

# Evaluation of the ePlex<sup>®</sup> Blood Culture Identification (BCID) Panels for Gram-positive/Gram-negative Bacteria and Yeasts

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**Introduction:** Multiple methods used for blood culture identification create inconsistent reporting of critical results. The aim of this study was to evaluate performance characteristics of the ePlex BCID Panels compared to current standard of care (SOC) methods used in our lab.

**Methods:** Identification sensitivity and specificity were assessed across all targets detected by the ePlex as well as time to final identification (from time of bottle positive Gram stain) between ePlex and SOC testing. SOC included Xpert MRSA/SA or latex agglutination for Gram-positive cocci in clusters (GPCC), Vitek MS + Accelerate Pheno for Gram-negative rods (GNRs), serotyping or optochin disk ± Vitek MS for Gram-positive cocci in chains (GPC chains), Vitek MS or Vitek-2 for Gram-positive rods (GPR), and PNA-FISH or Vitek MS for yeasts.

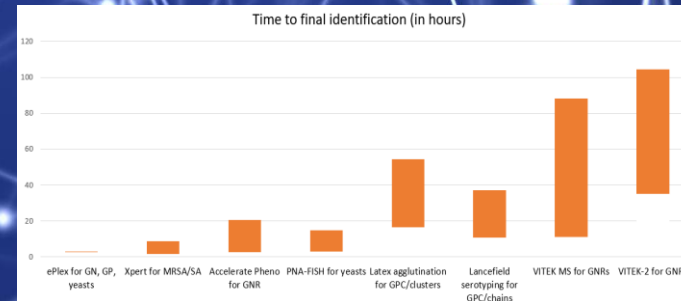
**Results:** 313 unique prospective blood culture specimens were tested with ePlex BCID Panels during a 3-month period (January-March 2020). The positive percent agreement was 100% for GNR (n= 98), *S. aureus* (n= 42), coagulase-negative staphylococci (n= 38), Group A *Streptococcus* (n= 3), Group B *Streptococcus* (n= 5), *S. pneumoniae* (n= 10), GPR (n= 21), and yeasts (n= 20). The negative percent agreement was 100% across all targets except for 1 false positive *Corynebacterium* spp. In total, 6.7% of blood cultures had an off-panel organism which ePlex did not detect. The median time to final identification was 3 (2 – 4) hours for ePlex and calculated for all other SOC methods. Compared to SOC molecular methods, the ePlex reduced time to identification 0.5 h compared to Xpert MRSA/SA, 6.7 h compared to Accelerate Pheno for GNR, and 3 h compared to PNA-FISH for yeasts (p<0.05). When the ePlex was compared to non-molecular techniques (MALDI-TOF), SOC for *Streptococcus* spp. and *Enterococcus* spp., the time to final identification was reduced by 24 – 30 hours (p<0.05).

## Pan Targets detected by the ePlex: ALL confirmed by culture

Pan Gram-Positive	3
Pan Gram-Negative	1
Pan <i>Candida</i>	1

Antibiotic resistance mechanisms	Detected by the ePlex	Confirmed by SOC
<i>mecA</i>	32	32
<i>vanA</i>	4	4
<i>bla</i> <sub>CTX-M</sub>	6	6*

\* There were 2 *E. coli* ESBL(+) by Vitek and confirmatory disk test which were not detected by the ePlex.



**Conclusions:** The ePlex BCID system provided highly accurate identification results for GP and GN bacteria as well as for yeasts. Our evaluation showed that this system significantly reduced time to final identification compared to SOC testing methods.