10-25-2019

Value of PCR as a de-escalation tool for an Antimicrobial Stewardship Program at a Community-based hospital

Wilbert Fuerte
Homestead Hospital, WilbertF@baptisthealth.net

Jorge Mejia
Baptist Health South Florida, JorgeMe@baptisthealth.net

Winifred Pardo
Homestead Hospital, wpardo@baptisthealth.net

Patricia Yulkowski
Baptist Health South Florida, PatriciaY@baptisthealth.net

Silvia Costales
Homestead Hospital, SilviaCo@baptisthealth.net

Value of PCR as a de-escalation tool for an Antimicrobial Stewardship Program at a community-based hospital

Wilbert J. Fuerte, Pharm.D., BCIDP, Jorge Mejia, MD, Winifred Pardo, Pharm.D., BCPS, Patricia Yulkowski BSN, Silvia Costales BSMT

Homestead Hospital, Homestead, Florida

Background

- On January 29th, 2016, the facility acquired the FilmArray Respiratory Panel (BioFire) TM Diagnostics, Inc, the first multiplex polymerase chain reaction (PCR) molecular panel approved by the FDA for the detection of both bacterial and viral respiratory pathogens.
- Sensitivity and specificity of this technology has been reported as 80-100%, and 100%, respectively[1], allowing for an optimal approach in the diagnosis of influenza and other organisms.
- An essential element of an Antimicrobial Stewardship Program (ASP) as outlined by the CDC and Joint Commission is to perform a "48-hour timeout" to assess the patient for opportunities, including de-escalation and discontinuation of antimicrobials[2].
- At our facility, we identified the need to review patients prescribed oseltamivir and any associated antibiotics for ASP opportunities. With the PCR tool available pharmacists were educated through an associated workflow to contact prescribers (within 48 hours) for de-escalation of oseltamivir when results were negative for influenza. For influenza positive patients who were also prescribed antibiotics, a procalcitonin level was recommended, and if appropriate, antibiotic de-escalation was suggested. Additionally, pharmacists notified nursing to initiate or discontinue droplet isolation based on the PCR influenza results.

Objectives

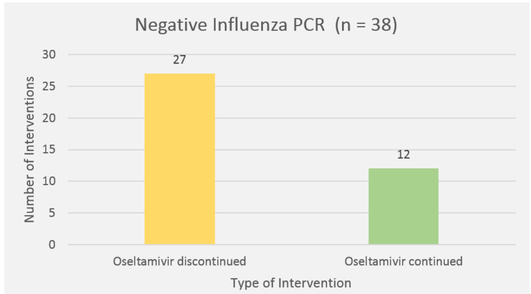
1. To evaluate the effectiveness of pharmacist interventions utilizing PCR results for patients receiving oseltamivir and concurrent antibiotics
2. To determine intervention results by pharmacists with regards to isolation requirements.
3. Calculate potential cost-savings based on intervention data.

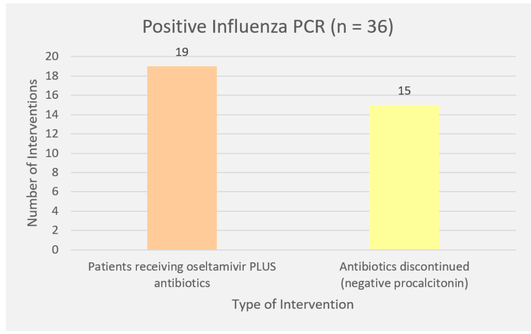
Methods

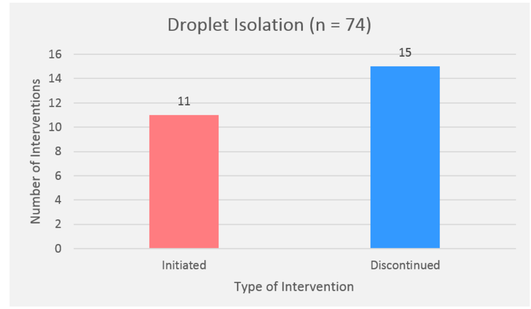
- This study was determined to be exempt by Baptist Health South Florida Institutional Review Board.
- Single-center, retrospective chart review.
- Study period: October 1st, 2017 through March 31st, 2018.
- Inclusion Criteria:
  - Patients 18 years of age and older.
  - Receiving oseltamivir with an associated pharmacist intervention documented.
- Exclusion Criteria:
  - Patients younger than 18 years of age
  - Receiving oseltamivir with no associated documented intervention.
- List generated for patients receiving oseltamivir with an associated ASP intervention documented was obtained from a data analytics platform.
- Charts were reviewed for PCR results, pharmacist intervention data, procalcitonin levels, and 30-day readmission rate.
- Group purchasing organization (GPO) pricing of antimicrobials was utilized for estimated cost-savings.
- Pharmacist Workflow:

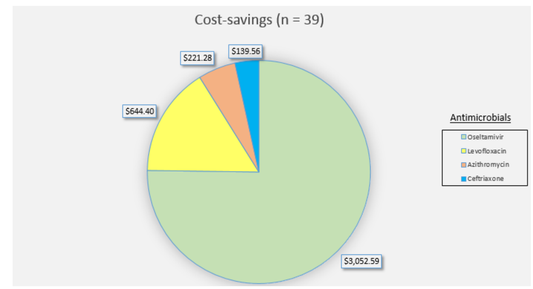
pct: procalcitonin

Results









Limitations

- Only patients for whom an ASP intervention was documented were included in this project.
- Patients with negative PCR and associated antibiotics were not reviewed.
- 30-day readmission was only assessed within the Baptist Health South Florida (BHSF) system.

Conclusion

- Pharmacist interventions for negative PCR showed a 71% (27/38) success rate in discontinuation of oseltamivir within 48 hours.
- Successful antibiotic discontinuation for patients with a positive PCR result and normal procalcitonin was 63% (12/19).
- Pharmacy identified 14.9% (11/74) of patients who required initiation of droplet isolation, and 20.3% (15/74) who did not need it.
- Overall, we estimated a total cost-saving of $4,057.83 during the study period as a result of pharmacist-driven ASP interventions.

References

1. Harper SA, Bradley JS, Englund JA, et al. Seasonal influenza in adults and children – diagnosis, treatment, chemoprophylaxis, and institutional outbreak management: Clinical practice guidelines of the Infectious Diseases Society of America. Clin Infect Dis. 2009; 48(8): 1003-1032.

2. Centers of Disease Control and Prevention. The Core Elements of Hospital Antimicrobial Stewardship Programs. http://www.cdc.gov/antibioticuse/healthcare/implementation/core-elements.html (Accessed on November 03, 2018).

Disclosure

▪ Authors of this project have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.