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Study Suggests Emergency Departments Require Tailoring Clinical Decision Support Systems to Reduce Antibiotic Over Prescribing

“One size fits all” clinical decision support systems used in hospitals not effective in reducing the number of antibiotic prescriptions issued in emergency departments

AURORA, Colo. (Sept. 9, 2020) – Researchers at the University of Colorado College of Nursing at the Anschutz Medical Campus found that a unique set of factors of the emergency department (ED) makes standard Clinical Decision Support (CDS) systems not as effective in helping to reduce antibiotic overprescribing in that environment.

Antimicrobial resistance is a major public health concern, accounting for 2.8 million infections and 35,000 deaths annually. Hospitals have focused on antibiotic stewardship programs (ASP) to reduce over prescribing of antibiotics, which is a major contributor to antimicrobial resistance. While this has been effective in reducing unnecessary antibiotic use by as much as 36% in inpatient settings, EDs are an exception where approximately 10 million outpatient antibiotic prescriptions are written annually in the US. Data show that up to 50% of the prescriptions were inappropriate or unnecessary.

[The study](#), published in *Applied Clinical Informatics*, looked at three pediatric EDs to determine how the unique setting of the ED influences this pattern, and how Clinical Decision Support (CDS) systems can complement professional judgment in the ED setting and potentially reduce unnecessary antibiotic use. “The ED is unique. Several factors are at play – clinical judgment, provider fatigue, the busyness of the ED, workflow, technology, bed availability, social determinants of health of the patient and their families. said lead author Associate Professor Mustafa Ozkaynak, PhD. “These all impact antibiotic prescribing decisions.”

The study of 38 ED providers analyzed these and additional factors to determine how to design a CDS system to assist with antimicrobial stewardship in pediatric emergency departments. It discovered that systems are rarely tailored to the context of the ED environment and end-user needs.

“ED clinicians often need to make rapid decisions and are frequently interrupted during the decision-making process,” said Ozkaynak. Current CDS systems do not take this unique set of circumstances into account. “Significant opportunities exist to improve the appropriateness of antibiotic prescribing in the ED setting. Including relevant contextual data, considering the limitations of current CDS systems, and tailoring the design and implementation could all help in reducing unnecessary antibiotic use.”

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