

What are we going to do about the increasing rate of healthcare-associated *Staphylococcus aureus* bacteraemia?

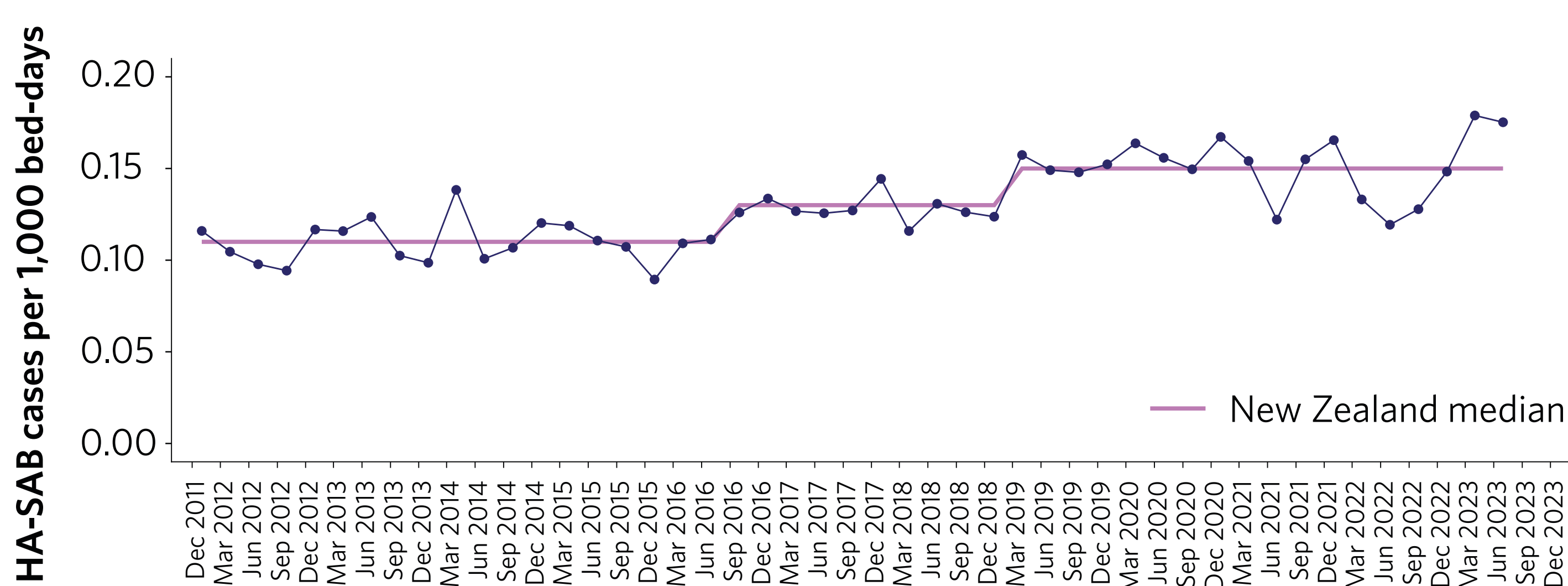
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Background

- » Healthcare-associated *Staphylococcus aureus* bacteraemia (HA-SAB) rates in Aotearoa New Zealand have increased from 0.11 events per 1,000 bed-days in 2012 to 0.15 in 2023 (Figure 1).
- » A review of the surveillance data in 2016 resulted in improved data collection and reporting.
- » A retrospective review of 1,867 events from January 2017 to June 2021 showed that 65 percent of HA-SAB events were due to invasive medical devices; the majority were vascular access devices (VADs).¹
- » Since July 2022, the source of all HA-SAB events has been reported to identify areas for quality improvement.

Figure 1. Median HA-SAB rate per 1,000 inpatient bed-days, 2011-23.



Aim

To understand the source of and risk factors associated with increased rates of HA-SAB.

Method

- » From July 2022, each health district reported quarterly the number of HA-SAB events per month via a secure cloud-based storage (c-Cache) system.
- » Information collected included: district; date of positive blood culture; patient age, sex and ethnicity; clinical specialty; and likely source.²

Results

- » Between July 2022 and December 2023, there were 728 HA-SAB events across the 19 districts.
- » Patients under the care of medical specialties, including accident and emergency, accounted for 64 percent of events (Figure 2).
- » Patient age at the time of HA-SAB event ranged from <1 year to >80 years (Figure 3).
- » Males accounted for 63 percent of events; 58 percent of the total affected population were European, 21 percent Māori, 12 percent Pacific peoples and 5 percent Asian.
- » In total, 13 percent of isolates were resistant to methicillin.
- » The primary sources of HA-SAB were invasive medical devices (69 percent of all events). Of these, 92 percent were VADs (48 percent peripheral intravenous catheters [PIVCs] and 44 percent central venous catheters) [Table 1].
- » When HA-SAB rates were standardised to the Māori age distribution, Māori and Pacific people had significantly higher rates (Figure 4).

Figure 2. Absolute number of HA-SAB events per clinical specialty, June 2022-December 2023.

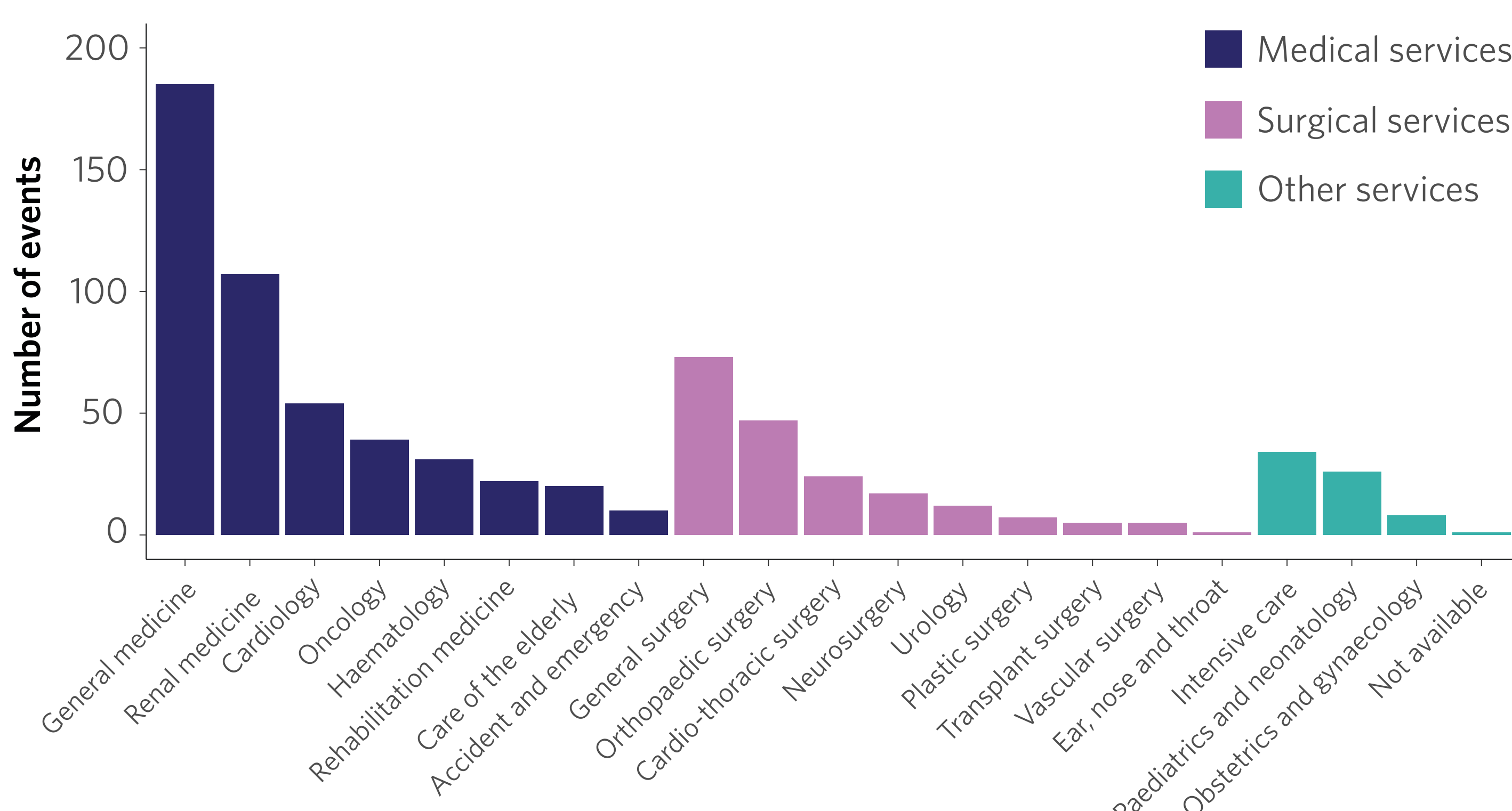


Figure 3. Age of patients at time of HA-SAB event.

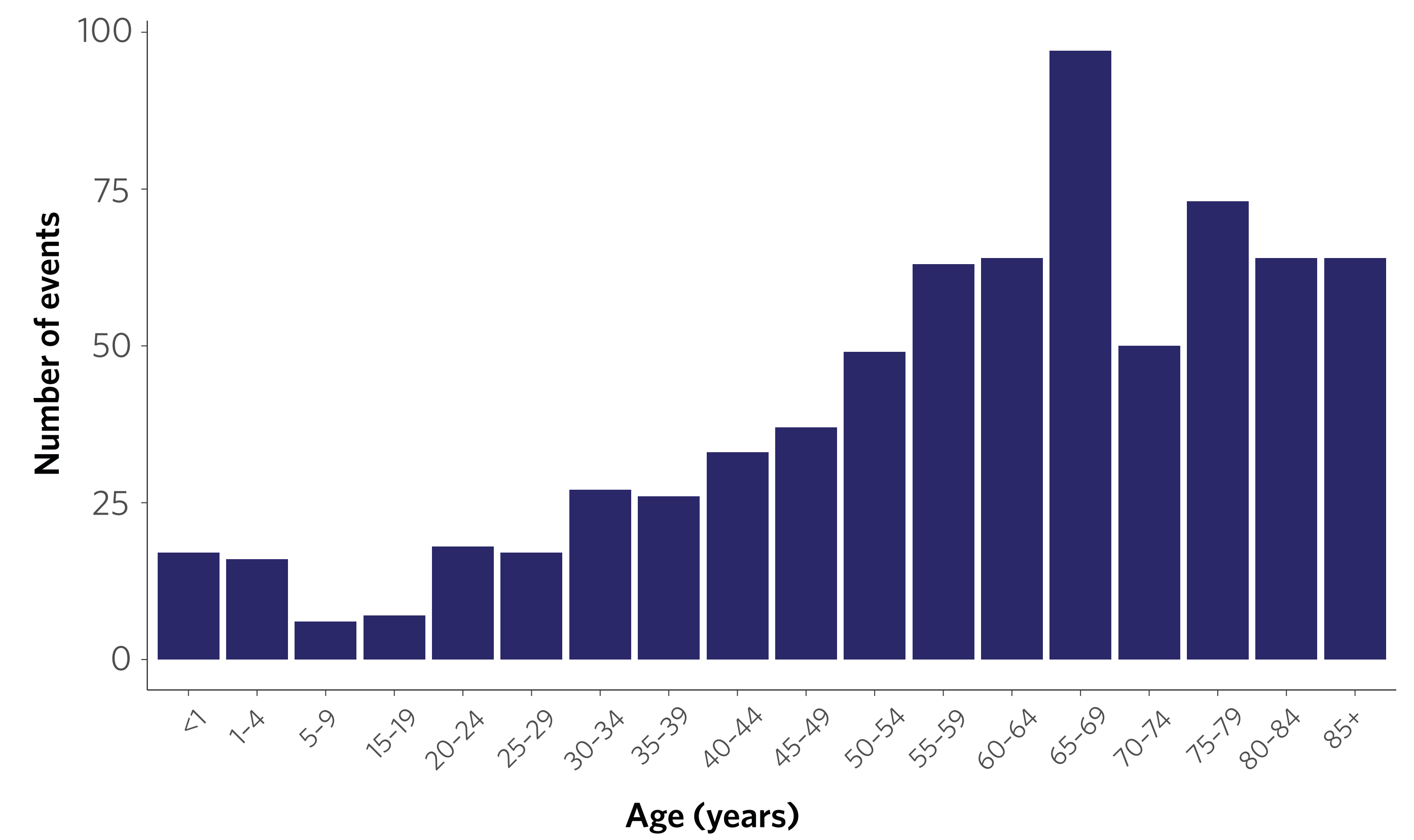
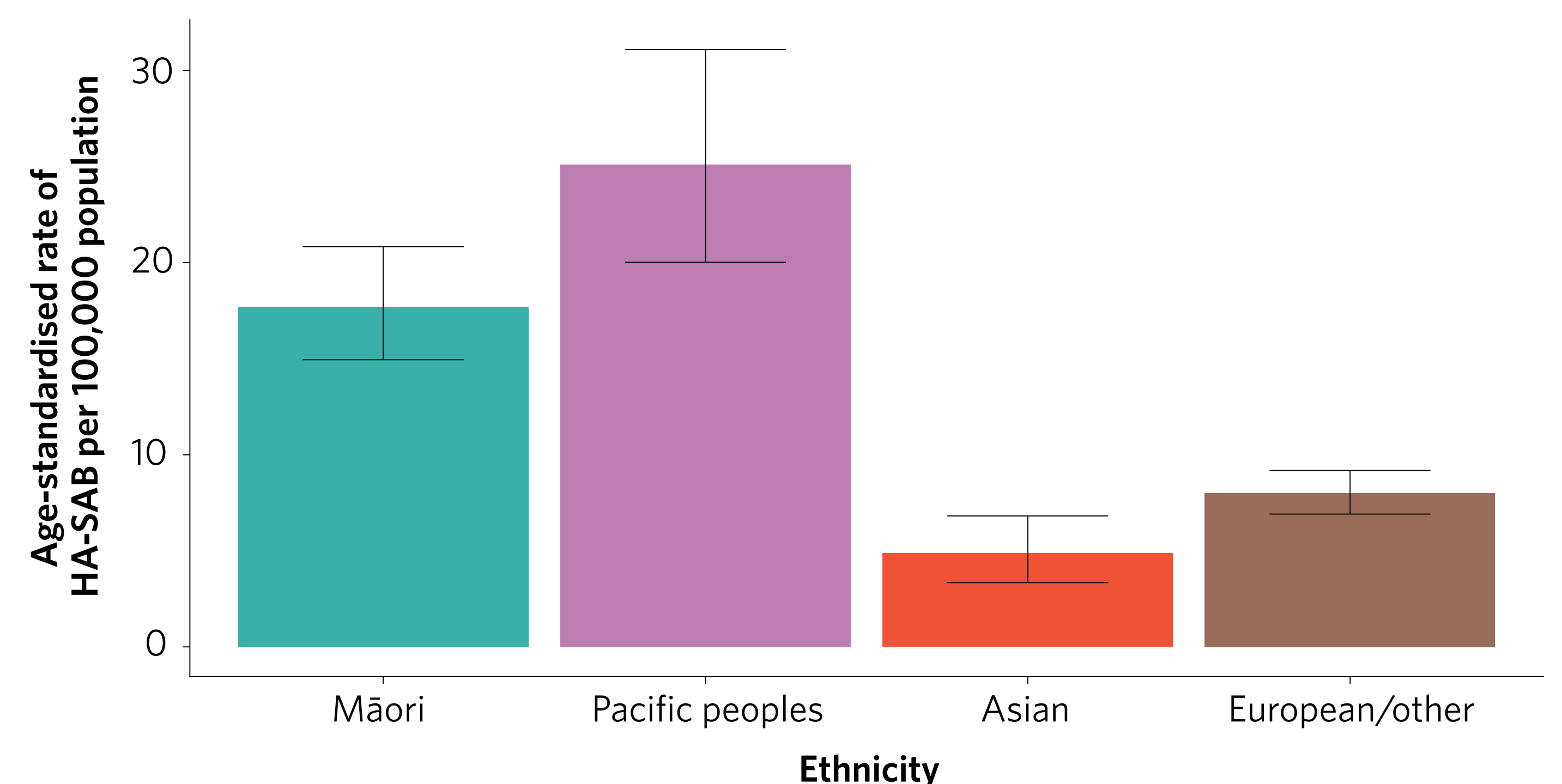


Table 1. Primary and secondary sources of HA-SAB events.

Primary source	N (%)	Secondary source	N (%)
Invasive medical devices	503 (69)	» Central venous catheter	222 (44)
		» PIVC	241 (48)
		» Urinary catheter	16 (3)
		» Endotracheal tube	3 (1)
		» Other medical device	18 (4)
		» Not recorded	3 (1)
Organ source, not surgical site infection	97 (13)	» Skin, soft tissue infection	55 (57)
		» Pulmonary	24 (25)
		» Urinary tract	6 (6)
		» Other	8 (8)
		» Not recorded	3 (3)
Surgical site infection	66 (10)	» Superficial	17 (25)
		» Deep	34 (68)
		» Organ space	12 (23)
		» Unknown	3 (4)
Other	62 (8)	» Unknown source	41
		» Neutropenic sepsis	9
		» Other source or procedure	12

Figure 4. Age-standardised ethnicity rate per 100,000 population.



Conclusions

- » The rate of HA-SAB per 1,000 bed-days continues to increase in Aotearoa New Zealand; VADs, particularly PIVCs, are a major contributor.
- » Māori and Pacific peoples have a higher burden of HA-SAB.
- » In response to this increasing rate, in 2024, Te Tāhū Hauora Health Quality & Safety Commission is undertaking a quality improvement initiative to improve the use and management of PIVCs in Aotearoa New Zealand.

References

- Barratt R, Clendon G, Gibson B, Roberts SA. 2022. Sources of healthcare-associated *Staphylococcus aureus* bacteraemia in New Zealand acute hospitals. *New Zealand Medical Journal* 135(1563): 29-35.
- Health Quality & Safety Commission. 2022. Guide to the surveillance of healthcare-associated *Staphylococcus aureus* bacteraemia. URL: www.hqsc.govt.nz/resources/resource-library/guide-to-the-surveillance-of-healthcare-associated-staphylococcus-aureus-bacteraemia-ha-sab.