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Impact of negative methicillin-resistant Staphylococcus aureus (MRSA) nasal swab on total duration of MRSA therapy for pneumonia patients

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Background
- It is estimated that up to 50% of antimicrobials prescribed in the acute care settings are either inappropriate or unnecessary.  
- Despite low prevalence of MRSA in community acquired pneumonia, empiric antibiotic regimens sometimes include coverage of MRSA with an agent such as vancomycin, and it can be difficult to narrow coverage in a timely manner, or even at all, as sputum cultures are not usually available.
- One study reported the prevalence of MRSA in community acquired pneumonia to be 0.6%.  
- Based on HCA data from 2014-2017, the incidence of MRSA pneumonia was estimated to be 1.7%, indicating the majority of patients with pneumonia do not need anti-MRSA therapy.
- Nasal screening for MRSA has been shown to have a high negative predictive value (>94%) across different types of pneumonia.  
- Recent literature has highlighted MRSA nasal screening as a possible antimicrobial stewardship program tool to avoid unnecessary empiric MRSA therapy for pneumonia.  
- When compared to blood and sputum cultures, MRSA nasal swab offers quicker turn-around time, and is less affected by preceding anti-MRSA antibiotic administration as it detects genetic material rather than viable organisms.  
- Rapid de-escalation from unnecessary anti-MRSA coverage could prevent patient harm, such as renal toxicity and development of healthcare acquired infections and resistance.  
- Reduction in unnecessary anti-MRSA therapy could save resources by decreasing both anti-MRSA cost and cost associated with lab monitoring, as well pharmacist time spent dosing agents such as vancomycin.

Purpose
This study will assess the impact of negative MRSA nasal swab on the duration of anti-MRSA therapy.

Methodology
- Retrospective cohort study exempted from the Institutional Review Board.
- The Wilcoxon Signed Rank Test will be used to measure continuous data while the Chi Square or Fisher’s Exact Test will be used to measure categorical data.
- Study period will take place from July 2018 to July 2019.

Inclusion Criteria
- Adults 18 years or older
- Clinical diagnosis of pneumonia based on ICD codes
- Patients on anti-MRSA therapy (vancomycin, linezolid, ceftaroline)

Exclusion Criteria
- Patients < 18 years old
- Nasal swab obtained after 72 hours or more of MRSA therapy
- Primary infection other than respiratory tract infection
- Pregnant patients
- Prisoners

Data Collection
- Demographics: Height, weight, age, sex, race, comorbidities, history of pneumonia, IV antibiotic use within the previous 90 days
- Laboratory: Complete blood count, basic metabolic panel, radiographic imaging
- Diagnosis: Pneumonia (all types)
- Hospital Course: Dates of hospital admission and discharge
- Other: 30 day all-cause mortality
- Cost

Data will be collected using the clinical surveillance platform, Vigilanz, the electronic health record (EHR) and the computerized physician order entry system, Meditech.

Outcome Measures
- Primary endpoints:
  - Anti-MRSA days of therapy
- Secondary endpoints:
  - Patient length of stay
  - Cost to the facility
  - 30 day all-cause mortality
  - Nephrotoxicity as defined by the KDIGO guidelines (increase in serum creatinine > 1.5 times the base line, > 0.3 mg/dL within 48 hours, and Urine volume < 0.5 mI/kg/h for 6 hours.)

Results
Research study in progress, no results available at this time.

Disclosures
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