

# Combined With AMS Programs, Molecular RDTs Improve Antimicrobial Use



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Lapin JS, Smith RD, Hornback KM, Johnson JK, Claeys KC.  
[From bottle to bedside: Implementation considerations and antimicrobial stewardship considerations for bloodstream infection rapid diagnostic testing.](#)  
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Antimicrobial stewardship (AMS) programs have rapidly implemented molecular rapid diagnostic tests (mRDTs) for bloodstream infections (BSIs) to improve antimicrobial management and patient outcomes. This review highlights the benefits of mRDTs within AMS programs, assesses the practical AMS considerations for implementing mRDTs within health systems, and discusses future directions.

## Benefits of Molecular Rapid Diagnostics Within AMS Programs

- **Clinical benefits in gram-positive BSIs** include timely pathogen identification, faster de-escalation to treatment, decreased hospital length of stay, decreased time to necessary escalation of antimicrobials, and increased proportion of blood culture contaminants treated
- **Clinical benefits in gram-negative BSIs** include a reduction in the proportion of patients receiving an appropriate empiric regimen; receiving unnecessary antipseudomonal agents and combination antimicrobials; time to de-escalation of combination therapy, antipseudomonal agents, and carbapenems; time to organism identification; time to antimicrobial escalation; and median hospital length of stay
- Incorporating mRDTs can decrease hospital length of stay and costs

## Practical AMS Considerations for Implementing mRDTs Within Health Systems

- **Preparation is key** for optimizing the reporting and communicating the mRDT results. This requires a strong relationship between the AMS program and the clinical microbiology laboratory, support from the hospital administration, established leadership, identification of key stakeholders, and clinician education
- **Implementation** requires automation and rapid communication of mRDT results to primary providers and infectious disease/AMS-trained clinicians, along with conveniently placed guidelines, treatment algorithms, and resources
- **Postimplementation assessment** should measure AMS adherence, evaluate cost-effectiveness, and determine if adaptations are needed

## Future Directions

- Development of more cost-effective RDTs that optimize clinical workflow and provide phenotypic methods for rapid antibiotic susceptibilities from blood cultures
- Further research on the optimal positioning/utilization of phenotypic mRDTs to enhance patient outcomes
- More robust randomized trials to further investigate the impact of mRDTs on clinical outcomes
- It is important to consider which panels or combinations of panels would be optimal for specific healthcare settings



*“Available evidence has made clear that mRDTs not only decrease time to organism identification in bacterial BSI but can also lead to improved antimicrobial use when combined with active interventions from AMS programs,” concluded the study authors.*