Examiner the Use of Rapid Polymerase Chain Reaction Assay in Optimizing Antimicrobial Usage in Respiratory Viral Infections

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Examining the use of rapid polymerase chain reaction assay in optimizing antimicrobial usage in respiratory viral infections.
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Background
• Respiratory infections account for over 5 million deaths worldwide.
• Historically, respiratory pathogen testing has included the use of cultures and antigen-testing.
• Rapid polymerase chain reaction (PCR) assay:
  • Fast, effective identification of 17 viral pathogens
  • 95% sensitive and 99% specific
  • Turnaround time – 1 hour

Methods
• An exploratory analysis using medical chart reviews will be conducted using daily molecular result reports provided to the pharmacy.
• Inclusion criteria: Adults ≥ 18 years of age who received viral PCR microbiology testing for respiratory infections between July 1, 2017 and March 31, 2018.
• Exclusion: Patients with a documented viral respiratory infection 2 weeks prior to the time of admission.
• Patients will be randomly selected (every 6th patient) for a total population size of 150 patients.
• Data collection:
  1. Viral PCR results (time of results & pathogen identification)
  2. Diagnostic labs
    1. Procalcitonin level (Y-high, Y-low, N)
    2. Influenza A & B antigen testing (Y-positive, N-negative, N)
  3. Initial therapy
    1. Antimicrobial and/or antiviral therapy
    2. Time of initial therapy
  4. If applicable, antibiotic prescribed and documented indication
  5. Therapy modification upon respiratory results
    1. Y/N (e.g., discontinuation of antibiotic or start of antiviral therapy)
    2. Time of therapy modification

Preliminary Results

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• Preliminary data demonstrates 26.7% (16/60) of patients who had PCR assay testing were determined to be positive for a respiratory viral infection.
  • Most reported virus: rhinovirus/enterovirus (10/16, 62.5%).
  • In addition to PCR testing, 1 in every 3 patients had an influenza A & B antigen test (8/60, 30%) and 61.7% had a procalcitonin level.
  • Patients who were positive for respiratory viral infections were managed appropriately taking into account any co-infection.
  • When antimicrobial therapy was not indicated, the antimicrobial de-escalation time was approximately 4 hrs.

Conclusion
Research in progress.

Implications for Practice
• Optimize treatment using PCR assay as a diagnostic tool.
• Reduce unnecessary diagnostic tests.
• Decrease the inappropriate use of antimicrobials in viral respiratory infections.

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References