

IMPROVING DIAGNOSTIC CLARITY & CARE WITH KARIUS

INSIGHTS FROM INFECTIOUS DISEASE

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WHAT IS NEXT GENERATION SEQUENCING (NGS)?

Next-generation sequencing (NGS) is a culture-free method of analyzing the microbes within a sample. These tests sequence all or part of the microbial DNA or RNA in a patient specimen.

WHAT IS KARIUS?

The **Karius Test** is a type of next generation genetic sequencing that detects microbial cell-free DNA (**not** RNA) from organisms in the blood and compares it against a proprietary genetic library owned by Karius. There are other companies who have developed similar assays such as nRichDx and DISQVER-NGS by Noscendo.

“A NEW KID ON THE BLOCK; TO BE USED WITH CAUTION IN THE RIGHT CLINICAL CONTEXT”

KARIUS VS. CONVENTIONAL MICROBIOLOGY

Advantages of Karius Test

- Allows for the detection of > 1000 DNA-based viruses, bacteria, fungi, protozoans, and parasites. Of note, Karius does **NOT** detect RNA viruses such as HIV, Hepatitis C, RSV, or rhinovirus.
- Can be of assistance in detecting pathogens that are difficult to grow using conventional methods and pathogens in patients previously treated with antimicrobials.
- Can be of assistance when direct-sampling of a focal infection is not safe or feasible (bearing in mind a negative result does not rule-out infection).

Disadvantages of Karius Test

- High cost (> **\$1000 per test**)
- Long turnaround times due to shipping requirements (around 4 to 7 days)
- Inability to detect RNA viruses
- Reduced ability to detect pathogens outside the bloodstream or spaces lacking significant blood flow
- Potential for unnecessary treatment when tests are not interpreted carefully within the clinical context, resulting in **bystander (commensal or non-pathogenic) organisms being erroneously targeted for treatment.**
- Limited to no information regarding antimicrobial susceptibilities

HOW & WHEN CAN I ORDER KARIUS?

To provide actionable information and minimize the harms of over-testing, Karius is most useful in patients with a high pre-test probability of infection. You can consider Karius when assessing for **organisms that are not easily detected by conventional microbiologic methods** (*cultures, serologies, multiplex PCRs, blood and urine antigen tests*) or when the known nidus of infection is unable to be safely sampled (*e.g. culture negative endocarditis, empyemas failing standard CAP therapy and unable to be drained*). Due to these nuances, **Karius should be ordered in consultation with an infectious disease specialist, who can provide guidance on other helpful testing modalities and aid in Karius interpretation.**

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