Impact of a Clinical Pathway and Rapid Influenza Polymerase Chain Reaction Test on Appropriate Testing and Treatment Among Non-hospitalized Children with Influenza-Like Illness

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Introduction

Accurate diagnosis of influenza in children presenting with influenza-like illness (ILI) is challenging. A clinical pathway and highly accurate rapid polymerase chain reaction (PCR) test were introduced in the emergency department (ED) of a large pediatric hospital to facilitate appropriate diagnosis and management of children with influenza. We measured the impact of the pathway and new PCR test on rates of appropriate influenza testing and treatment for children with ILI.

Methods

- Retrospective cohort study
- Study population: all non-hospitalized children 18 years presenting to the ED with ILI
- Study period: December to March, 2012 to 2015
- Outcomes: appropriate testing and appropriate oseltamivir use
- Analysis
  - Groups divided by exposure to the pathway and rapid PCR test
  - Bivariate analysis to test for significant covariates (\( \alpha < 0.05 \))
  - Multivariate logistic regression to adjust for pertinent covariates
- Stratification by high risk status

Results

- Total 10815 subjects
  - (pathway - test) 4359, (pathway - test) 4024, (+ pathway, + test) 2432
  - 48% female, median age 2.51 yrs, 44% high risk status
  - Appropriate testing increased from 57.2% to 58.6% to 61.4% (p<.003)
  - Appropriate oseltamivir use increased from 57.1% to 59.7% to 62.0% (p<.001)

Discussion

- The increase in appropriate testing and treatment was driven by improved testing and treatment in high risk patients
- Introduction of the pathway led to more appropriate oseltamivir use, suggesting that the pathway influenced the behavior of ED providers
- ED providers were more likely to test influenza patients after the rapid PCR test was made available, potentially due to timely availability of results to inform decision-making
- Gender, race and insurance status were not consistently significant covariates

Conclusion

Introduction of the clinical pathway and the rapid PCR test increases appropriate influenza testing and treatment. There are also important differences when stratifying by high risk status. Future studies include analyzing other factors which led to deviation from the clinical pathway, as well as other clinical outcomes such as subsequent ED readmissions and inpatient hospitalizations.

References