THE PEDIATRIC INFECTIOUS DISEASE JOURNAL
March 2020, 39 (3): 188-191 doi: 10.1097/INF.0000000000002544

Performance and Impact of a CLIA-waived, Point-of-care Respiratory PCR Panel in a Pediatric Clinic

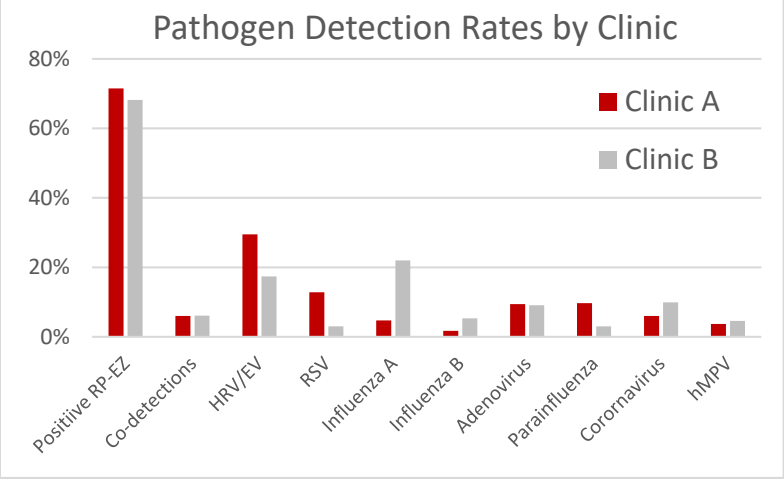
Beal SG, Posa M, Gaffar M, Reppucci J, Mack JA, Gurka MJ, Rand K, Houck H, Kelly MN

Study Description

This is a prospective study to evaluate the impact of using the BioFire® FilmArray® Respiratory EZ (RP EZ) Panel in a pediatric outpatient clinic. At Clinic A, patients for whom respiratory pathogen testing was deemed appropriate by the clinician were tested on-site using the BioFire RP EZ Panel and/or rapid antigen tests. Use of the BioFire RP EZ Panel was encouraged and prescriptions for antimicrobials were delayed until test results were available. At Clinic B, on-site testing was limited to rapid antigen tests, however, residual respiratory samples were frozen and later tested for definitive pathogen identification. The primary study aim was to determine the proportion of patients that received appropriate antimicrobial therapy based on pathogen detection. Patients with positive rapid antigen results for strep throat were excluded because antibiotic use would be unrelated to the results of the BioFire RP EZ Panel. The study also evaluated the impact to clinic workflow.

Summary of Results and Discussion

During the one year study period, a total of 430 samples (298 at Clinic A and 132 at Clinic B) were tested with the BioFire RP EZ Panel. As shown in the figure below, the overall positivity rate and co-detection rates were similar. Patients tested at Clinic A were significantly younger (3.19 vs 5.89, p<0.0001), had lower detection rates for influenza A and B, and a higher detection rate for RSV and HRV/EV. Continued use of rapid antigen tests at Clinic A (350 additional samples) likely contributed to the differences in pathogen detection rates as samples with positive rapid antigen results may have been



This article summary was adapted by BioFire Diagnostics from the original publication.
Refer to the original referenced publications for complete information.

BioFire Diagnostics, LLC | Salt Lake City, Utah, USA | 1-801-736-6354 | biofiredx.com

© 2019 BioFire Diagnostics, LLC. All rights reserved.

excluded from testing with the BioFire® RP EZ Panel at Clinic A. The high positivity rate at both sites indicates appropriate use of diagnostic testing at both locations. Importantly, 51% (153/298) and 36% (48/132) of samples tested at Clinic A and Clinic B had pathogens detected by the BioFire RP EZ Panel that cannot be detected by rapid antigen tests.

Appropriate use of antimicrobials was determined by comparing antimicrobial prescriptions to detected pathogens. Both clinics had high rates of appropriate use of antibiotics indicating strong antimicrobial stewardship. However, use of the BioFire RP EZ Panel demonstrated a significant improvement in the appropriate use of antimicrobials. Specifically, antimicrobials were avoided more often for patients with no pathogen detection (97.6 vs 90.5%) or with viral detections other than influenza or RSV (98.1 vs 94.1%). Clinic B had a higher use of oseltamivir for influenza positive patients, however, a post-hoc analysis of patients with influenza determined that all 55 patients at both clinics were managed appropriately when including factors such as age and duration of symptoms.

BioFire RP EZ Panel Detection	Study Defined Appropriate Treatment	Clinic A	Clinic B	P Value
None	No antibiotics or antiviral	83/85 (97.6%)	38/42 (90.5%)	0.0923
Influenza	Oseltamivir	6/19 (31.6%)	27/36 (75%)	0.0018
RSV	No antibiotics or antivirals	37/38 (97.4%)	3/3 (100%)	1.0000
Virus other than influenza/RSV	No antibiotics or antivirals	152/155 (98.1%)	48/51 (94.1%)	0.16727
Atypical Bacteria	Appropriate antibiotic	1/1 (100%)	0/0 -	–
Total		279/298 (93.6%)	116/132 (87.9%)	**0.0445**

An evaluation of clinic workflow at Clinic A found that the average duration of appointment times was shorter (mean 48.0 vs 53.7, p=0.0009) for patients tested with the BioFire RP EZ Panel compared to those that were not tested. Results for the BioFire RP EZ Panel were called to the patients after the test results were available.

"Subjective feedback, from nursing staff who performed the testing and physicians who reported results by phone, was positive"

Key Points

- Approximately 50% of respiratory pathogens detected by the BioFire RP EZ Panel are not detectable by rapid antigen testing due to the limited number of pathogens.
- Use of the BioFire RP EZ Panel significantly increased appropriate use of antimicrobials even in a setting with strong antimicrobial stewardship.
- Use of the BioFire RP-EZ Panel reduced appointments times and subjective feedback from the clinical staff was positive.

BFR0000-8410-01

This article summary was adapted by BioFire Diagnostics from the original publication.
Refer to the original referenced publications for complete information.

© 2019 BioFire Diagnostics, LLC. All rights reserved.