Increased incidence of community-associated *Staphylococcus aureus* bloodstream infections in Victoria and Western Australia, 2011–2016

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Standardised national surveillance of health care-associated *Staphylococcus aureus* bloodstream infections (HA-SABs)[1] has found that rates are declining in Australia.[2] The incidence of community-associated SABs (CA-SABs), however, has not been investigated. These infections frequently have complicated courses (eg, metastatic sites of infection)[3] and high mortality (about 20%).[4]

During calendar years 2016 and 2017, the Victorian Healthcare Associated Infection Surveillance System (VICNISS) and Healthcare Infection Surveillance Western Australia (HISWA) received reports from affiliated hospitals about increases in the frequency of CA-SABs. We sought to formally review trends in their incidence and to determine whether populations at particular risk could be identified. We analysed quarterly data for the period 1 January 2011 – 31 December 2016 from 93 Victorian public hospitals (VICNISS) and 58 Western Australian public hospitals (HISWA). As a quality assurance evaluation of surveillance data, no patient-identifying or hospital-level data were captured; formal ethics review was therefore not required.

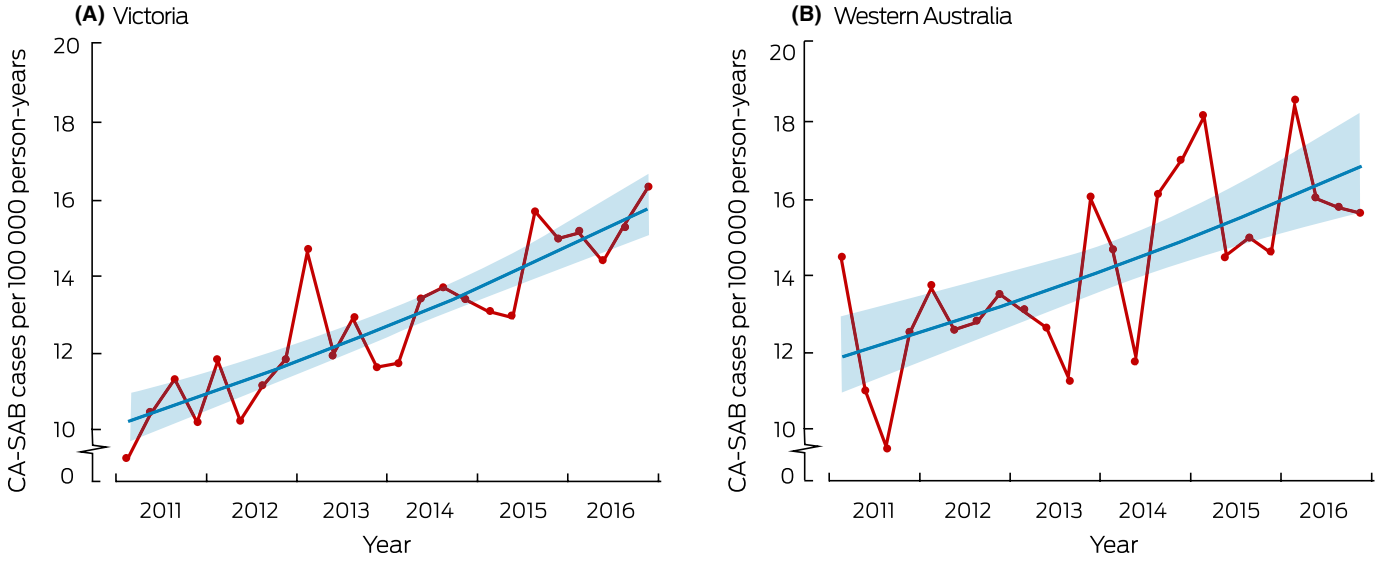
A total of 10 320 SAB events were reported (7262 in Victoria, 3058 in WA); 6800 infections (65.9%) were community-associated, corresponding to an aggregate crude rate of 13.3 CA-SABs per 100 000 person-years (Victoria, 12.9; WA, 14.3 CA-SABs per 100 000 person-years). The incidence in each state increased significantly during the study period: 8% (95% confidence interval [CI], 6–10%) per year in Victoria and 6% (95% confidence interval [CI], 4–9%) per year in WA (Box).

Most CA-SABs (5698, 83.8%) were caused by methicillin-susceptible *S. aureus* (MSSA). There was a small but statistically significant annual increase in the proportion of MSSA CA-SABs in Victoria (4% per year; 95% CI, 3–8%), but not in WA; that is, the incidence of CA-SABs caused by MSSA rose more rapidly in Victoria than the overall incidence of CA-SABs.

The incidence of CA-SABs was higher among older patients and in men, and was particularly high for men over 60: the standardised incidence in this group was 50.9 cases (95% CI, 48.5–53.4) in Victoria and 56.7 cases (95% CI, 52.6–61.0) per 100 000 person-years in WA, twice the incidence among women of the same age (Victoria, 24.7 [95% CI, 23.2–26.4]; WA, 24.9 [95% CI, 22.4–27.7] cases per 100 000 person-years).

Our study is the first to evaluate the epidemiology of CA-SAB in more than one Australian state. Other investigators have similarly reported a greater disease burden for older people and men.[4] It is notable that residents of aged care facilities have been identified as being at particular risk;[5] infections in this group would be classified as CA-SABs by our analysis. One limitation of our study was that only infections in patients presenting to

Quarterly incidence of community-associated *Staphylococcus aureus* bloodstream infections (CA-SABs) in Victoria and Western Australia, 2011–2016, with trend lines and 95% confidence envelopes



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public hospitals are captured by surveillance systems, perhaps missing some community-onset infections, but the vast majority of patients with SABs would require admission to hospital. Some infected persons would have been managed entirely in private health care, meaning that we will have underestimated the incidence of CA-SABs.

The increases in incidence we describe may reflect the emergence of virulent *S. aureus* strains in the community or changes in host risk factors. Characterising the isolates responsible for infection would assist identify virulence factors and the relatedness of isolates. Further evaluation of infection risks in people over 60 years of age is also needed for developing targeted prevention strategies.

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