



## Randomized Trial of Rapid Multiplex Polymerase Chain Reaction-Based Blood Culture Identification and Susceptibility Testing.

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This paper describes a prospective randomized controlled trial evaluating outcomes associated with FilmArray® Bloodstream Identification (BCID) Panel detection of bacteria, fungi, and resistance genes directly from positive blood culture bottles (BCBs).

A total of 617 adults and children with positive BCBs were randomized into three arms: standard BCB processing (207) and two intervention groups using the FilmArray® BCID Panel: BCID testing reported with template comments (198), or BCID testing reported with template comments and real-time audit and feedback of antimicrobial orders by an antimicrobial stewardship team (212). The primary outcome was antimicrobial therapy duration. Secondary outcomes were time to antimicrobial de-escalation or escalation, length of stay (LOS), mortality, and cost.

Time from BCB Gram stain to microorganism identification was shorter in the groups using FilmArray® BCID Panel testing (1.3 hours) vs control (22.3 hours). Additionally, both intervention groups had decreased use of broad spectrum antibiotics and increased use of narrow spectrum antibiotics compared to the control group. Additionally, time from Gram stain to appropriate antimicrobial escalation was reduced by 14 hours in both intervention groups and time to de-escalation was reduced by 19 hours in the group that included FilmArray® BCID Panel test results with an audit from the antimicrobial stewardship team. Groups did not differ in mortality, LOS, and cost.

Use of the FilmArray® BCID Panel, along with templated comments or oversight from an antimicrobial stewardship team, may optimize antibiotic prescribing for bloodstream infections.

*“Faster identification and resistance characterization of pathogens may lead to earlier administration of directed antimicrobial therapy, promote earlier de-escalation of broad-spectrum agents, and potentially result in better outcomes.”*

### KEY POINTS

- Rapid multiplex PCR reported with templated comments may lead to reduced treatment of contaminants and reduced use of broad-spectrum antimicrobials.
- The FilmArray® BCID Panel reduced time to microorganism identification by almost 1 day (21 hours).
- Of the three study arms, FilmArray® BCID Panel testing combined with antimicrobial stewardship resulted in the most rapid antibiotic de-escalation.