Te Tāhū Hauora
Health Quality & Safety Commission

Healthcare-associated *Staphylococcus aureus* bacteraemia: Te Whatu Ora – Health New Zealand districts | Te tauwhiro hauora e hāngai ana ki te huakita ā-toto *Staphylococcus aureus*: Te Whatu Ora – rohe Hauora o Aotearoa

1 July 2022 to 30 June 2024

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Enquiries to info@hqsc.govt.nz

Te Kāwanatanga o Aotearoa
New Zealand Government

Executive summary | He kupu whakarāpopoto

Continuous ongoing surveillance of healthcare-associated *Staphylococcus aureus* bacteraemia (HA-SAB) is an important quality activity that makes care safer and guides strategies to improve clinical practice.

Many HA-SAB events are preventable, especially those relating to intravascular devices, which are a major contributor of HA-SAB events.

Since 2012, the median rate of HA-SAB for all districts across Aotearoa New Zealand has increased from 0.11 to 0.15 events per 1,000 bed-days.

Since 1 July 2022, public hospitals have taken part in HA-SAB source surveillance and submitted data each quarter to Te Tāhū Hauora Health Quality & Safety Commission using a standardised collection form.

This report summarises results for two years of this surveillance across all districts of Te Whatu Ora | Health New Zealand (Health New Zealand), from 1 July 2022 to 30 June 2024.

The key findings are as follows:

- There were 966 HA-SAB events in total, which amounts to 1–2 events occurring each day within district hospitals. The absolute number per district over the two-year period ranged from 2 to 208 HA-SAB events.
- Of those patients with HA-SAB, 61.2 percent were European or other, 20.8 percent were Māori, 11.6 percent were Pacific peoples, 6.0 percent were Asian, and 0.4 percent did not specify.
- Methicillin-susceptible *S. aureus* accounted for 87.2 percent of cases and methicillin-resistant *S. aureus* (MRSA) accounted for 12.4 percent of cases and for 0.4 percent of cases the susceptibility was not available. MRSA is more common in the North Island.
- Medical devices were the source for three-quarters (70.1 percent) of all HA-SAB events, followed by organ source (not surgical site infection (SSI)) at 12 percent and SSI at 8.2 percent.
- All ethnic group data was age standardised using Census data to have identical age structures. This showed the highest expected HA-SAB rate was for Pacific peoples followed by Māori. Likewise, applying the same approach for HA-SAB related to central vascular catheter or peripheral intravascular catheter use, the highest expected HA-SAB rate was also for Pacific peoples followed by Māori.

Consumer stories | He kōrero nā te hunga kiritaki

To highlight the significant impact healthcare-associated infections can have on patients and their whānau, the infection prevention and control team at Te Tāhū Hauora Health Quality & Safety Commission (Te Tāhū Hauora) interviewed three consumers about their experiences. The stories are available on the consumer stories page of our website.

Jane's story – the unseen impact of developing an infection after surgery

Beth's story – the dangers with invasive medical devices

Mary's story – when things go wrong after discharge

Introduction | He kupu whakataki

Healthcare-associated *Staphylococcus aureus* bacteraemia (HA-SAB) causes significant mortality and morbidity in patients. Many of these infections are preventable.

Continuous ongoing surveillance is an important quality activity that helps to make care safer and guides strategies to improve clinical practice.

The HA-SAB rate per 1,000 bed-days is an outcome measure for the Hand Hygiene New Zealand programme as part of the national quality and safety marker reports. This data is available at Quality & Safety Markers | Te Tāhū Hauora Health Quality & Safety Commission.

Since 1 July 2022, public hospitals have taken part in HA-SAB source surveillance and submitted data to Te Tāhū Hauora each quarter using a standardised data collection form. In September 2024 an electronic HA-SAB dashboard was released to display this data and can be accessed by districts using a link provided to district infection prevention and control teams.

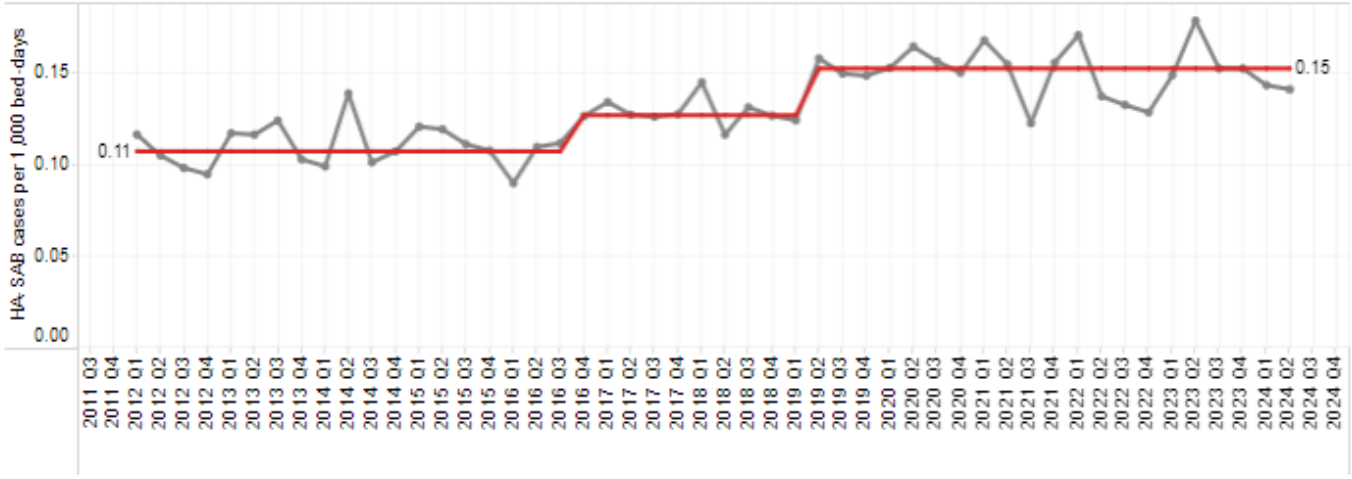
This report presents a summary of results for two years of HA-SAB source surveillance for the period 1 July 2022 to 30 June 2024 for all districts of Health New Zealand. Data was extracted from the dashboard on 15 November 2024.

Discussion | He kōrerorero

HA-SAB rate

Since 2012, the median rate for HA-SAB has increased from 0.11 to 0.15 events per 1,000 bed-days (Figure 1). This is despite notable improvements in hand hygiene compliance from 62 percent to 84 percent over the same period.

Figure 1: Median rate of HA-SAB per 1,000 bed-days, Aotearoa New Zealand, January 2012–June 2024



Overall, there were 966 HA-SAB events, which amounts to 1–2 events occurring each day within district hospitals. The absolute number per district ranged from 2 to 208 (Table 1).

Table 1: Rate of HA-SAB per 1,000 bed-days by district, Aotearoa New Zealand, 1 July 2022–30 June 2024

District	Cases	Cases per 1000 bed days
Te Toka Tumai Auckland	208	0.23
Counties Manukau	143	0.21
Waitaha Canterbury	100	0.15
Capital, Coast and Hutt Valley	99	0.15
Waikato	92	0.14
Te Pae Hauora o Ruahine o Tararua MidCentral	76	0.30
Southern	44	0.12
Waitematā	38	0.06
Te Tai Tokerau	37	0.13
Hauora a Toi Bay of Plenty	36	0.10
Nelson Marlborough	22	0.13
Lakes	19	0.12
Wairarapa	10	0.19
South Canterbury	10	0.13
Taranaki	9	0.05
Tairāwhiti	7	0.11
Whanganui	7	0.07
Te Matau a Māui Hawke's Bay	7	0.03
Te Tai o Poutini West Coast	2	0.06

HA-SAB antimicrobial susceptibility

Eight hundred and forty-two (87.2 percent) HA-SAB cases were methicillin-susceptible *S. aureus* and 120 (12.4 percent) were methicillin-resistant *S. aureus* (MRSA). Susceptibility was not available for 4 cases (0.4 percent).

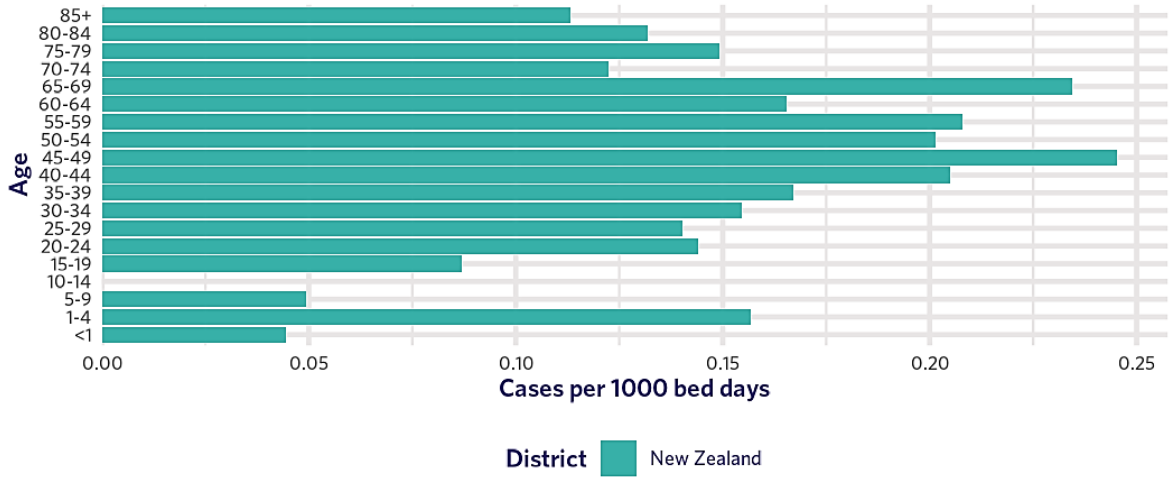
MRSA is more common in the North Island.

HA-SAB by age, gender and ethnicity

Ages ranged from less than one year of age to greater than 80 years. The distribution of HA-SAB by age group was highest in the paediatric population for 1–4 year-olds and highest in the adult population for 45-49 year-olds,65–69 year-olds. (Figure 2).

More than 64 percent of HA-SAB infections occurred in males.

Figure 2: Rate of HA-SAB per 1,000 bed-days by age, Aotearoa New Zealand, 1 July 2022–30 June 2024



HA-SAB distribution by ethnic group was as follows: 591 (61.2 percent) were European or other, 201 (20.8 percent) were Māori, 112 (11.6 percent) were Pacific peoples and 58 (6.0 percent) were Asian, 4 were not specified (0.4 percent) (Table 2).

Table 2: Percent of HA-SAB by ethnicity, Aotearoa New Zealand, 1 July 2022–30 June 2024

Ethnicity	Percent of HA-SAB (number)
European/other	61.2% (591)
Māori	20.8% (201)
Pacific peoples	11.6% (112)
Asian	6.0% (58)
Not specified	0.4% (4)

Age structures vary between ethnic groups in Aotearoa New Zealand; therefore, direct age standardisation is used to compare HA-SAB rates between Māori, Pacific, Asian and European and other ethnic groups. This adjusts the observed rates of HA-SAB within each group to the expected rate if all ethnic groups had identical age structures.

The highest expected HA-SAB rate was for Pacific peoples followed by Māori (Figure 3, Table 3).

Figure 3: Rate of HA-SAB per 1,000 bed-days, age-standardised ethnicity, Aotearoa New Zealand, 1 July 2022–30 June 2024

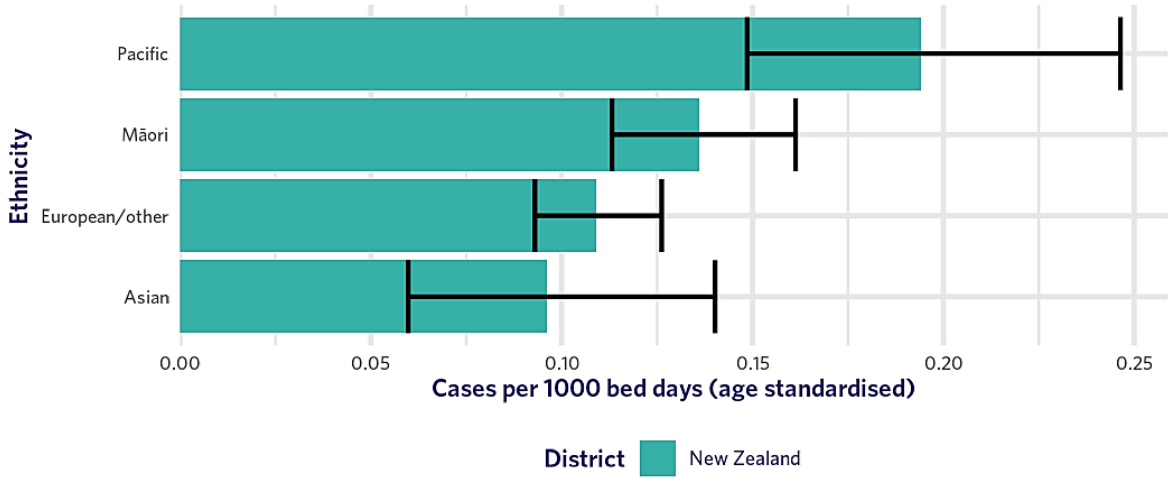


Table 3: Rate of HA-SAB per 1,000 bed-days, age standardised ethnicity confidence intervals, Aotearoa New Zealand, 1 July 2022-30 June 2024

Ethnicity	Cases per 1000 bed days (age standardised)	Lower confidence interval (95%)	Upper confidence interval (95%)
Pacific	0.1941	0.1486	0.2464
Māori	0.1360	0.1132	0.1613
European/other	0.1091	0.0930	0.1262
Asian	0.0960	0.0598	0.1402

HA-SAB sources

The sources of HA-SAB are listed in Table 4. The highest number of cases were associated with a device source.

Through standardising ethnic group data by age, for HA-SAB device related events such as central vascular catheter or peripheral intravascular catheter use, the highest expected HA-SAB rate was also for Pacific peoples followed by Māori.

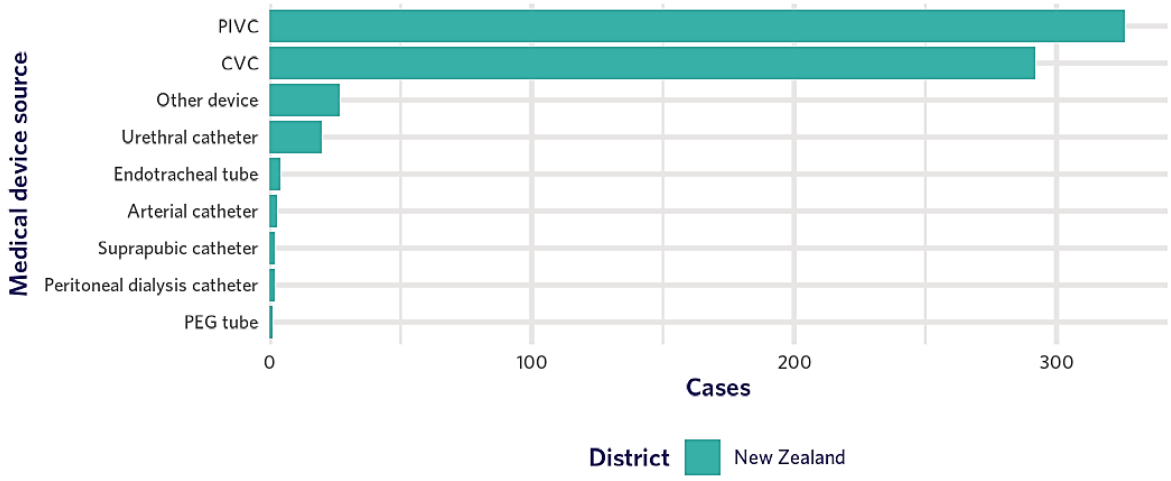
Table 4: Number of HA-SAB cases by source, Aotearoa New Zealand, 1 July 2022–30 June 2024

Source	Cases
Device	677
Organ source (not SSI)	116
Surgical site infection	79
Unknown	57
Other	20
Neutropaenic sepsis	14
Source information not available	3

Invasive medical devices

Of the 677 (70.1 percent) cases of HA-SAB caused by invasive medical devices, 326 (48.2 percent) were associated with a peripheral intravascular catheter (PIVC), 292 (43.1 percent) with a central vascular catheter (CVC) and 59 (8.7 percent) were from other device sources (Figure 4).

Figure 4: Number of HA-SAB by medical device source, Aotearoa New Zealand, 1 July 2022–30 June 2024



PIVC-related HA-SAB accounted for 326 HA-SAB events with 128 (39.3 percent), occurring in patients under the care of general medical or medical specialty services.

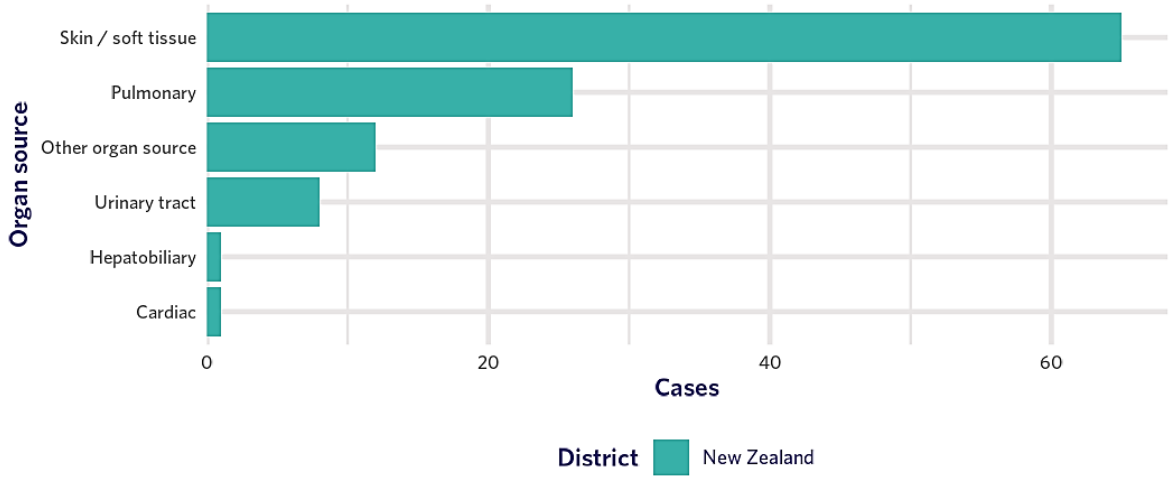
CVC-related HA-SAB accounted for 292 HA-SAB events with 116 (39.7 percent) occurring in patients cared for by renal services.

Organ source (not SSI)

Organ sites accounted for 116 (12 percent) of all HA-SAB infections. The majority of organ source (not SSI) were skin and soft tissue infections (56.0 percent), followed by pulmonary

(22.4 percent), other organ source (10.3 percent), urinary tract (6.9 percent), hepatobiliary and cardiac 1.7 percent (Figure 5) and 2.6 percent were unspecified.

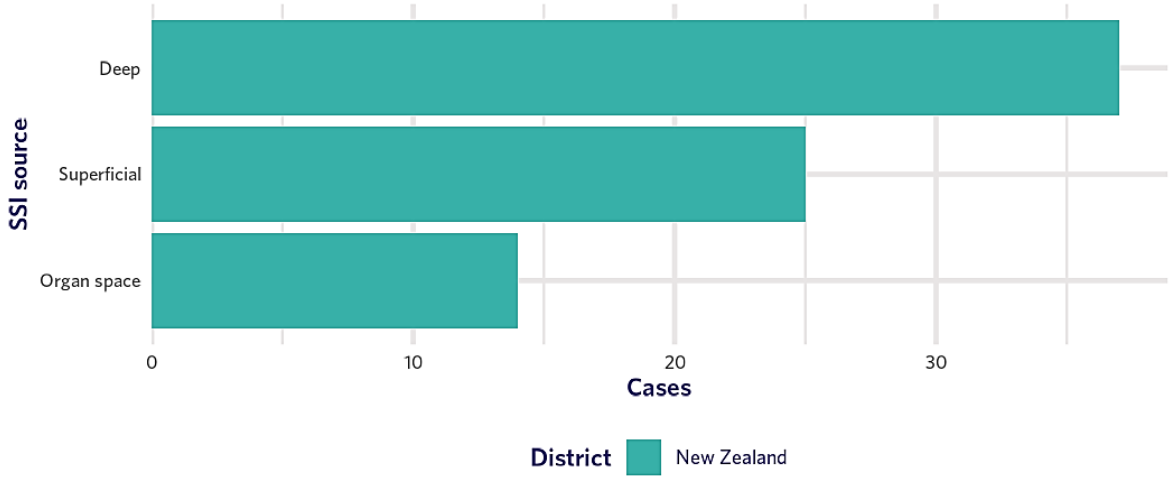
Figure 5: HA-SAB cases by organ source (not SSI), Aotearoa New Zealand, 1 July 2022–30 June 2024



Surgical site infections (SSIs)

There were 79 (8.2 percent) SSIs, of which 37 (46.9 percent) were deep SSI, 25 (31.6 percent) were superficial SSI and 14 were organ space (17.7 percent) (Figure 6). The wound classification was unknown for 3 cases (3.8 percent).

Figure 6: HA-SAB cases by SSI source, Aotearoa New Zealand, 1 July 2022–30 June 2024



Conclusion | He kupu whakatepe

The ongoing high rates of HA-SAB in Māori and Pacific peoples require additional analysis if we are to understand the possible causes, and adopt appropriate improvement strategies, enact Te Tiriti o Waitangi and reduce inequity.

The cause of the continued increase in HA-SAB rate attributed to invasive medical devices over the two years is also unclear and likely due to multiple factors. Quality improvement initiatives are needed to improve the processes associated with PIVC and CVC use. Te Tāhū Hauora started a quality improvement initiative in 2023 working with districts to address the high rate of HA-SAB with a PIVC source.