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## IMPLEMENTATION OF MRSA NASAL SWABS TO DECREASE ANTI-MRSA THERAPY IN COVID-19 INFECTION

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**INTRODUCTION:** Limited information is available to guide antimicrobial stewardship interventions in COVID-19 infections. Two meta-analyses have been published to date showing a rate of bacterial co-infection between 7-8% in COVID-19, with only 1 case of methicillin-resistant *Staphylococcus aureus* (MRSA) among those publications.

**METHODS:** In an effort to optimize use of anti-MRSA therapy, the COVID-19 Task Force at this large, hybrid community and academic medical center implemented routine MRSA nasal swabs for all COVID-19 patients, suspected or confirmed, requiring anti-MRSA therapy. This retrospective review was conducted to evaluate the use of MRSA nasal swabs in patients admitted between April 13, 2020 and July 26, 2020. Electronic health record-generated reports were created to identify patients with a diagnosis code of COVID-19 infection or COVID-19 rule out who also received an MRSA nasal swab.

**RESULTS:** Out of 263 patients identified with MRSA nasal swabs, 113 patients were included in the final analysis. Almost 75% of patients required ICU admission and the overall mortality rate was 41.6%. A total of 12 swabs (10.6%) resulted as positive for MRSA. In response to swab results, 54 patients (47.8%) had anti-MRSA agents discontinued and another 37 patients (32.7%) were never started on anti-MRSA therapy (collectively referred to as "discontinued" in this report). The median duration of anti-MRSA therapy overall was 12 hours (12 hours in the discontinued group versus 120 hours in the continued group). Sputum cultures were obtained in 29 patients, with pathogens identified in 13. Most pathogens were gram-negative, including *Pseudomonas aeruginosa* in 8 cases. Methicillin-resistant *Staphylococcus aureus* was isolated in sputum cultures of two patients; both had MRSA positive nasal swabs and were continued on anti-MRSA therapy.

**CONCLUSIONS:** With implementation of MRSA nasal swabs in COVID-19 patients, anti-MRSA therapy was reduced in 80.5% of patients in the study cohort, with median duration 12 hours for anti-MRSA therapy. Of the 22 patients with therapy continued, 11 were for pneumonia and MRSA positive swab and 10 for treatment of an alternative indication. MRSA nasal swabs may serve as an effective antimicrobial stewardship tool in COVID-19 pneumonia.

## HIGH INCIDENCE OF BAROTRAUMA IN CRITICALLY ILL PATIENTS WITH COVID-19

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**INTRODUCTION:** Intubated patients with acute respiratory distress syndrome are thought to have a 5-12% incidence of barotrauma, even with protective ventilation. However, little is known about the incidence of barotrauma in COVID-19. Due to high rates of observed barotrauma at this center, this retrospective cohort study aims to better characterize the incidence of barotrauma and identify predisposing factors such as inflammatory markers and disease severity indices for this high-mortality complication.

**METHODS:** Inclusion criteria were as follows: age over 18 years, positive RT-PCR for SARS-CoV2, admission to the ICU between 03/15/2020 and 06/15/2020, and a score of 5 or higher on the World Health Organization's Ordinal Scale or respiratory rate over 30 breaths per minute on admission. Data were collected for the following categories developed by an internal committee of pulmonary/critical care faculty and housestaff based on similar studies: age, sex, body mass index, ferritin, d-dimer, APACHE II score, SOFA score, blood gas, ventilation mode and settings. Patients with evidence of barotrauma (pneumothorax, pneumomediastinum, pneumopericardium, subcutaneous emphysema) on imaging had additional respiratory data points collected.

**RESULTS:** 78 patients met inclusion. Among 38 patients who received invasive mechanical ventilation (IMV) 12 had barotrauma (32%). Of 40 patients who did not receive IMV 3 had barotrauma (8%). Of 15 cases of barotrauma, 8 had pneumothorax (2 bilateral, 6 unilateral), 9 had pneumomediastinum, 4 had pneumopericardium, 6 had subcutaneous emphysema. 8 were found incidentally on imaging for non-respiratory indication. Mortality in the barotrauma group was 72% for IMV & 50% for non-IMV (3 patients transferred to other hospital, 3 remain hospitalized) compared to 50% for IMV & 8% for non-IMV in patients without barotrauma. Further analysis pending at submission, data to be finalized prior to presentation.

**CONCLUSIONS:** Barotrauma may be an underappreciated complication of COVID-19, perhaps serving as an independent predictor of disease severity or low lung compliance. Many theories have been presented for the physiology of COVID-19 respiratory failure, but barotrauma could be evidence of or a herald sign for the low compliance phenotype.