

Initial Impression of Explify Respiratory Testing: Is it an Effective Diagnostic Tool?



Joshua D. Donkin MD, James Polega MD, Mudita Bhugra MD, Jorgelina De Sanctis MD, Habiba Hassouna MD
Spectrum Health/Michigan State University Internal Medicine Residency,
Spectrum Health/Michigan State University Internal Medicine/Pediatrics Residency,
Spectrum Health/Michigan State University Infectious Disease Fellowship



Introduction

- Respiratory infections are a common cause of hospital admissions and often represent a diagnostic challenge when attempting to isolate a specific pathogen.
- Sputum culture is notoriously unreliable and more invasive sample acquisition for microbial identification still relies on the time-consuming process of culturing the sample.
- Next generation sequencing is a powerful new tool that presents the possibility of fast and highly accurate hypothesis-free identification of pathogens.
- There are multiple platforms available of varying reported abilities and a wide range in cost.

Objectives

- Determine the clinical utility of the Explify Respiratory Panel in identifying respiratory pathogens, in patients presenting with respiratory infection to a large quaternary care center in West Michigan.

Methods

- Retrospective Chart Analysis
 - Explify testing (Table 1) given to 16 patients (Table 2) over an initial 3-month trial.
 - Concern for respiratory infection with wide differential diagnosis.
- Analysis included
 - Pathogens identified.
 - Comparison with other modalities of testing employed.
 - Suspected pathogenicity of identified organisms.
 - Impact of testing on clinical course and management.

Table 1. Explify Respiratory Testing
Next Generation Sequence Testing
Capable of Identifying > 900 pathogens (bacteria, fungi, virus, parasites)
Sample type: Sputum, NP swab, BAL (PREFERRED)
Turn around time: 5 days (including shipping time)
Cost: \$470 (compared to \$1284.18 for Universal PCR Testing)
Concerns
False positives due to contaminants or host DNA
False positives due to identification on nonpathogenic organisms

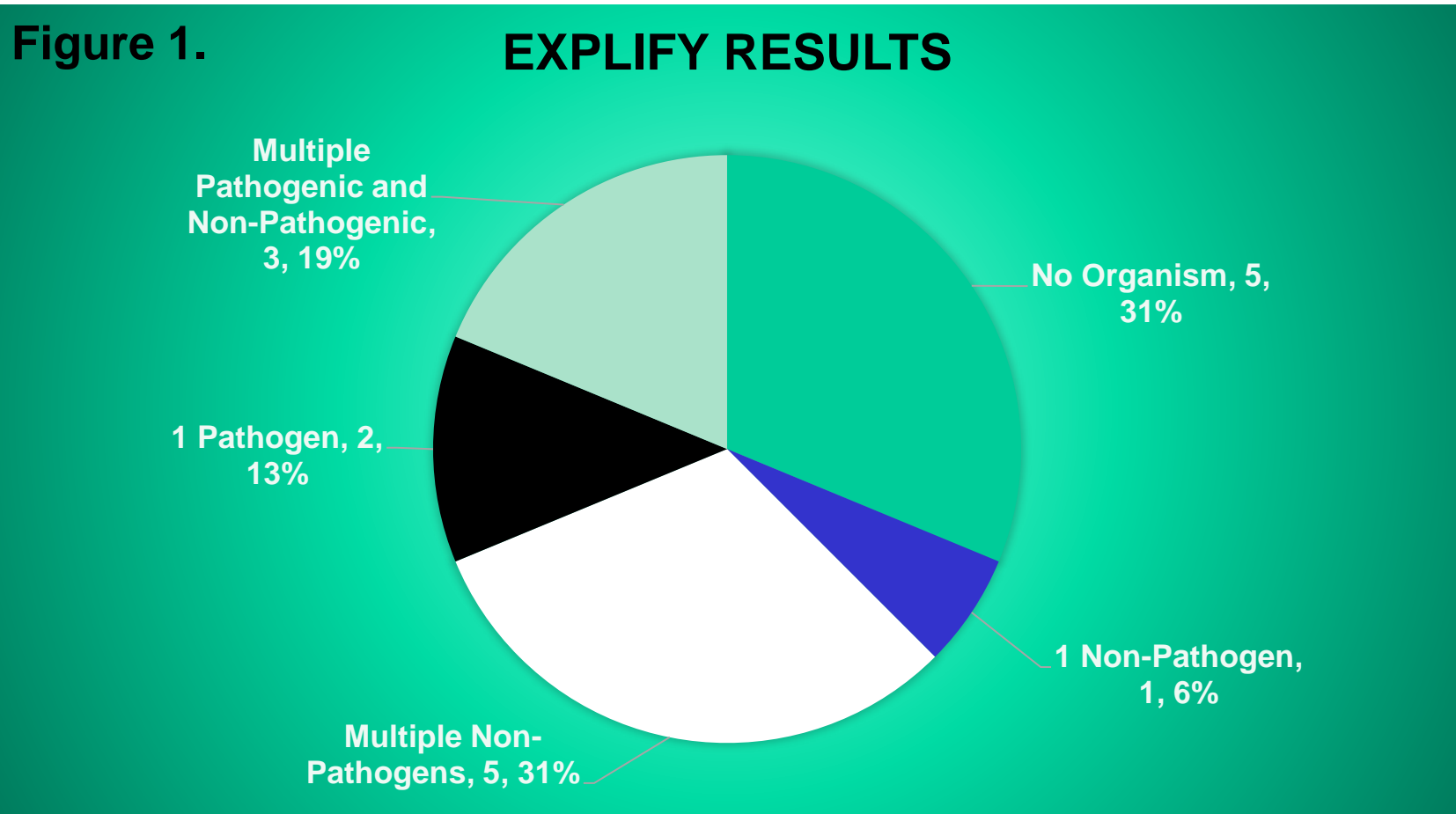


Table 2. Patient Characteristics
9 male, 7 female
Ages 40 - 77
5 immunocompromised patients
3 with known hematologic malignancy
4 with history of solid organ malignancy
1 solid organ transplant recipient (heart)
1 hematopoietic stem cell transplant recipient

Results

- Explify testing did not result in a meaningful impact in care in any of the cases we examined with regards to changing therapy.
- In 31% of the cases no organism was detected by Explify (Figure 1).
- In 69% at least one organism was detected but despite identification all of these were determined by the test or the treating clinician to be nonpathogenic in the patient

Discussion

- The Explify Respiratory Test offers a wide array of possible pathogen identification and costs are comparable to other next generation sequence testing available.
- However, based upon the results of our analysis, Explify:
 - Did not increase the diagnostic yield.
 - Requires invasive testing for sample acquisition.
 - Did not offer clinical value in the diagnosis and management of patients with undifferentiated respiratory illnesses.
 - May delay other diagnostic and therapeutic interventions while awaiting the results of the test.
 - Results did not justify additional testing and cost.
- We do not currently have evidence to continue to use Explify Respiratory Testing.
- This study highlights the importance of quality improvement projects and significance of evaluation of new and existing testing modalities to avoid unnecessary testing and cost burden for our patients.

Acknowledgement
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