



THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

The Clinical Utility of the GenMark Dx ePlex® Fungal Blood Culture Identification Panel

Stefania Carmona, MD¹, Jeremy Meeder, BS², Derek Moates, MS²,
Todd McCarty, MD¹, Rachael A. Lee, MD, MSPH¹, & Sixto M. Leal, Jr., MD, PhD²

¹Department of Medicine, Division of Infectious Diseases, University of Alabama at Birmingham, Birmingham, AL;

²UAB Fungal Reference Laboratory, Department of Pathology, Division of Laboratory Medicine

BACKGROUND

- The GenMark ePlex® Fungal Blood Culture Identification (BCID-FP) Panel utilizes electrowetting technology to detect the 15 most common causes of fungemia. Rapid identification of fungal species and innate resistance patterns enable improved antifungal stewardship

OBJECTIVE

- Examine the impact of the ePlex® Fungal BCID panel on antifungal stewardship in patients with fungemia.

METHODS

- The initial blood culture bottle in patients with fungal organisms on Gram Stain were evaluated using BCID-FP and standard of care MALDI-TOF MS on colonies.
- In the pre-implementation phase (n=26), only SOC MALDI-TOF MS results were reported in the EMR and the BCID-FP was performed without provider notification.
- In the post-implementation phase (n=35), BCID-FP results were additionally reported in the EMR.
- Chart reviews assessed risk factors for fungemia and the potential impact (pre-implementation) and actual impact (post-implementation) of the BCID-FP on the time to organism identification, treatment, and patient outcomes

RESULTS

Fungal Species	Total (N=61) No. (%)
<i>C. albicans</i>	24 (39)
<i>C. glabrata</i>	11 (18)
<i>C. parapsilosis</i>	9 (15)
<i>C. tropicalis</i>	3 (5)
<i>C. krusei</i>	4 (7)
<i>C. kefyr</i>	1 (2)
<i>C. lusitaniae</i>	2 (3)
<i>C. neoformans</i>	2 (3)
<i>C. albicans and C. glabrata</i>	2 (3)
<i>C. braccarensis</i>	1 (2)
<i>C. pararugosa</i>	1 (2)

	Total	Pre-Implementation	Post-Implementation	P-value
Time saved to organism ID	1.43 days	1.12 days	1.81 days	0.009
Patients on Empiric therapy prior to culture positivity	11.40%	5.70%	19.20%	0.125
De-escalation feasible	23.0%	14.3%	34.6%	0.12
7-day Mortality	34.4%	34.3%	34.6%	0.979
30-day Mortality	59.0%	60.0%	57.7%	0.856

For additional results, please scan the QR Code:



CONCLUSIONS & FUTURE DIRECTIONS

- The BCID-FP enabled earlier fungal identification compared to traditional culture and MALDI-TOF MS on colonies.
- BCID-FP allowed for earlier de-escalation to fluconazole based on the identification of organisms with low fluconazole resistance rates in 34.6% of cases.
- High mortality rates in this patient population may require evaluation of a larger cohort to identify statistically significant differences in mortality.

REFERENCES

- Bryant S, Almahmoud et al. Evaluation of Microbiological Performance and the Potential Clinical Impact of the ePlex® Blood Culture Identification Panels for the Rapid Diagnosis of Bacteremia and Fungemia. *Front Cell Infect Microbiol*. 2020 Nov 26;10:594951. doi: 10.3389/fcimb.2020.594951. PMID: 33324578; PMCID: PMC7726344.
- Huang T-D, et al. Evaluation of the ePlex Blood Culture Identification panels for detection of pathogens in bloodstream infections. *J Clin Microbiol* 2019; 57(2): e01597-18.
- Timbrook TT et al. The effect of molecular rapid diagnostic testing on clinical outcomes in bloodstream infections: A systematic review and meta-analysis. *Clin Infect Dis* 2017; 64(1): 15-23.

ACKNOWLEDGEMENTS

- UAB Fungal Reference Lab
- UAB Clinical Microbiology Lab
- UAB Division of Infectious Diseases
- UAB Department of Pathology