

Sepsis care bundles may increase antibiotic resistance



Previous research has shown the effectiveness of care bundles in the diagnosis and treatment of septic patients. However, a new study suggests such care protocols could lead to increased use of certain broad-spectrum antibiotics and healthcare facility-onset (HCFO) *C. difficile* infection (CDI) rates. The study, published in the *American Journal of Infection Control*, is the first to address the inadvertent impact of sepsis care programmes on broad-spectrum antibiotic use among hospitals and nursing unit-levels.

Researchers analysed adult inpatients at a 1,171-bed tertiary care teaching hospital who were admitted to nursing units with both sepsis care bundle programmes in place and the highest incidences of sepsis, antibiotic use, and HCFO CDI. They collected data on the administration of broad-spectrum antibiotics per 1,000 patient days and HCFO CDI data per 10,000 patient days from June 2011 through July 2014.

The study defined sepsis care bundle programmes as sepsis screenings integrated into a hospital's electronic health record and EHR-triggered antibiotic administration. This protocol aims to standardise initial evaluation and subsequent sepsis management orders, including monitoring, laboratory tests, and fluid and antibiotic administration. The order set recommends broad-spectrum antibiotics available for use without preauthorisation from a hospital's antibiotic stewardship team.

The study's key findings include:

- Over 127,346 total patient days, researchers recorded increased antibiotic use and HCFO CDI during sepsis care bundle implementation, with the period directly following the implementation phase accounting for the highest rate of antibiotic use (50.4 days of therapy [DOT] per 1,000 patient days).
- Specifically, while HCFO CDI rates were decreasing before sepsis care bundle implementation (-1.4 events per 10,000 patient days/month) they began to increase during (1.6 events per 10,000 patient days/month) and following (10.8 events per 10,000 patient days/month) implementation.
- Over the three-year timeframe, the data recorded an HCFO CDI rate of 14.4 per 10,000 patient days/month.

Sepsis care protocols may identify septic patients earlier in their disease course. However, as the researchers noted, this would lead to increased doses of antibiotics, particularly if antibiotics can be prescribed without preauthorisation. "Hospitals' antibiotic stewardship teams can use these observations to align protocol with processes that ensure appropriate antibiotic administration," said lead author Jashvant Poeran, MD, PhD, Assistant Professor of Population Health Science and Policy, Orthopaedics, and Medicine at the Icahn School of Medicine at Mount Sinai.

"Routine integrated sepsis treatment remains an integral part of how providers deliver rapid care to counter a sepsis diagnosis," said Linda Greene, RN, MPS, CIC, FAPIC, 2017 APIC president. "But this is a double-edged sword: How do we prevent and treat sepsis while minimising antibiotic resistance? We cannot diminish the importance of implementing swift treatment, but so, too, do we need more research to uncover solutions to the unintended consequences that ensue."

Source: [American Journal of Infection Control](#)

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