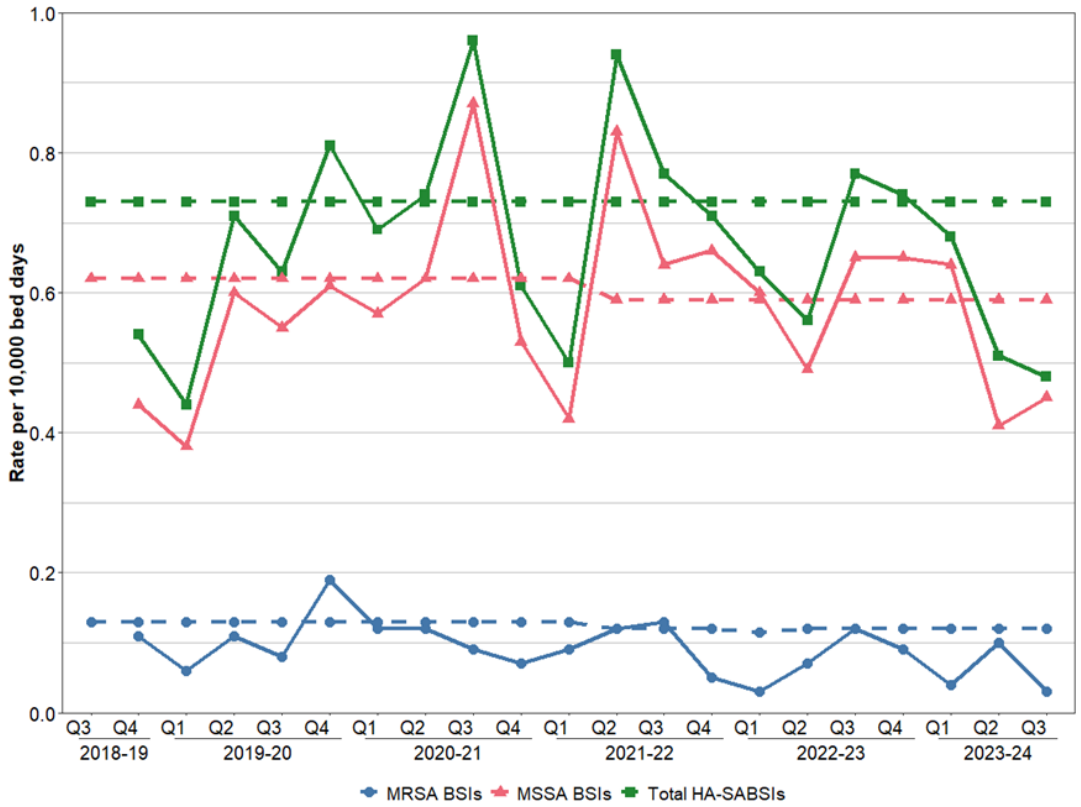
Key points

- There were 34 HA-SABSI reported in quarter 3, 2023-24 including 32 MSSA and two MRSA infections (Table 5).
- The total HA-SABSI rate decreased to 0.48 from 0.51 per 10,000 bed days reported in quarter 2, 2023-24 and remains below the national comparator rate (Figure 7).
- The MSSA HA-SABSI rate increased to 0.45 from 0.41 infections per 10,000 bed-days reported in quarter 2, 2023-24 (Figure 7).
- The MRSA HA-SABSI rate decreased to 0.03 from 0.10 infections per 10,000 bed-days reported in quarter 2, 2023-24 (Figure 7).
- Of the 34 HA-SABSI reported, 15 (44%) were attributable to IVDs. A further nine (26%) were procedure related and seven (21%) had an organ site focus (Figure 8).
- Of the 15 IVD related HA-SABSI, seven (47%) were attributed to PIVC, three (20%) were infusaports, two (13%) were cuffed catheters, and one (7%) was a PICC line and one a central venous catheter.
- Three of the PIVC had a documented time in situ less than 72 hours and one was in situ for more than 72 hours. The dwell time for the remaining three was unknown.
- 10 (67%) of the 15 IVD-related SABSIs were reported from tertiary hospitals (Figure 10).

Table 5 - HA-SABSI rates per 10,000 bed-days, Quarter 3 2023-24

Organism name	Number of submitting hospitals	Number of bed-days	Number of HA-SABSIs	Aggregate rate [95% CI]	Cumulative aggregate rate [95% CI]
MSSA	48	705,180	32	0.45 [0.43-0.47]	0.17 [0.17-0.17]
MRSA	48	705,180	2	0.03 [0.03-0.03]	0.03 [0.03-0.03]
Total	**48**	**705,180**	**34**	**0.48 [0.46-0.5]**	**0.2 [0.2-0.2]**

Note: As of July 1 2020 the National benchmark for HA-SABSI decreased to 1.0 per 10,000 patient days (previously a rate of 2.0) and this will align with the existing WA benchmark utilised for health service performance reporting.



Note: The dotted line is the comparator rate for the corresponding infection. The comparator rates are the Australian Institute Health and Welfare (AIHW) National public hospital aggregate rates (refer to the data notes for further information).

Figure 7- MRSA, MSSA and total HA-SABSI rates, 2018-19 to 2023-24

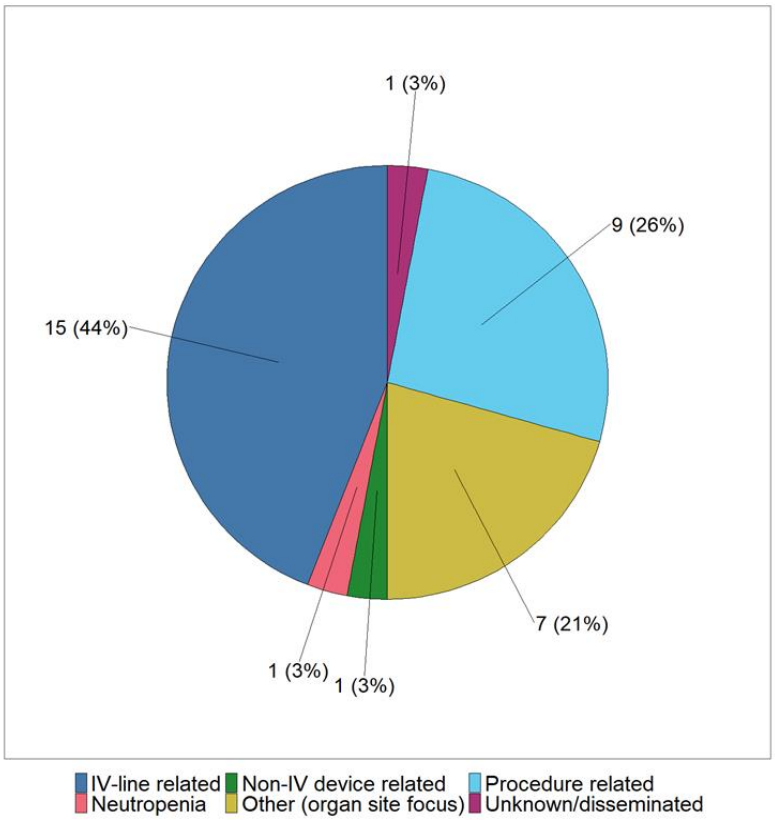


Figure 8 - Number of HA-SABSI by attributable source, quarter 3 2023-24

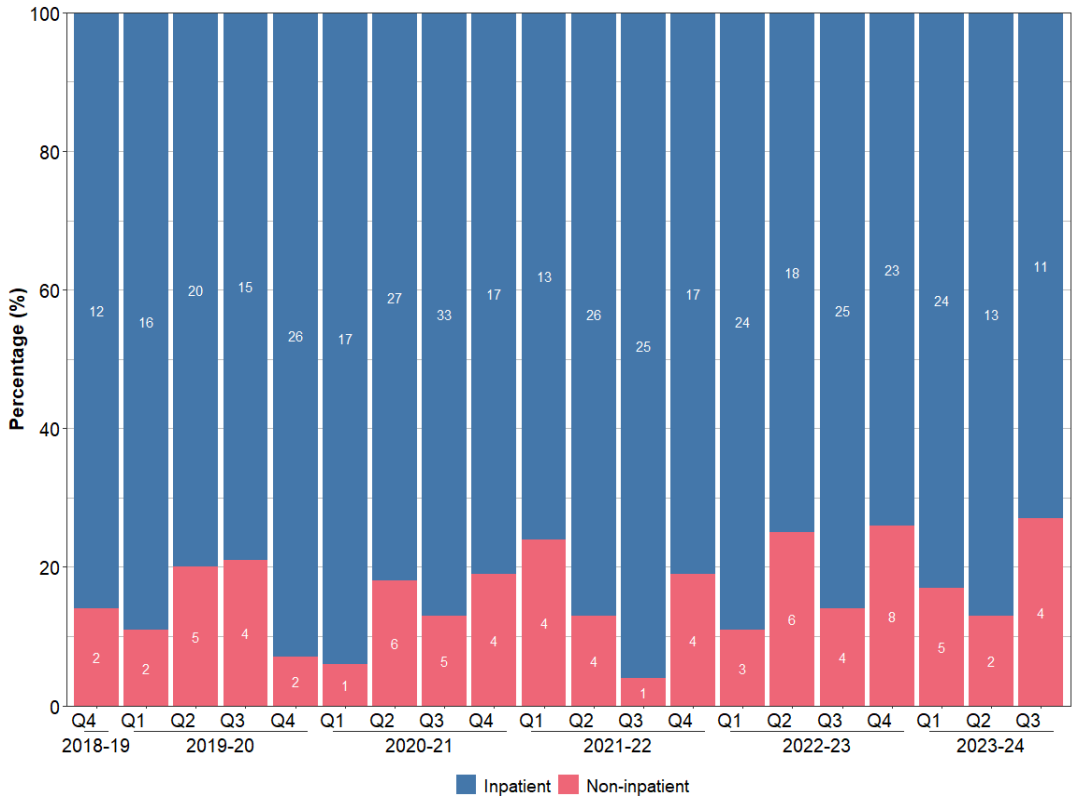


Figure 9 - Percentage and number of HA-SABSI attributed to intravascular devices by patient location, 2018-19 to 2023-24

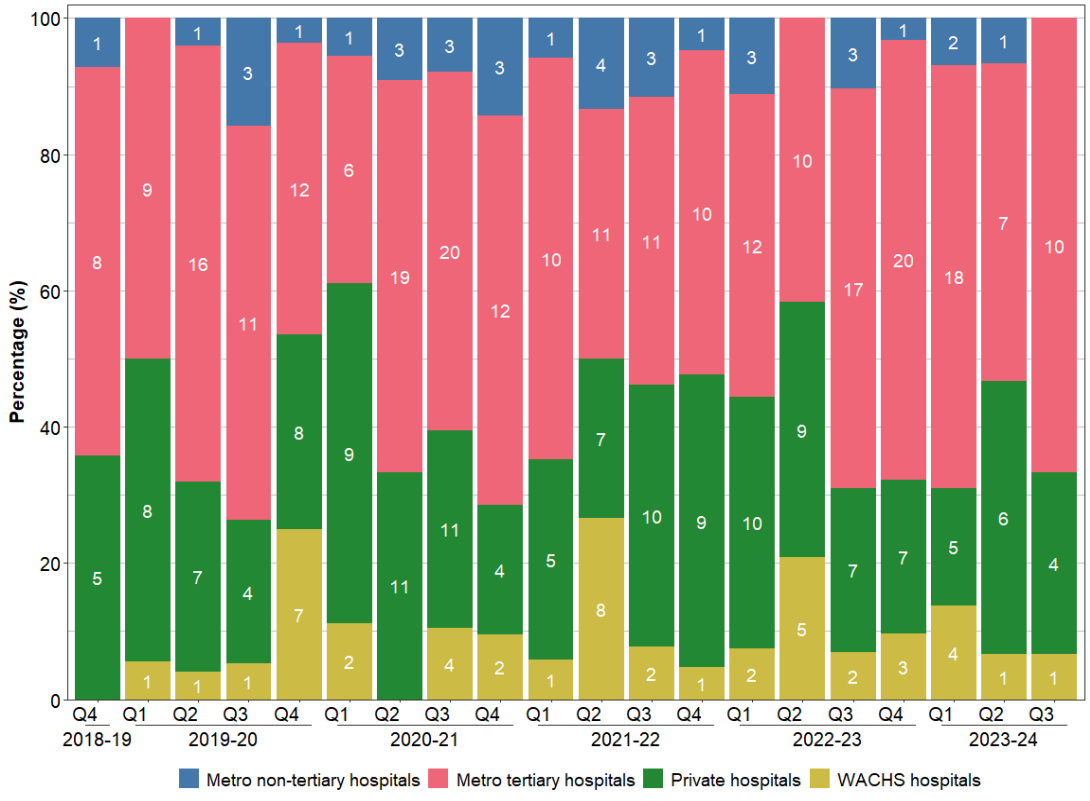


Figure 10 - Percentage and number of HA-SABSI attributed to intravascular devices, by hospital group, 2018-19 to 2023-24

Haemodialysis access-associated bloodstream infections

Key points

- The majority (73%) of patients received haemodialysis via an arteriovenous fistula (AVF) in quarter 3, 2023-24 and three access-associated BSIs were reported this quarter (Table 6).
- 16 cuffed catheter (CC) access-associated BSIs were reported. The cuffed catheter BSI rate increased to 1.48 1.01 infections from per 100 patient-months reported in quarter 2, 2023-24 (Figure 11). This is the highest rate reported for the five year reporting period.
- There were no BSIs associated with arteriovenous grafts or non-cuffed catheters this quarter.

Table 6 - HD-BSI rate, by type of access, Quarter 3 2023-24

Type of access	Number of contributing units	Aggregate utilisation ratio (%)	Number of BSIs	Number of patient months	Aggregate rate [95% CI]	Cumulative aggregate rate [95% CI]
AVF	26	73.28	3	3,195	0.09 [0-0.19]	0.05 [0.03-0.07]
AVG	26	1.54	0	67	0 [0-0]	0.35 [0.05-0.65]
CC	26	24.86	16	1,084	1.48 [0.76-2.2]	0.74 [0.62-0.86]
Non-cuffed	3	0.32	0	14	0 [0-0]	1.47 [0.19-2.75]

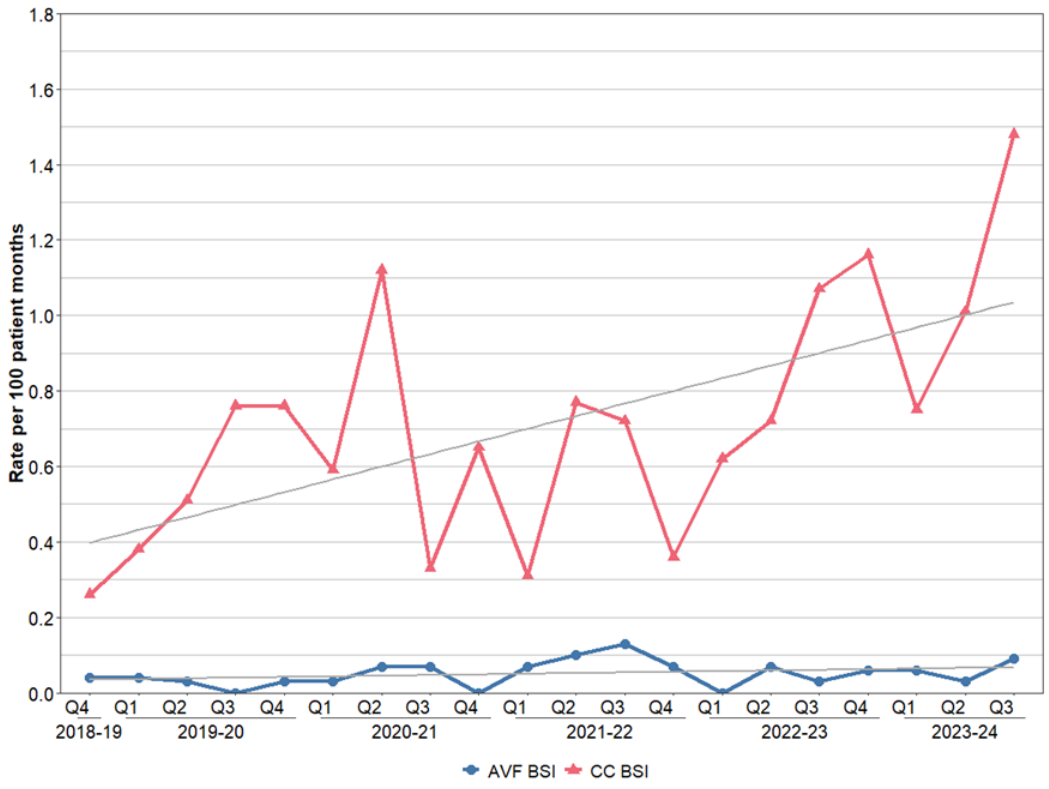


Figure 11- AVF and cuffed catheter BSI rate, 2018-19 to 2023-24

Central line-associated bloodstream infection

Key points

- The majority of central lines utilised in adult ICUs were centrally-inserted (Table 7).
- There were four adult ICU CLABSIs reported in quarter 3, 2023-24 (Table 8).
- The total ICU CLABSI rate of 0.54 per 1,000 line-days was comparable to that reported in quarter 2, 2023-24 (Figure 12).
- Three haematology CLABSIs were reported this quarter and the rate increased to 0.54 from to 0.36 per 1,000 line days, reported in quarter 2, 2023-24 (Figure 12).
- No oncology CLABSIs were reported this quarter (Figure 12).

Table 7 - Adult ICU central line utilisation ratio (CLUR), quarter 3 2023-24

Central line insertion	Number of contributing hospitals	Number of line days	Number of bed-days	Tertiary aggregate CLUR (%)	Total aggregate CLUR (%)
Peripherally inserted	12	2,123	13,794	27.72	15.39
Centrally inserted	12	5,536	13,794	72.28	40.13

Note: *All rates per 1,000 central line days

Table 8 - CLABSI by unit type, quarter 3 2023-24

Unit Type	Number of contributing hospitals	Number of line days	Number of CLABSIs	Aggregate rate [95% CI]	Cumulative aggregate rate [95% CI]
Adult ICU					
Centrally inserted	12	5,536	3	0.54 [0.35-0.73]	0.51 [0.46-0.56]
Peripherally inserted	12	2,123	1	0.47 [0.18-0.76]	0.21 [0.15-0.27]
Total adult ICU	**12**	**7,659**	**4**	**0.52 [0.36-0.68]**	**0.44 0.4-0.48]**
Haematology unit					
Centrally inserted	1	1,973	2	1.01 [0.57-1.45]	0.78 [0.69-0.87]
Peripherally inserted	1	3,583	1	0.28 [0.11-0.45]	0.46 [0.41-0.51]
Total haematology	**1**	**5,556**	**3**	**0.54 [0.35-0.73]**	**0.58 [0.53-0.63]**
Oncology unit					
Centrally inserted	4	60,547	0	0 [0-0]	0.02 [0.02-0.02]
Peripherally inserted	4	16,243	0	0 [0-0]	0.15 [0.13-0.17]
Total oncology	**4**	**76,790**	**0**	**0 [0-0]**	**0.04 [0.04-0.04]**

Note: All rates per 1,000 central line days.

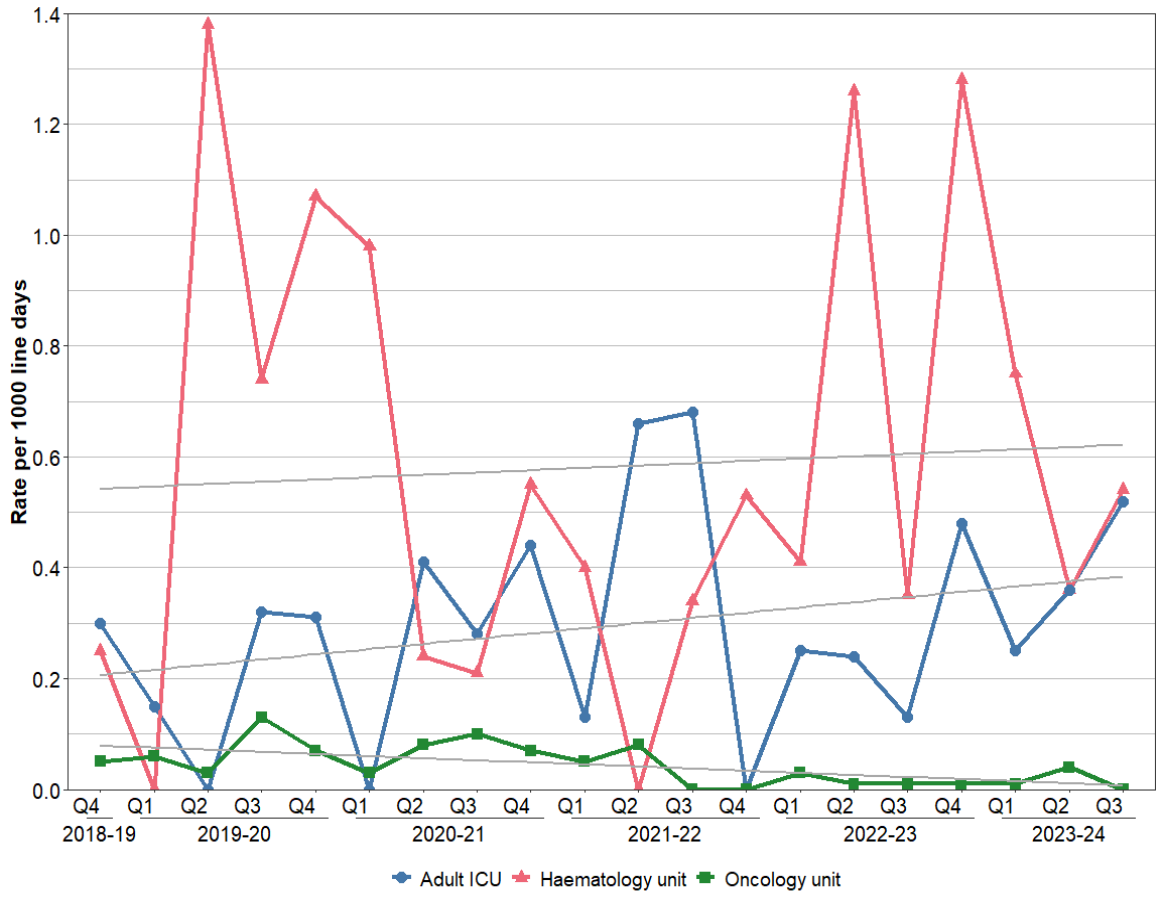


Figure 12 - ICU, haematology and oncology unit CLABSI rates, 2018-19 to 2023-24

Methicillin-resistant *Staphylococcus aureus* healthcare associated infection

Key points

- There were a total of 32 MRSA HAIs reported in quarter 3, 2023-24 (Table 9).
- The total MRSA HAI rate has trended downwards over the last 5 years and has remained below the comparator rate for this entire reporting period (Figure 13). The rate decreased to 0.51 from 0.61 infections per 10,000 bed-days reported in quarter 2 2023-24.
- 19 (59%) MRSA HAIs were reported from metropolitan tertiary hospitals, with nine of these infections attributed to one tertiary facility. Smaller numbers of MRSA HAIs were reported from the other hospital groups with private hospitals reporting nine infections, metropolitan non-tertiary hospitals reporting three infections and WACHS hospitals reporting one MRSA HAI.
- 31 of the 32 MRSA HAIs reported were identified from the inpatient setting, with two of these infections reported from ICUs.
- 15 (47%) patients were known to be colonised with MRSA prior to developing their MRSA infection.
- 17 (53%) of the MRSA HAIs were related to surgical wounds and there was one BSI. A further 10 MRSA HAIs (31%) were from non-surgical wounds. The remaining infections were isolated from sputum and other sterile body sites (Figure 14).
- The majority of MRSA HAIs (56%) were caused by micro B PVL negative strains (Figure 15).

Table 9 - Inpatient and non-inpatient MRSA HAI rate per 10,000 bed-days, quarter 3 2023-24

Setting	Number of contributing hospitals	Number of MRSA HAIs	Number of bed days	Aggregate rate [95% CI]	Cumulative aggregate rate [95% CI]
ICU non-sterile site	48	1	18,924	0.53 [0.43-0.63]	0.59 [0-0]
ICU sterile site	48	1	18,924	0.53 [0.43-0.63]	0.12 [0-0]
Non-ICU non-sterile site	48	22	463,438	0.47 [0.45-0.49]	0.16 [0-0]
Non-ICU sterile site	48	7	463,438	0.15 [0.14-0.16]	0.06 [0-0]
Total inpatient MRSA HAI	**48**	**31**	**482,362**	**0.64 [0.62-0.66]**	**0.24 [0-0]**
Non-inpatient MRSA HAI	48	2	NA	NA	NA
Total MRSA HAI	**48**	**33**	**629,274**	**0.52 [0.5-0.54]**	**0.2 [0.2-0.2]**

Note: * Rates are per 10,000 multi and same-day bed-days.

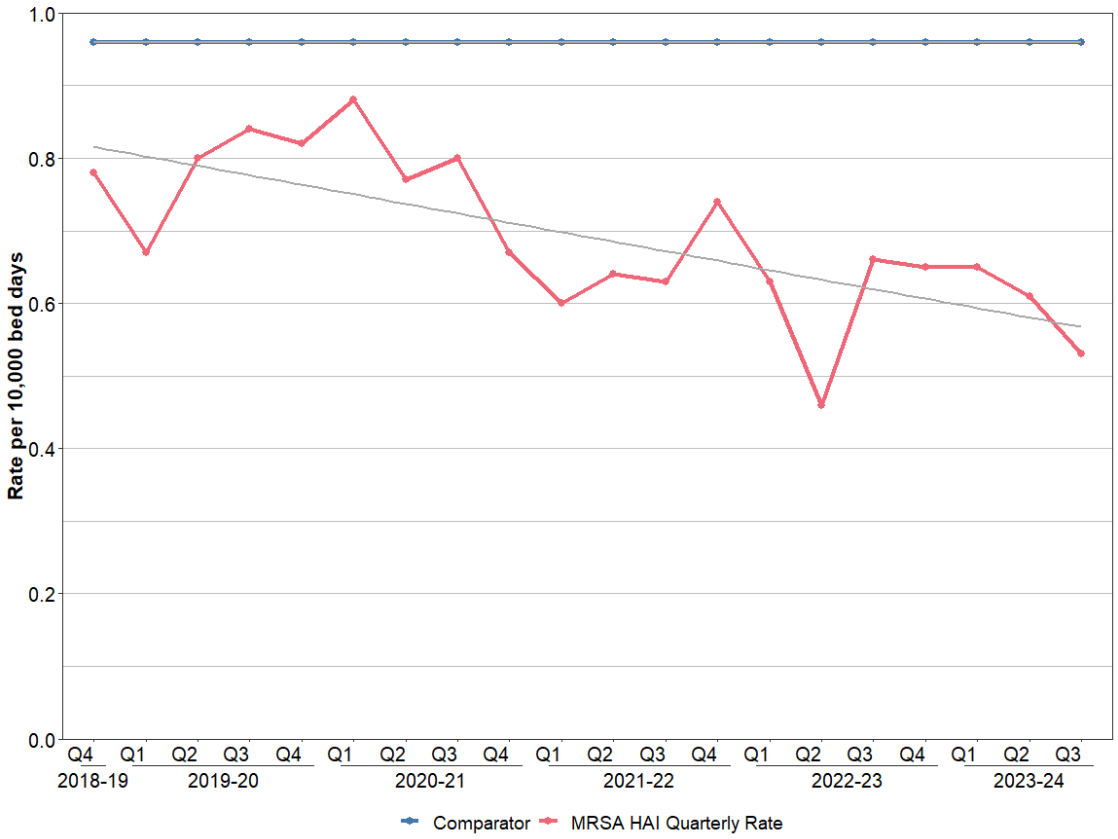


Figure 13 - Total (inpatient and non-inpatient) MRSA HAI rate per 10,000 multi and same day bed-days, 2018-19 to 2023-24

Table 10 - MRSA HAI by strain group, site and place of acquisition, quarter 3, 2023-24

Setting	Micro-B PVL negative MRSA	Micro-B PVL positive MRSA	Micro-C MRSA	Not typed	Total
Non-ICU sterile site	5	1	1	0	7
Non-ICU non-sterile site	10	6	6	0	22
ICU sterile site	1	0	0	0	1
ICU non-sterile site	1	0	0	0	1
Proportion (%)	55%	23%	23%	0%	31%
Strain	Not characterised	Qld Clone (5) / WSSP (1) / WA121 (1)	UK15 (7)		
Total MRSA HAI	**17**	**7**	**7**	**0**	**31**

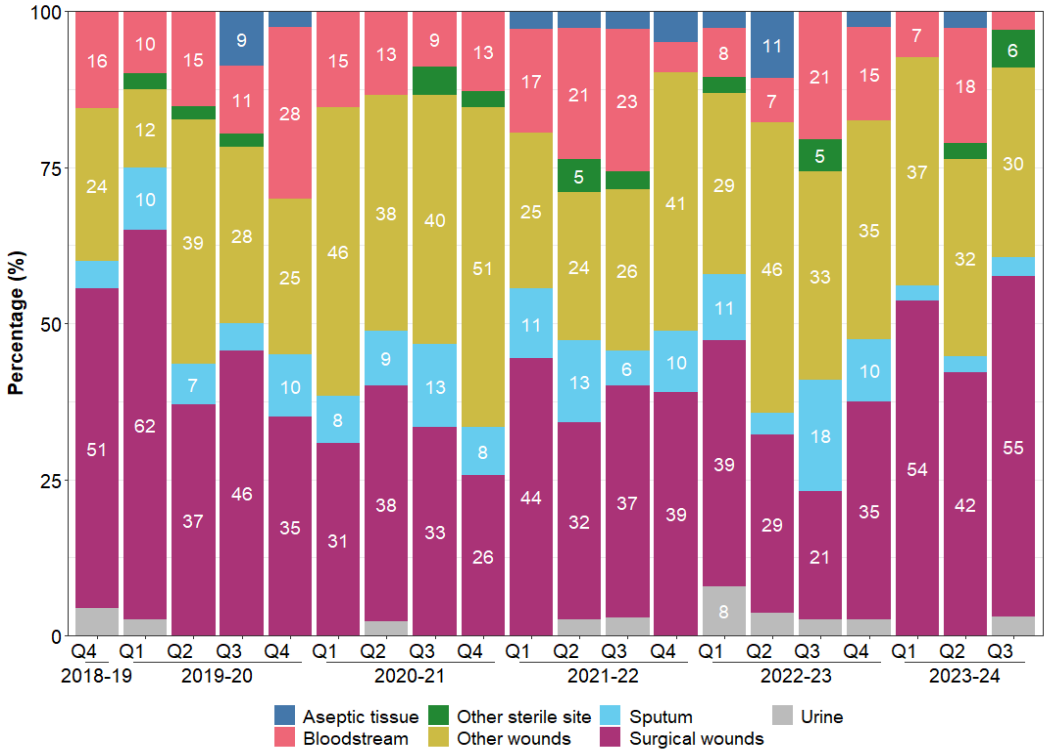


Figure 14 - Percentage of MRSA HAIs by specimen site, 2018-19 to 2023-24

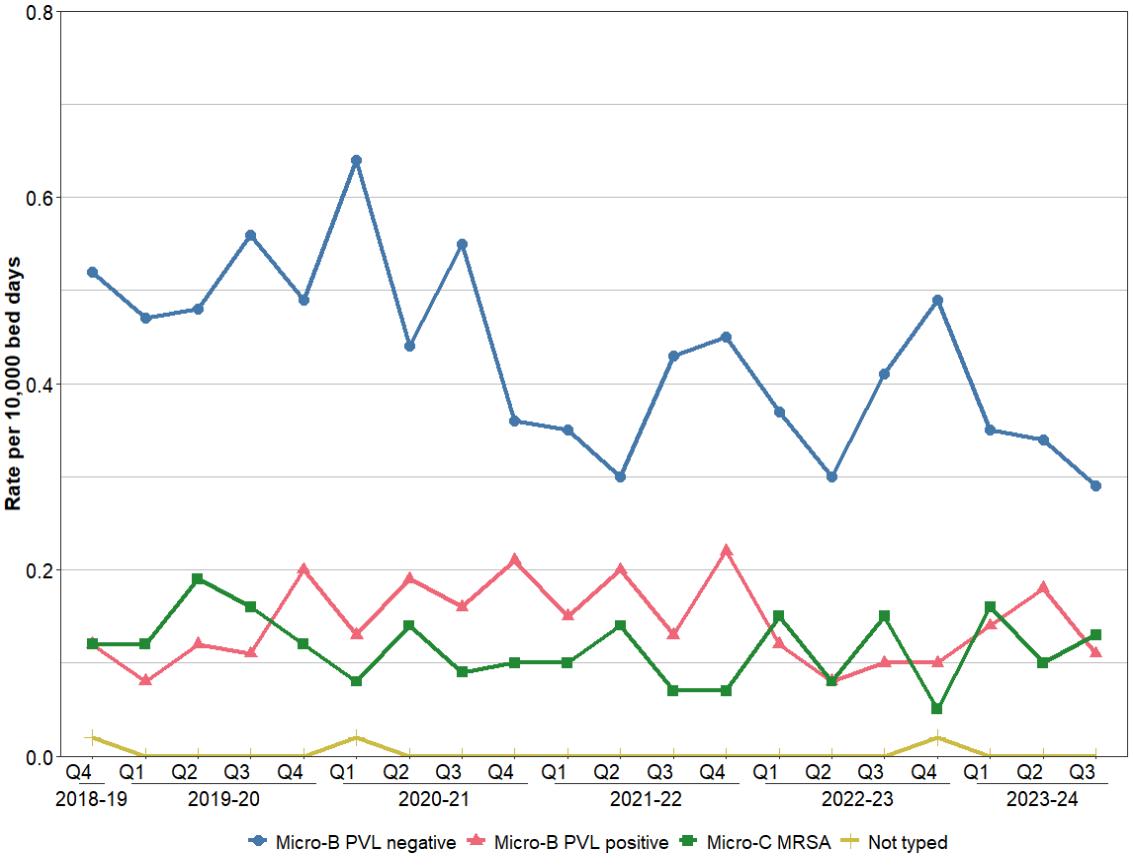


Figure 15 Rate of MRSA HAI by strain group, 2018-19 to 2023-24

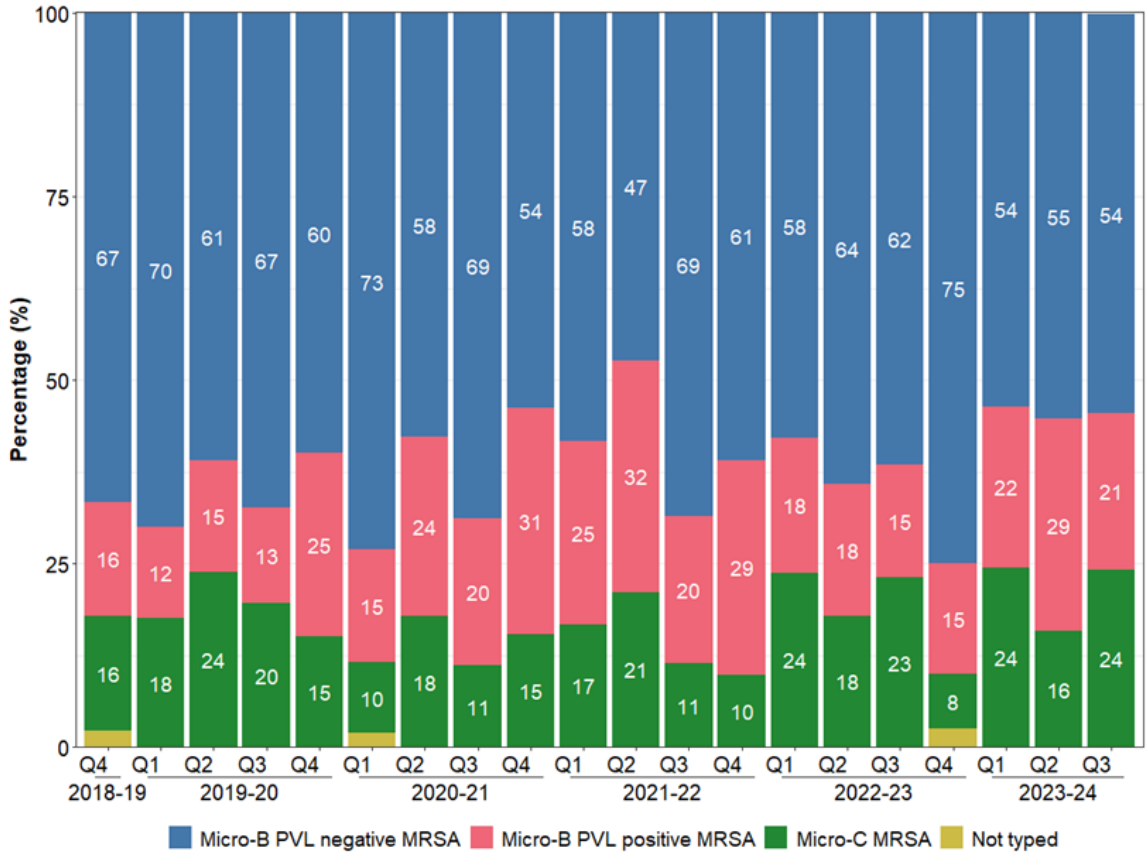


Figure 16 - Percentage of MRSA HAIs by strain group, 2018-19 to 2023-24

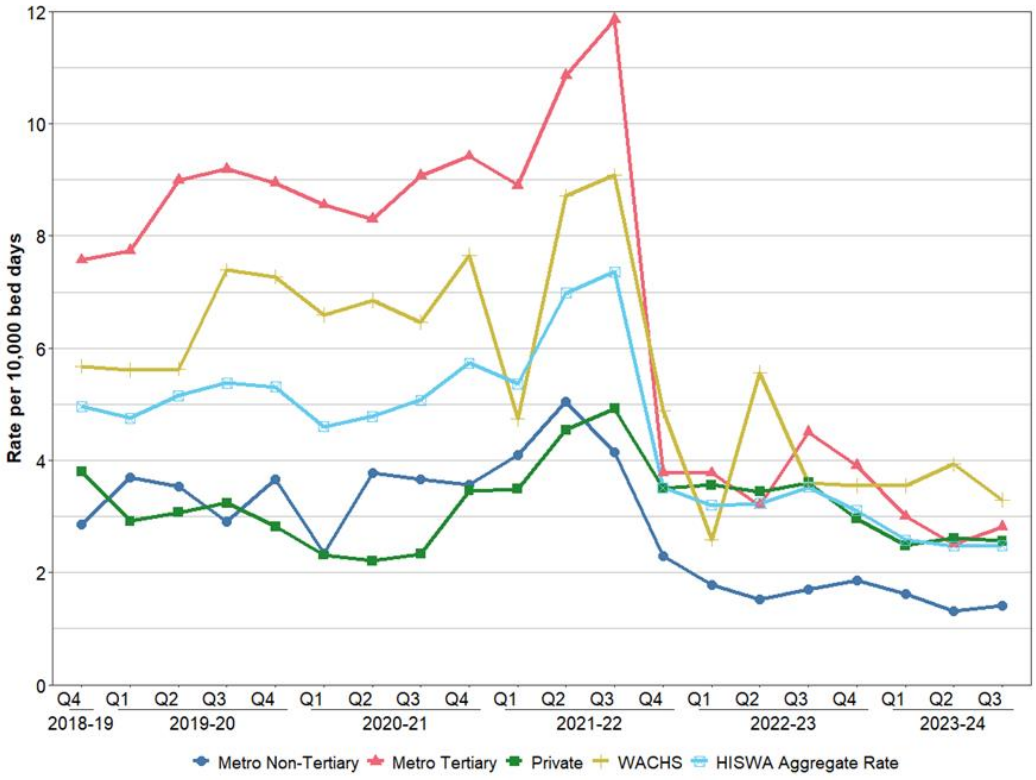
Hospital-identified *Clostridioides difficile* infection

Key points

- The HISWA aggregate hospital-identified *Clostridiodes difficile* infection (HI-CD) rate of 2.48 was comparable to the rate of 2.47 infections per 10,000 bed-days reported in quarter 2, 2023-24 (Table 11).
- Rates remained fairly stable across all hospital groups (Figure 17).
- The majority (41%; n=69) of all HI-CDIs were reported from private hospitals and may reflect ongoing testing variation at some private hospitals.

Table 11 HI-CDI rates by hospital group, quarter 3 2023-24

Hospital group	Number of contributing hospitals	Number of infections	Number of bed-days	Aggregate rate [95% CI]	Cumulative aggregate [95% CI]
Tertiary hospitals	5	57	202,969	2.81 [2.74-2.88]	1.97 [1.96-1.98]
Metropolitan non-tertiary hospitals	8	19	135,208	1.41 [1.35-1.47]	0.77 [0.76-0.78]
WACHS hospitals	21	24	72,945	3.29 [3.16-3.42]	1.71 [1.7-1.72]
Private hospitals	14	69	269,146	2.56 [2.5-2.62]	0.99 [0.99-0.99]
Total	**48**	**169**	**680,268**	**2.48 [2.44-2.52]**	**1.32 [1.32-1.32]**



Note: Some private hospitals are still reporting CDI-positive cases based on polymerase chain reaction (PCR) results, whilst all public hospital groups report CDI-positive cases based on toxin-positive enzyme immunoassay (EIA) testing. The move to EIA testing began in Quarter 4 2021-22.

Figure 17 - HI-CDI rates by hospital group, 2018-19 to 2023-24

Vancomycin-resistant *Enterococci* sterile-site infections

Key points

- There were four vancomycin-resistant *Enterococci* (VRE) sterile site infections reported in quarter 3, 2023-24.
- Three infections were identified at metropolitan hospitals and one at a WACHS facility.
- Three infections were classified as healthcare-associated. One patient was known to be colonised prior to the onset of their infection. None of the patients identified were from a residential care facility.
- Three (75%) VRE HAIs were isolated from peritoneal fluid cultures, and one from other sterile site (muscle tissue) (Figure 18).
- Two (50%) of the isolates was identified as *Enterococcus faecium* vanA and two (50%) were *Enterococcus faecium* vanB (Figure 19).

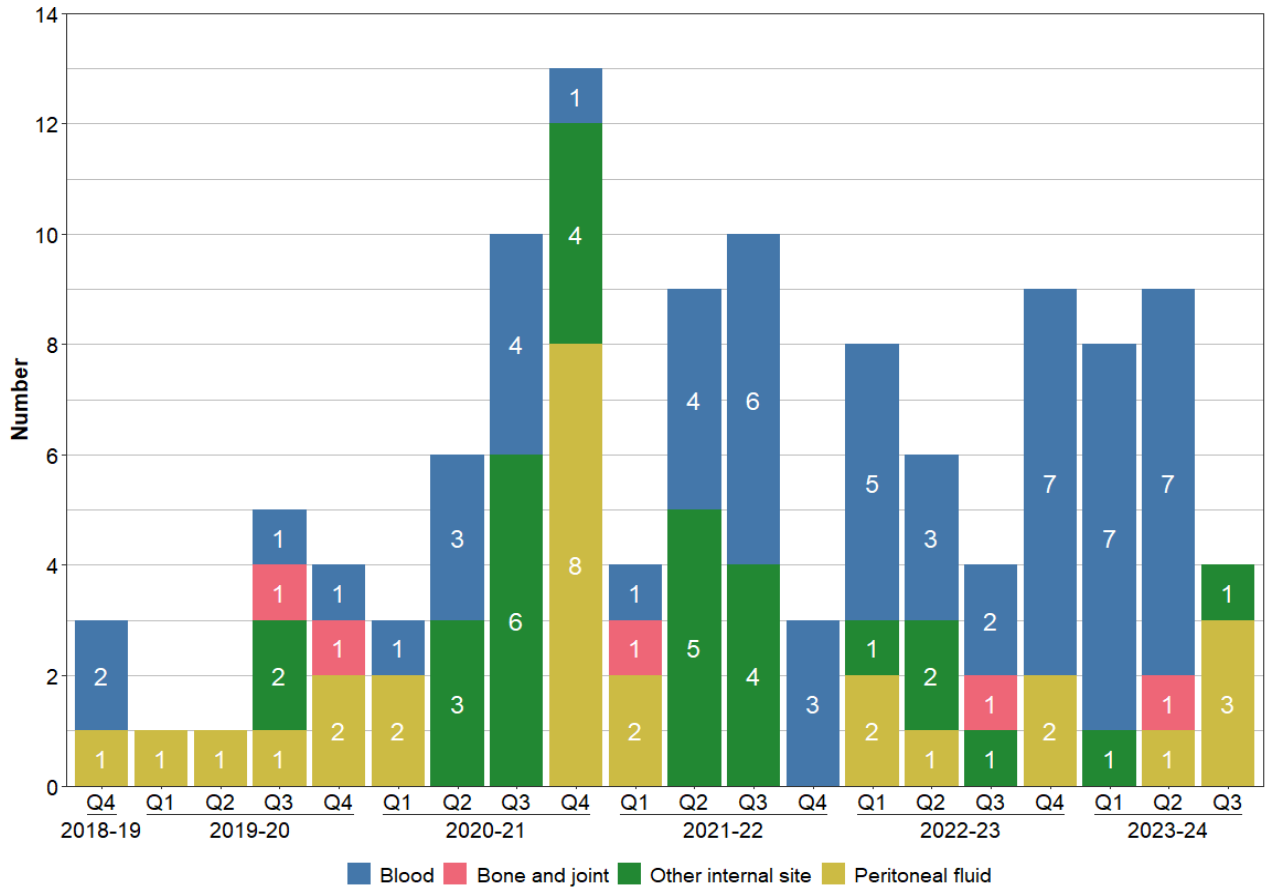


Figure 18 - VRE infections by sterile body sites, 2018-19 to 2023-24

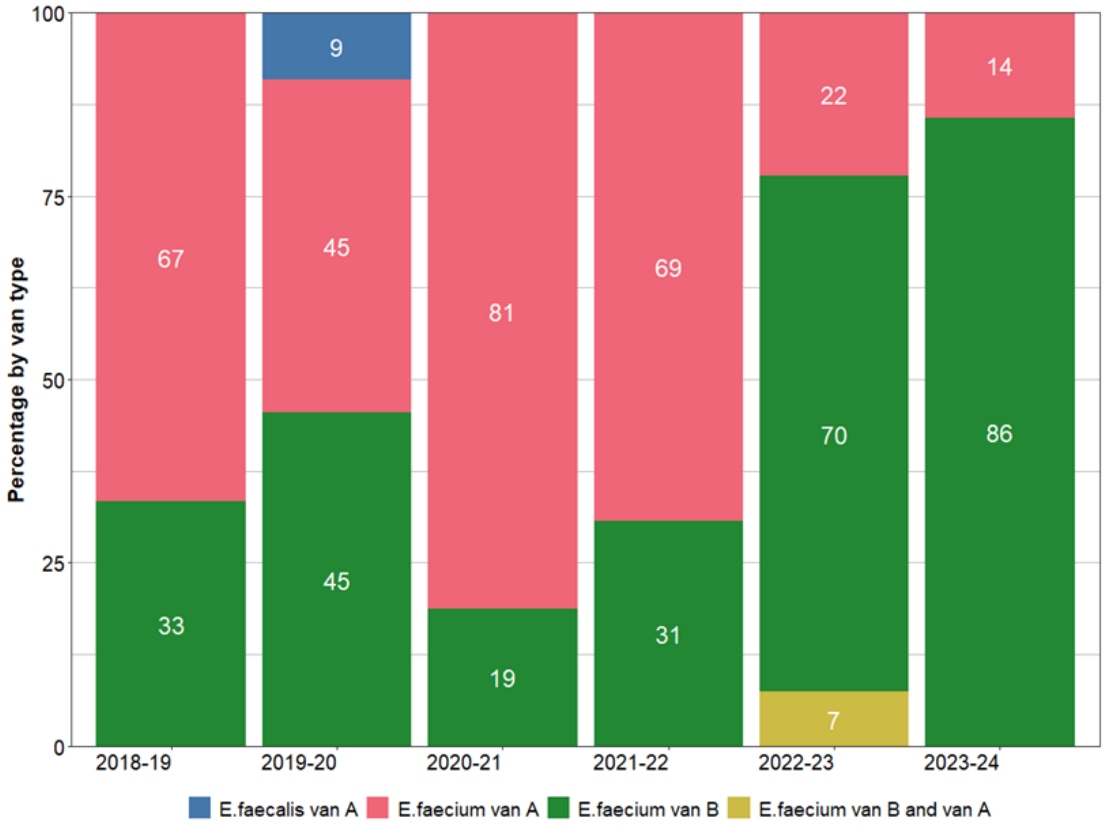
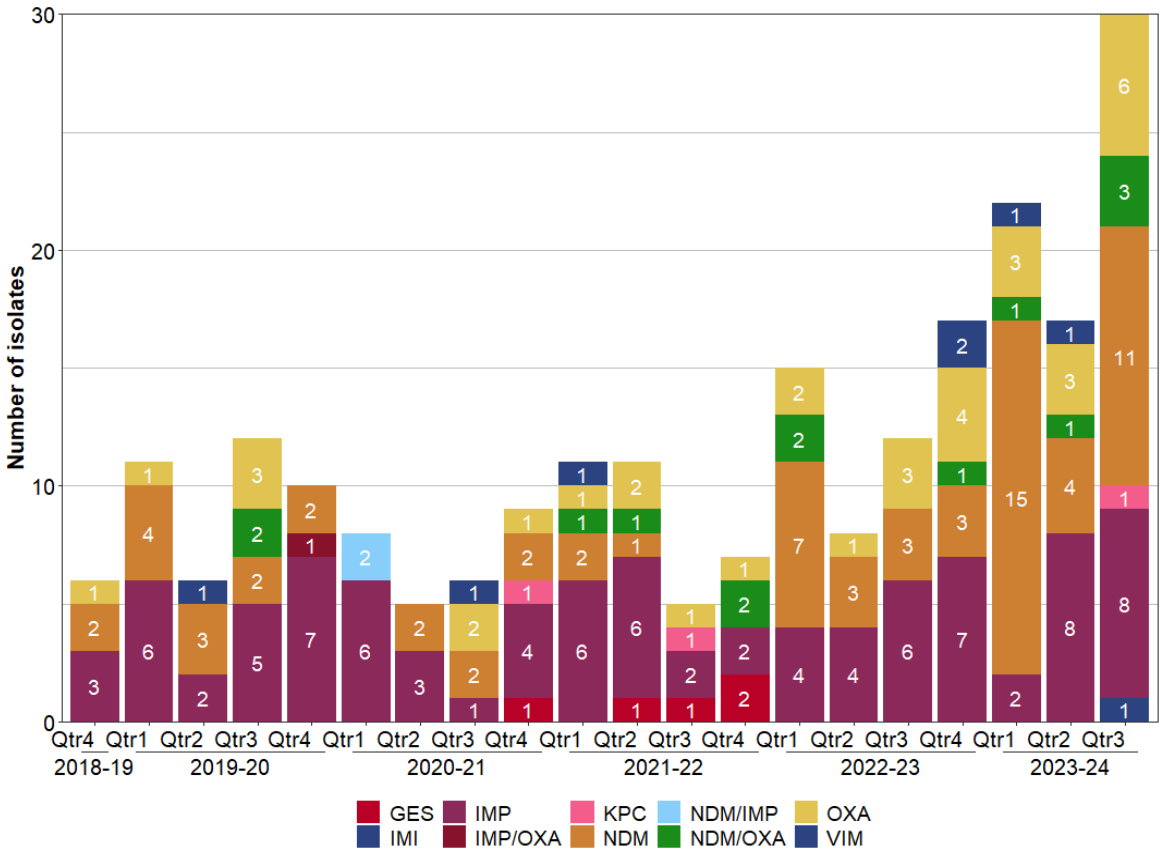


Figure 19 - VRE sterile site infections by van type, 2018-19 to 2023-24

Carbapenemase-producing organisms

Key points

- Surveillance of carbapenemase-producing organisms (CPO) is performed by the IPPSU in liaison with the PathWest Gram-negative Reference Laboratory located at the Queen Elizabeth II Medical Centre. All isolates with confirmed carbapenemase resistance are referred to the reference laboratory for confirmatory testing for the production of a carpanemase.
- Of the 71 referred patient isolates in quarter 3, 2023-24, 32 isolates were confirmed to be a CPO and 30 were unique* CPO isolates.
- The carbapenemase enzymes identified from the 30 confirmed unique CPO isolates included 11 NDM, eight IMP, three combined NDM/OXA, six OXA and one each of KPC and IMI (Figure 21).



Note:*Unique isolates- if there were multiple isolations of the same isolate from the same specimen, only the first isolation was included in the analysis.

Figure 20 - Number of unique CPO isolates by type, 2018-19 to 2023-24

Occupational exposures

Key points

- A total of 358 occupational exposures were reported by healthcare workers (HCWs) this quarter (Table 12).
- The total occupational exposure rate increased to 5.07 from 4.50 exposures per 10,000 bed-days reported in quarter 2, 2023-24 (Figure 21).
- The parenteral occupational exposure rate increased to 3.98 from 3.44 exposures per 10,000 bed-days reported in quarter 2, 2023-24 (Figure 21).
- The non-parenteral occupational exposure rate of 1.09 was comparable with the previous reporting period (Figure 21).
- The majority of parenteral exposures were reported by doctors (48%) (Figure 22) and nurses/midwives reported the majority (45%) of non-parenteral exposures. (Figure 23).
- There were 19 parenteral exposures sustained by HCWs who are not considered a primary user of sharp devices.

Table 12 - Parenteral and non-parenteral occupational exposures, quarter 3 2023-24

Exposure type	Number of contributing hospitals	Number of exposures	Number of bed-days	Aggregate rate [95% CI]	Cumulative aggregate rate [95%]
Non-parenteral exposures	49	77	706,175	1.09 [1.07-1.11]	0.34 [0.34-0.34]
Parenteral exposures	49	281	706,175	3.98 [3.93-4.03]	1.14 [1.14-1.14]
Total exposures	**49**	**358**	**706,175**	**5.07 [5.02-5.12]**	**1.48 [1.48-1.48]**

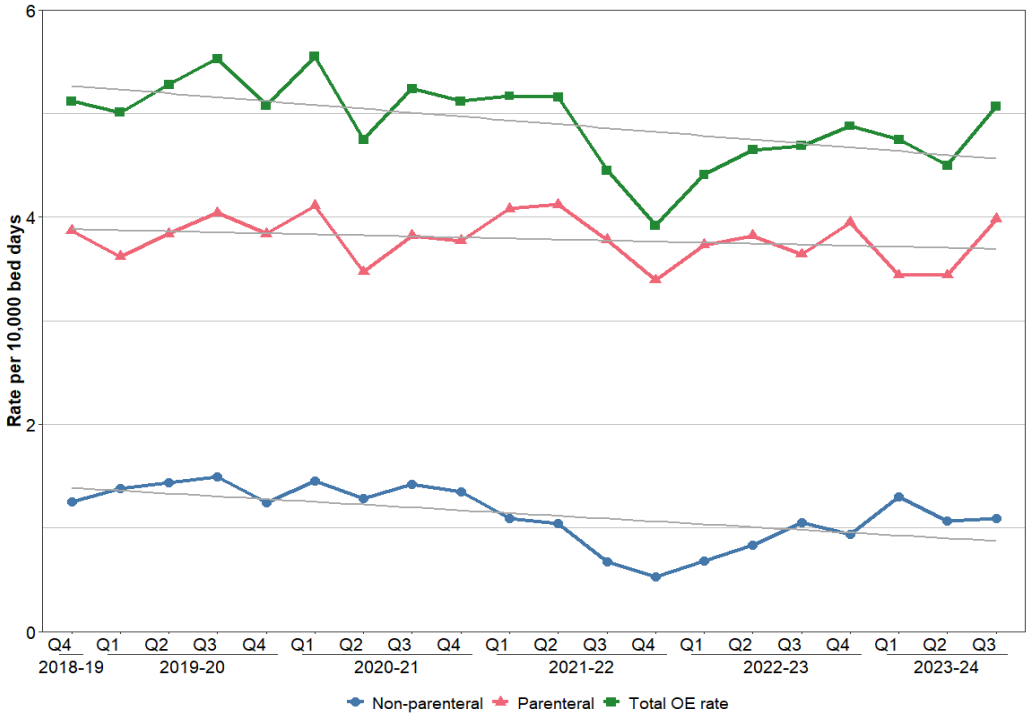


Figure 21 - Parenteral and non-parenteral occupational exposure rates, 2018-19 to 2023-24

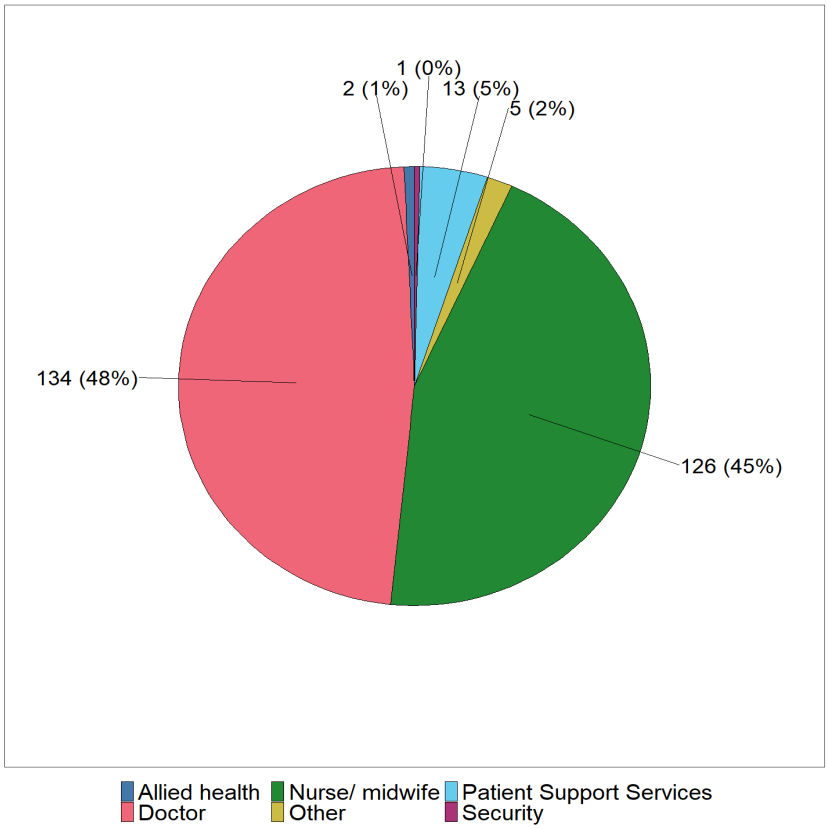


Figure 22- Parenteral occupational exposures by HCW category, quarter 3 2023-24

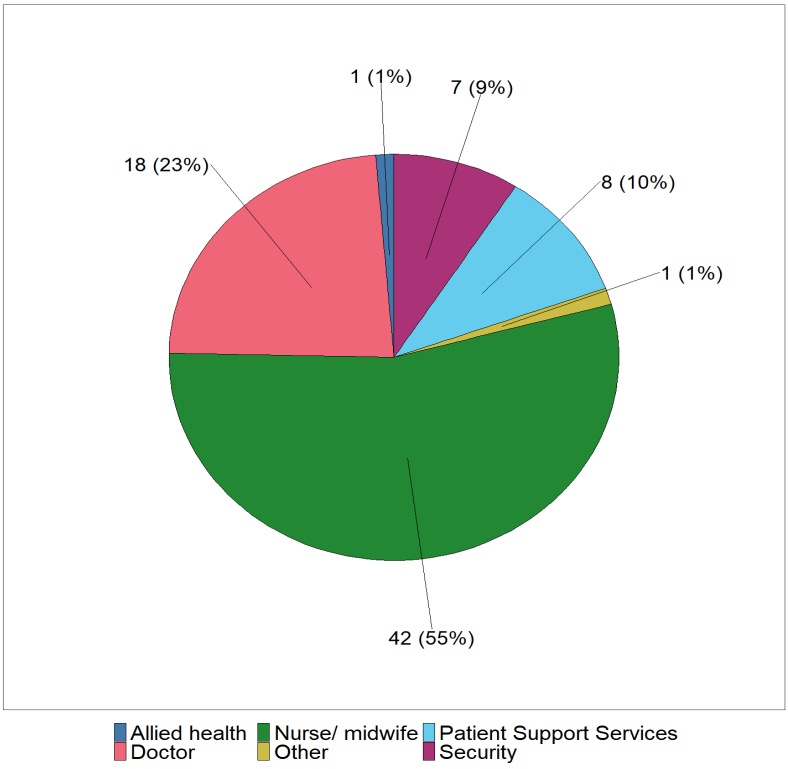


Figure 23 - Non-parenteral occupational exposures by HCW category, quarter 3 2023-24

Data notes

Data quality statement

Date Extracted: 2024-05-14 Publication Date:

The following may impact on aggregated rates:

2023-24

Quarter 1 2023-24: JHC haemodialysis data is reported via SCGH.

Quarter 1 2023-24: KEMH Neonatology numerators and denominators are reported via PCH.

Quarter 1 2023-24: Increased bed day denominators for SJG Subiaco due to joining of Mt Lawley Maternity Service.

Quarter 1 2023-24: Decreased ICU line days for Fiona Stanley Hospital due to changes in data collection method.

December 2023: Glengarry and SJG Mt Lawley ceased performing caesarean section procedures.

Prior to 2023-24

Please refer to previous reports for more complete data prior to 2023-24. HISWA contributors should contact IPPSU for details if data needs to be updated.

Data finalisation

All HISWA contributors are to finalise data as soon as possible to meet prescribed data submission deadlines. If there are issues with finalising data please advise IPPSU as soon as possible.

Data refresh

All late submissions or data changes requested by HISWA contributors are refreshed each quarter when HISWA data are extracted for the reporting period. Therefore, data from previous reports may deviate from current data.

Data comparators

IPPSU continue to review suitable up-to-date comparators for surveillance indicators. Refer to specific indicator notes for information on available comparators.

Mandatory indicators

Mandatory indicators were introduced for public hospitals and those health entities who provide contracted services to public patients in 2007. Mandatory indicators are those marked with an asterisk (*).

Cumulative aggregate rates

Cumulative aggregate rates have historically been calculated using the full HISWA data set. This calculation has now been updated to use only the previous 5 years of data.

HISWA indicators

Surgical site infections

Arthroplasty*

- 22 hospitals (8 private; 15 public) submit data to HISWA. This represents 100% of all hospitals in WA that perform hip and knee arthroplasty procedures. One integrated district hospital commenced performing these procedures in July 2018.
- The comparator is from Table 3 in the Public Health England, *Surveillance of Surgical Site Infections in NHS hospitals in England, 2022-23 Report.* (https://assets.publishing.service.gov.uk/media/65805a711c0c2a001318cfb7/SSISS-annual-report-2022-to-2023.pdf).
- 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 fewer than 100 procedures annually and are not required to assign a risk index score.
    - procedure type includes: primary and revision procedures.
- The IPPSU commenced data submission to the WA Department of Health, Performance Reporting Branch in February 2019 for SSIs following primary hip and knee arthroplasty for inclusion in the Health Service Perfomance Report (HSPR).

Caesarean section

- 25 hospitals (6 private and 19 public) 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 fewer 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*

- 48 hospitals (11 private, 37 public) submit data to HISWA. Data are included from North Metropolitan Mental Health Service since 2014-15.
- HA-SABSI data have been included as an indicator in National Healthcare Agreements since 2009 and are reported on the MyHospitals website. The IPPSU also submits HA-SABSI data to the Department of Health, Performance Reporting Branch on behalf of public hospitals and Contracted Health Entities (CHEs) as they are included in the HSPR.
- Data collection is in accordance with the Australian national definition.

- From 1 July 2017, unqualified newborn bed-day data were 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 public hospital HA-SABSI data are validated by the Infection Prevention, Policy, & Surveillance Unit.
- The national benchmark for HA-SABSI is set at 1.0 cases per 10,000 patient days, as per the Australian Commission on Safety and Quality in Health Care.
- The comparator for HA-SABSI is the Australian national public hospital aggregate 2019-20 rate (0.71 per 10,000 patient days). The MSSA comparator rate is 0.59 and the MRSA comparator rate is 0.12 per 10,000 bed days. Australian Institute of Health and Welfare. (2021). *Bloodstream infections associated with hospital care 2019–20.* Retrieved from https://www.aihw.gov.au/reports/health-care-quality-performance/bloodstream-infections-associated-with-hospital-care.

Haemodialysis*

- 26 haemodyalisis units (15 private, 11 public) submit data to HISWA, including two home dialysis units.
- The rate per 100 patient months can be interpreted as: the average percentage of dialysis patients acquiring an access associated BSI per month.
- Synthetic and native vessel arterio-venous grafts are combined in the data.
- There is currently no suitable comparator identified.

Central line-associated BSI

- CLABSI definitions changed in July 2014. The new definitions identify BSI that are likely to be related to mucosal barrier injury as a result of neutropenia or graft versus host disease and exclude them from CLABSI data.
- Data is risk adjusted to peripherally and centrally inserted central lines.
- 12 adult ICUs (4 private and 8 public hospitals) submit CLABSI data to HISWA.
- 1 public and 3 private oncology unit submit CLABSI data to HISWA.
- 1 haematology CLABSI unit submit CLABSI data to HISWA.

Multi-resistant organism surveillance

Methicillin-resistant *Staphylococcus aureus**

- MRSA (infection and colonisation) is a notifiable in WA under the *Public Health Act 2016* via laboratory reporting.
- 48 hospitals (11 private, 37 public) submit data to HISWA.
- Data are risk adjusted by ICU / non-ICU and inpatient / non-inpatient settings.
- 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, 2018-19 (personal communication).

Vancomycin-resistant *Enterococci**

- VRE infection and colonisation is a notifiable in WA under the Public Health Act 2016 via laboratory reporting.
- HISWA VRE data includes both community- and healthcare-associated VRE isolates.
- HISWA currently only reports sterile site infections.
- The IPPSU receives VRE data from
    - VRE sterile site infections submitted by ICPs to HISWA.
    - notification of all VRE clinical isolates referred to the PathWest Gram-positive Reference Laboratory.
- Categories for sterile site specimens:
    - blood
    - peritoneal: fluid and tissue from peritoneal space / peritoneum (includes abdominal fluid and ascites)
    - bone and joint: bone biopsy, synovial fluid
    - other internal sites: specimens from body sites that are normally sterile where a specimen has been obtained surgically or by aspirate e.g., deep soft tissue (muscle and fascia), pleura, liver, pancreas, kidney, spleen, vascular tissue, heart, brain, lymph node, ovarian tissue.

Carbapenemase-producing organisms

- CPO (infection and colonisation) is a notifiable condition in WA under the *Public Health Act 2016* via laboratory reporting.
- The IPPSU collates all CPO data submitted to the PathWest QEII Gram-negative Reference Laboratory.

Hospital-identified *Clostridioides difficile* infection*

- 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.
- Laboratory testing moved to PCR during mid-2010 leading to a doubling of identified cases.
- A second increase in identified cases in the second half of 2011 corresponded to the appearance of several “new” strains of *C. difficile*, possibly imported from the United States.
- These data are not suitable for use as a perfomance measure or for benchmarking.
- *C. difficile* toxin A and B enzyme immunoassay (EIA) was implemented on the 6th March 2022.
- The metropolitan non-tertiary group includes North Metropolitan Mental Health Service data since July 2014 and Fremantle Hospital since January 2015.

Healthcare worker exposures

Occupational exposures*

- 49 hospitals (12 private, 37 public) voluntarily 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.
- Data is risk adjusted by healthcare worker classification and type of exposure.

This document can be made available in alternative formats on request for a person with disability.