In ICU patients with COVID-19, empiric broad-spectrum ABX is often overutilized with an inertia to de-escalate despite negative culture results, potentially increasing the risk of adverse events. This remains an important area for focused antimicrobial stewardship efforts to mitigate the development of multidrug resistance.

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### 286. Infectious Complications and Antimicrobial Utilization in Hospitalized Patients with COVID-19

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**Session:** P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

**Background.** Hospitalized patients with COVID-19 have created increased demands on health care infrastructure and resources. Bacterial and fungal infections have been reported and have increased the need for antimicrobial utilization. We performed a retrospective chart review to characterize bacterial infections and antibiotic utilization during the COVID-19 surge at our tertiary care center.

**Methods.** All patients diagnosed with COVID-19 using SARS-CoV-2 PCR admitted to MedStar Georgetown University Hospital from 01Mar2020 through 31Aug2020 were included in the analysis. Data was collected on hospital-wide antimicrobial utilization (mean days of therapy per 1000-patient-days [DOT]) during the COVID surge and was compared to antimicrobial utilization during a 6-month period that preceded the COVID-19 surge. Clinical and microbiological data and patient outcomes were also collected and analyzed.

**Results.** A total of 238 patients met inclusion criteria during the observation period, of which 25.6% (n = 61) developed a bacterial, fungal, or viral co-infection. Culture-positive bacterial complications were seen in 21.8% (n = 52) with 32.8% (n = 20) having a multidrug resistant organism (MDRO). There was a statistically significant difference between COVID-19 patients with co-infection and those without for intubation (p < 0.001), vasopressor use (p < 0.001), and renal replacement therapy (p = 0.001). COVID-19 patients with co-infections had a longer mean length of stay (21.9 days vs 13.5 days, p < 0.001) and greater mortality (32.8% vs 20.6%, p = 0.006) compared to those without a co-infection, respectively.

Mean antimicrobial utilization for the entire hospital population was 790.6 DOT during the COVID surge compared to 928.7 DOT during a 6-month period preceding the COVID surge (p < 0.001). For all COVID-19 patients, antimicrobial utilization was 846.9 DOT; however, this increased to 1236.4 DOT for COVID-19 patients with co-infections.

**Disclosures.** Although hospital-wide antimicrobial utilization had decreased during the COVID surge, COVID-19 patients with co-infections demonstrated a disproportionate use of antimicrobials as well as ICU resources. As MDRO infections were relatively common, antimicrobial stewardship should be prioritized in the COVID-19 population.

**Conclusion.** Although hospital-wide antimicrobial utilization had decreased during the COVID surge, COVID-19 patients with co-infections demonstrated a disproportionate use of antimicrobials as well as ICU resources. As MDRO infections were relatively common, antimicrobial stewardship should be prioritized in the COVID-19 population.

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Results. The average age of our study population was 65 years; 68% were male. The average hospital length of stay (LOS) was 34 days. The mean time from admission to the development of Candidemia was 16 days. Associated co-morbidities included cardiovascular diseases (CVD) in 79%, diabetes mellitus (DM), in 68%, and obesity in 50%. Underlying kidney disease was present in 10%. Treatments for COVID-19 included convalescent plasma (53%), remdesivir (53%), steroids (52%) and tocilizumab (19%). All patients were managed in the intensive care unit (ICU) and 95% required multiple central line (CL) placements. Most of the patients (58%) required hemodialysis (HD); all patients were treated with multiple antibiotics. The average LOS in the ICU was 25 days. Despite anti-fungal treatment, 68% expired. The 28-day mortality was 50%.

Conclusion. The occurrence of Candidemia in our hospitalized patients with acute COVID-19 infection was associated with a history of CVD, DM, obesity, prolonged hospital LOS, requirement for multiple CL, HD, treatment with multiple antibiotics and a long stay in the ICU. The mortality of COVID-19 patients with Candidemia is high. The development of strategies to mitigate the occurrence of nosocomial Candidemia in this population of patients is urgently needed.

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Table 2. Bivariate analysis: Demographics and clinical characteristics by mortality

| Characteristic | n=552 | n=73 | p-value |
|---------------|-------|------|---------|
| Age (median, IQR) | 54 (43, 62) | 62 (53, 70) | 0.001 |
| Race/Ethnicity | 0.65 |
| Non-Hispanic Black | 192 (35) | 30 (41) |
| Non-Hispanic White | 24 (4) | 3 (4) |
| Hispanic | 324 (59) | 40 (55) |
| Asian | 11 (2) | 0 |
| Other | 1 (1) | 0 |

Table 3. Bivariate analysis: Demographics and clinical characteristics by ICU Admission

| Characteristic | n=472 | n=153 | p-value |
|---------------|-------|------|---------|
| Age (median, IQR) | 54 (42, 62) | 57 (48, 65) | 0.005 |
| Gender | 0.97 |
| Female | 152 (32) | 49 (32) |
| Male | 320 (68) | 104 (68) |
| Race/Ethnicity | 0.51 |
| Non-Hispanic Black | 165 (35) | 57 (37) |
| Non-Hispanic White | 23 (5) | 4 (3) |
| Hispanic | 273 (58) | 91 (59) |
| Asian | 10 (2) | 1 (1) |
| Other | 1 (1) | 0 |
| Comorbidities | 0.001 |
| Diabetes mellitus | 178 (38) | 71 (46) |
| Severity of illness | 0.12 |
| Critical | 1 (1) | 9 (6) |
| Severe | 191 (40) | 107 (70) |
| Moderate | 179 (38) | 25 (16) |
| Mild | 101 (21) | 12 (8) |
| First CRP (n=428) | 487 (214, 894) | 558 (315,1072) |
| Glucose | 116 (100, 164) | 138 (113, 188) | <0.001 |

Table 1. Demographic characteristics, severity of illness on admission and outcomes of the studied population.

| Characteristic | n=625 | n (%) | Age (median, IQR) | 55 (44,63) |
|---------------|-------|-------|-----------------|----------|
| Gender | Female | 201 (32) | Male | 424 (68) |
| Race/Ethnicity | Non-Hispanic Black | 222 (36) | Non-Hispanic White | 27 (4) |
| Hispanic | 364 (58) | Asian | 11 (2) |
| Other | 1 (1) | Severity of illness on Admission | Critical | 10 (2) |
| Severe | 298 (48) | Moderate | 204 (33) |
| Mild | 113 (18) | Outcomes | Death | 73 (12) |
| ICU Admission | 153 (24) | Intubation | 84 (13) |
| Discharge out of Hospital | 500 (80) | Readmission | 19 (3) |

Conclusion. JSH is a safety net hospital that provides care for the most vulnerable population of Chicago. The proportion of Hispanic patients increased in the later weeks of the pandemic until they represented most of the inpatient population and presented with more severe disease (Figure 1). Although race was not associated with mortality or ICU admission, the high prevalence of chronic diseases such as hypertension and DM in our population may explain the higher rate of admissions. Strengthening of preventive medicine and social engagement with minorities must be a crucial effort to decrease the burden of COVID-19 in this population.