Respiratory infections are a leading cause for emergency room visits and hospitalization in the pediatric population. Infections are predominantly caused by viruses, but can appear similar to bacterial infections. Appropriate diagnosis of the etiology is necessary to optimize utilization of antimicrobials and prevent the development and/or spread of antimicrobial resistance. In August 2015, Williamson Medical Center (WMC) implemented a multiplex polymerase chain reaction (PCR) Respiratory Panel (RP). The test is available for use without restriction in the pediatric population. Samples are processed 24 hours a day, 7 days a week by the in-house laboratory. The PCR RP identifies 20 common respiratory pathogens. 

Objective

To review the use of the PCR test and the impact of this test on healthcare utilization in a pediatric community hospital. Impact of healthcare utilization was determined by inpatient admissions, use of antibiotics, and further workup or procedures conducted.

Methods

A retrospective chart review was conducted of all patients aged 0 to 17 years with RP specimens collected August 2015 through December 2016. An evaluation of the impact of RP results was completed through review of duration or change in antimicrobial therapy, change in patient management, and avoidance of further workup, antimicrobial therapy, or hospital admission. A subgroup analysis was performed for patients less than 60 days of age.

Results

Respiratory Panel Usage by Month August 2015-December 2016

Validation testing was performed prior to November 2015. RP ordering increased over time, and viral detection was also highest in the months October-January.

RSV and rhinovirus/enterovirus were the most commonly detected pathogens. RSV season lasts from November to March in Tennessee (Region 4).

Respiratory Panel Collection 0-60 Days of Age

Conclusion

The use of a RP was beneficial in this pediatric population to decrease hospital admissions, avoid further unnecessary procedures, avoid unnecessary antibiotic therapy, decrease duration of antibiotics, and target antimicrobial therapy.

References