

Association Between Hospital Unit Type and Risk of Bloodstream Infection in Pediatric Patients

Authors and Affiliations

Hifza Hussain¹; Mei-Chin Hsieh, PhD, MSPH¹

¹Louisiana State University Health Sciences Center School of Public Health

Background

Healthcare-associated infections (HAI) remain a major source of morbidity and healthcare burden in hospitalized populations. Bloodstream infections (BSI) occur when pathogenic organisms enter the bloodstream, a HAI associated with prolonged hospital stays and mortality. Understanding how clinical context, including hospital unit type, influences BSI risk is essential for improving prevention strategies.

Objectives

This study aimed to assess whether hospital unit type is associated with BSI risk among hospitalized pediatric patients and to identify pathogen distribution among BSI cases.

Methods

We conducted a hospital-based cross-sectional study to evaluate the association between hospital unit type and BSI. Blood cultures were collected from December 2024 to August 2025 at a pediatric hospital in Louisiana. BSI cases ($n = 30$) were identified using the National Healthcare Safety Network (NHSN) criteria. Pearson's chi-square tests assessed associations between BSI and patient characteristics. Log-binomial regression models were used to estimate risk ratios (RR) for BSI while adjusting for covariates.

Results

No significant differences were observed across demographic characteristics, device type, or pathogen distribution. In the unadjusted analyses, patients in the hematology-oncology unit had a higher risk of BSI compared to ICU patients (RR = 1.89; 95% CI: 1.04–3.42). However, this association was attenuated and no longer statistically significant after adjustment (RR = 1.21; 95% CI: 0.89–1.64).

Conclusions

Although unit type appeared associated with BSI risk in the unadjusted analyses, this relationship was not significant after accounting for clinical factors, suggesting that underlying patient complexity and device use may explain observed differences.

Recommendations

Infection prevention efforts should continue to prioritize strengthening consistent care and early detection surveillance to help reduce BSI risk and improve patient outcomes.