

Research on antibiotic use desperately needed as resistance crisis looms

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Overuse of antibiotics in healthcare contributes to the development of antibiotic-resistant bacteria, resulting in 2 million infections and 100,000 deaths in the U.S. each year, but research is lacking to inform antibiotic stewardship programs aimed at reining in unnecessary use of these powerful drugs, according to a Society for Healthcare Epidemiology of

America (SHEA) white paper published today in its journal *Infection Control & Hospital Epidemiology*.

"Antibiotic stewardship is crucial to maintaining the effectiveness of life-saving treatments and preventing harm to patients and the wider community," said SHEA President Hilary Babcock. "We developed this research agenda to draw attention to serious gaps in our knowledge for future investigators and funders."

Andrew Morris, MD, medical director, Sinai Health System-University Health Network Antimicrobial Stewardship Program, Toronto, and lead author of the [white paper](#), *Research Needs in Antibiotic Stewardship*, said antibiotic stewardship research is in its infancy, and [research funding](#) is needed to move practice forward.

"For most infections, we don't know the optimal drug, dose, or treatment duration. For many, we don't even know if they require antibiotic treatment," Morris said.

The authors acknowledge that Antibiotic Stewardship Programs have gained momentum in hospitals as a powerful tool to address inappropriate antibiotic use, but that the optimal use and full value of these programs has not yet been explored. To address these gaps, the authors highlight four broad categories where gaps exist:

1. A scientifically rigorous evidence base to define optimal antibiotic prescribing practices, which adequately inform stewardship interventions across a variety of patient populations and settings;
2. Effective stewardship approaches to recognize effective interventions, knowledge of how these interventions can be adapted for implementation both locally and across diverse settings, and an understanding of how interventions can be

- sustained once implemented;
3. Standardized processes and outcome metrics;
 4. Advanced study designs with appropriate analytic methods, accompanied by infrastructure to support data collection and sharing.

The white paper outlines specific areas where additional clinical evidence is needed to define optimal antibiotic use, including diagnosing and treating pneumonia, urinary tract infections, skin and soft tissue infections, diabetic foot infections, intra-abdominal infections, and prevention of bacterial infections.

"In an effort to combat antibiotic resistance, the federal government, as well as hospitals and [health](#) systems, are mandating antibiotic stewardship programs. However, we don't know the optimal staffing for these programs or how they should function," Morris said. The paper notes that nurses have mostly been absent from antibiotic stewardship, and it calls for research to determine how best to engage bedside nurses in stewardship activities.

While further research and investment in antibiotic stewardship is critical to improving and optimizing these strategies, this research falls in the gaps between public health and clinical research, Morris said.

"Because antibiotic stewardship represents the interface of public health, epidemiological research, and clinical research, clear federal funding pathways need to be created. The National Institute of Health funds science but won't fund [stewardship](#) because it is largely epidemiologically based and involves public health. The Centers for Disease Control and Prevention funds [public health](#), but it won't fund research that evaluates different interventions," Morris said.

More information: Andrew M. Morris et al, Research needs in

antibiotic stewardship, *Infection Control & Hospital Epidemiology*
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