

Benefits of Physician Knowledge of Rapid Influenza Test Results in Ambulatory Adults with Influenza-Like-Illness (ILI)



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Objective

- To determine the effect of providing rapid influenza test results to physicians treating ambulatory adults with influenza-like illness on antiviral and antibiotic prescribing

Background and Significance

Rapid diagnostic tests for influenza are being used more frequently in both outpatient and inpatient settings. Studies involving rapid influenza testing in children have documented that physician knowledge of a positive influenza test results in direct benefit to the patient through decreased antibiotic use, increased antiviral use and reduction in ancillary testing.

Data regarding the impact of rapid influenza diagnosis in adults is currently limited to a few studies conducted in long-term care facilities plus a recent retrospective study of hospitalized adults. Although limited, these studies demonstrate that rapid influenza testing is associated with increased antiviral use and decreased antibiotic use in older adults with influenza.

Multiple studies have found that 50-70% of children and adults with viral illnesses are treated with antibiotics. Antibiotic resistance is a significant societal problem and is due in large part to this type of indiscriminant antibiotic prescribing. Significant governmental efforts are underway to educate the medical and lay communities about appropriate antibiotic use.

Multiple clinical trials have evaluated the safety and effectiveness of various antiviral agents for the treatment of patients with documented influenza and provide a rational basis for their use. Although the data supports the use of these agents, especially within the first 48 hours of illness, many physicians either rarely prescribe them or avoid their use altogether. Several commonly cited reasons for not prescribing antiviral agents are that patients present too late for them to be effective, their expense, and that influenza is usually a self-limited illness.

This prospective study will evaluate the impact of providing rapid influenza test results to physicians caring for ambulatory adults with ILI. The effect on physician decision-making will be evaluated through evaluation of antibiotic and antiviral prescribing to this group of patients.

Funding and Support

Quidel provided research funding and QuickVue® Influenza A+B test kits

Methods

Enrollment, specimen collection and testing

- This study examines a cohort of adult patients that were part of a larger prospective study evaluating POC testing for influenza and RSV in adults presenting with acute respiratory symptoms to an academic medical center in Central Texas during the winter of 2005-06
- The study was approved by the Scott & White Hospital IRB
- Informed consent was obtained from each subject prior to their participation
- Subjects were enrolled during acute care visits to one of three different outpatient primary care clinics
- Subjects were assigned by alternate day assignment into two groups:
 - MD Aware: the physician received the rapid influenza A+B test results during the visit
 - MD Unaware: the physician did not receive the rapid influenza test results
- A respiratory specimen was collected from each subject using one of the following methods: 1) nasal swab, 2) nasopharyngeal aspirate, or 3) nasopharyngeal swab
- Swab specimens were suspended in 1.0 ml of sterile saline which served as a transport medium. NP aspirates were collected using 1-2 ml of saline and did not require further dilution after collection.
- The QuickVue® Influenza A+B test by Quidel was performed on all specimens within 15 minutes of collection. The manufacturer's instructions for testing NP aspirate samples were followed; as all specimen types were suspended in sterile saline immediately after collection.
- A 0.3 ml aliquot of specimen in saline transport was placed in Universal Transport Media (Copan, Corona, CA), stored at 2-8°C and sent to the Scott & White Laboratory for viral culture using R-Mix shell vials (Diagnostic Hybrids, Athens, OH). Viral culture was initiated within 8 hours of specimen collection.
- All remaining specimen was transferred into 1 ml UTM and frozen at -70°C

Analysis of Rapid Influenza Testing in Ambulatory Adults with Influenza-Like Illness: Criteria for Cohort Selection

- Subjects from the primary study noted above were included in the cohort of adult ambulatory patients with ILI if they met the following criteria:
 - Age ≥ 18 years
 - Outpatient visit at one of the three primary care clinics
 - Illness duration of ≤ 7 days
 - Symptoms included subjective or measured fever, plus at least one respiratory symptom (cough, congestion and/or coryza)

Statistical Analysis

- Descriptive statistics were used to characterize the study population
- Continuous variables were compared using the two sample t-test
- Categorical variables were compared using the Chi-square or Fisher's Exact Test
- The designated level of significance was 0.05 using a two-tailed test
- The sensitivity and specificity of the QuickVue® Influenza A+B test was determined by comparison to viral culture

Results

- A total of 203 subjects met criteria for inclusion into this cohort for analysis and ranged in age from 18-99 years
- There were no significant demographic differences noted between subjects in the MD Aware and Unaware groups
- The QuickVue® Influenza A+B test had a sensitivity of 77.6% and specificity of 93.1% in this cohort of adults with ILI. The sensitivity and specificity of the rapid influenza tests in this study were above the average for those values typically reported for adult patients.
- As demonstrated in the table below, provision of rapid influenza test results to treating physicians caused a significant increase in antiviral use and a clinically significant reduction in antibiotic prescribing
- During the study, many physicians raised ethical concerns over randomizing patients to the MD Unaware group. This caused us to adjust to an effectiveness model where randomization was continued but treating physicians could receive the test results if they had significant concern for their patient's safety. Conversely, some physicians would not wait for results, thus creating a more real-world evaluation of the effectiveness of providing influenza test results to treating physicians by seeing test minimizers and test maximizers in action.
- The fact that some physicians had ethical issues over withholding test results during the acute care visit and "demanded" the results speaks to the fact that the physicians want to know the results.

Effect of Physician Knowledge of Rapid Influenza Result on Treatment with Antivirals and Antibiotics

Prescription Given	MD Aware of Rapid Influenza Result N=131	MD Unaware of Rapid Influenza Result N=72	p-value
Antiviral	35 (26.7)	8 (11.1)	0.009
Antibiotic	48 (36.6)	35 (48.6)	0.097

Conclusion

Physicians aware of the rapid influenza test results made more appropriate decisions regarding antibiotic and antiviral use in ambulatory adults with influenza and ILI.