

EFFECTIVENESS OF A METAGENOMIC NEXT GENERATION SEQUENCING ASSAY FOR IDENTIFYING PATHOGENS: A RETROSPECTIVE REVIEW OF TEST UTILIZATION IN A LARGE CHILDREN'S HOSPITAL

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Background: Plasma cell-free metagenomic next generation sequencing (pNGS) is a new diagnostic method utilized in the clinical microbiology laboratory to potentially identify multiple pathogens with a single diagnostic test. Little is understood about where pNGS fits in the diagnostic schema of an infectious workup. Here, we describe our experience with a commercial pNGS assay (Karius, Redwood, CA) at Texas Children's Hospital in terms of diagnostic utility and turnaround time in comparison to conventional microbiological testing (CT).

Materials/Methods: A retrospective review of all patients who had pNGS from April – June 2019 was performed. All CT performed a week before and after were reviewed. Results for pNGS, specimen collection time, and result time were compared to that of CT. Any discordant results were reviewed to determine if there was a change in antimicrobials due to the additional organism(s) identified by pNGS.

Results: A total of 60 patients were reviewed. The majority (80%) was immunosuppressed or with a primary immunodeficiency. Positive and negative agreement between pNGS and CT were 59% and 68%, respectively. Overall, resulted time was earlier by CT than pNGS (36.5 hours vs 67.9 hours). Turnaround time was faster by CT than pNGS (1.8 days vs 3.6 days). When additional organism(s) were identified by pNGS, antimicrobials were changed 28% of the time.

Conclusions: Our results indicate that pNGS has a limited diagnostic value compared to CT in our institution. Results were known sooner and in a more timely fashion by CT. Additional clinical investigations are warranted to identify the specific clinical scenarios where pNGS will be benefited.