our study [2], in which matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS) was performed on isolated colonies during our day shift only. Routine workup of positive blood culture bottles varies across laboratories and is evolving with new technologies. As suggested by Idelevich and Becker [1], in laboratories with established workflows and sufficient staffing, MALDI-TOF MS may be performed on young colonies after a short incubation, abbreviating time to pathogen identification [3, 4] and enabling earlier phenotypic susceptibility testing.

Unlike rapid “add-on” molecular methods, rapid MALDI-TOF MS may be a replacement technology. However, while around-the-clock MALDI-TOF MS is within reach of large clinical microbiology laboratories, especially those with total laboratory automation, it is unfeasible for every laboratory, especially small ones. In contrast, multiplex molecular polymerase chain reaction assays are more easily done in real time, do not require automation, and are technically within reach of all laboratories. The multiplex polymerase chain reaction approach we studied was also faster than real-time MALDI TOF MS (median time from Gram stain to organism identification, 1.3 hours). However, this high-cost add-on test had only modest benefits for outcomes. Ideally, clinical and budgetary implications of rapid around-the-clock MALDI-TOF MS should be evaluated in a randomized, controlled study.

Idelevich and Becker [1] also highlight limitations of genotypic resistance testing with rapid diagnostic platforms that detect a limited cadre of resistance genes. In our study, we found that detection of mecA, vanA, and vanB enabled timely antibiotic modifications for gram-positive bloodstream infections, but the limited gram-negative resistance gene information did not alter management of gram-negative infections. Although rapid MALDI-TOF MS does not provide susceptibility, it may enable earlier phenotypic susceptibility testing, which we hypothesize would be especially useful for gram-negative bacilli. Randomized, controlled studies should be performed to evaluate the clinical implications of rapid phenotypic susceptibility testing.

Work flow in each laboratory is unique, with some, such as ours, operating 24/7 and others having limited hours. Routine blood culture practice is optimal if bottles are promptly (within an average of 47 minutes in our laboratory) placed on blood culture instruments and punctually removed and Gram stained if positive, with rapid communication of results to clinicians, who respond expeditiously [5]. At our institution, results of positive blood cultures are communicated within an average of an hour after bottles are flagged as positive [5]. Optimizing work flow is a cost-neutral strategy that may be overlooked in the face of exciting new technologies.

With adoption of new technologies, laboratory work flow must be readdressed and stewardship interventions developed that encourage clinicians to act on rapid test results. Our study findings should be generalizable to any technology that provides similar results, including MALDI-TOF MS. With total laboratory automation, around-the-clock MALDI-TOF MS will be applied to cultures from many specimen types; this will require positioning of systems to respond to such results 24/7. In the face of changing practices in clinical microbiology laboratories, we hope that our randomized trial design may be applied in future studies to evaluate the outcomes of diagnostic approaches, whether technology or work flow based, including ideal stewardship interventions.

Note

Potential conflicts of interest. All authors: No reported conflicts. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

Ritu Banerjee, Christine B. Teng, Scott A. Cunningham, Sherry Ihde, James P. Steckelberg, James P. Moriarty, Nilay D. Shah, Jay Manekar, and Robin Patel

Divisions of 1Pediatric Infectious Diseases, 2Laboratory Medicine and Pathology, 3Infectious Diseases, and 4Health

Reply to Idelevich and Beck

To the Editor—We appreciate Idelevich and Becker’s comments [1] regarding
References

*R. B. and C. B. T. contributed equally to this work.
Correspondence: R. Banerjee, Department of Pediatric and Adolescent Medicine, Division of Pediatric Infectious Diseases, Mayo Clinic, 200 First St, SW, Rochester, MN 55905 (banerjee.ritu@mayo.edu).

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