Government of Western Australia
Department of Health

Healthcare Infection Surveillance Western Australia (HISWA)

Aggregate Report

Quarter 4, April – June 2024

Infection Prevention, Policy and Surveillance Unit

Communicable Disease Control Directorate

12 August 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 infection
HCW	Health care worker
HD-BSI	Haemodialysis bloodstream infection
HI-CDI	Hospital-identified *Clostridioides difficile* infection
HISWA	Healthcare Infection Surveillance Western Australia
HSPR	Health Service Performance Report
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) coordinates 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 April to 30 June 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 webpage.

IPPSU forum

The next IPPSU forum is scheduled for **11th September 2024**.

Reminders

IPPSU staff made 95 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-day 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-CDIs are to be entered as ‘CDI Hospital’ under ‘Place of acquisition’, and the ‘Previously colonised’ fields are 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 MRSA HA-SABSI rate remains at an all-time low for the 5-year reporting period.
- The haemodialysis cuffed catheter access-associated BSI rate decreased this quarter for the first reporting period since Quarter 1 2023-24.
- There were only two CLABSIs reported from a total of 79,642 line days from the four contributing oncology units.

Concerns

- There is an ongoing upward trend in the total caesarean section SSI rate. This increase is driven by SSIs developing in patients following emergency procedures. Of the 29 SSIs reported, 23 (79%) were following emergency procedures.
- The total HA-SABSI rate increased for the second consecutive quarter.
- Of the 45 HA-SABSI reported 37 (83%) were classified as preventable adverse events. There were 25 events (56%) attributed to intravascular devices and of these 15 were attributed to PIVC, representing 33% of all HA-SABSIs.
- There were four CLABSIs reported from the 12 adult ICU units.

Surgical site infection following hip arthroplasty

Key points

- There were 1,546 hip arthroplasty procedures performed this quarter (Table 1) (1,428 primary and 118 revision procedures), with 964 procedures (62%) performed by private hospitals.
- Eight SSIs following hip arthroplasty were reported: six from primary procedures and two from revision procedures. Seven SSIs were deep or organ space infections and all were identified on readmission to hospital.
- The total SSI rate following hip arthroplasty was 0.52 compared with 0.49 per 100 procedures reported for the previous quarter (Figure 1).
- The deep SSI hip rate decreased to 0.45 from 0.56 infections per 100 procedures reported for the previous quarter (Table 3, Figure 3).

Table 1 - Hip arthroplasty SSI rate, by risk index, Quarter 4 2023-24

Risk index*	Number of contributing hospitals	Number of procedures	Number of SSIs	Aggregate rate [95% CI]	Cumulative aggregate rate [95% CI]
Risk index 0	22	823	2	0.24 [0-0.57]	0.0 [0-0]
Risk index 1	22	663	5	0.75 [0.09-1.41]	1.0 [0.81-1.19]
Risk index 2	22	56	1	1.79 [0-5.26]	3.0 [2.03-3.97]
Risk index 3	22	4	0	0 [0-0]	13.0 [4.49-21.51]
Total	**22**	**1,546**	**8**	**0.52 [0.16-0.88]**	**0.70 [0.60-0.80]**

Note: *Refer to Appendix 1 – Risk Index

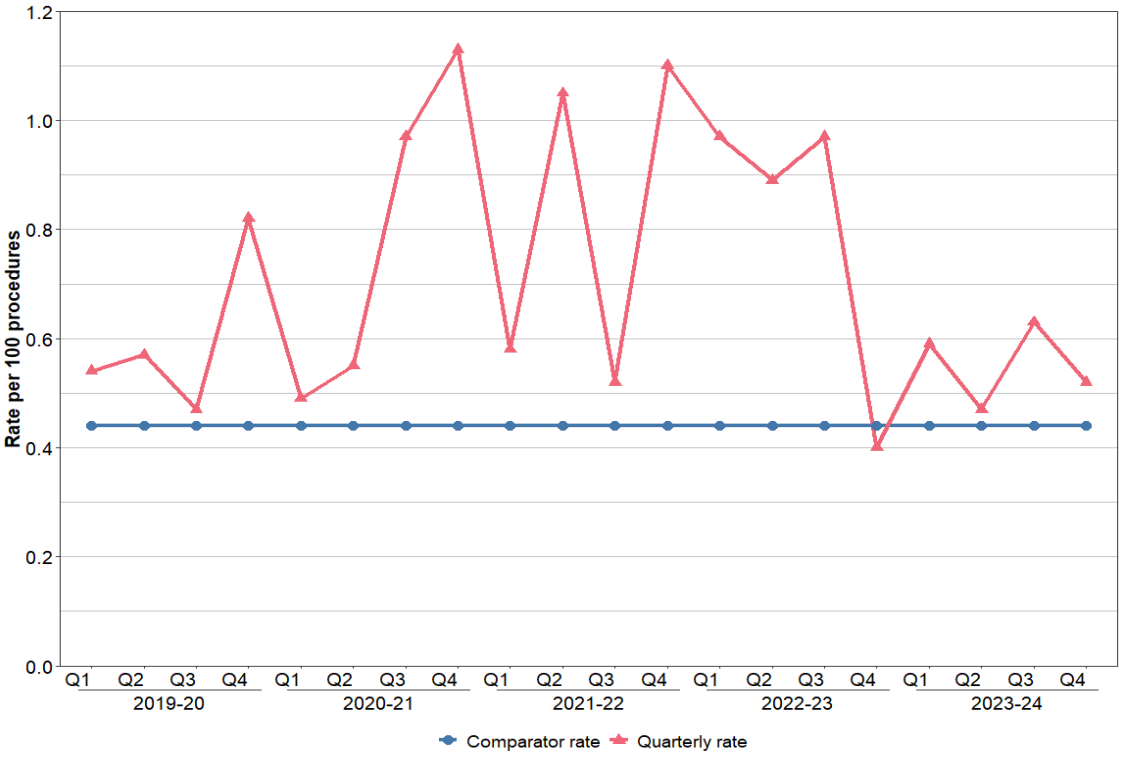


Figure 1 - Hip arthroplasty SSI rate, 2019-20 to 2023-24

Surgical site infection following knee arthroplasty

Key points

- There were 2,151 knee arthroplasty procedures performed this quarter (Table 2) (1,985 primary and 166 revision procedures), with 1,497 procedures (70%) performed by private hospitals.
- Nine SSIs following knee arthroplasty were reported: six from primary procedures and three from revision procedures. 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 0.42 was comparable to 0.44 infections per 100 procedures reported for the previous quarter (Figure 2).
- The deep SSI knee rate decreased to 0.28 from 0.39 infections per 100 procedures reported in the previous quarter (Table 3, Figure 4).

Table 2 - Knee arthroplasty SSI rate, by risk index, Quarter 4 2023-24

Risk index*	Number of contributing hospitals	Number of procedures	Number of SSIs	Aggregate rate [95% CI]	Cumulative aggregate rate [95% CI]
Risk index 0	22	1,196	6	0.5 [0.1-0.9]	0 [0-0]
Risk index 1	22	835	3	0.36 [0-0.77]	0 [0-0]
Risk index 2	22	111	0	0 [0-0]	1.0 [0.59-1.41]
Risk index 3	22	9	0	0 [0-0]	1.0 [0-3.06]
Total	**22**	**2,151**	**9**	**0.42 [0.15-0.69]**	**0.3 [0.25-0.35]**

Note: *Refer to Appendix 1 – Risk Index

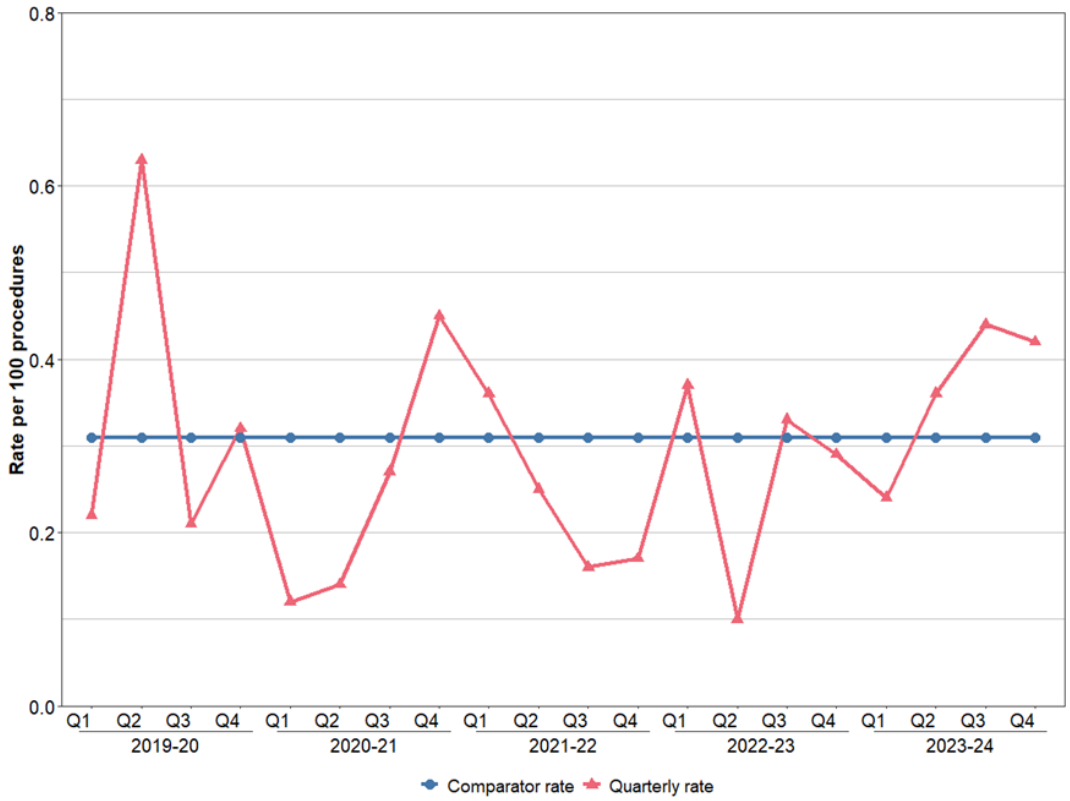


Figure 2 - Knee arthroplasty SSI rate, 2019-20 to 2023-24

Deep and superficial SSI following arthroplasty procedure

Table 3 - SSI rates, by superficial or deep/organ space infections, Quarter 4 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	7	8	1,546	0.06 [0-0.18]	0.45 [0.12-0.78]
Knee arthroplasty	2	7	9	2,151	0.09 [0-0.22]	0.33 [0.09-0.57]
Total	**3**	**14**	**17**	**3,697**	**0.08 [0-0.17]**	**0.38 [0.18-0.58]**

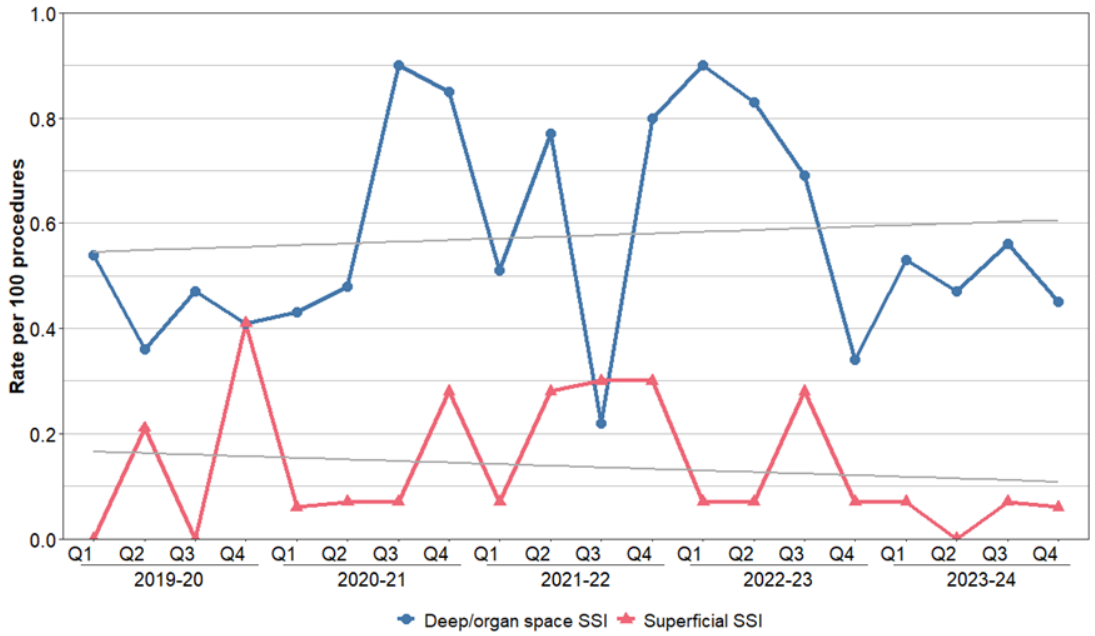


Figure 3 - Hip arthroplasty SSI rate by infection type, 2019-20 to 2023-24

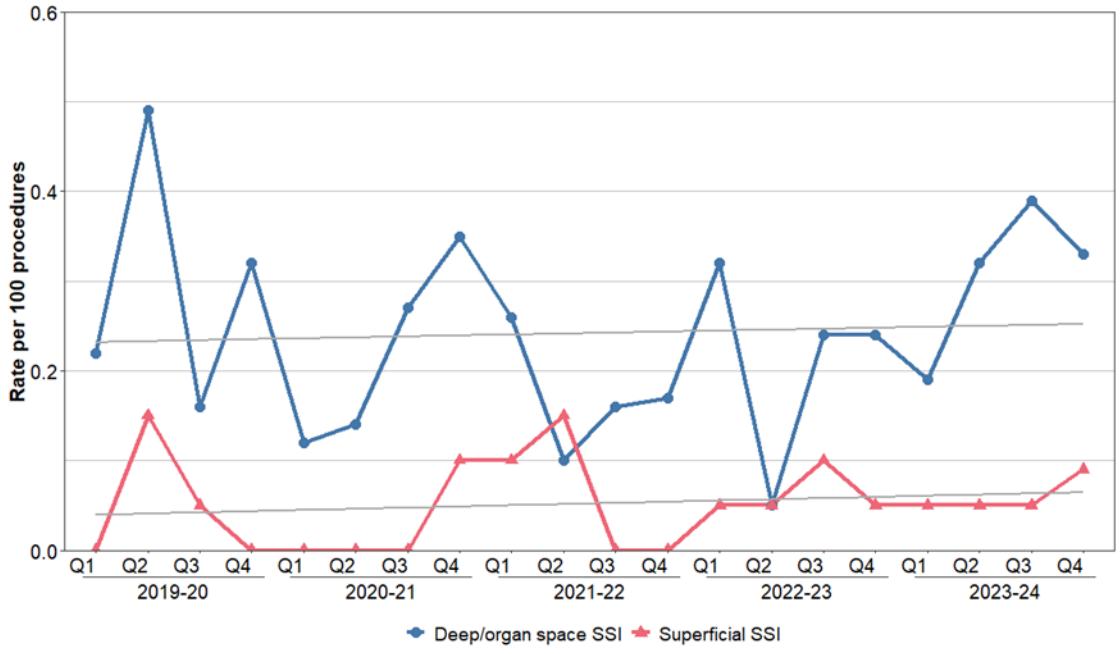


Figure 4 - Knee arthroplasty SSI rate by infection type, 2019-20 to 2023-24

Surgical site infection following caesarean section

Key points

- There were 2,794 caesarean section procedures performed this quarter (Table 4), of which 1,613 (58%) were emergency and 1,181 (42%) were elective procedures.
- A total of 48 SSIs were reported, 19 of which were identified by post-discharge surveillance* and are not included in further data analysis or in HISWA calculated rates.
- Of the remaining 29 SSIs, 23 were categorised as superficial infections and six as deep or organ space SSIs.
- The vast majority of SSIs (93%) were identified when the patient required readmission to hospital for care, with only two SSIs identified on initial admission (both superficial infections).
- The majority of SSIs (79%) were following emergency procedures, and included six deep or organ space SSIs.
- The total inpatient SSI rate increased to 1.04 from 0.94 infections per 100 procedures reported in the previous quarter .
- The superficial SSI rate increased from 0.72 to 0.82 infections per 100 procedures, although the deep or organ space SSI rate was comparable with previous quarter (Figure 5).
- The elective and emergency procedure SSI rates were comparable to the previous reporting period (Figure 6), noting the upward trend following emergency procedures continues.

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

Item	Number of hospitals	Number of procedures	Number of superficial SSI	Number of deep SSI	Total Number of SSIs	Total Aggregate rate [95% CI]	Cumulative aggregate rate [95% CI]
Risk index 0	25	1,234	4	1	5	0.41 [0.05-0.77]	0.48 [0.39-0.57]
Risk index 1	25	1,126	11	3	14	1.24 [0.59-1.89]	0.95 [0.81-1.09]
Risk index 2	25	378	6	2	8	2.12 [0.67-3.57]	1.95 [1.61-2.29]
Risk index 3	25	56	2	0	2	3.57 [0-8.43]	3.11 [1.69-4.53]
Total Inpatient	**25**	**2,794**	**23**	**6**	**29**	**1.04 [0.66-1.42]**	**0.88 [0.8-0.96]**
Post-discharge	NA	0	19	0	19	NA	NA
Total SSIs	**25**	**2,794**	**42**	**6**	**48**	**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.

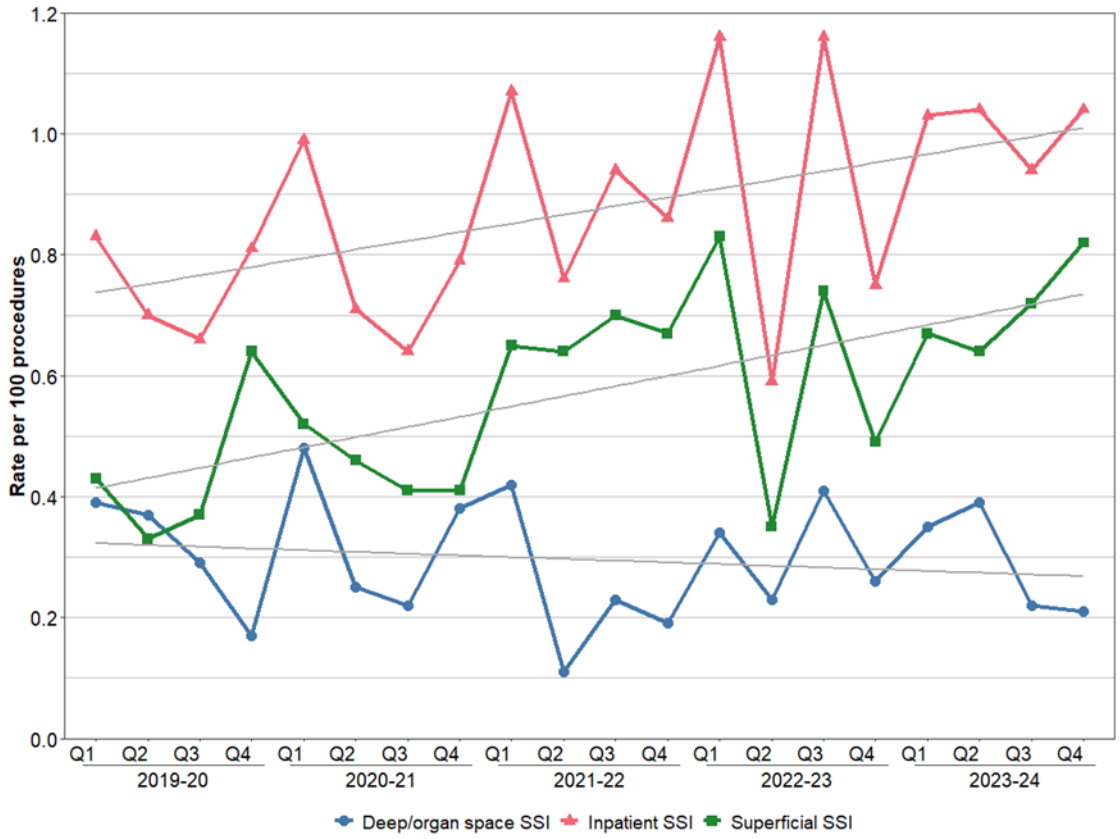


Figure 5 -Total inpatient caesarean section SSI rates and by infection type, 2019-20 to 2023-24

Figure 6 - Inpatient caesarean section SSI rates by procedure type, 2019-20 to 2023-24

Healthcare-associated *Staphylococcus aureus* bloodstream infection

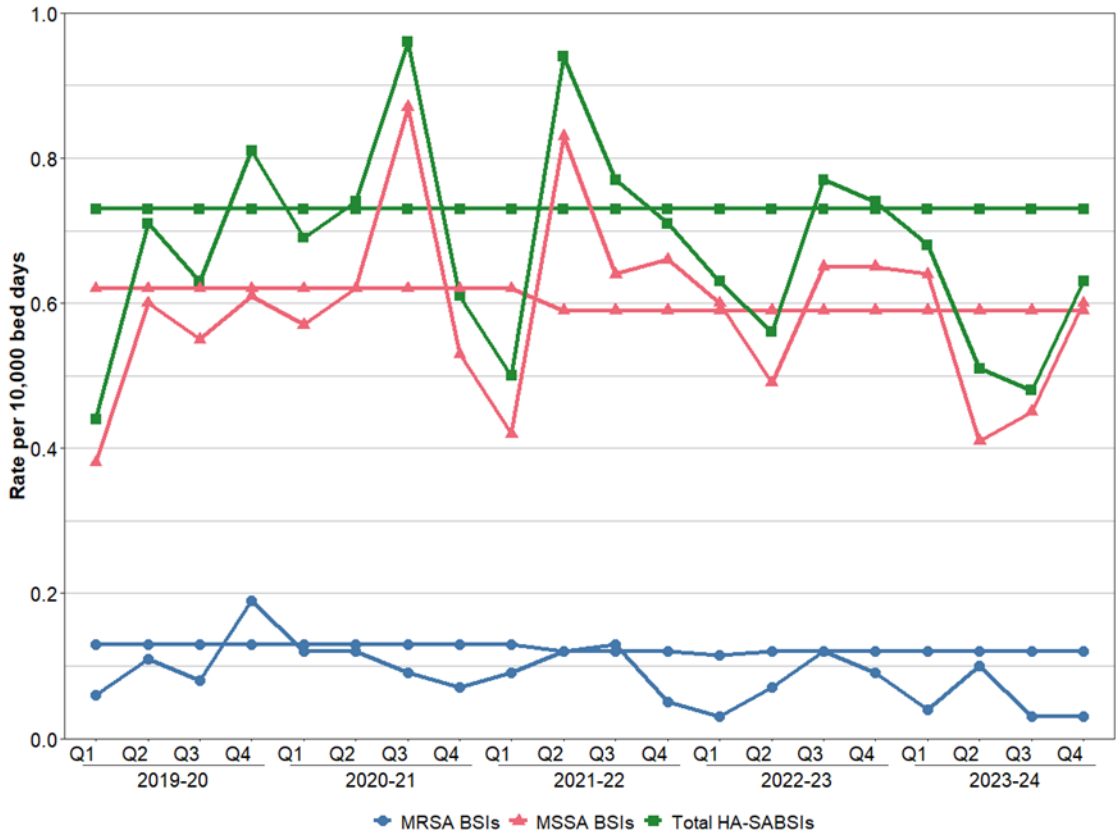
Key points

- There were 45 HA-SABSIs reported this quarter, including 43 MSSA and two MRSA infections (Table 5).
- The total HA-SABSI rate increased to 0.63 from 0.48 per 10,000 bed days reported in Quarter 3 2023-24 but remains below the national comparator rate (Figure 7).
- The MSSA HA-SABSI rate increased to 0.60 from 0.45 infections per 10,000 bed-days reported in the previous quarter (Figure 7).
- The MRSA HA-SABSI rate remained stable this quarter with 0.03 infections per 10,000 bed-days reported (Figure 7).
- Of the 45 HA-SABSIs reported, 25 infections (56%) were attributable to IVDs. A further 12 infections (27%) were procedure-related, and one had an organ site focus (Figure 8).
- Of the 25 IVD-related HA-SABSIs, 15 infections (60%) were attributed to PIVC, four were attributed to infusaport, and three infections each were attributed to cuffed catheters and PICC lines.
- Thirteen of the PIVC-related HA-SABSIs had a documented time in situ of less than 72 hours, one was in situ for more than 72 hours, and the dwell time for one PIVC SABSI was unknown (Figure 10).
- Nine (36%) of the 25 IVD-related SABSIs were reported from tertiary hospitals (Figure 12).

Table 5 - HA-SABSI rates per 10,000 bed-days, Quarter 4 2023-24

Organism name	Number of contributing hospitals	Number of bed-days	Number of HA-SABSIs	Aggregate rate [95% CI]	Cumulative aggregate rate [95% CI]
MSSA	48	717,281	43	0.6 [0.58-0.62]	0.17 [0.17-0.17]
MRSA	48	717,281	2	0.03 [0.03-0.03]	0.03 [0.03-0.03]
Total	**48**	**717,281**	**45**	**0.63 [0.61-0.65]**	**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, 2019-20 to 2023-24

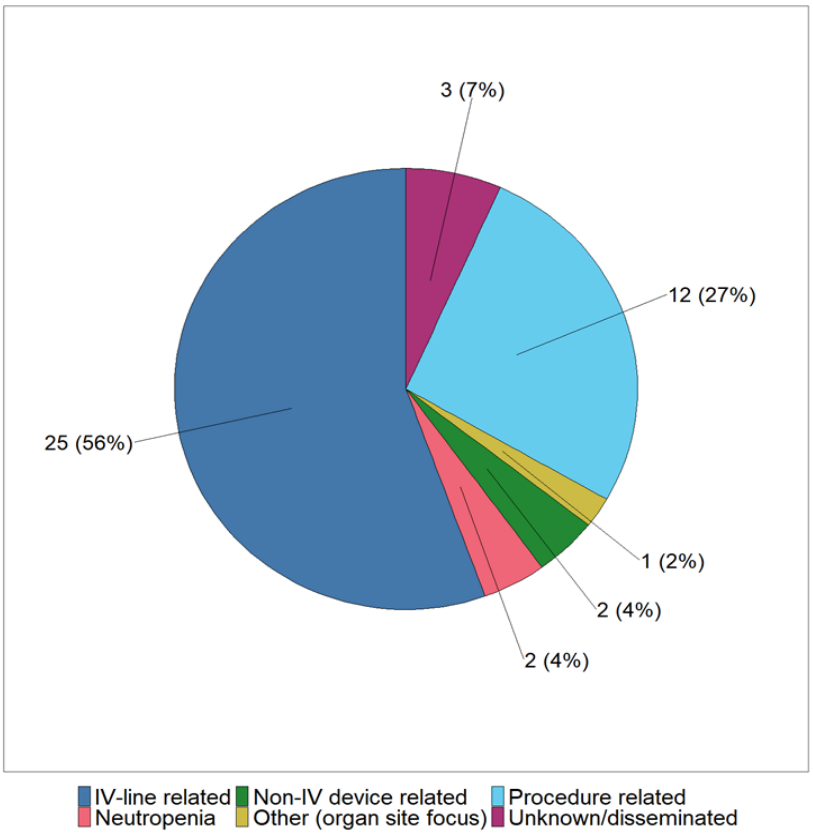


Figure 8 - Number of HA-SABSIs by attributable source, Quarter 4 2023-24

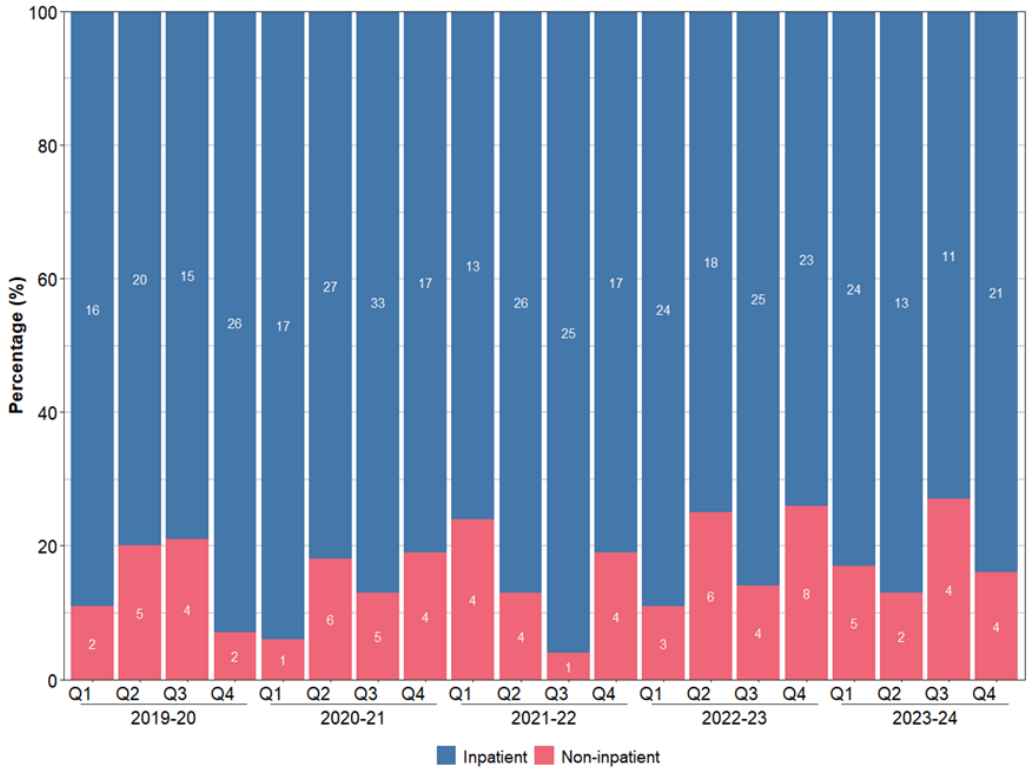


Figure 9 - Percentage and number of HA-SABSI attributed to intravascular devices by patient location, 2019-20 to 2023-24

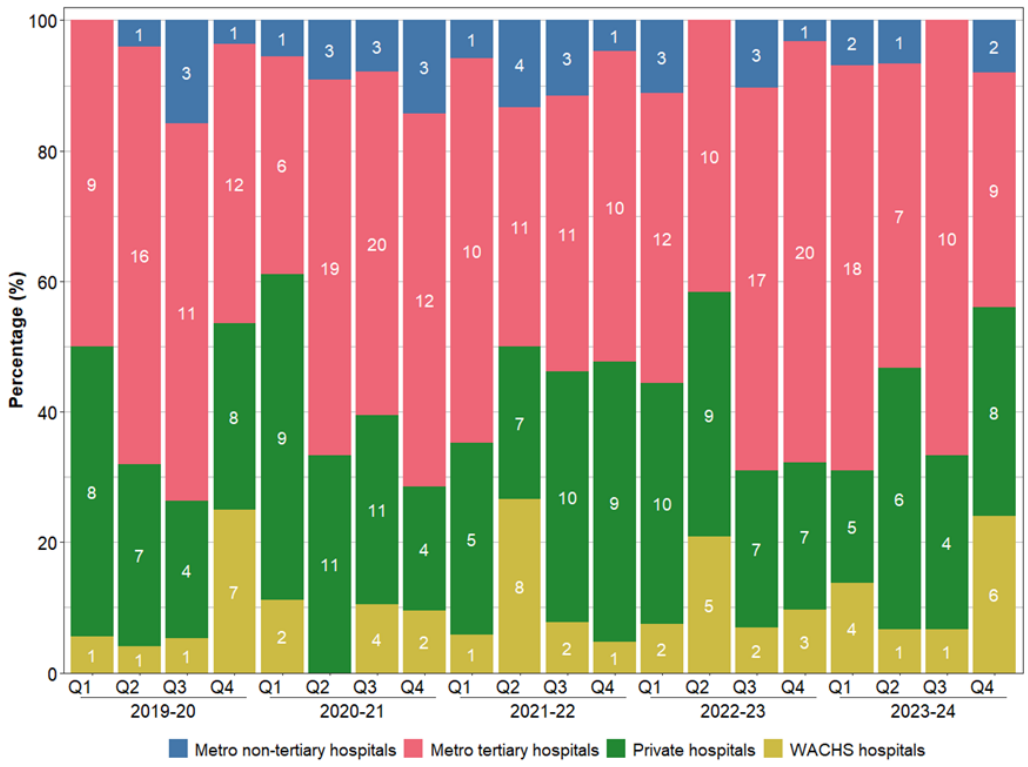


Figure 10 - Percentage and number of HA-SABSI attributed to intravascular devices, by hospital group, 2019-20 to 2023-24

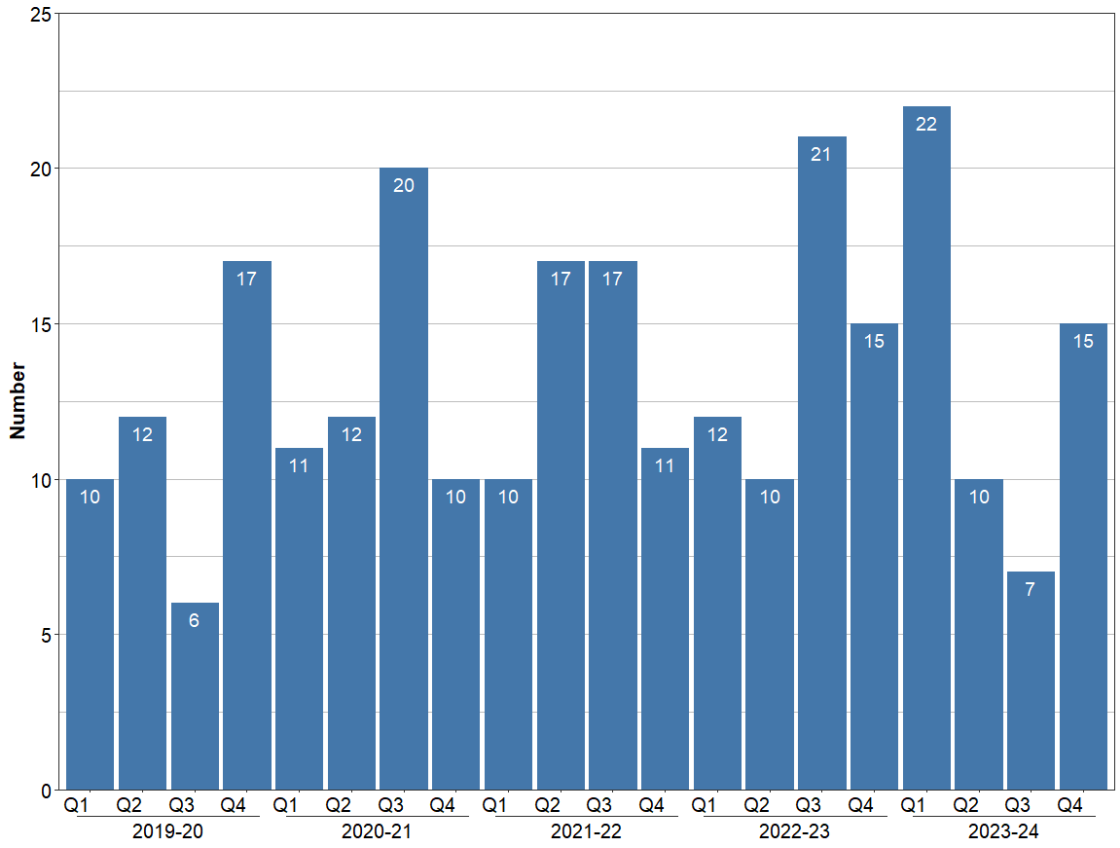


Figure 11- Number of HA-SABSIs attributed to PIVCs, 2019-20 to 2023-24

Haemodialysis access-associated bloodstream infections

Key points

- The majority (73%) of patients received haemodialysis via an arteriovenous fistula (AVF) in this reporting period (Table 6).
- Five cuffed catheter (CC) access-associated BSIs were reported. The CC BSI rate decreased to 0.45 from 1.48 infections per 100 patient-months reported in the previous (Figure 13).
- One AVF and one arteriovenous graft access-associated BSI were also reported.
- There were no BSIs associated with non-cuffed catheters this quarter.

Table 6 - HD-BSI rate, by type of access, Quarter 4 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	73.17	1	3,281	0.03 [0-0.09]	0.05 [0.03-0.07]
AVG	26	1.45	1	65	1.54 [0-4.53]	0.42 [0.08-0.76]
CC	26	24.98	5	1,120	0.45 [0.06-0.84]	0.74 [0.62-0.86]
Non-cuffed	3	0.40	0	18	0 [0-0]	1.45 [0.19-2.71]

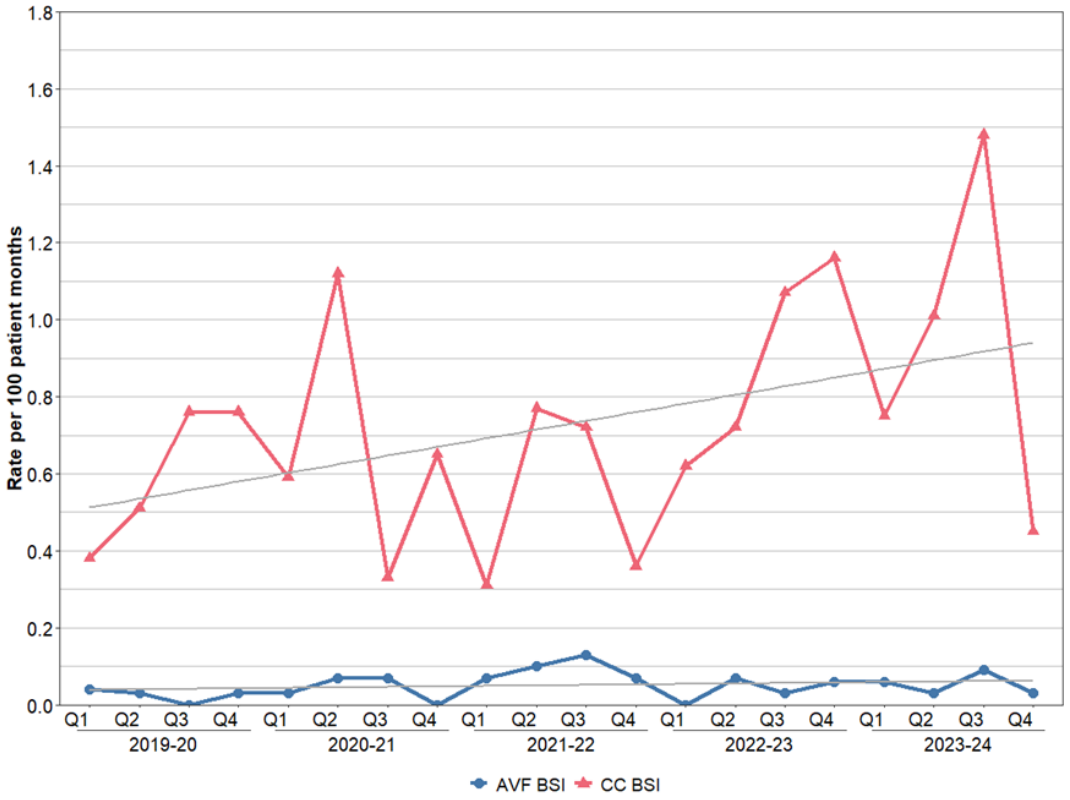


Figure 13 - AVF and cuffed catheter associated BSI rate, 2019-20 to 2023-24

Central line-associated bloodstream infection

Key points

- The majority (76%) of central lines in adult ICUs were centrally inserted (Table 7).
- Four adult ICU CLABSIs were reported this quarter (Table 8) and the ICU CLABSI rate of 0.49 was comparable to 0.52 infections per 1,000 line-days reported in the previous quarter.
- Five haematology CLABSIs were reported this quarter and the rate increased to 0.83 compared to 0.54 infections per 1,000 line days reported in previous quarter (Figure 15).
- Two oncology CLABSIs were reported with a rate of 0.03 infections per 1,000 line days compared to zero oncology CLABSI reported last quarter.

Table 7 - Adult ICU central line utilisation ratio (CLUR), Quarter 4 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	1,964	14,284	24.03	13.75
Centrally inserted	12	6,210	14,284	75.97	43.48

Table 8 - CLABSI by unit type, Quarter 4 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	6,210	1	0.16 [0.06-0.26]	0.49 [0.44-0.54]
Peripherally inserted	12	1,964	3	1.53 [0.99-2.07]	0.33 [0.26-0.4]
Total adult ICU	**12**	**8,174**	**4**	**0.49 [0.34-0.64]**	**0.45 [0.41-0.49]**
Haematology unit					
Centrally inserted	1	1,945	1	0.51 [0.19-0.83]	0.77 [0.68-0.86]
Peripherally inserted	1	4,102	4	0.98 [0.68-1.28]	0.51 [0.46-0.56]
Total haematology	**1**	**6,047**	**5**	**0.83 [0.6-1.06]**	**0.61 [0.56-0.66]**
Oncology unit					
Centrally inserted	4	62,500	1	0.02 [0.01-0.03]	0.02 [0.02-0.02]
Peripherally inserted	4	17,142	1	0.06 [0.02-0.1]	0.14 [0.12-0.16]
Total oncology	**4**	**79,642**	**2**	**0.03 [0.02-0.04]**	**0.04 [0.04-0.04]**

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

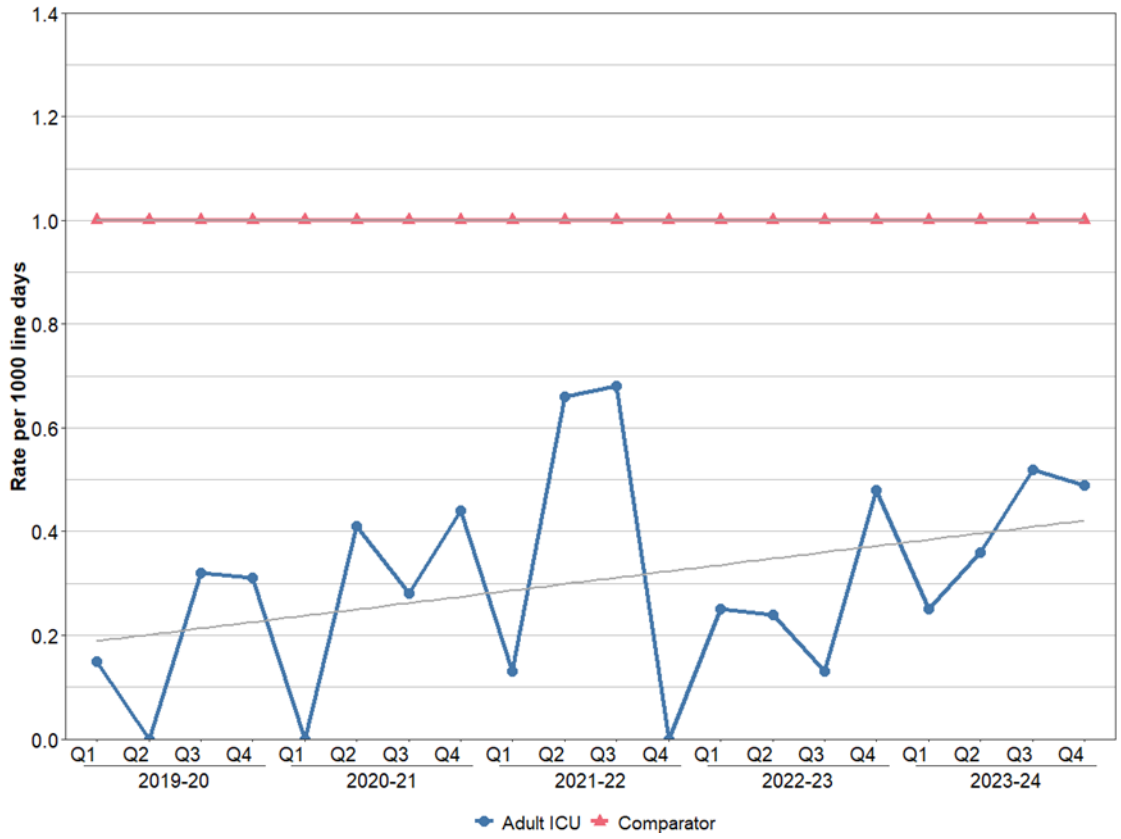


Figure 14 - Adult ICU unit CLABSI rates, 2019-20 to 2023-24

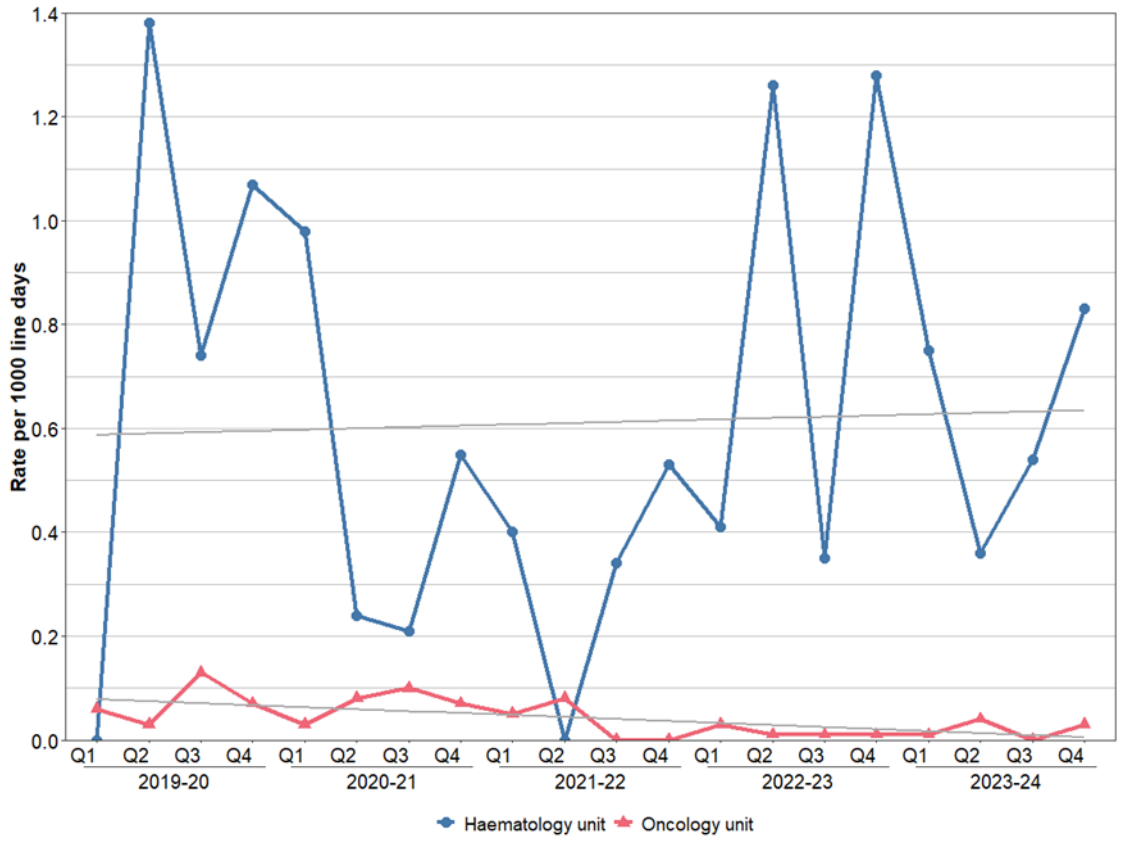


Figure 15 - Haematology and oncology unit CLABSI rates, 2019-20 to 2023-24

Methicillin-resistant *Staphylococcus aureus* healthcare associated infection

Key points

- A total of 49 MRSA HAIs were reported this quarter (Table 9).
- The total MRSA HAI rate increased to 0.76 from 0.55 infections per 10,000 bed-days reported in the previous quarter but remains below the comparator rate (Figure 16). This is the first MRSA HAI rate increase since quarter 3 2022-23.
- Thirty-two MRSA HAIs (65%) were reported from metropolitan tertiary hospitals, with 12 of these infections attributed to one tertiary facility. Smaller numbers of MRSA HAIs were reported from the other hospital groups with WACHS hospitals reporting seven infections, metropolitan non-tertiary hospitals reporting six infections and four infections reported from the private hospital group.
- Of the 49 MRSA HAIs, 48 were identified from the inpatient setting, with four of these infections reported from ICUs.
- A total of 18 patients (37%) were known to be colonised with MRSA prior to developing their MRSA infection.
- The majority of MRSA HAIs (61%) were related to surgical wounds; two patients acquired an MRSA BSI and a further 10 MRSA HAIs were from non-surgical wounds. The remaining infections were isolated from sputum, aseptic tissue or peritoneum samples (Figure 17).
- The majority of MRSA HAIs (61%) were caused by micro B PVL negative strain (Figure 19).

Table 9 - Inpatient and non-inpatient MRSA HAI rate per 10,000 bed-days, Quarter 4 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	4	19,595	2.04 [1.84-2.24]	0.58 [0-0]
ICU sterile site	48	0	19,595	0.00 [0.00-0.00]	0.11 [0-0]
Non-ICU non-sterile site	48	37	469,957	0.79 [0.76-0.82]	0.16 [0-0]
Non-ICU sterile site	48	7	469,957	0.15 [0.14-0.16]	0.05 [0-0]
Total inpatient MRSA HAI	**48**	**48**	**489,552**	**0.98 [0.95-1.01]**	**0.23 [0-0]**
Non-inpatient MRSA HAI	48	1	NA	NA	NA
Total MRSA HAI	**48**	**49**	**641,240**	**0.76 [0.74-0.78]**	**0.2 [0.2-0.2]**

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

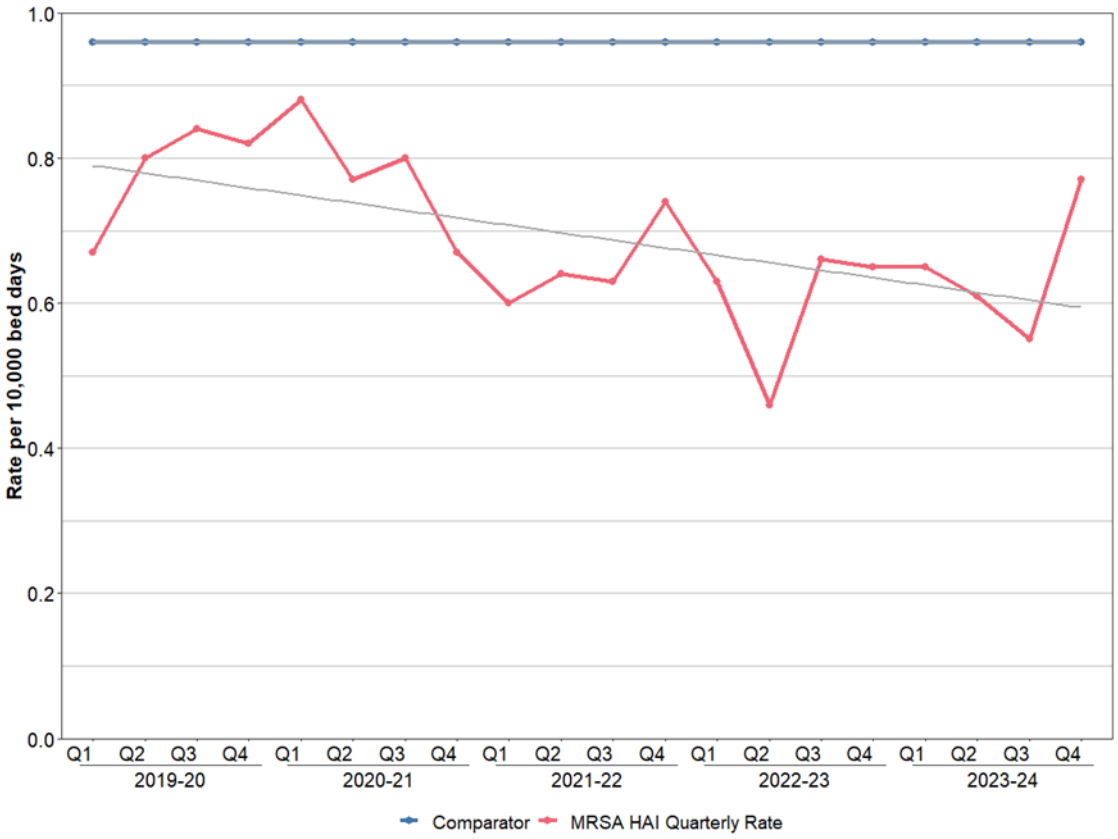


Figure 16 - Total (inpatient and non-inpatient) MRSA HAI rate per 10,000 multi and same day bed-days, 2019-20 to 2023-24

Table 10 - MRSA HAI by strain group, site and place of acquisition, Quarter 4 2023-24

Setting	Micro-B PVL negative MRSA	Micro-B PVL positive MRSA	Micro-C MRSA	Not typed	total
Non-ICU sterile site	3	2	2	0	7
Non-ICU non-sterile site	22	10	5	0	37
ICU non-sterile site	4	0	0	0	4
Proportion	60%	25%	15%	0%	48%
Strain	Not characterised	Qld Clone (5) WA121 (6) WSSP (1)	UK15 (6) USA300 (1)		
Total MRSA HAI	**29**	**12**	**7**	**0**	**48**

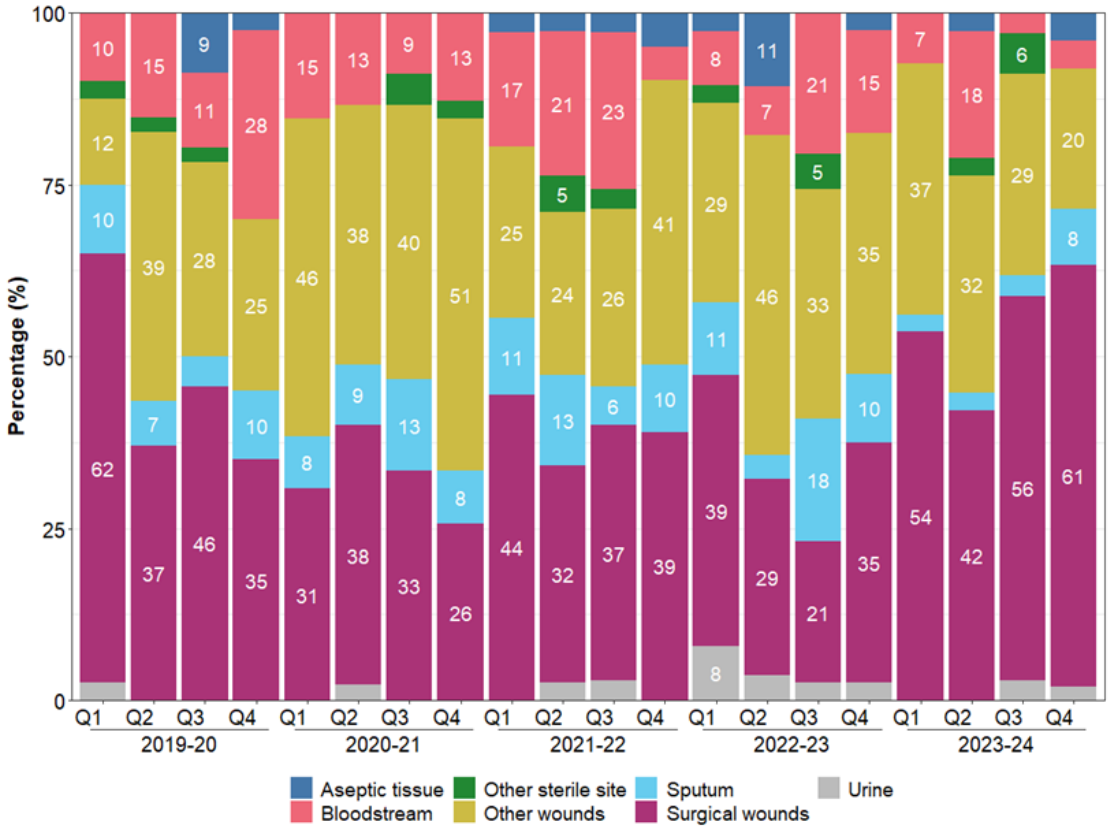


Figure 17 - Percentage of MRSA HAIs by specimen site, 2019-20 to 2023-24

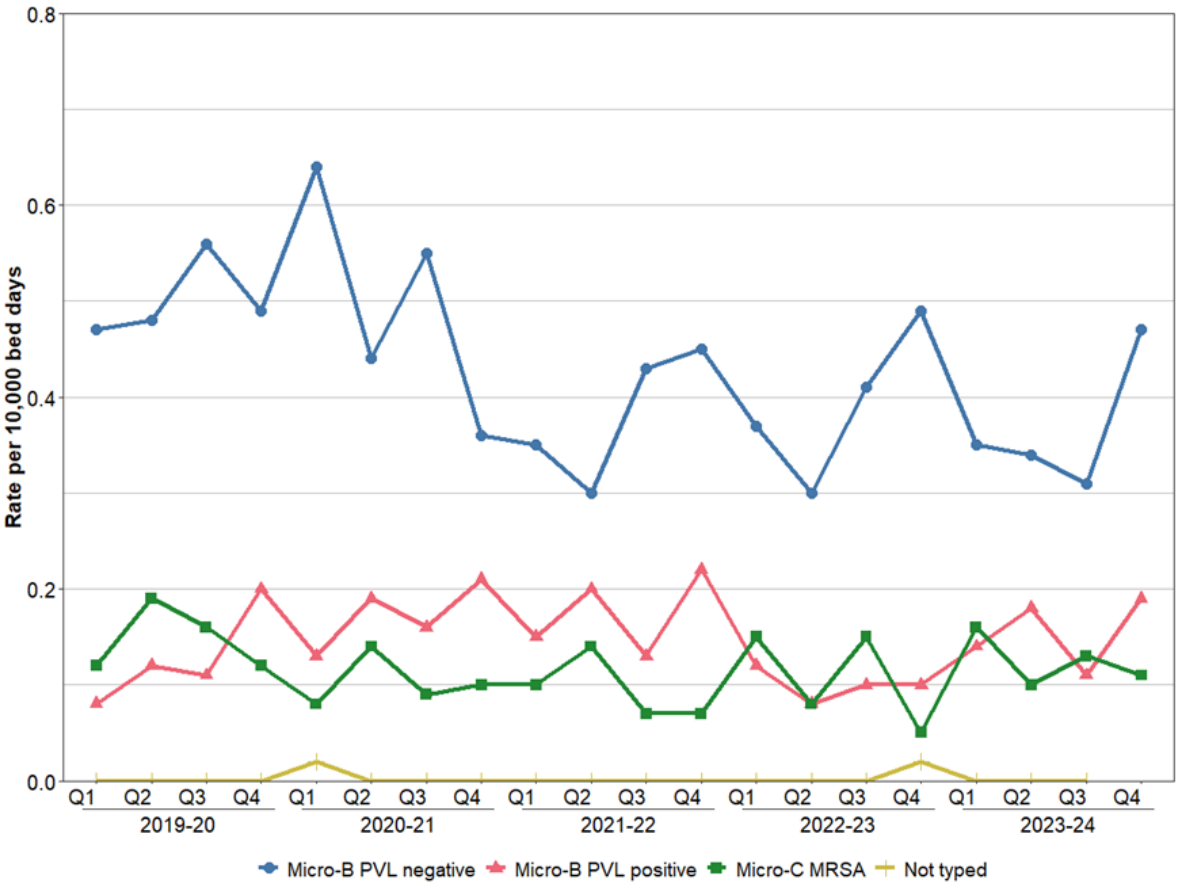


Figure 18 Rate of MRSA HAIs by strain group, 2019-20 to 2023-24

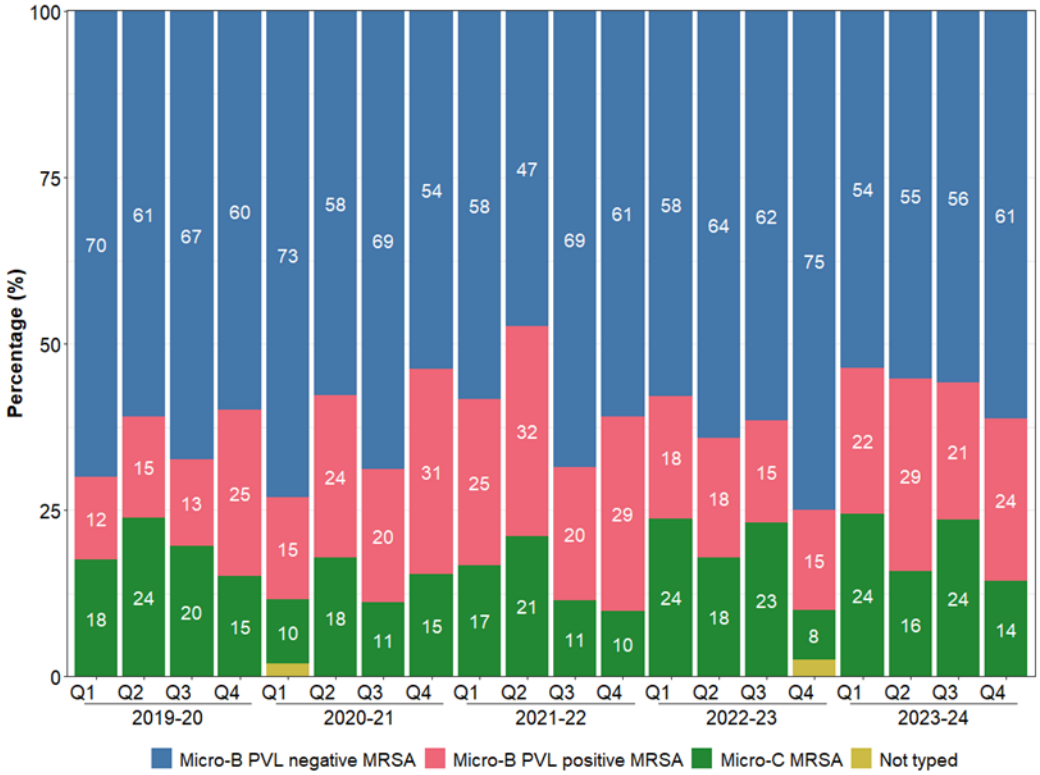


Figure 19 - Percentage of MRSA HAIs by strain group, 2019-20 to 2023-24

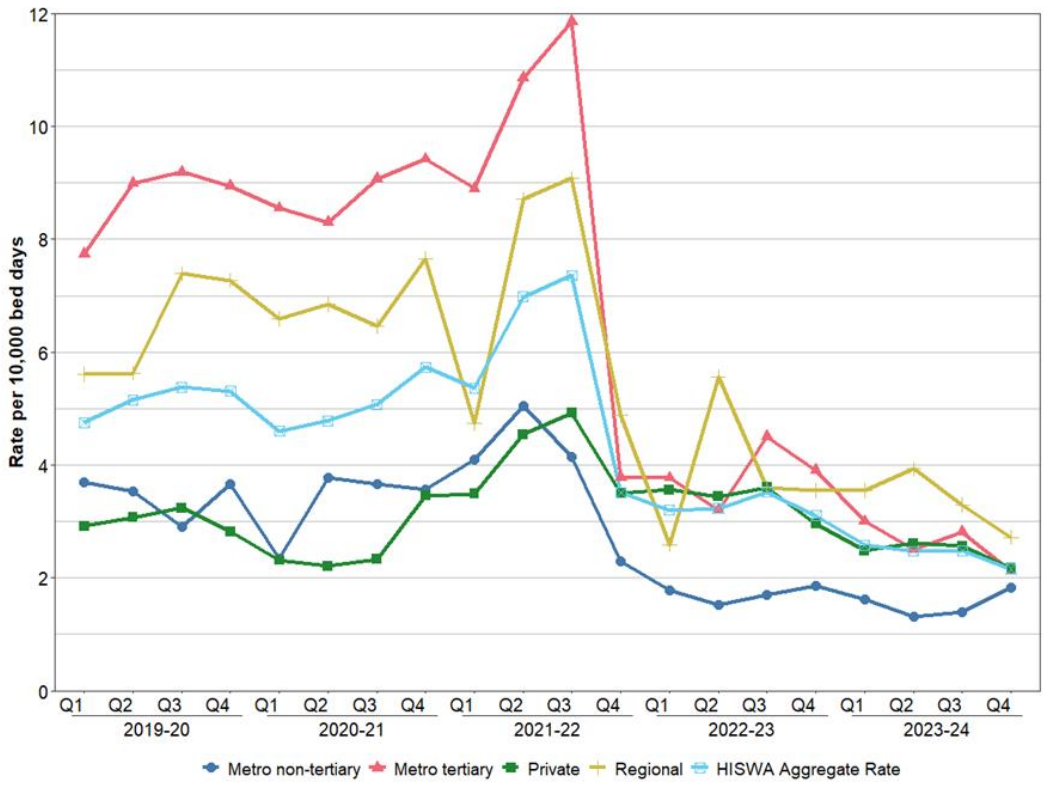
Hospital-identified *Clostridioides difficile* infection

Key points

- The HISWA aggregate hospital-identified *Clostridiodes difficile* infection (HI-CDI) rate of 2.15 was comparable to the rate of 2.48 infections per 10,000 bed-days reported in the previous quarter (Table 11).
- The majority of hospital groups reported small decreases in rates except for the metropolitan non-tertiary hospitals which saw a slight increase (Figure 20).
- Sixty-one cases (41%) were reported from private hospitals and may reflect ongoing testing variation at some private hospitals.

Table 11 - HI-CDI rates by hospital group, Quarter 4 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	44	207,772	2.12 [2.06-2.18]	1.87 [1.86-1.88]
Metropolitan non-tertiary hospitals	8	24	130,862	1.83 [1.76-1.9]	0.75 [0.74-0.76]
Regional hospitals	21	20	73,479	2.72 [2.6-2.84]	1.64 [1.63-1.65]
Private hospitals	14	61	280,701	2.17 [2.12-2.22]	0.96 [0.96-0.96]
Total	**48**	**149**	**692,814**	**2.15 [2.12-2.18]**	**1.27 [1.27-1.27]**



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 20 - HI-CDI rates by hospital group, 2019-20 to 2023-24

Vancomycin-resistant Enterococci sterile-site infections

Key points

- There were 13 vancomycin-resistant Enterococci (VRE) sterile site infections reported in quarter 4 2023-24.
- Eleven infections were identified at metropolitan hospitals, with one tertiary facility reporting the majority (six) of these infections. The other VRE infections were reported from a regional resource centre (two), a metropolitan non-tertiary hospital (one) and a private hospital (one).
- All 13 infections were classified as healthcare-associated infections. Five of the 13 patients were known to be colonised with VRE prior to the onset of their infection.
- Five VRE HAIs were isolated from blood cultures, four from peritoneal cultures, and four from other sterile sites (Figure 21).
- All 13 isolates were identified as *Enterococcus faecium* van B (Figure 22).

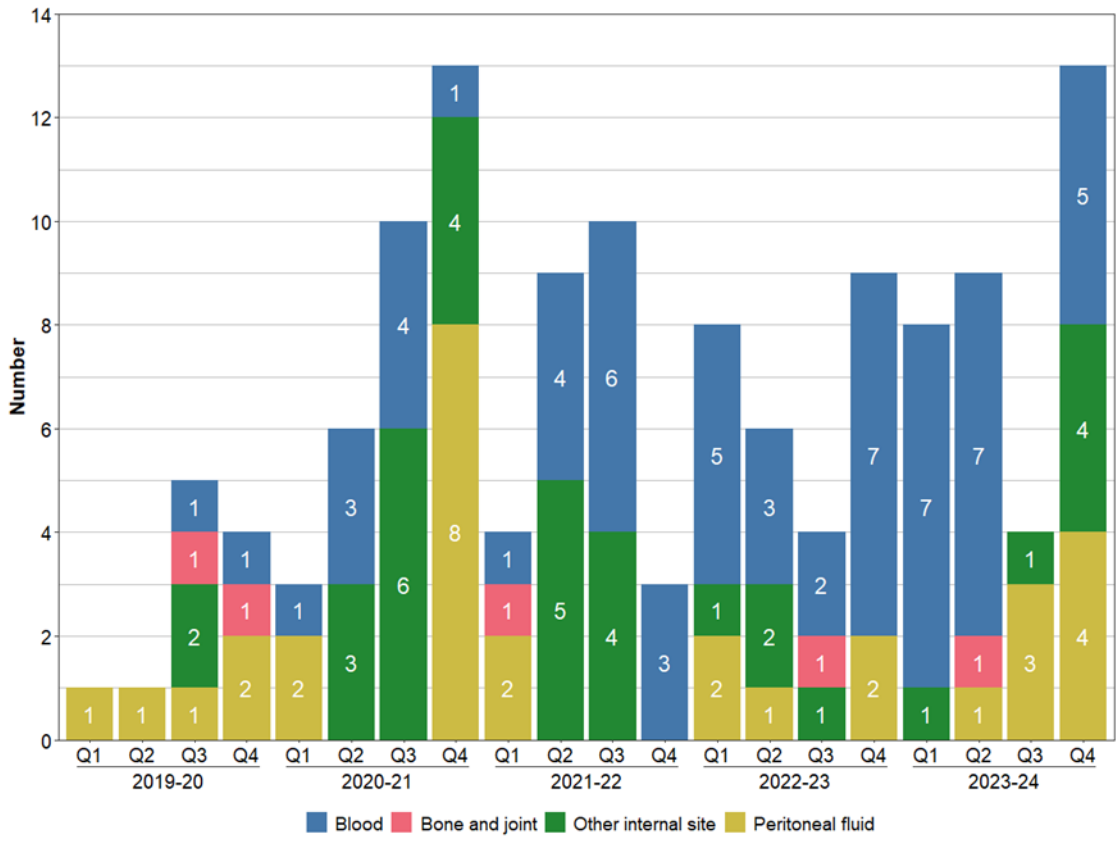


Figure 21 - VRE infections by sterile body sites, 2019-20 to 2023-24

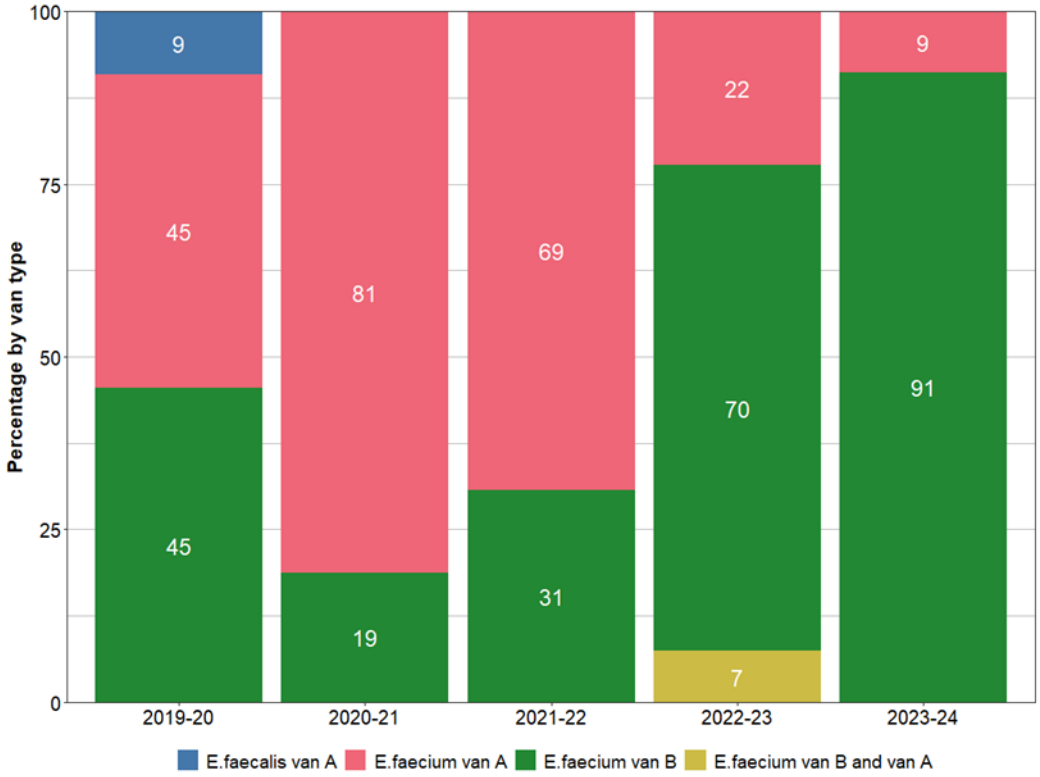
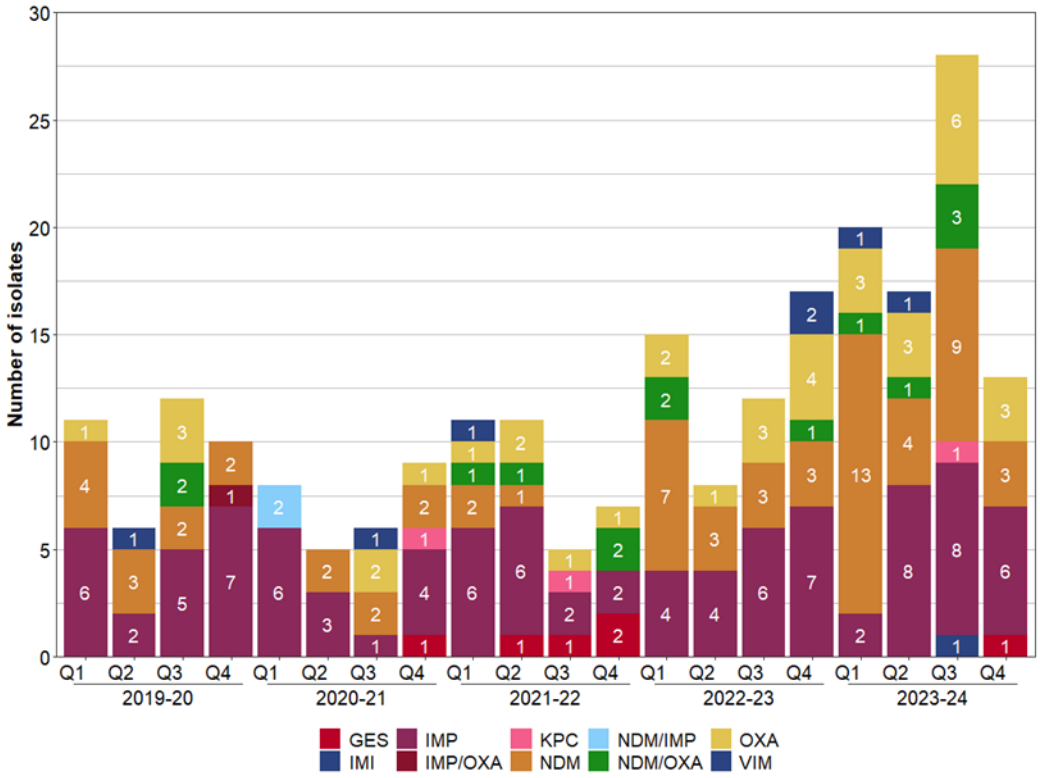


Figure 22 - VRE sterile site infections by van type, 2019-20 to 2023-24

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 carbapenem resistance are referred to the reference laboratory for confirmatory testing for the production of a carbapenemase.
- Of the 56 referred patient isolates in quarter 4, 2023-24, 14 isolates were confirmed to be a CPO, of which 13 were unique CPO isolates.*
- Of the 13 unique CPO isolates, seven were identified from screening and six were clinical specimens.
- The carbapenemase enzymes identified from the 13 confirmed unique CPO isolates included six IMP, three NDM, three OXA and one GES (Figure 23).



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 23 - Number of unique CPO isolates by type, 2019-20 to 2023-24

Occupational exposures

Key points

- A total of 352 occupational exposures were reported by healthcare workers this quarter.
- The total occupational exposure rate was 4.90 compared with 5.07 exposures per 10,000 bed-days reported in the previous quarter (Figure 24).
- The parenteral occupational exposure rate of 3.63 was comparable to 3.98 exposures per 10,000 bed-days reported in the previous quarter (Figure 24).
- The non-parenteral occupational exposure rate of 1.27 was comparable to 1.09 exposures per 10,000 bed-days reported in the previous quarter (Figure 24).
- The majority of parenteral exposures (50%) and non-parenteral exposures (60%) were reported by nurses/midwives (Figure 25 and Figure 26).
- There were 17 parenteral exposures sustained by HCWs who were not considered the primary user of the sharp instrument.

Table 12 - Parenteral and non-parenteral occupational exposures, Quarter 4 2023-24

Exposure type	Number of contributing hospitals	Number of exposures	Number of bed-days	Aggregate rate [95% CI]	Cumulative aggregate rate [95% CI]
Parenteral exposures	49	261	718,370	3.63 [3.59-3.67]	1.13 [1.13-1.13]
Non-parenteral exposures	49	91	718,370	1.27 [1.24-1.3]	0.34 [0.34-0.34]
Total exposures	**49**	**352**	**718,370**	**4.9 [4.85-4.95]**	**1.46 [1.46-1.46]**

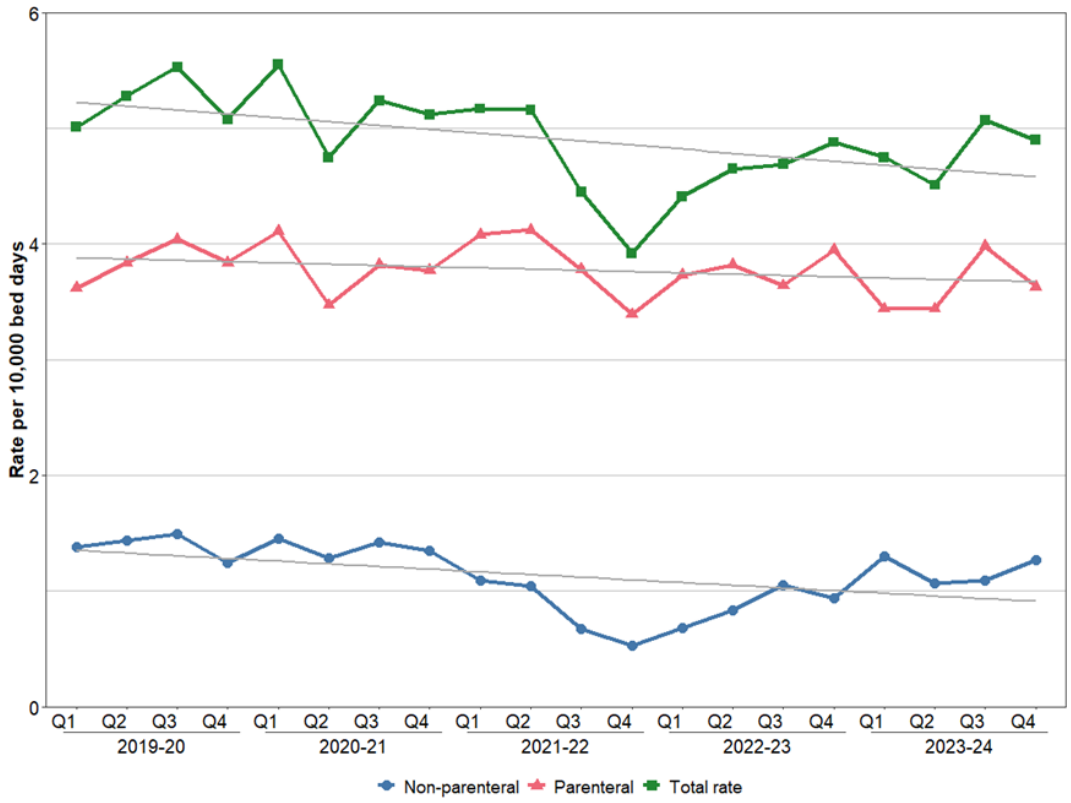


Figure 24 - Parenteral and non-parenteral occupational exposure rates, 2019-20 to 2023-24

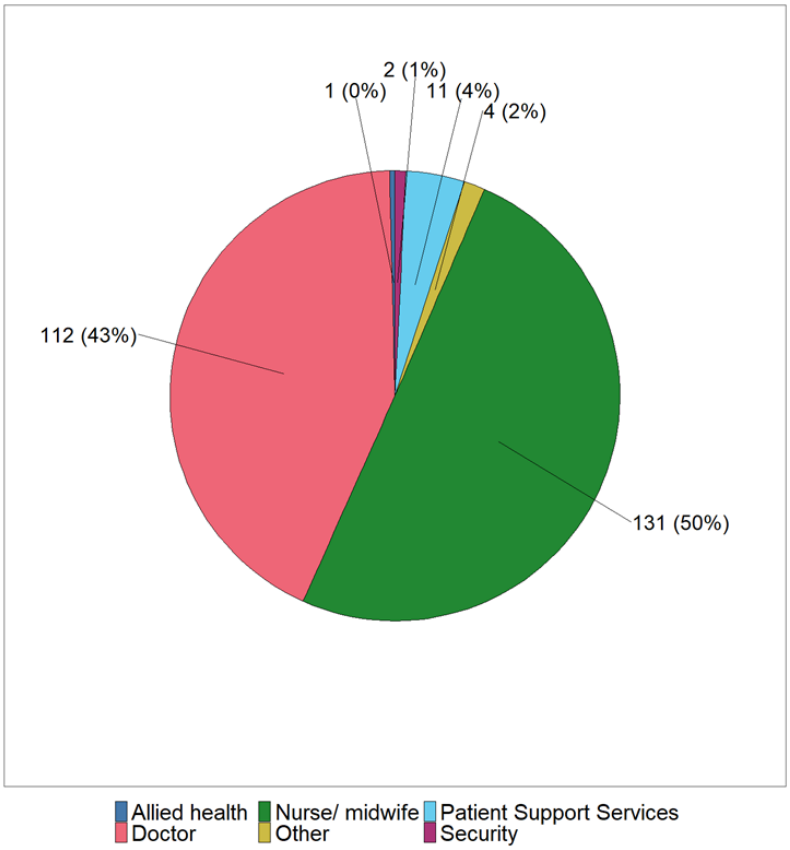


Figure 25 - Parenteral occupational exposures by HCW category, Quarter 4 2023-24

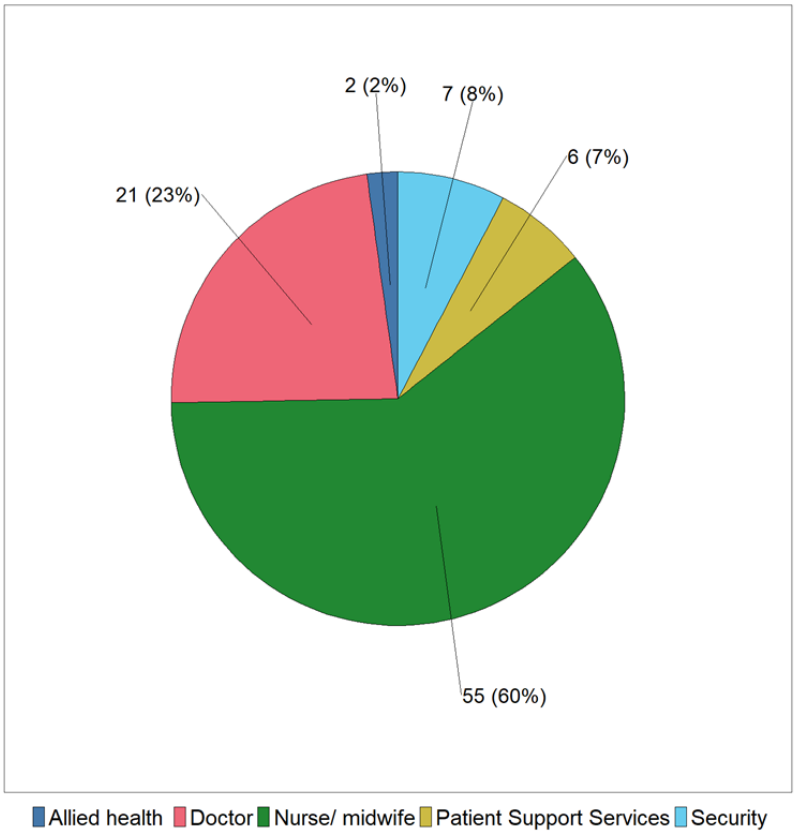


Figure 26 - Non-parenteral occupational exposures by HCW category, Quarter 4 2023-24

Appendix 1 - Data notes

Data quality statement

Date extracted: 2024-08-12; publication date: 2024-08-xx.

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.

June 2024: SJG Bunbury 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 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

Hip and knee arthroplasty*

- Twenty-two hospitals (8 private and 14 public hospitals) 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 used 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

- Twenty-five hospitals (6 private and 19 public hospitals) 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 includes elective and non elective procedures.
- Caesarean section SSIs are frequently superficial infections that are treated outside the hospital setting. There is no standardised post-discharge surveillance methodology used in WA. SSIs detected and treated post-discharge (i.e. as outpatients or by a 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*

- Forty-eight hospitals (11 private and 37 public hpspitals) 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 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 with more recent reports.

- All public hospital HA-SABSI data are validated by the Infection Prevention, Policy and 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. For further details see the Australian Institute of Health and Welfare report *Bloodstream infections associated with hospital care 2019–20* at www.aihw.gov.au/reports/health-care-quality-performance/bloodstream-infections-associated-with-hospital-care

Haemodialysis*

- Twenty-six haemodialysis units (15 private and 11 public hospitals) submit data to HISWA, including two home-based 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 BSIs 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.
- Twelve adult ICUs (4 private and 8 public hospitals) submit data to HISWA.
- One public and tjree private oncology units submit data to HISWA.
- One public haematology CLABSI unit submits data to HISWA.

Multi-resistant organism surveillance

Methicillin-resistant *Staphylococcus aureus**

- MRSA (infection and colonisation) is notifiable in WA under the *Public Health Act 2016* via laboratory reporting.
- Forty-eight hospitals (11 private and 37 public hospitals) 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 from SA Health, Infection Prevention and Control Service, 2018-19 (personal communication).

Vancomycin-resistant *Enterococci**

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

- Forty-nine hospitals (12 private and 37 public hospitals) 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 category and type of exposure.

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