The Impact of Respiratory Viral Testing in Hospitalized Adult Patients at a Tertiary Care Facility

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Background

- The use of multiplex nucleic acid amplification tests for detection of respiratory viruses is increasing.
- These tests have the potential to limit antibiotic use and hospital length of stay by rapidly diagnosing the etiology of respiratory illnesses.
- However, these tests are expensive, and the clinical significance of a positive result can be unclear.
- The goal of this study was to assess the impact of respiratory viral testing on clinical management among adults hospitalized at UNC Hospitals.

Methods

- Retrospective chart review
- Inclusion criteria
  - Age ≥ 18 years
  - Admitted to a floor or stepdown unit between September 1, 2015 and April 15, 2016
  - At least one positive respiratory viral test collected within 48 hours of admission:
    - GenMark Respiratory Viral Panel (RVP)
    - Cepheid Xpert Rapid Influenza or Influenza/RSV PCR tests (Rapid PCR)
- Charts were reviewed to assess if positive viral testing resulted in a change in clinical management, particularly antibiotic de-escalation or initiation of antiviral therapy

Results

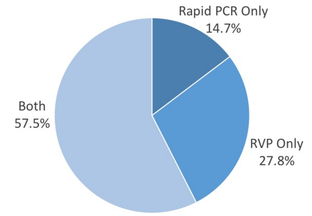
Demographics and Clinical Characteristics

Admissions	Patients	Age: Median (IQR)	Sex: n (%)
252	243	57.1 (39.5-70.1)	Female: 125 (49.6), Male: 127 (50.4)

Comorbidities	n (% of admissions)
Cancer	66 (26.2)
Chemotherapy within the last 6 months	34 (13.5)
Neutropenic at time of testing	5 (2.0)
Chronic Obstructive Pulmonary Disease (COPD)	52 (20.6)
Solid Organ Transplant on Immunosuppression (SOT)	32 (12.7)
Asthma	29 (11.5)
Cystic Fibrosis (CF)	29 (11.5)
HIV	9 (3.6)
Tobacco Use	
Never	119 (47.2)
Former	93 (36.9)
Current	40 (15.9)

Use of Testing and Test Characteristics

Figure 1. Types of Respiratory Testing Performed



Characteristics of Rapid PCR Testing	
Median hours from collection to result (IQR)	2 (1-2)
Characteristics of RVP Testing	
Median hours from collection to result (IQR)	37 (25-50)
Result reported after discharge (n (%))	35 (13.9%)
RVP done despite positive Rapid PCR test (n (%))	10 (4.0%)

Results and Impact of Testing

Figure 2. Results of RVP testing among patients with at least one positive respiratory viral result

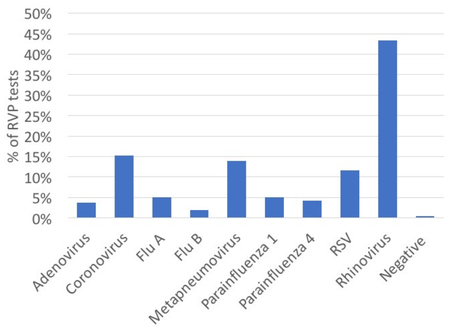


Figure 3. Effect of respiratory viral testing on clinical management

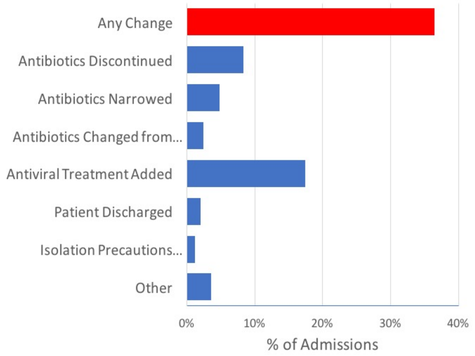
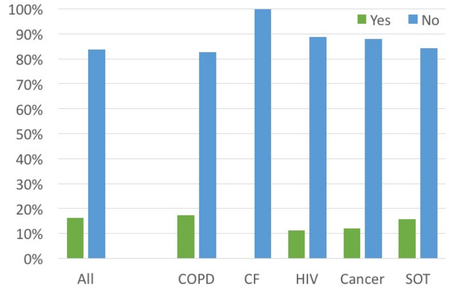


Figure 4. Did respiratory testing result in antibiotic de-escalation?



Additional Findings

- Respiratory symptoms were documented at presentation for 93.7% of admissions.
- Respiratory support was required on admission in 50% of cases.
- 89.3% of patients who went on to have positive viral testing were started on antibiotics at admission.
- Of those who had a positive Rapid PCR test, 72.3% were started on antibiotics at admission.

Conclusions

- Most patients with positive respiratory viral testing received antibiotics, but these results only changed antibiotic use in 16.3% of cases.
  - The results of respiratory testing did not alter antibiotic use in any patient with CF.
- A substantial number of RVPs were reported after discharge.
- Initiation of an antiviral therapy was the most frequent management change made based on positive respiratory viral testing.
- These data suggest there are many lost opportunities to impact clinical management with judicious use of respiratory viral testing.

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