

Table 2. Clinical Outcomes and Adverse Events in ICU Patients with COVID-19

	Culture-negative, Antibiotics ≤ 72 h (n = 10)	Culture-negative, Antibiotics > 72 h (n = 32)	Culture-positive (n = 23)	P-value
Clinical Outcomes*, n (%) or median (IQR)				
Clinical Success	4 (40)	10 (31.3)	9 (39.1)	0.79
In-hospital Mortality	6 (60)	22 (68.8)	14 (60.9)	0.79
Time from Antibiotic Discontinuation to Re-start (days)	4.5 (2-7)	4 (2-8)	6 (4-6)	0.68
Time to ICU Discharge from Antibiotic Start (days)	8.5 (4-15)	11.5 (5.5-21)	11 (6-15)	0.57
Time to Hospital Discharge or Death from Antibiotic Start (days)	12.5 (4-16)	18.5 (6.5-25.5)	13 (8-34)	0.29
Adverse Events*, n (%)				
Total # Patients	2 (20)	13 (40.6)	7 (30.4)	0.44
AKI	1 (10)	8 (25)	4 (17.4)	0.71
MDRO	0	8 (25)	2 (8.7)	0.14
Antibiotic-related Rash	1 (10)	0	1 (4.3)	0.13
Drug Fever	0	1 (3.1)	0	1
<i>Clostridioides difficile</i> Infection	0	0	0	1

Definitions:

- **Clinical success:** discharged alive or > 2-point decrease in WHO 10-point Clinical Progression Scale score from day of antibiotic initiation to day 30
- **AKI:** increase in SCr ≥ 0.3 mg/dL or increase in SCr to ≥ 150-200% of baseline or urine output < 0.5 mL/kg/h for > 6 h (AKIN definition); assessed ≥ 24 h following initiation and up to 48 h following discontinuation of initial antibiotic regimen
- **MDRO:** MRSA, VRE, or Gram-negative bacteria resistant to one or more classes of antimicrobial agents per CDC definition

Abbreviations: ICU, intensive care unit; h, hours; IQR, interquartile range; AKI, acute kidney injury; MDRO, multidrug-resistant organism; WHO, World Health Organization; SCr, serum creatinine; AKIN, Acute Kidney Injury Network; MRSA, methicillin-resistant *Staphylococcus aureus*; VRE, vancomycin-resistant *Enterococcus*; CDC, Centers for Disease Control and Prevention

Comparisons were made using the chi-square test or Fisher's exact test for nominal variables and the Kruskal-Wallis test for continuous variables; P-values < 0.05 were considered statistically significant; All analyses were conducted using SAS Enterprise Guide 7.1 (SAS Institute Inc., Cary, NC)

Conclusion. In ICU patients with COVID-19, empiric broad-spectrum ABX are 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 6-month 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 eligibility 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.

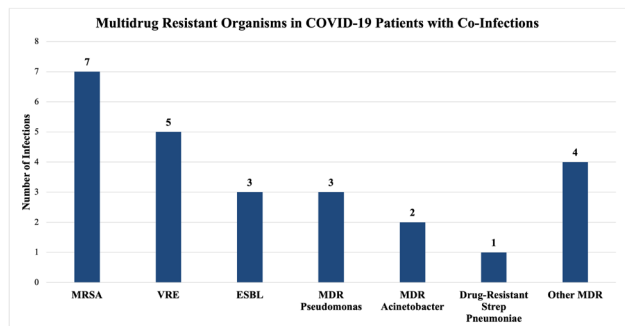
Mean antimicrobial utilization for the entire hospital population was 790.6 DOT during the COVID surge compared to 928.7 DOT during a 6-month period preceding the COVID surge (p < 0.001). For all COVID-19 patients, antimicrobial utilization was 846.9 DOT; however, this increased to 1236.4 DOT for COVID-19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

Table 1. Demographics

Complications, n (%)	Sample (n=238)	Co-infection (n=61)	P-value
Respiratory Support	193 (81.8)	53 (86.9)	0.180
Intubation	66 (27.7)	34 (55.7)	< 0.001*
Vasopressors	58 (24.4)	32 (52.5)	< 0.001*
Renal Replacement Therapy	48 (20.2)	21 (34.4)	0.001*
Length of hospital stay, mean (d ± SD)	13.53 ± 12.9	21.92 ± 18.2	<0.001*
Deceased	49 (20.6)	20 (32.8)	0.006*

Table 2. Antimicrobial Utilization in COVID-19 Patients

	Sample (N=238)	Co-Infection (n=61)	No Infection (n=177)
DOT per 1000-patient-days	846.9	1236.4	570.4
Mean Days of Antimicrobial Use	6.8	9.75	5.91
Median Days of Antimicrobial Use	5	6	4



Conclusion. Although hospital-wide antimicrobial utilization had decreased during the COVID surge, COVID-19 patients with co-infections demonstrated a disproportionate use of antimicrobial agents 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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287. Characteristics and Outcomes of COVID-19 Patients with Candidemia at a Community Hospital in Chicago.

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Background. 1,416 patients with acute COVID-19 infection were admitted to our hospital in 2020. During that year we noticed an alarming increase in cases of nosocomial Candidemia: 26 versus an average of 2.8 cases per year over the previous 5 years. 19 of the 26 episodes (73%) of Candidemia occurred in patients who were admitted with acute COVID-19 infection. Recent reports suggest that hospitalized patients with COVID-19 are at increased risk for developing Candidemia, however their clinical characteristics, risk factors and outcomes have not been well described. We evaluated the risk factors and mortality of hospitalized COVID-19 patients with Candidemia.

Methods. We performed a retrospective chart review of 19 patients with Candidemia and confirmed COVID-19 infection at a 292-bed community teaching hospital in Chicago, Illinois from January through December 2020. We report a

descriptive analysis of the demographic characteristics, comorbidities, complications, and outcomes of these patients.

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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288. Clinical Variables Associated with COVID-19 Mortality and ICU Admission in a Public Safety-net Hospital in Chicago

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

Background. The COVID-19 pandemic has disproportionately impacted minorities in the United States. John H. Stroger Jr. Hospital (JSH) is a tertiary care hospital within the safety-net system for Cook County in Chicago, Illinois. In this study we report demographics, clinical characteristics and outcomes of patients admitted with COVID-19 in our hospital during the spring surge of 2020.

Methods. A retrospective study was done including patients > 18 years of age admitted to JSH with positive PCR for SARS-CoV2 from March 18 to May 30th, 2020. Outcomes, clinical and demographic characteristics were extracted from the electronic medical record. Moderate and severe disease were defined as radiographic evidence of pulmonary infiltrates and SpO₂ > 94% on room air or SpO₂ < 94% on room air, respectively. Bivariate analysis and logistic regression were performed to assess for risk factors for admission to the intensive care unit and mortality.

Results. 625 patients were included, 424 (68%) were male. Median age was 44 years (44,63). 364 (58%) were Hispanic and 222 (36%) non-Hispanic Blacks. 113 (18%) of patients presented with mild disease, 204 (33%) with moderate disease, 298 (48%) with severe disease. 73 patients (12%) died. 153 (24%) required ICU admission, 84 (13%) required intubation [Table 1]. In bivariate analysis, increasing age and diabetes (DM) were associated with increased mortality and ICU admission (p=0.001, Tables 2 and 3). Race/ethnicity was not associated with increased mortality or ICU admission. In the multivariate analysis, elevated glucose on admission regardless of DM and CKD were associated with mortality (p < 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)

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

	n=552	n=73	p-value
	No	Yes	
	n (%)	n (%)	
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	
Comorbidities			
Diabetes mellitus	207 (37)	42 (58)	0.001
Severity of Illness*			<0.001
Critical	4 (<1)	6 (8)	
Severe	241 (44)	57 (78)	
Moderate	199 (36)	5 (7)	
Mild	108 (20)	5 (7)	

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

	n=472	n=153	p-value
	No	Yes	
	n (%)	n (%)	
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			
Diabetes mellitus	178 (38)	71 (46)	0.06
Severity of Illness			<0.001
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)	538 (315,1072)	0.12
Glucose	116 (100, 164)	138 (113, 188)	<0.001

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.

