

Study underlines large variation in patient mortality associated with different bloodstream infections

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New research presented at this year's European Congress of Clinical Microbiology & Infectious Diseases (ECCMID) in Amsterdam, Netherlands (13-16 April) shows the danger posed by bloodstream infections (BSIs), and the large variation in mortality rates associated with different infectious microorganisms. The study is by Liya Lomsadze and colleagues from Northwell Health, Great Neck, New York, United States.

BSIs are ranked among the top seven causes of death, however relatively little is known about the risks posed by the different species of microorganism that give rise to them. The researchers sought to evaluate this link by performing a multi-centre retrospective analysis of hospitalised patients who had been discharged from 10 New York health facilities over a one-year period from January to December 2018.

Patients with a suspected BSI had 2 sets of blood samples taken, which were cultured to look for infection. Where infections were found, the cultures were sent for molecular analysis to identify the species of microorganism present. During the study period there were a total of 212,257 [hospital discharges](#) of which 4,133 involved the death of a patient. Out of those discharges, 6,149 (3%) were found to have a BSI caused by one or more microorganisms in their blood, and 744 (12%) of these patients died in the hospital.

For those individuals with some form of BSI, 5,688 (93%) were infected with a single species of microorganism, with the remaining 461 (7%) showing two or more different species in their blood. Mortality rates varied significantly according to the type of pathogen present, from 8% for Streptococcus species to 22% for methicillin-resistant Staphylococcus aureus (MRSA) and 46% for Acinetobacter baumannii infections (see table below).

The research highlighted the risk posed by BSIs, which were associated with an overall mortality rate much higher (12% vs 2%) than that of the general hospitalised patient population. In addition to this, certain species of microorganism; Acinetobacter, vancomycin-resistant Enterococcus species, carbapenem-resistant Klebsiella pneumoniae (KPC), and Candida [species](#) were associated with the highest rates of in-hospital mortality (30-46%). Illicit drug use, pressure ulcers and acute kidney injury were strongly associated with BSI.

The researchers say: "When an infection is suspected, a patient is generally started on [broad-spectrum antibiotics](#) while our team tests their blood for infection. Molecular identification of the correct organism causing the infection is vital, as it helps doctors narrow the antibiotic treatment to the correct one for that particular [infection](#)."

They add: "One surprising finding was the high (13%) mortality rate that is associated with Coagulase negative Staphylococcus. This organism is usually considered to have low virulence. Further research is needed to find out what is behind this higher than expected mortality rate."

They conclude that: "Since most (86%) of BSIs were suspected within 3 days of admission, this indicates that the majority of these infections were community-acquired—meaning that patients were already infected when they entered hospital. Further study is needed to work out where these infections originate."

Provided by European Society of Clinical Microbiology and Infectious Diseases

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