

Evaluation of De-Escalation of Empirically Initiated Broad-Spectrum Antibiotics in Patients Diagnosed with Healthcare-Associated Pneumonia

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Background

- Patients are commonly initiated on empirical antibiotics upon presentation to the emergency center with a suspected infection while diagnostic information is being obtained.
- Reduction in mortality has been shown with prompt initiation of antibiotics for the treatment of infections. However, it has been demonstrated that 20–50% of all antibiotics prescribed in U.S. hospitals are inappropriate.^[1-4]
- Inappropriate prescribing of antibiotics has led to the growing public health concern of antibiotic resistance.
- The Centers for Disease Control and Prevention (CDC) states that annually more than two million people are infected and approximately 23,000 deaths are attributed to infections due to antibiotic-resistant organisms.^[5]
- Unfortunately, many providers do not appropriately de-escalate antibiotic therapy. Therefore, many patients are unnecessarily maintained on broad-spectrum therapy for a longer period of time than is warranted.
- Patients should be de-escalated based on culture data, when it becomes available. Recent literature has shown lower mortality rates in patients who receive de-escalation therapy.^[6]
- To ensure appropriate de-escalation, the CDC recommends the utilization of antibiotic “time out”.^[1]
- Antibiotic “time out” prompts a reassessment of the continuing need and choice of antibiotics when the clinical picture is clearer and more diagnostic information is available. The CDC states that all clinicians should review antibiotic selection and appropriateness within 48 hours, as the maximal inflammatory response usually resolves over the first 48 hours.^[1]

Objectives

PRIMARY

- To evaluate the differences in outcomes between patients with Healthcare-associated Pneumonia (HCAP), who are de-escalated from broad-spectrum therapy (vancomycin plus piperacillin-tazobactam) versus patients who remain on broad-spectrum therapy:
 - 30 day mortality
 - Length of stay
 - Total number of days on Vancomycin Plus Piperacillin-Tazobactam (VPPT) therapy
 - Total number of days on antibiotic therapy
- Determine the number of patients with HCAP who received empirical VPPT therapy within 24 hours of presentation to emergency center and didn't de-escalate 48 hours post initiation.
- Determine the total number of inappropriate days of VPPT therapy >48 hours.

SECONDARY

- Escalation of therapy to a broader spectrum antibiotic.
- 30 day infection related hospital readmission.

Methods

STUDY DESIGN:

Electronic medical records of all patients deemed to be included in the study between 01/01/2014 to 06/30/2015 will be retrospectively reviewed.

At least 75 and up to 150 patients will be included in the study.

Patients' demographics (age, gender, race, etc.), comorbidities, infectious diagnosis, all available microbiologic results, pertinent radiographic studies, and details of antibiotic therapy will be collected.

Inclusion Criteria

- Adult patient (≥ 18 years of age) admitted to Beaumont Hospital – Royal Oak (BHRO) with a suspected or confirmed HCAP between 01/01/2014 to 06/30/2015 from BHRO's emergency center.
- Initiation of at least VPPT within 24 hours of arrival to BHRO's emergency center

Exclusion Criteria

- Age <18 years old
- Not diagnosed with HCAP

Statistical Analysis

- Dichotomous data will be compared using Pearson's chi-square or Fisher's exact test if sample size is insufficient.
- T-test, or Wilcoxon-Mann-Whitney will be used if data is not normally distributed.
- Overall incidence rate will be calculated along with 95% confidence interval.
- A p-value of 0.05 will determine statistical significance.

References

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Disclosure

Authors of this presentation have the following 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: Rand Sulaiman, B.S., Pharm.D., and Prakash Shah, Pharm.D. have nothing to disclose.