

Multidisciplinary Management of Gram-Negative Bloodstream Infections



Bloodstream infections (BSIs) caused by Gram-negative pathogens pose significant challenges in ICU patients due to their high prevalence and severity, with mortality rates reported as high as 40%. The widespread prevalence of multidrug-resistant organisms (MDRO) further complicates antibiotic treatment choices, with mortality rates reaching 43% when MDROs are involved. Antimicrobial stewardship, aimed at optimising antibiotic use, has shown promise in ICU settings. However, critically ill patients present additional challenges due to sepsis-related physiological alterations impacting antibiotic pharmacokinetics/pharmacodynamics.

Early appropriate antibiotic therapy is crucial in septic ICU patients and is associated with reduced mortality. A multidisciplinary team comprising intensivists, infectious disease consultants, clinical pharmacologists, and microbiologists offers an integrated approach to ICU patient management. It has been linked to improved clinical outcomes and reduced antimicrobial consumption.

This study aimed to evaluate the impact of such a multidisciplinary management team (MMT) on the clinical outcomes of ICU patients with Gram-negative BSIs.

In the period before the intervention (January to December 2018), patients received infectious disease consultation upon request. In the post-intervention phase (January to December 2022), patients underwent daily assessment by a multidisciplinary team comprising an intensivist, infectious disease physician, clinical pharmacologist, and microbiologist.

One hundred and thirty-five critically ill patients were included, with 67 in the pre-intervention phase and 68 in the post-intervention phase. Median age was 67 years, and males comprised 31.9% of the cohort. Parameters such as septic shock, need for continuous renal replacement therapy, and mechanical ventilation at bloodstream infection onset were similar in both phases, as was the prevalence of MDRO. However, in the post-intervention phase, there was a significant decrease in empirical carbapenem use (40.3% vs. 62.7%), accompanied by an increase in appropriate empirical therapy (86.9% vs. 55.2%) and a reduction in overall antibiotic treatment duration (12 vs. 16 days). Despite no differences in SOFA score change and all-cause 30-day mortality, there was a notable decrease in microbiological failure (10.3% vs. 29.9%) and new-onset 30-day MDRO colonisation (8.3% vs. 36.6%) in the post-intervention phase. Multivariable analysis, adjusted for key factors, revealed that implementing an MMT was associated with a protective effect against new MDRO colonisation and microbiological failure.

Source: [Annals of Intensive Care](#)

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