

COLLABORATION DRIVES STEWARDSHIP IMPROVEMENTS

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Diagnostic data and advanced analytics have the power to bring together laboratory professionals, clinicians, and pharmacists to improve collaboration and set antimicrobial stewardship (AMS) goals unique to their institution.

CROSS-DEPARTMENT INVOLVEMENT IS NECESSARY FOR DRIVING STEWARDSHIP

Thriving AMS committees are built upon the belief that everyone has a role to play in improving stewardship and that each hospital discipline has something valuable to contribute. For example, having clinical microbiologists as core team members can provide new perspectives on managing antimicrobial prescribing through a patient's journey and how to best utilize diagnostic tools and data to optimize treatment.

Microbiologists can help clinicians and pharmacists gain a deeper and longer-lasting understanding of how the clinical laboratory operates and what kind of specimens are most appropriate. When it comes to diagnostic tests, there is a level of probability and statistical analysis needed to interpret and communicate results that clinical laboratorians may be uniquely qualified to handle. The clinical laboratory plays a crucial role in test ordering, algorithm development, surveillance efforts, and ensuring reliable testing. A better understanding of the lab's role in AMS through education can also improve diagnostic

stewardship to maximize the economic and patient benefits of ordering a test.

In turn, a stewardship program is not complete without pharmacists and other clinicians. Clinicians are directly responsible for executing the core elements of stewardship programs, which include leadership commitment, accountability, drug expertise, action, tracking, reporting, and education. In addition to providing the clinical information necessary for the microbiology laboratory to maintain ideal diagnostic stewardship practices, clinicians play a large role in educating laboratorians and other clinicians about topics like drug resistance and optimal prescribing practices. Ideally, collaboration and communication between clinicians and the microbiology laboratory should occur on a daily basis.

Integrating cross-department exposure into AMS committees is part of building a robust, collaborative network of information sharing. To do so in a sustainable way requires considering how to implement new ways of thinking into the specific culture and processes of an institution. It takes conscious effort in order to dedicate resources and time to improving collaboration, but it is worth prioritizing for long-term success.

UNDERSTANDING THE IMPORTANCE OF REGIONAL AND INSTITUTIONAL CONTEXT

Healthcare systems differ in structure and function. Rural versus urban centers and academic versus non-academic hospitals face unique issues and encounter different resource accessibility challenges. Many interior and exterior factors impact how stewardship initiatives are implemented, how the results are communicated, how clinicians will act, and how pharmacists will prescribe based on test results.

It is important to note that the suggested metrics for evaluating stewardship programs will vary depending on the healthcare setting and its function.¹ Common outcome measures may include days of therapy (DOT) of antibiotic use, the frequency of *Clostridioides difficile* (*C. difficile*) infections, levels of antimicrobial resistance (AMR) in local organisms, and economic impacts.

The data used to assess these outcomes are often obtained from laboratory testing or produced as a combined result of diagnostic testing and decision-making. Given the variability in laboratory resources and capabilities, cross-functional collaboration between the stewardship team and the laboratory is imperative for adapting testing and algorithms to the local context to achieve desired stewardship outcomes.

Research findings related to diagnostic testing and outcomes may be challenging to apply in practice because of the variability in laboratory testing and how each laboratory communicates results to the clinical team. In addition, due to differences in the local context, it is not practical to expect laboratory testing, clinical management, and data collection to be done in the same way across settings. Given this, understanding the internal and external factors that determine how both diagnostic and AMS initiatives are implemented is key to creating a language everyone can use to understand the context for measuring and reaching desired stewardship outcomes.

DIAGNOSTIC DATA AND ANALYTICS AS THE COMMON LANGUAGE OF STEWARDSHIP

By using data and analytics as the commonly understood language within an AMS committee, healthcare providers can set thresholds, analyze and compare incidence rates, and monitor the impact of stewardship efforts. Easy access to hospital-level resistance data and localized epidemiology trends enables healthcare professionals to communicate and make data-informed decisions.

Advances in laboratory data collection and analytics positively contribute to stewardship efforts. For example, cumulative antibiograms that used to take significant time and effort for labs to compile can now be created almost instantly, giving users quick access to their hospital's organism resistance profile. As a result, healthcare providers can better understand the prevalence and burden of certain resistance patterns in organisms, which can directly impact empiric antibiotic use and patient management. The continued development of advanced diagnostic technologies necessary to improve patient care and optimize stewardship programs requires coordinated collaboration between the clinical laboratory and clinical stewardship teams.

The development of advanced analytics solutions has also created new opportunities for data sharing with public health authorities and hospital systems, providing near-real-time updates necessary for treatment and public health interventions. Diagnostic tests produce the data needed to drive impactful and efficient patient care, public health interventions, and hospital infection prevention.

REFERENCES:

¹Barlam TF, Cosgrove SE, Abbo LM, et al. Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America. *Clin Infect Dis*. 2016;62(10):e51-e77. <https://doi.org/10.1093/cid/ciw118>