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7-26-2023

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**Emergency Department**

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Like a comic book supervillain, the "superbug" lurks on the periphery of the medical system, ready to rear its head if antibiotic prescribing patterns provoke it into action. Antimicrobial resistance seen in superbugs is a significant risk to public health and presents dangerous implications for our ability to treat infections. Antimicrobial stewardship programs (ASPs) promote the adequate and accurate use of antimicrobials to mitigate the spread of drug-resistant organisms. The implementation of ASPs in US Emergency Departments (EDs) is associated with several challenges due to the unique setting and the requirements of an ED.

One challenge to the implementation of ASPs in EDs is the demand for rapid real-time decision-making and rapid initiation of treatment, which can result in antimicrobial review processes being overlooked. Unless the ASP is built into the workflow, physicians might not be able to access the information in time to affect decision-making. Also, there is inherent diagnostic uncertainty in the ED, and the limited information may contribute to potential overuse or misuse of antimicrobials. If the physician does not know what is going on, antibiotics may be given as part of empiric treatment. Moreover, the patient's expectations of receiving antibiotics may influence physicians to over-prescribe antibiotics. Patients who ask specifically for antibiotics may be more likely to receive them. Finally, ED physicians face great pressure from hospital administration to start antibiotics with time-to-antibiotics serving as a measured quality

measure for a variety of serious bacterial infections; they face less pressure regarding their judicious use of antibiotics in patients that are less likely to have a bacterial infection.

The core mission of the ASP is to promote staff awareness and adherence to established guidelines for antibiotic utilization. Educational initiatives are a big part of this effort. Yet, the mere scheduling of educational initiatives is a challenge to staff working in a 24/7 ED environment. Instead of a traditional classroom format, the utilization of social behavioral interventions such as peer comparisons has shown success to reduce inappropriate prescribing within the ED setting.[1] Other ASP interventions that have shown effectiveness in the ED include having dedicated pharmacists stationed in the ED to assist with antimicrobial prescriptions. In addition, easy access to clinical guidelines and algorithms embedded within the electronic health record may allow for more evidence-based antimicrobial use.[2]

Ultimately, the goal of reducing the risks of new superbugs capable of overcoming our strongest antimicrobials requires a multi-pronged approach. Solving this problem requires the collective effort of the healthcare community to recognize the problem, individual effort by physicians to consider how patient-level decisions affect the public at-large, and a system-wide effort to make guidelines more accessible, comprehensive care more feasible, and adherence to evidence-based practices more incentivized.

*The authors have no conflicts to report*

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