

KCHP Abstract

Purpose

Differentiating between viral and bacterial pneumonia is an ongoing challenge for clinicians within healthcare. Though most institutions have created protocols to prevent patients with viral infections from getting unnecessary antibiotics, the treatment of COVID-19 and potential bacterial co-infections made these antimicrobial stewardship practices questionable. In the meta-analysis "Bacterial co-infection and secondary infection in patients with COVID-19: a living rapid review and meta-analysis," 24 studies with 3338 patients revealed that bacterial co-infection with COVID-19 was only 3.5% with over 70% of patients receiving antibiotics.¹ This project was designed as a quality improvement project at a community hospital to study antibiotic prescribing practices and indications in patients with COVID-19. This project should be referenced to help reassess antibiotic use by prescribers at a community hospital during the COVID-19 pandemic.

Methods

A chart review was performed on 92 patients and 79 of the patients were included in this project. Thirteen patients were excluded because they tested positive for COVID-19 in the Emergency Department and were not admitted as an in-patient based on clinical status. Patients' demographic information, COVID-19 exposure history, history of COPD/asthma, cultures and sensitivities, antibiotics (excluding azithromycin for the indication of COVID-19), duration of antibiotic therapy, living facility, white blood cell count trend, temperature max upon admission, allergies, if the patient was immunocompromised, if the patient has a previous *Pseudomonas aeruginosa*, Methicillin-Resistant *Staphylococcus aureus*, or multi-drug resistant organism infection, and if the patient had broad spectrum antibiotic use within the last 90 days were collected. Results were compiled and compared to assess the appropriateness of antimicrobial therapy.

Results

The mean age was 65.94 years old with a range of 26-93 years. Forty-two of the patients were African American (53.2%), 26 of the patients were Caucasian (32.9%), 9 of the patients were Hispanic (11.39%), 1 patient was Indian (1.3%), and 1 patient was Asian-American (1.3%). Three patients (3.8%) had lab-confirmed COVID-19 from an outside lab on admission. Of the remaining patients, 37 (46.8%) had a known or suspected COVID-19 exposure, while 39 (49.4%) had no known prior COVID-19 exposure or were unable to be assessed. Sixteen patients did not get any cultures collected while the other 63 patients did. Overall, there were 70 patients started on broad-spectrum antibiotics. Of the other patients, 3 were started on azithromycin monotherapy, and 6 patients were started on no antibiotics. There were 43 patients with no positive cultures that received antibiotics (61.4%). Positive cultures included any growth of a potential bacterial pathogen from a blood, urine, sputum, or throat culture. Of the 16 patients that did not have cultures collected, 11 of them were started on antibiotics.

Conclusions

Of the patients in this project, 61.4% received antibiotics without positive cultures. This included the 11 patients that received antibiotics with no cultures collected (68.8%). Ultimately, this project revealed that antimicrobial stewardship practices during the COVID-19 pandemic should be further evaluated and refined to prevent over-prescribing. This will lead to fewer side effects, adverse events, and delay

resistance to key broad-spectrum agents. This project does have limitations, though. This project looked at patients from the beginning of the pandemic in March of 2020 and most healthcare providers were unaware of the rate of bacterial co-infections with COVID-19 pneumonia since it had not been studied. As the guided treatment of COVID-19 advanced, however, literature that emerged demonstrated that bacterial co-infections were insignificant. Even with these limitations, the hospital's protocol should be addressed to improve patient care.

References:

1. Langford BJ, So M, Raybardhan S, Leung V, Westwood D, MacFadden DR, Soucy JR, Daneman N. Bacterial co-infection and secondary infection in patients with COVID-19: a living rapid review and meta-analysis. *Clin Microbiol Infect.* 2020 Dec;26(12):1622-1629.