



# INFECTIOUS DISEASE SOCIETY OF NEW YORK

## **A Retrospective Analysis of Antimicrobial Use and Bacterial Cultures in Hospitalized Cancer Patients with COVID-19**

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### **Background**

Sparse data are available on rates of antimicrobial use and bacterial coinfections in hospitalized cancer patients with COVID-19 infection. The study objectives are to characterize antibiotic utilization and bacterial coinfections in patients admitted with COVID-19 at a tertiary cancer center.

### **Methods**

This was a single-center, retrospective cohort study. Hospitalized patients with confirmed COVID-19 between 03/01/20 – 06/15/20 were categorized into three groups based on severity of illness. Primary outcomes included proportion receiving antibiotics and those with clinically or microbiologically confirmed bacterial infection. Secondary outcomes included 30-day mortality, hospital length-of-stay (LOS), and antibiotic length of therapy (LOT) after COVID-19 diagnosis.

### **Results**

Of 358 patients, 278 (78%) received antibiotics and 205 (57%) had a bacterial infection. Overall 30-day mortality was 16% (57/358), but varied by COVID-19 severity [room air: 2/133 (2%), nasal cannula: 7/97 (7%), and high-flow nasal cannula/ventilator: 48/128 (38%),  $P < 0.0001$ ]. Median LOS was 9 days (IQR 5-17) and also varied by COVID-19 severity [room air: 6 days (IQR 3-9), nasal cannula: 9 days (IQR 6-15), and high-flow nasal cannula/ventilator: 16 days

(IQR 10-32),  $P<0.0001$ ]. The median antibiotic LOT in all patients was 4 days (IQR 1-9), but differed significantly by severity of COVID-19 [room air: 1 day (IQR 0-4), nasal cannula: 4 days (IQR 1-7), and high-flow nasal cannula/ventilator: 9 days (IQR 5-16),  $P<0.0001$ ]. A total of 234 infections were identified and 41 patients had  $>1$  infection. The majority were respiratory ( $n=140$ ), followed by gastrointestinal ( $n=24$ ), fever & neutropenia ( $n=23$ ), urinary ( $n=22$ ), bloodstream ( $n=14$ ), and skin and soft tissue infections ( $n=11$ ). Patients with no bacterial coinfection had a negligible median antibiotic LOT of 0 days (IQR 0-13). Antibiotic LOT was significantly shorter in those with 1 infection (7 days, IQR 0-45) versus  $>1$  infection (20 days, IQR 4-48) ( $P<0.0001$ ).

## **Conclusion**

Antibiotics were commonly prescribed in cancer patients admitted with COVID-19. Antibiotic utilization, 30-day mortality, and LOS were highest in those with more severe disease. Patients with less severe illness and no concomitant bacterial infection had very short antibiotic LOT. It may be reasonable to minimize antibiotic use in cancer patients with lower severity of illness and absence of bacterial coinfection.