

HISWA

Healthcare Infection Surveillance Western Australia

Quarterly Aggregate Report

Quarter 4 , 2010 – Number 22



Government of Western Australia
Department of Health

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HISWA News

- The ACS&QHC National Workshops to support the implementation of the *Australian Guidelines for the Prevention and Control of Infection in Healthcare* will be held in Perth on June 8th and 9th 2010. Expressions of interest were sought earlier this year to combine a workshop with a HISWA forum and this was positively received. The Workshop and HISWA Forum will be held on the 8th June and a second Workshop for Primary Care providers will be held on the 9th of June. More details on the registration process will be advised in the next few weeks.
- The HAIU welcomes Lauren Tracey who is our A/Program Officer following Leigh's departure. Lauren can be contacted on 08 9388 4866 or email lauren.tracey@health.wa.gov.au.
- We would also like to welcome Dr Vicky D'Abrera who has commenced in the role of Senior Clinical Advisor at the Office of Safety and Quality and as such will provide support to the HAIU. Vicky is a Microbiologist with a passion for infection prevention and control issues.
- Reminder: When completing your CDI infection data, can you please ensure you select **CDI Hospital** as **Place of Acquisition** in the drop down menu.

Quarter 3 Highlights

- The inpatient MRSA HAI rate decreased for the 4th consecutive quarter and is below the 2010 HISWA aggregate rate.
- The sustained reduction in haematology CLABSI from the 2 reporting facilities.
- The downward trend in the parenteral occupational exposure rate.

Quarter 3 Concerns

- Of the 18 SSI reported following knee arthroplasty, 13 (72%) were recorded as deep SSIs. The knee SSI rate has remained above the comparator since Quarter 1, 2008.
- The number and percentage of hospital-associated MRSA strains causing MRSA HAIs increased, from 11 (27.5%) in Qtr 3 to 14 (37%) this quarter. The majority (13, 93%) of these were caused by UK 15 strains.
- The rate of *Clostridium Difficile* has increased to 2.60 infections per 10,000 bed-days and is now above the comparator rate.
- 49 healthcare-associated SABSIs (HA-SABSIs) were reported, 23 of which were attributed to intravascular devices. The HA-SABSIs rate increased this quarter.

Data Notes for Quarter 4, 2010

- MRSA data was not submitted by Moora and Kununurra Hospitals.
- The OPIV Therapy contributor was unable to supply denominator data.
- NHHI audit period 3 data was previously included in the Q3 HISWA aggregate report. National comparator data for period 3 has been included in this report.

Surgical site infections

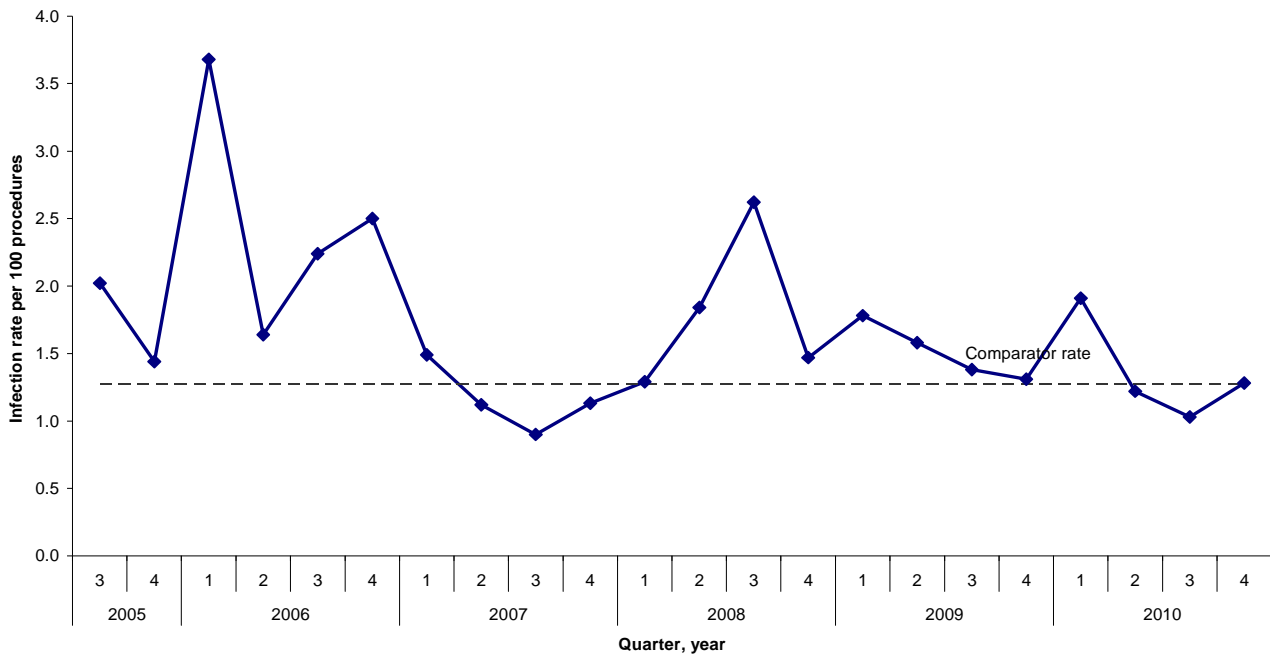
Hip Arthroplasty SSI

	No. of contributing hospitals	No. of procedures	No. SSI	Aggregate rate (95% CI)	Cumulative aggregate (95% CI)	Comparator rate [1]
Hip arthroplasty risk all (for hospitals with <100 procedures)	7	78	0	0.00 (0.00 – 5.92)	0.75 (0.31 – 1.68)	Unavailable
Hip arthroplasty risk index 0	12	399	3	0.78 (0.17 – 2.42)	1.10 (0.90 – 1.36)	0.67
Hip arthroplasty risk index 1	12	272	5	1.95 (0.72 – 4.66)	2.52 (2.07 – 3.07)	1.44
Hip arthroplasty risk index 2	12	31	2	8.33 (1.32 – 27.25)	6.35 (4.44 – 9.01)	2.40
Hip arthroplasty risk index 3	12	0	0	0.00 (0.00 – 0.00)	11.11 (0.17 – 45.98)	Unavailable
Total Hip arthroplasty	19	780	10	1.28 (0.67 – 2.39)	1.68 (1.47 – 1.91)	1.27

Rate per 100 procedures

[1] NHSN

Aggregate Hip Arthroplasty SSI Rate



Comment

The aggregated hip SSI rate increased this quarter and is comparable with the international comparator rate. The rate for Qtr 4, 2010 was 1.28 infections per 100 procedures compared to 1.03 infections per 100 procedures in Qtr 3, 2010. The cumulative aggregate rate of 1.68 infections per 100 procedures for all hip arthroplasty was greater than comparator rate of 1.27 infections per 100 procedures.

Surgical site infections

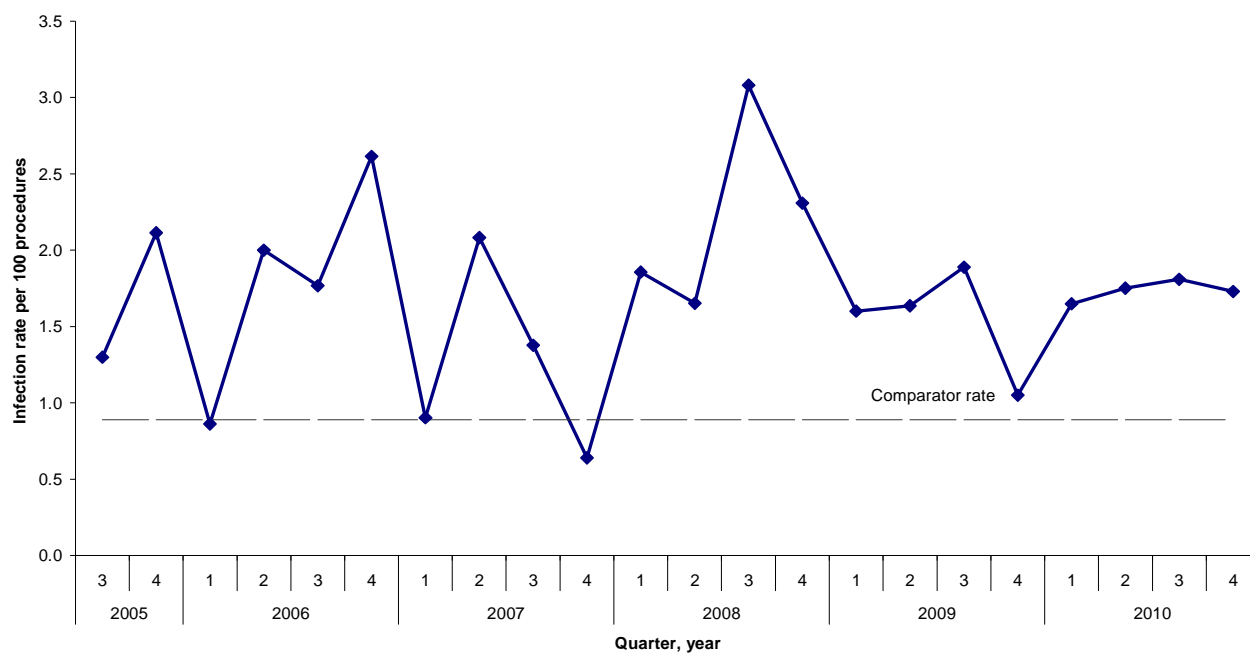
Knee Arthroplasty SSI

	No. of contributing hospitals	No. of procedures	No. SSI	Aggregate rate (95% CI)	Cumulative aggregate (95% CI)	Comparator rate [1]
Knee arthroplasty risk all (for hospitals with <100 procedures)	7	113	3	2.97 (0.69 – 8.84)	2.54 (1.81 – 3.57)	Unavailable
Knee arthroplasty risk index 0	12	548	5	0.92 (0.34 – 2.21)	1.21 (1.02 – 1.44)	0.58
Knee arthroplasty risk index 1	12	336	5	1.57 (0.58 – 3.77)	2.12 (1.76 – 2.56)	0.99
Knee arthroplasty risk index 2	12	41	5	14.29 (5.90 – 29.99)	5.21 (3.70 – 7.30)	1.60
Knee arthroplasty risk index 3	12	0	0	0.00 (0.00 – 0.00)	0.00 (0.00 – 44.79)	Unavailable
Total Knee arthroplasty	19	1038	18	1.73 (1.09 – 2.75)	1.71 (1.53 – 1.92)	0.89

Rate per 100 procedures

[1] NHSN

Aggregate Knee Arthroplasty SSI Rate



Comment

The aggregated rate decreased slightly this quarter. The aggregated rate for Qtr 4, 2010 was 1.73 infections per 100 procedures compared to 1.81 infections per 100 procedures in Qtr 3, 2010. The quarterly aggregate rate has been above the comparator rate since Qtr 1 2008.

Healthcare associated MRSA infections

Healthcare associated MRSA

	No. of contributing hospitals	No. of MRSA Infections this Qtr	No. of bed-days	Aggregate rate (95% CI)	Cumulative aggregate (95% CI)	Comparator rate [2]
MRSA ICU sterile site	10	1	15,119	0.66 (0.00 – 4.23)	1.36 (1.01 – 1.84)	2.52
MRSA ICU non-sterile site	10	1	15,119	0.66 (0.00 – 4.23)	0.41 (0.23 – 0.71)	5.20
MRSA Non-ICU sterile site	45	9	432,383	0.49 (0.31 – 0.75)	0.62 (0.57 – 0.68)	0.30
MRSA Non-ICU non-sterile site	45	21	432,383	0.21 (0.10 – 0.40)	0.23 (0.20 – 0.26)	1.30
Total in-patient MRSA HAI	45	32	447,502	0.72* (0.50 – 1.02)	0.88 (0.82 – 0.95)	1.42[#]
MRSA HAI non-inpatient	45	6	NA	NA	NA	Unavailable
Total MRSA Healthcare Associated Infection	45	38	552,867	0.69[†] (0.50 – 0.95)	NA	Unavailable

* Rate per 10,000 multi-day bed-days;

[2] South Australian Infection Control Service

[†] Rate per 10,000 multi- and same-day bed-days

[#] Rate per 10,000 patient days

MRSA by strain analysis for this quarter

MRSA Strains Causing Healthcare Associated Infections (All isolates)	Count	Percentage
WA CA-MRSA (WA clones)	23	60%
Imported CA-MRSA (Qld Clone, USA 300, WSPP)	1 (QLD CLONE)	3%
Hospital-associated MRSA (AUS clones, UK clones, NY/JAPAN)	14 (1 AUS2, 13 UK15)	37%
Total	38	100%

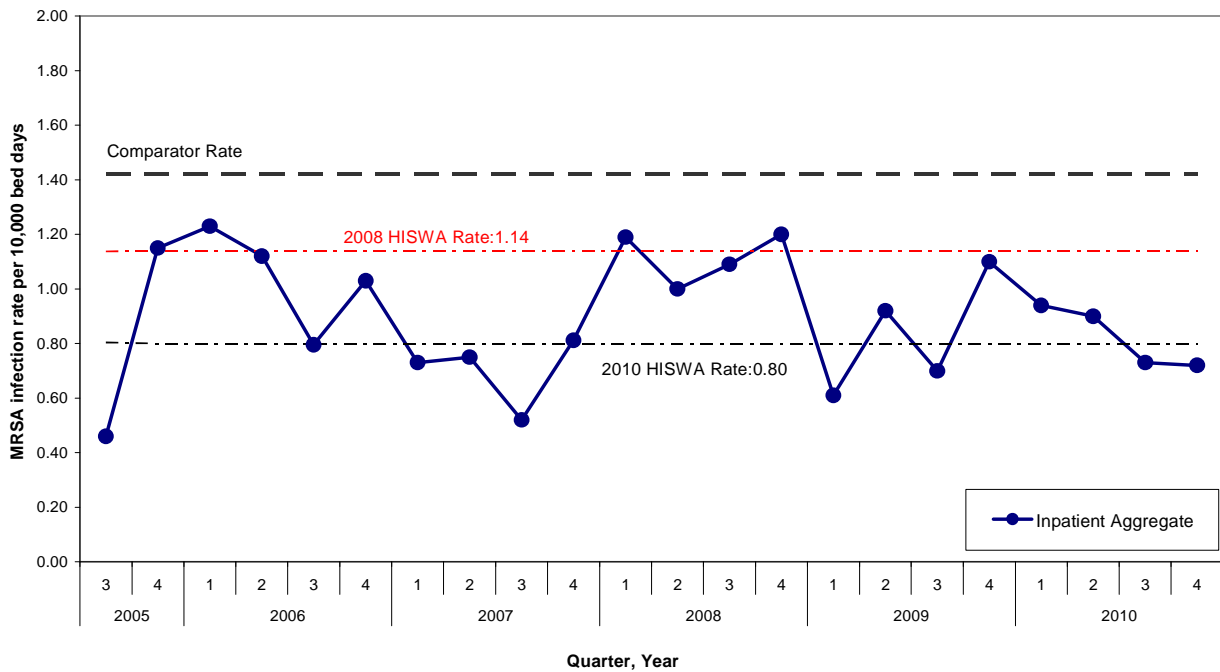
MRSA by place of detection for this quarter

Detected	WA CA-MRSA	Imported CA-MRSA	Hospital-associated MRSA	Total
ICU Sterile	1	0	0	1
ICU Non-Sterile	1	0	0	1
Non ICU Sterile	5	0	4	9
Non ICU Non-Sterile	12	1	8	21
Non-inpatient	4	0	2	6
Total	23	1	14	38

Healthcare associated MRSA infections

MRSA Healthcare associated infections attributed to in-patient care reported by all contributors

Aggregate Inpatient Healthcare Associated MRSA infections



Comment

The majority (84.0%) of all MRSA HAIs were recorded in the inpatient setting with (55%) of all MRSA HAIs occurring in the non-ICU setting and from non-sterile sites. The inpatient MRSA HAI rate remains below the comparator rate and decreased for the 3rd consecutive quarter. The annual cumulative rate decreased from 1.14 (2008) to 0.80 (2010).

The majority (60%) of MRSA HAIs were caused by MRSA strains that are endemic in the WA community. The number and percentage of hospital-associated strains causing MRSA infections increased from 11 (27.5%) in Qtr 3, 2010 to 14 (37%) in Qtr 4, 2010.

Hospital *Clostridium difficile* infection

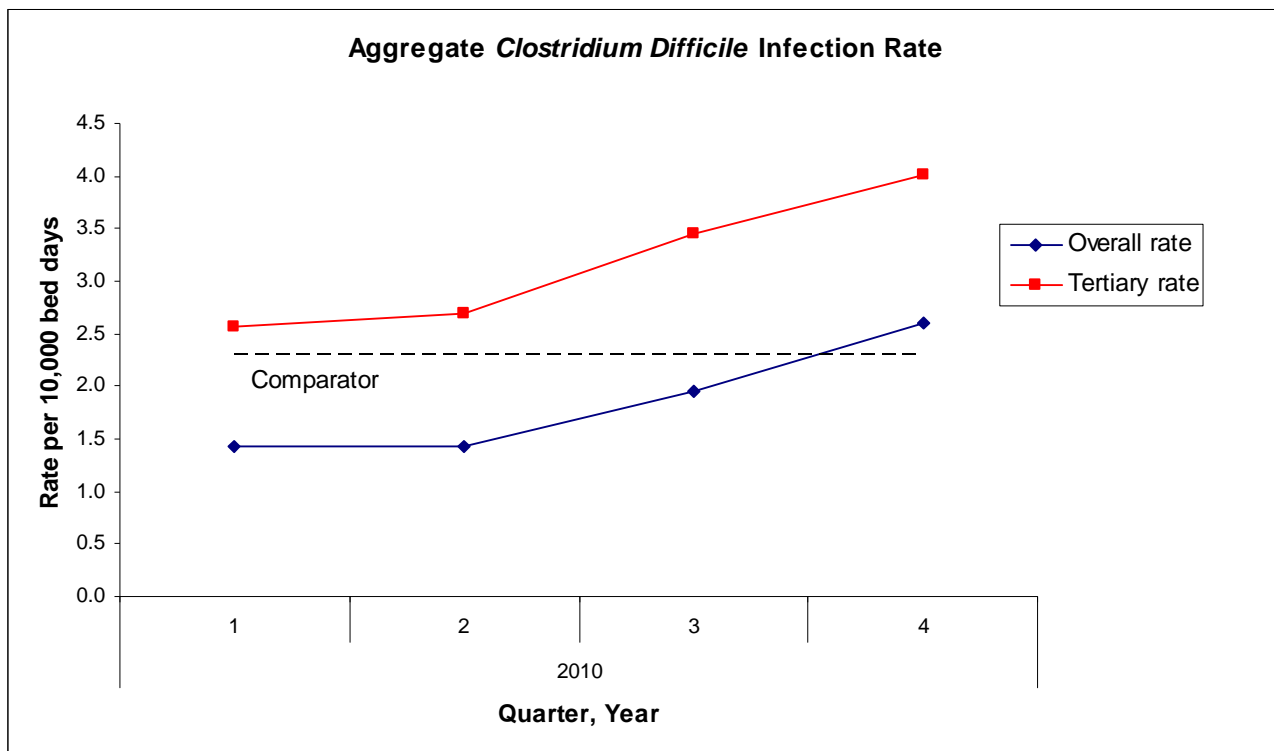
Clostridium difficile

Hospital Type	No. of contributing hospitals	No. of C. Diff infections this quarter	No. of bed-days	Aggregate rate (95% CI)	Cumulative aggregate (95% CI)	Comparator rate [3]
Tertiary	5	96	239,430	4.01 (3.28 - 4.90)	3.40 (3.02 - .082)	N/A
Metropolitan non-tertiary	8	29	122,613	2.37 (1.64 - 3.42)	1.11 (0.85 - 1.45)	N/A
WACHS	21	5	60,749	0.82 (0.30 - 2.01)	0.55 (0.32 - 0.96)	N/A
Private	8	7	103,238	0.68 (0.30 - 1.44)	0.42 (0.26 - 0.68)	N/A
Total	42	137	526,030	2.60* (2.20 - 3.08)	1.87 (1.69 - 2.07)	2.30[#]

* Rate per 10,000 multi- and same-day bed-days (including psychiatric bed-days)

[3] Tasmanian Healthcare Associated Infection Report

[#] Rate per 10,000 patient days



Comment

The majority of hospital *Clostridium difficile* infections (70%) are reported from the tertiary public hospitals. The HISWA rate increased from 1.95 in quarter 3, 2010 to 2.60 per 10,000 bed-days in this quarter. The HISWA aggregate rate of 2.60 is above the comparator rate of 2.30 infections per 10,000 patient days.

Haemodialysis access-associated bloodstream infection

Haemodialysis associated bloodstream infection by type of access

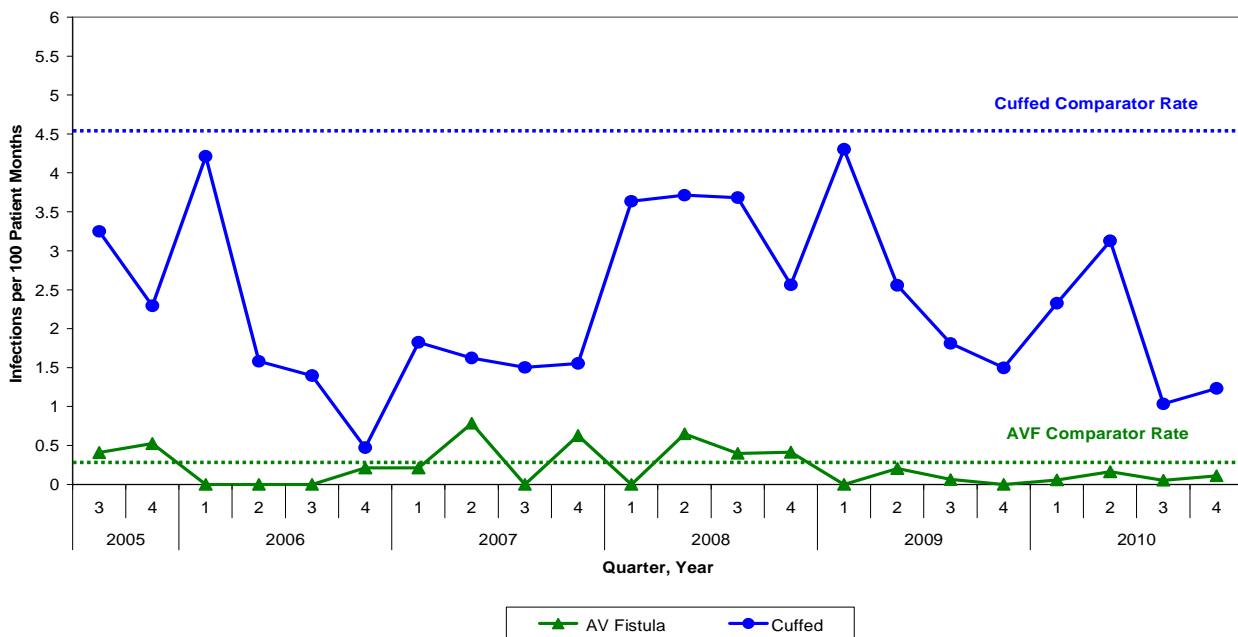
	No. of contributing haemodialysis units	Aggregate access utilisation ratio (%)	No. of BSI	No. of patient months	Aggregate rate this Qtr (95% CI)	Cumulative aggregate (95% CI)	Comparator rate [4,5]
AV fistula BSI	21	73.50	2	1,886	0.11 (0.00 – 0.42)	0.15 (0.10 – 0.22)	0.26
AV graft BSI	21	3.62	1	93	1.08 (0.00 – 6.54)	0.73 (0.35 – 1.47)	0.67
Synthetic and native vessel graft							
Cuffed catheter BSI	21	22.17	7	569	1.23 (0.55 – 2.59)	2.17 (1.86 – 2.53)	4.51
Non-cuffed catheter-associated BSI	21	0.70	1	18	5.56 (0.00 – 27.98)	3.82 (1.94 – 7.24)	7.76

per100 patient months

[4, 5] Klevens, R.M et al

Rate

Aggregate Haemodialysis Associated BSI: Cuffed Catheter and AV Fistula



Comment

The majority (73%) of patients received haemodialysis via an AV fistula, which was the same ratio as last quarter. This high AV fistula utilisation ratio reflects the contribution of data from all satellite units where AV fistula use is highest. The rate of AV fistula infection remains low and has been below the comparator for the last eight quarters. The rate of cuffed catheter associated BSI increased this quarter, however remains well below the comparator rate.

Central line associated bloodstream infection (CLABSI)

Haematology CLABSI

	No. of contributing hospitals	No. of line days	No. of CLABSI	Aggregate rate (95% CI)	Cumulative aggregate (95% CI)	Comparator rate
Haematology peripherally inserted CLABSI	2	2,884	4	1.39 (0.42 – 3.74)	2.94 (2.35 – 3.68)	Unavailable
Haematology centrally inserted CLABSI	2	1,330	1	0.75 (0.00 – 4.79)	4.62 (3.77 – 5.66)	Unavailable

Rate per 1,000 central line days

Oncology CLABSI

	No. of contributing hospitals	No. of line days	No. of CLABSI	Aggregate rate (95% CI)	Cumulative aggregate (95% CI)	Comparator rate
Oncology peripherally inserted CLABSI	1	1,001	0	0.00 (0.00 – 4.75)	0.18 (0.04 – 0.55)	Unavailable
Oncology centrally inserted CLABSI	1	7	0	0.00 (0.00 – 409.75)	0.00 (0.00 – 15.17)	Unavailable

Rate per 1,000 central line days

Outpatient IV therapy CLABSI

	No. of contributing hospitals	No. of line days	No. of CLABSI	Aggregate rate (95% CI)	Cumulative aggregate (95% CI)	Comparator rate
OPIV peripherally inserted CLABSI	1	0	0	0.00 (0.00 – 0.00)	0.00 (0.00 – 0.28)	Unavailable
OPIV centrally inserted CLABSI	1	0	0	0.00 (0.00 – 0.00)	0.00 (0.00 – 0.00)	Unavailable

Rate per 1,000 central line days

Comment

The 5 CLABSI from specialised units were all reported from the two Haematology units. The rate of peripherally inserted haematology CLABSI decreased from 1.81 per 1,000 central line days in Qtr 3, 2010, to 1.39 this quarter. There was one centrally inserted haematology CLAB infection reported this quarter.

OPIV therapy line days were unavailable from the contributing hospital.

Central line associated bloodstream infection

Adult ICU CLAB infections

	No. of contributing hospitals	No. of line days	No. of infections this Qtr	Aggregate rate (95% CI)	Cumulative aggregate (95% CI)	Comparator rate [6]
ICU peripherally inserted CLAB	5	395	0	0.00 (0.00 – 11.94)	0.60 (0.00 – 3.83)	0.64
ICU centrally inserted CLAB	5	3,405	3	0.88 (0.18 – 2.75)	1.48 (1.18 – 1.86)	1.90
ICU total CLAB	5	3,800	3	0.79 (0.16 – 2.47)	1.46 (1.16 – 1.83)	1.82

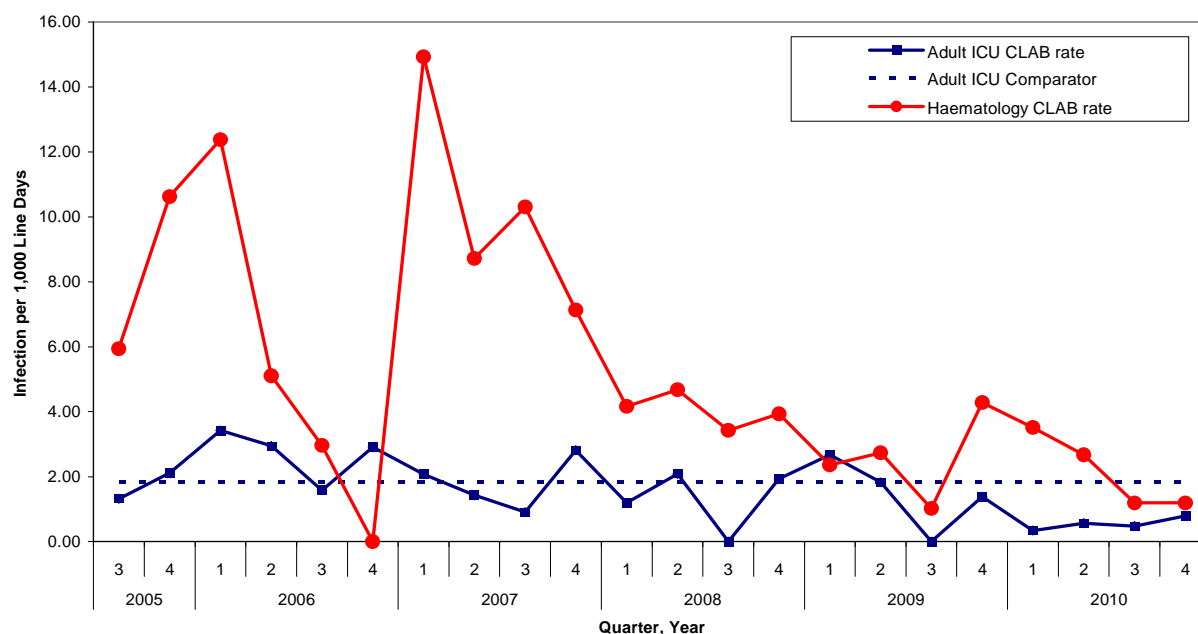
Rate per 1,000 central line days

[6] ACHS 2006 - 2009

Adult ICU central line utilisation ratio (CLUR)

	No. of contributing hospitals	No. of line days	No. of bed days	Aggregate CLUR (%)
Adult ICU peripherally inserted CLUR	5	395	4,869	8%
Adult ICU centrally inserted CLUR	5	3,405	4,869	69%

Adult ICU and Haematology CLAB Rates



Comment

There were 3 Adult ICU CLABSI reported this quarter. The aggregate rate increased this quarter to 0.79 per 1,000 line days but remains below the comparator. The aggregate haematology CLABSI rate remained the same as the previous reporting period, following decreases for three consecutive quarters.

Staphylococcus aureus bloodstream infection

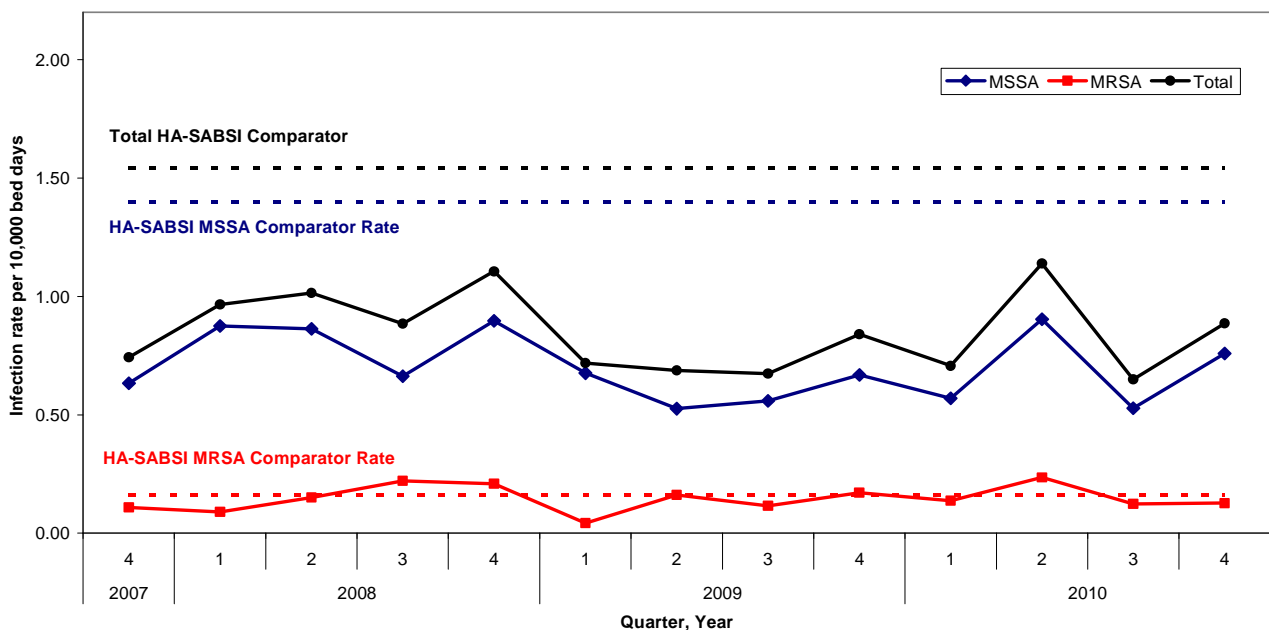
	Number of contributing hospitals	Total number of bed days	Number of infections this Qtr	Aggregate rate (95% CI)	Cumulative aggregate (95% CI)	Comparator rate [7]
Total methicillin-sensitive <i>Staphylococcus aureus</i> (MSSA) bloodstream infection	45	552,867	42	0.76 (0.56 – 1.03)	0.70 (0.64 – 0.77)	1.40
Total methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) bloodstream infection	45	552,867	7	0.13 (0.07 – 0.33)	0.15 (0.12 – 0.18)	0.16
Total <i>Staphylococcus aureus</i> bloodstream infection	45	552,867	49	0.83* (0.67 – 1.18)	0.85 (0.78 – 0.92)	1.54#

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

[7] Tasmanian Infection Prevention and Control Unit

Rate per 10,000 patient days

Aggregate *Staphylococcus aureus* Bloodstream Infection

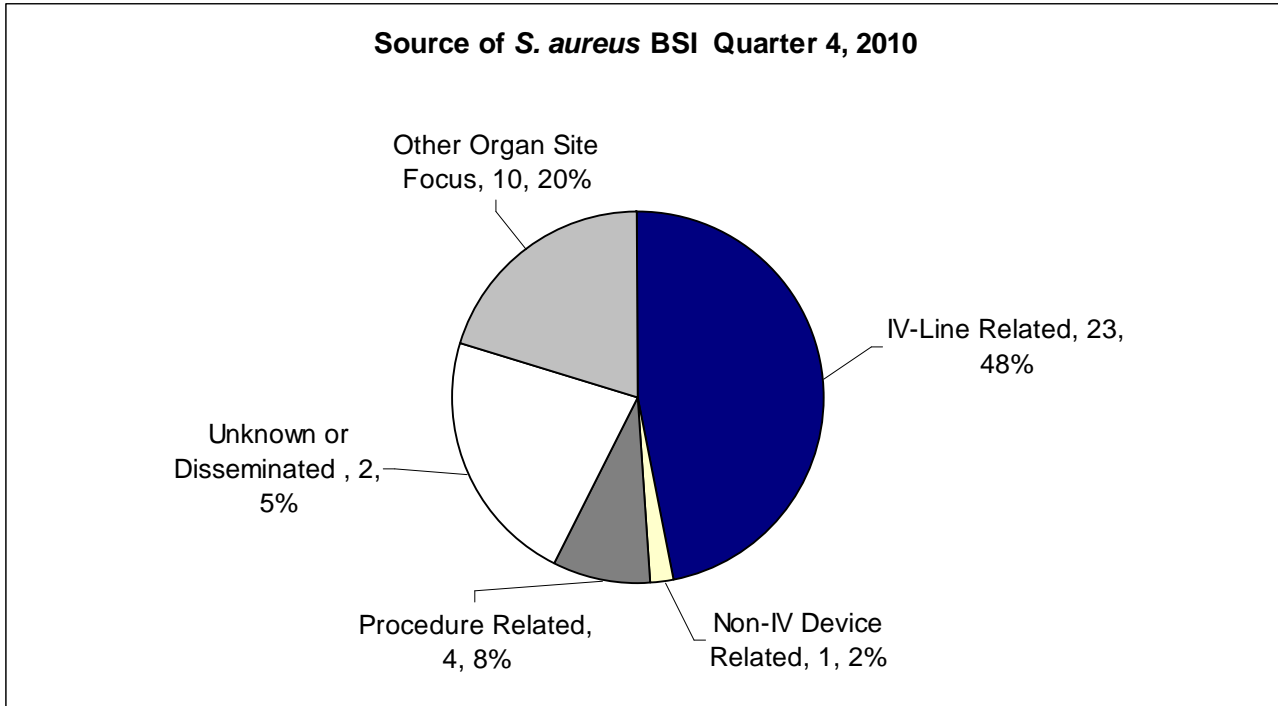


Comment

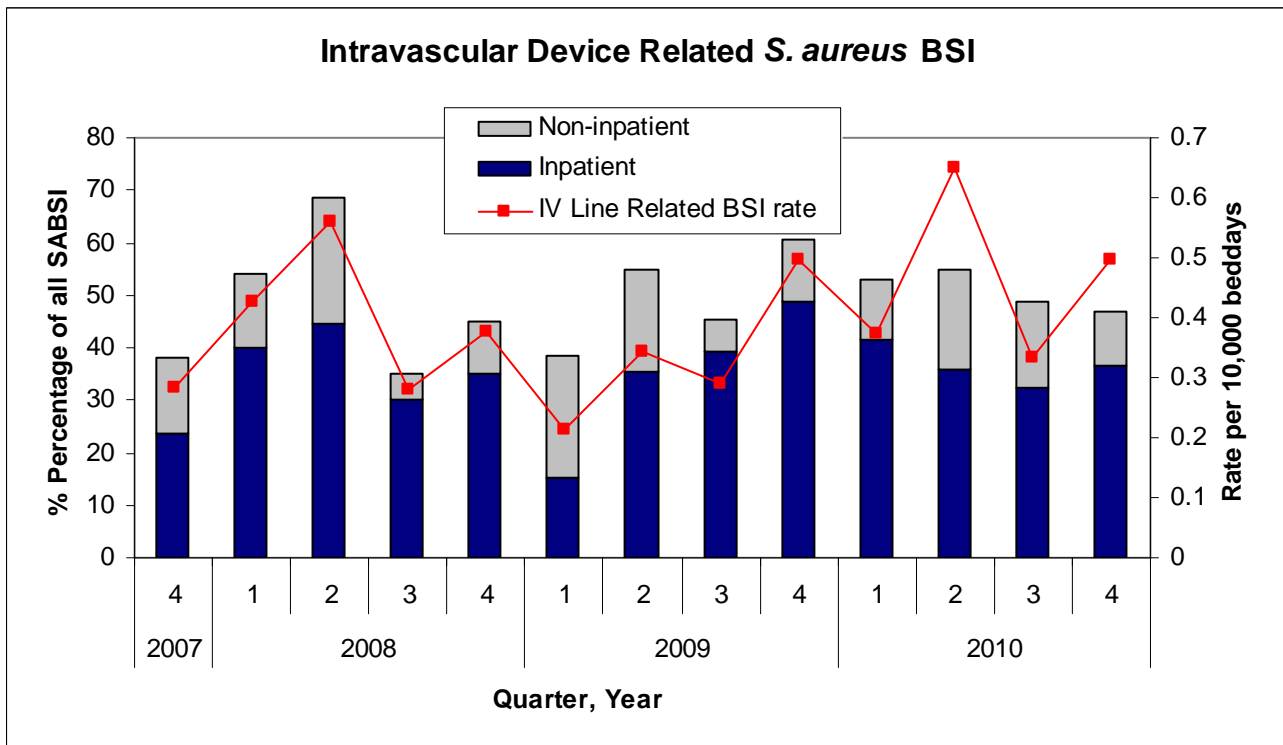
The aggregate rate of healthcare-associated *Staphylococcus aureus* bloodstream infection (HA-SABSI) increased from 0.65 in Qtr 3, 2010 to 0.83 per 10,000 occupied bed-days for this quarter. The most frequently identified source for HA-SABSI continues to be from intravascular devices (48%). The IVD associated HA-SABSI rate increased from 0.33 Qtr 3, 2010 to 0.49 per 10,000 bed days for this quarter. The overall HA-SABSI and the MSSA HA-SABSI remain well below the comparator rate but the MRSA HA-SABSI is comparable with the comparator.

Staphylococcus aureus bloodstream infection

Source of *Staphylococcus aureus* bloodstream infection



Staphylococcus aureus bloodstream infection attributed to intravascular devices



Occupational exposure

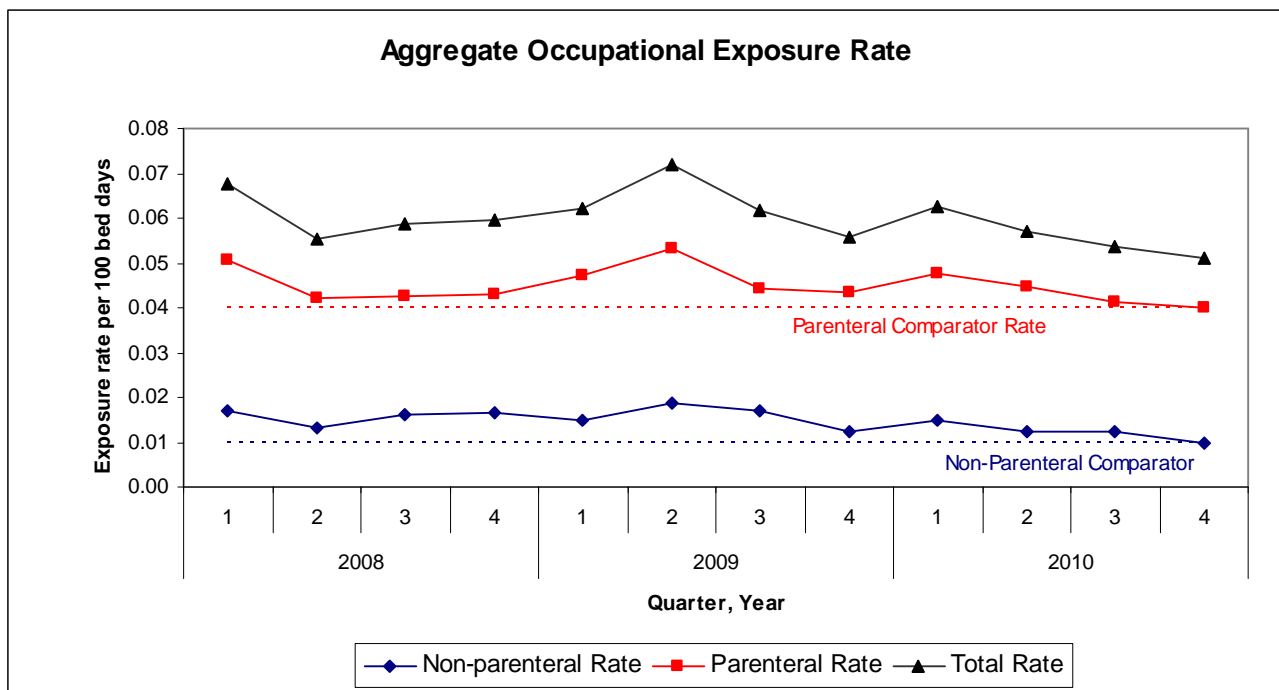
Occupational Exposures Parenteral and Non-parenteral

Exposure Type	No. of contributing hospitals	No. of Bed days	No. of Exposures this Qtr	Aggregate rate (95% CI)	Cumulative aggregate (95% CI)	Comparator rate [8]
Non-Parenteral	45	612,905	82	0.01 (0.01 – 0.02)	0.01 (0.01 – 0.02)	0.01
Parenteral	45	612,905	230	0.04 (0.03 – 0.04)	0.04 (0.04 – 0.05)	0.04
Total Exposures	45	612,905	312	0.05 (0.05 – 0.06)	0.06 (0.06 – 0.06)	Not Available

Rate per 100 bed-days (multi and same day; includes psychiatric)

[8] ACHS 2005 - 2009

Parenteral and non-parenteral occupational exposure reporting

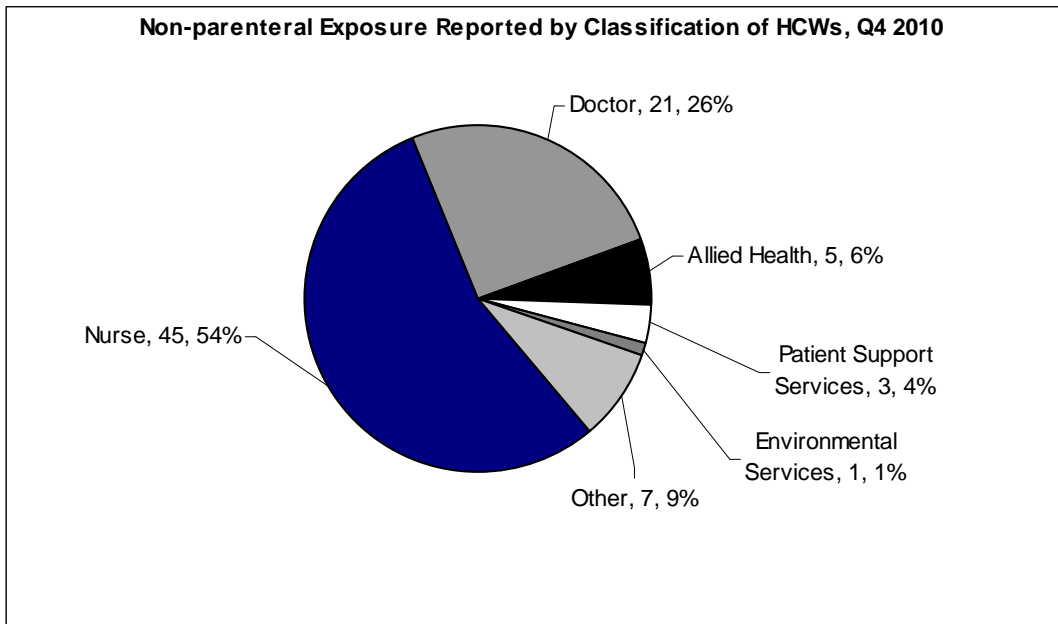


Comment

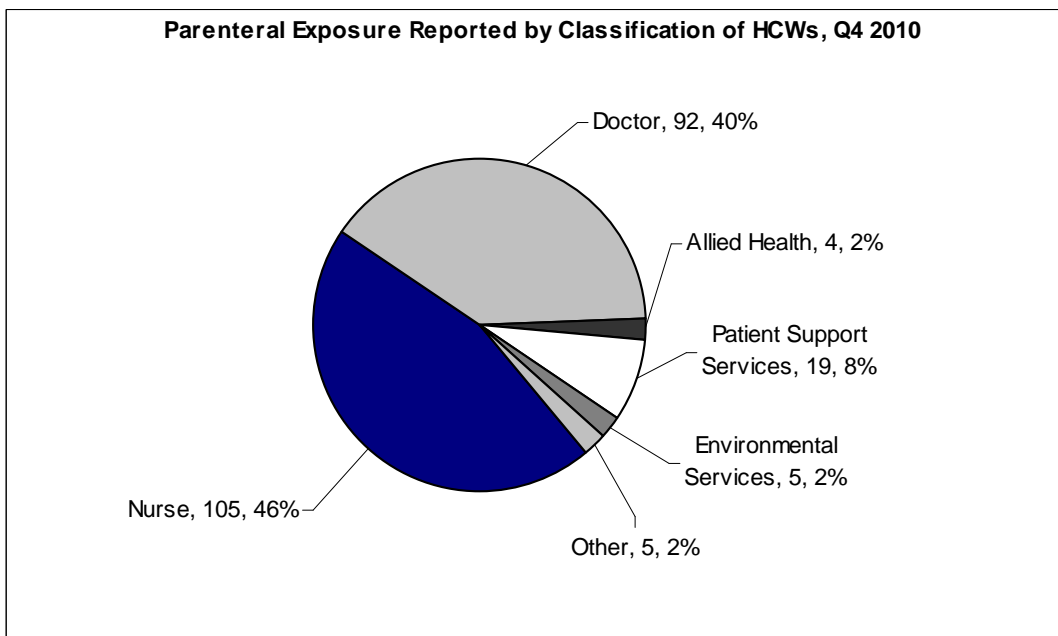
The overall rate of occupational exposures decreased this quarter for the 4th consecutive quarter. The parenteral and non-parenteral occupational exposure rates are equal to the comparator. The majority of parenteral (46%) and non-parenteral exposures (54%) continue to be reported by nurses.

Occupational exposure

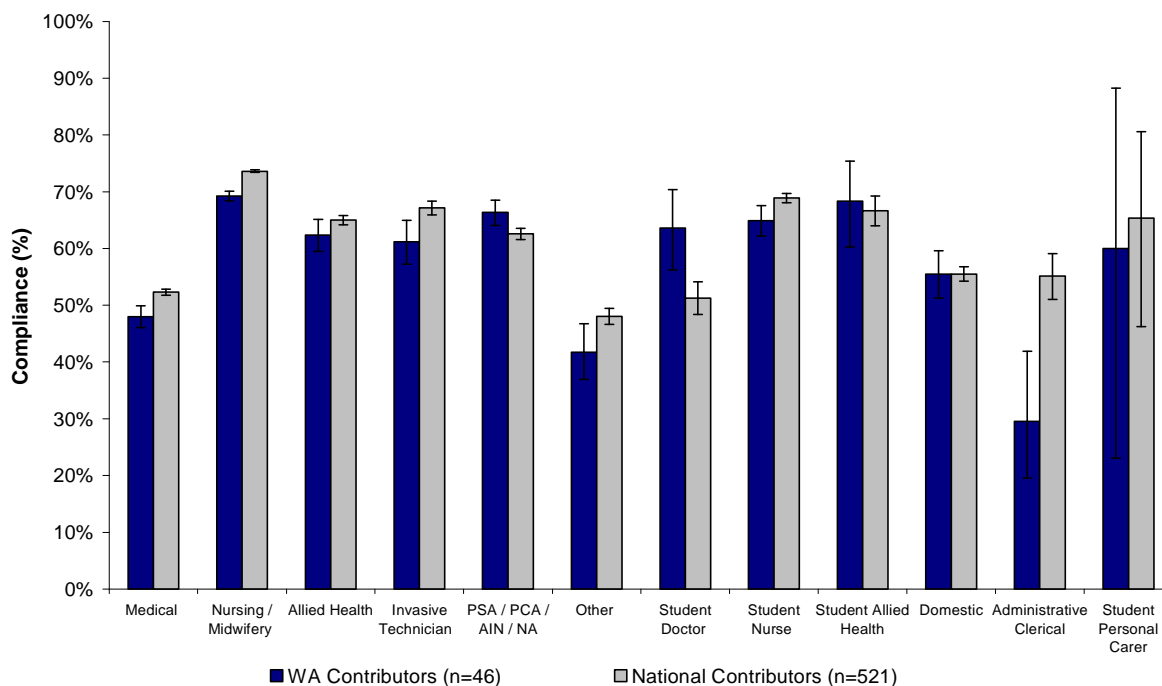
Classification of HCW reporting a non-parenteral occupational exposure



Classification of HCW reporting a parenteral occupational exposure



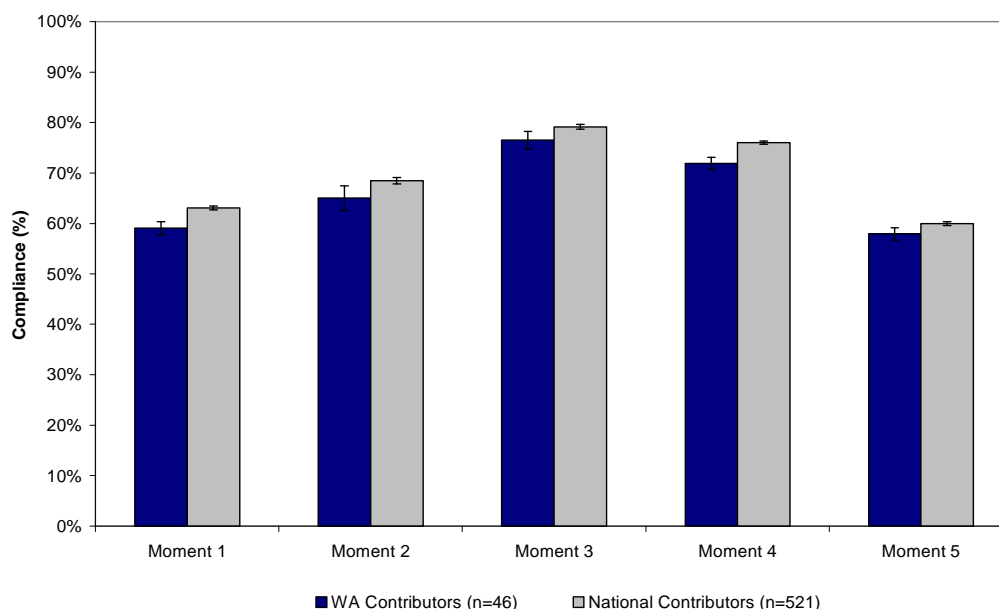
Hand Hygiene compliance by healthcare worker category- WA versus national contributors



HCW category

PSA / PCA / AIN / NA = personal care staff including patient care assistant / orderly / nursing assistant / assistant in nursing; Domestic = housekeeping / cleaning / food handling staff; Invasive Technician = phlebotomist / dialysis technician / catheter lab technician

Hand hygiene compliance by moment - WA versus national contributors



Comment

The performance of WA HCW groups reflects national trends, with nursing / midwifery compliance greater than allied health and medical professionals. Similarly WA and national data identifies that hand hygiene is performed more frequently following moments 3 and 4 than following moments 1 and 2.

Notes for Interpretation

Surgical Site Infection

- Risk stratification is based on the risk index developed in the USA by the NHSN
- An international comparator (NHSN) is utilised to compare rates per 100 procedures (NHSN)
- In Quarter 4 2008, HISWA adopted the revised comparator rate from the NHSN which was released in November 2008. (Hip revised rate of 1.48 per 100 procedures-previously 1.51 and Knee revised rate 0.89 per 100 procedures-previously 1.22). Note to update for Qtr 1 2011

MRSA

- HISWA contributors use the same numerator and denominator MRSA definitions as the SA surveillance unit. These are consistent with the recently drafted national minimum dataset for multi-resistant organism (MRO) surveillance.
- This area of reporting is undergoing significant evolution nationally and comparison should be possible with other jurisdictions in Australia in the future.

Clostridium difficile

- Data collection in accordance with the Australian national definition commenced January 2010.
- The purpose of this national indicator is to describe the burden of disease and includes both community and healthcare associated infections. Hospitals are encouraged to collect enhanced surveillance data to establish the rate of healthcare-associated CDI within their facilities.

Haemodialysis BSI

- An international comparator with a large sample size has been chosen for haemodialysis BSI until this indicator is further developed within other Australian jurisdictions.
- Commencing July 2009 this indicator became part of the mandatory indicator program. The increased data set will enhance the value of the HISWA data.
- The rate per 100 pt-months can be interpreted as: the average % of dialysis patients acquiring an access associated BSI per month.

Central line associated BSI - Haematology and Oncology and Outpatient IV Therapy

- ACHS current surveillance requirements for Haematology and Oncology Units are for inpatient episodes only, however as patients are often discharged home with long-term catheters in-situ and infections frequently occur outside hospital, HISWA has combined inpatient and outpatient data. ACHS plans to review and recommend this in the future and therefore data will become available from other jurisdictions.
- Currently in WA there are two hospitals reporting Haematology BSI and only one reporting Oncology and Outpatient IV Therapy indicators to HISWA.

Staphylococcus aureus Bloodstream Infection

- Submission of *S.aureus* bloodstream infection data became mandatory in October 2007
- Rate of HA SABSI included as indicator in National Healthcare Agreements from 2009
- Rate of HA SABSI utilised as outcome measure for NHHI

Central line associated BSI – Adult ICU

- This indicator was included in the mandatory indicator program in October 2009 for those hospitals with an Adult ICU.

Occupational Exposure

- This indicator commenced in January 2008 as part of the mandatory reporting program.
- Participation in this indicator includes mental health facilities in WA.

Hand Hygiene Compliance

- WA Hospitals participating in the NHHI follow the auditing methodology outlined in the Hand Hygiene Australia '5 Moments for Hand Hygiene' Manual (accessible at <http://www.hha.org.au>).
- In audit period 2, 2010 HCW categories domestic and administrative / clerical were adopted to more accurately categorise health care roles previously grouped under the PSA/PCA/AIN/NA category.

Comparator References

1. National Healthcare Safety Network (NHSN) report: Data summary for 2006 through 2008, issued December 2009. *American Journal of Infection Control*, vol. 37, pp. 783-805.
2. South Australia Infection Control Service 2007 - 2009. Data supplied by personal communication.
3. Tasmanian Acute Public Hospitals Healthcare Associated Infection Report January 2009.
4. Klevens, R.M., Tokars, J.I., Andrus, M 2005. Electronic reporting of infections associated with haemodialysis. *Nephrology News & Issues*. June: 37-43.
5. Klevens, RM, Edwards, JR, Andrus, ML, Peterson, KD, Dudeck, MA, & Horan, TC 2008, 'Dialysis surveillance report: National healthcare safety network (NHSN) – Data summary for 2006', *Seminars in Dialysis*, vol. 21, no. 1, pp. 24-28.
6. Australian Clinical Indicator Report ACHS 2001-2009. www.achs.org.au.
7. Tasmanian Infection Prevention and Control Unit 2008 – 2010. Data supplied by personal communication.
8. Australian Clinical Indicator Report ACHS 2001-2009. www.achs.org.au.

