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Understanding injury-related bloodstream infections in Queensland: a data linkage study

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Defined as the presence of any infectious microorganisms in the bloodstream, bloodstream infections (BSIs) pose a major threat to public health. BSI is an important complication that may affect the recovery time, treatments of injured patients. The studies on patients with injury-related BSIs report data from single or selected hospitals. No population-based studies have been conducted on injury-related BSIs. Hence, the burden of injury-related BSI is not quantified across the world. In Australia, injuries are a leading cause of mortality, hospitalisations, and disability making injury prevention and control a national health priority area, while BSIs have a significant economic impact. Queensland is the second-largest state in Australia by area and has the second-highest injury hospitalisation rates in Australia. We conducted a retrospective population-based data linkage study to understand the patient demographics, incidence rates, isolates and antimicrobial resistance among Queenslanders with injury-related BSIs.

The study population consisted of all residents of Queensland, Australia, with incident BSI, admitted to a Queensland Health public hospital between 1 January 2000 and 31 December 2019. The data used for this study consists of three population-based data collections: the Queensland pathology data providing positive blood cultures, Queensland Hospital Admitted Patient Data Collection (QHAPDC) and Death Registrations. All blood cultures taken from public healthcare institutions were recorded in the Queensland pathology data and linkage to QHAPDC data identifies the hospitalisation, demographics, clinical and outcome data of these patients. The Registry of General Death confirmed mortality as of 31 December 2020.

During the study period, a total of 3428 injury encounters and 3586 BSI episodes were identified among 3402 individuals. The median age of this cohort was 63 years, and the majority of the individuals were males (65%). Among these patients, around 50% had a 30-day mortality. The age-standardised rates of injury-related BSIs showed an increasing trend over the years and males reported a higher rate than females. The most commonly identified isolate among these patients was Staphylococcus aureus.
Through innovatively linking administrative datasets, this study provides the first population-based disease burden of injury-related BSIs and a strong foundation for future research to improve patient outcomes.

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