DATA INSIGHTS

ePlex® BCID Panels: Sepsis and COVID-19

COVID-19 grew to pandemic proportions in 2020, with global case numbers approaching 100M by the end of the year. Although most cases are mild, some patients are at higher risk, with an overall mortality rate of >2%[1]. The mortality rate of sepsis can be as high as 75% depending on the agent causing infection[2] and because the clinical presentation of COVID-19 and sepsis can be similar, antimicrobial use has increased during the pandemic[3] further driving antimicrobial resistance. Rapid detection or rule-out of bacterial or fungal co-infections and secondary infections can help reduce unnecessary or inadequate antimicrobial therapy.

Worse Clinical Outcomes

Blood cultures from hospitalized patients diagnosed with sepsis were compared to non-bloodstream infection (BSI) controls and found that **BSI in COVID-19 patients is common, with worse clinical outcomes.**[4]

- Up to 34% of hospitalized COVID-19 patients developed secondary BSIs[4,5]
    - 91.4% bacterial
    - 5.5% fungal
- Longer ICU stay[4,5] (10-12 days longer)
- Higher median hospital costs for COVID-19 patients with longer LOS[6] ($54K vs. $12K)
- Higher in hospital mortality[4,5] (53.1% vs. 32.8%)
- High incidence of ICU-acquired infections in critically ill patients[7]

Rapid detection of

>95%

of BSI-causing pathogens with ePlex BCID Panels enables earlier appropriate, and potentially life-saving therapy.

ePlex®

Designed for the Patient, Optimized for the Lab

Unnecessary Antimicrobial Therapy

In a study, among 197 COVID-19 patients hospitalized in the ICU, **a high rate of COVID-19 patients were shown to have positive blood cultures and more than half of these were considered contaminants**[5]

- >90% of patients received antibiotics despite only 15% having a secondary infection caused by bacteremia[5,8]
- About 50% of positive blood cultures were found to be contaminants[5]
- Both inadequate AND unnecessarily broad empiric therapy were associated with higher mortality in sepsis patients[9]

Only ePlex BCID Panels include a broad range of contaminant organisms, allowing clinicians to rapidly de-escalate unnecessary antimicrobials that can lead to adverse outcomes or furthering of antibiotic resistance.

Overuse of Antibiotics Fuels Resistance

COVID-19 is accelerating the threat of antimicrobial resistance[10]

- Sepsis and COVID-19 can present with similar symptoms, resulting in patients often being treated with broad spectrum antibiotics unnecessarily[10]
- Overuse of antibiotics is the primary driver of antibiotic resistance today - most apparent in the treatment of COVID-19[3]
- The spread of resistant pathogens is amplified by[3]:
    - Increased antibiotic use
    - Increased exposure to healthcare settings
    - Increased invasive procedures

Rapid testing for a broad set of pathogens can help rule in and rule out co-infections so unnecessary treatment can be prevented or de-escalated earlier, helping reduce further spread of antibiotic resistance.

The ePlex BCID Panels deliver the most comprehensive solution for testing patients suspected of bloodstream infections and sepsis, including patients with COVID-19.

ePlex BCID Panels:

- Detect the broadest number of Gram-Positive, Gram-Negative and Fungal Pathogens, including:
    - More contaminant organisms for early de-escalation
    - More anaerobes and potentially multidrug resistant (MDR) organisms
    - The broadest fungal panel including emerging and MDR fungi
- 10 common resistance genes aid prompt therapy and infection control decisions
- Rapid results aid in early appropriate therapy
- Simple workflow so critical tests can be run on any shift

References

1. Johns Hopkins University of Medicine Coronavirus Resource Center https://coronavirus.jhu.edu/map.html
2. Pfaller MA, et al.(2007) Clin Micro Rev 20(1):133-63
3. Makary, M. et. al. (2021) MedPage Today, https://www.medpagetoday.com/blogs/marty-makary/90795
4. Bhatt, P., et. al. (2020) Clin Infect Dis, ciaa1748, https://doi.org/10.1093/cid/ciaa1748
5. d'Humieres, C. et. al. (2021) medRxiv, https://www.medrxiv.org/content/10.1101/2021.01.22.21250287v1
6. Di Fusco, et. al. (2021). Journal of Medical Economics. https://pubmed.ncbi.nlm.nih.gov/33555956
7. Soriano, M. C. (2020) Journal of Infection, DOI:https://doi.org/10.1016/j.jinf.2020.09.010
8. Zhou F, et. al. (2020) Lancet; 395:1054-62.
9. Rhee C, et. al. (2020) JAMA Network Open; 3(4):e202899
10. Hsu, J. (2020) BMJ;369:m1983, https://www.bmj.com/content/369/bmj.m1983

GenMark Diagnostics, Inc.
5964 La Place Court
Carlsbad, CA 92008
USA

For more information, visit GenMarkDX.com