Study Name:

Urgent Care Management of Respiratory Illness Enabled with Novel Testing Pathway (URGENT): A Randomized Control Trial of Respiratory PCR versus Standard Care

Date: 30-January-2023

NCR: NCR213901

Principal Investigator:
Name**:** **Andrew C. Meltzer MD, MS**
Title: **Associate Professor of Emergency Medicine**
Institution: **George Washington University**

Background

Over the past two decades, new options have emerged for patients seeking acute care such as urgent care, retail clinics, and telemedicine. While visits to emergency departments have declined overall since 2008, urgent care facilities have seen a more than 100-fold increase in patient traffic.[6] For patients presenting to urgent care centers with acute respiratory illness, early and appropriate treatment is essential in lessening the disease course and preventing its spread. Acute respiratory illnesses account for the largest percentage of urgent care center visits, however diagnosis of the specific pathology of the infection is challenging and reliant on traditional diagnostic tests and physical exams.[7] In evaluating patients for acute respiratory illnesses, clinical findings are often nondescript and laboratory testing is needed for definitive diagnosis.[1] Many of the causative agents of acute respiratory illnesses are tested for using antigen detection assays.[5] While these assays produce results in approximately 10-15 minutes, they have relatively poor sensitivity which can lead to missed diagnoses.[3] Viral or bacterial cultures can also be used to diagnose acute respiratory illnesses, however, they take days to produce results which delays initiation of antiviral or antibiotic therapy and infection control measures.[3]

Rapid diagnosis and precise treatment have become possible with multiplex polymerase chain reaction (PCR) panels that can identify a variety of causative agents of acute respiratory illnesses such as bacterial and viral infections in one urgent care visit.[4] While real-time PCR is currently used as a standard for diagnosing acute respiratory illnesses such as influenza due to its high sensitivity and specificity, it typically takes several hours for results which is unfavorable in the urgent care setting.[2] Highly sensitive and rapid random-access PCR tests provide the sensitivity and specificity needed to both rapidly and accurately diagnose acute respiratory illnesses.[2] Similar PCR panels have been used in previous research for the diagnosis of gastrointestinal illnesses in the emergency department and point-of-care testing for hospitalized adults presenting with acute respiratory illness.[1] In this study, we aimed to determine if a rapid multiplex PCR test for urgent care patients with symptomatic upper respiratory infections can improve patient and provider-reported outcomes.

Acute respiratory illnesses cause millions of cases per year in the US and result in countless hospitalizations, which the current COVID-19 pandemic has greatly inflated. Most upper respiratory infections are of viral etiology.[7] Rapid diagnostics for acute respiratory illnesses in urgent care centers would be highly beneficial in improving both patient outcomes and care experiences as well as guiding provider course of care. In a 2010 study, 33.3% of urgent care center visits were found to be due to upper respiratory infections.[7] Furthermore, 41.5% of prescriptions written at urgent care facilities were found to be for antibiotics.[7] Antibiotic overuse for acute respiratory illnesses is partly driven by clinical uncertainty regarding underlying etiology.[1] With the increasing threat of antimicrobial resistance (AMR), accurate and rapid diagnostics will aid in preventing unnecessary antibiotic prescribing and promote antimicrobial stewardship.

Introduction of the rapid testing panels for acute respiratory infections in urgent care settings will afford clinicians ease in diagnosing the cause of a patient's illness which will in turn lead to better patient outcomes. This study utilizes the Biofire®

FilmArray Panel which in previous studies has been shown to be highly effective in diagnosing acute respiratory illnesses.

Study Objectives:

Aim 1: To asses improvement in *patient*-reported outcomes (PRO) in Urgent Care patients with acute respiratory illness who are tested with RP2.1 (EXP) versus standard care (SC).

Hypotheses: Improvement in PRO's in group (tested with RP2.1 (EXP) vs. standard care (SC)) assessed at Day 0 (i.e., day of test) and/or Day 7 (call-back).

Outcomes

Primary:

- ***Satisfaction with Urgent Care*** *(willingness to recommend urgent care versus others). Day 0.*

Secondary:

- ***Satisfaction with Urgent Care*** *(willingness to recommend urgent care versus others). Day 7.*
- ***Time isolated*** *(or recommended to isolate) by patient. Day 0,7.*
- ***Time isolated*** *(or recommended to isolate) by family members / close contacts. Day 0,7.*
- ***Understanding of current disease process****. Day 0, 7*
- ***Need for additional diagnostic tests by patient****. Day 7.*
- ***Need for additional diagnostic tests of family members / close contacts****. Day 7.*
- ***Missed time at work.*** *Day 7.*

Aim 2: To determine the difference in Urgent Care *provider*-reported outcomes after treatment of patients with acute respiratory illness tested with RP2.1 vs. SC. Assessed by provider survey.

Hypothesis*: Use of RP2.1 will lead to differences in provider-reported outcomes assessed at Day 0 compared to SC.*

- ***Confidence in diagnosis***
- ***Recommendations regarding isolation***
- ***Ability to address patient needs/ questions.***
- ***Recommendations regarding disease course.***
- ***Follow up recommendations***

Study Synopsis

Study Design

Sites
Two GW Urgent Care sites (McPherson Square, Rhode Island Avenue) - also known as Immediate and Primary Care Sites (IPC)

Enrollment times
~~7~~ 5 days per week, RA's screen for relevant chief complaint related to respiratory infection.

- (Estimate 5 hours per day = 25 hours / week) at all 3 sites. Therefore, 5 hours x 3 sites = 15 hours per day. Per week, 15 hours x 7 days / week = 105 hours / week
- Follow up and survey = 3 hours per day = 21 hours/ week
- 105 + 21 = 136 RA hours per week

Study Arms
EXP: RP2.1 result communicated plus scripted communication of meaning of results.
SC: Standard communication

Outcome Measures
Day 0
RA communicates results and assessment of Day 0 relevant patient, provider and process outcomes.

Day 7
Review of EHR (Allscripts, CRISP)
Patient follow-up assessment performed by phone.

Processing Samples
Samples will be collected and processed at the three urgent care/immediate primary care facilities (IPCs) affiliated with George Washington University Medical Faculty Associates.

- Testing will occur on site. Each urgent care performs CLIA-waived lab tests for point of care tests.

- Any Non- RP2.1 testing will be allowed in either group per discretion of the provider.

- Standardize script for communication of results provided on same day as testing to providers.

Standard care
Most patients with symptoms of a respiratory illness receive testing for COVID-19. The process for suspected COVID is to run a SARS antigen test initially. Results of the antigen tests are available within 15 to 20 minutes. For anyone with a negative test, samples are then sent to LabCorp for a confirmatory PCR test. The results of the PCR test are dependent on the number of tests LabCorp is performing but typically take

between 24 to 96 hours. All patients with results that are positive receive a phone call; for patients with a negative test, no call is made and patients must access the patient portal to get results.

Our expectation is that the use of RP2.1 will lead to improved satisfaction for patient and provider.

Inclusion Criteria

- Age 7-year-old
- Clinically stable
- Must present with one symptom of respiratory illness (e.g., cough, sneezing, runny or stuffy nose, sore throat, headaches, muscle aches, trouble breathing, shortness of breath, and/or fever).

Exclusion criteria

- Patient is unable to provide informed consent
- Chronic symptoms (>14 days) or asymptomatic
- Unstable (or "too sick" to consent)
- Prisoner or ward of state
- Non-English speaker

Potential barriers and solutions

- Success for the study requires provider buy-in to aid with recruitment efforts. Lack of provider buy-in may hinder sample size ascertainment. Proposed solutions include electronic alerts, incentive payments, and communication aids to physicians to discuss results with patients.
- Successful undertaking of this study requires dedicated research staff to ensure high recruitment goals and fidelity to protocol. We have budgeted for a study coordinator with 25% effort allocated directly to the project in addition to 136 hours of research assistant time per week. We currently have several trained research assistants who will be assigned to this study allowing for rapid implementation of study.

Data Analysis and Statistical plan

*We anticipate that we will enroll 30 patients per week for 12 weeks, 360 patients. (*Full power analysis still forthcoming,)

Data Collection

- Standard demographic information
- vaccination status
- insurance status
- QOL measures
- health literacy level
- current symptomatology
- vital signs

- CPT
- ICD-10 codes

Analysis
Dr. Yan Ma, professor of Biostatistics and Bioinformatics at George Washington University, will be our statistician for this project. He has aided in data analysis for previous projects affiliated with BioFire with Dr. Meltzer.

Communication
- Progress reports will be prepared every three months from study initiation to completion, including presentation or publication of the study results.

Anticipated start date
- *November 2021*

Anticipated duration of the study?
- November 2021~~-February~~ September 2022 (3 months for study enrollment)
- March 2022-May 2022 (3 months for Data Analysis and Manuscript Preparation)

IRB/Ethics Board Requirements and Status

- Is IRB/Ethics Board Approval Required? (Please provide a justification if approval is not required)/ Yes

- Does the study require informed consent? Yes

- What is the current status of the approval? *Note: A copy of the IRB/Ethics Committee decision regarding the study must be provided prior to study initiation.*

- Currently under review through George Washington University's IRB.

Requested Support

We request three rapid testing machines and enough cartridges for a minimum of 360 tests.

REFERENCES

1. Beard K, Brendish N, Malachira A, et al. Pragmatic Multicentre randomised controlled trial evaluating the impact of a routine molecular point-of-care 'test-and-treat' strategy for influenza in adults hospitalised with acute respiratory illness (flupoc): Trial protocol. *BMJ Open*. 2019;9(12). doi:10.1136/bmjopen-2019-031674

2. Dugas AF, Valsamakis A, Atreya MR, et al. Clinical diagnosis of influenza in the ed. *The American Journal of Emergency Medicine*. 2015;33(6):770-775. doi:10.1016/j.ajem.2015.03.008
3. Kim D-K, Poudel B. Tools to detect influenza virus. *Yonsei Medical Journal*. 2013;54(3):560. doi:10.3349/ymj.2013.54.3.560
4. Leber AL, Everhart K, Daly JA, et al. Multicenter evaluation of BioFire FilmArray Respiratory Panel 2 for detection of viruses and bacteria in nasopharyngeal swab samples. *Journal of Clinical Microbiology*. 2018;56(6). doi:10.1128/jcm.01945-17
5. Overview of influenza testing methods. Centers for Disease Control and Prevention. https://www.cdc.gov/flu/professionals/diagnosis/overview-testing-methods.htm. Published August 31, 2020. Accessed October 12, 2021.
6. Poon SJ, Schuur JD, Mehrotra A. Trends in visits to acute care venues for treatment of low-acuity conditions in the United States from 2008 to 2015. *JAMA Internal Medicine*. 2018;178(10):1342. doi:10.1001/jamainternmed.2018.3205
7. Weinick RM, Burns RM, Mehrotra A. Many emergency department visits could be managed at Urgent Care Centers and retail clinics. *Health Affairs*. 2010;29(9):1630-1636. doi:10.1377/hlthaff.2009.0748