

Real-World Experience of Cefiderocol in Treating Bacterial Infections in US Hospitals (January 2020–June 2021)

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Purpose

- Cefiderocol is a siderophore cephalosporin that has broad activity against Gram-negative pathogens...
It was approved in November 2019 by the US Food and Drug Administration to treat adult patients with complicated urinary tract infection, hospital-acquired bacterial pneumonia, and ventilator-associated bacterial pneumonia...
This study describes the demographic and clinical characteristics of patients treated with cefiderocol in US hospitals since its approval.

Methods

- Study design: A retrospective study of an existing healthcare database.
Data source: Since 2012, the Premier Healthcare Database (PHD) has collected anonymized patient-level data...
Study population: Hospitalized patients who were treated with cefiderocol as part of routine clinical care...
Study variables: Demographic and clinical characteristics, cefiderocol usage, hospitalization outcomes, and microbiology results.

Figure 1. Patient Attrition

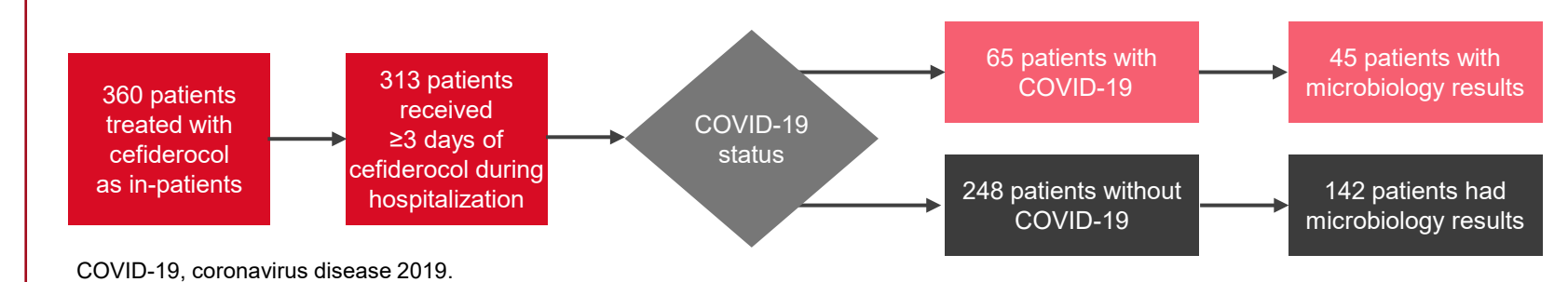


Table 1. Patient demographics and clinical characteristics

Table with 5 columns: Characteristic, Overall (N=313), COVID-19 (N=65), Non-COVID-19 (N=248), P value (COVID-19 vs. non-COVID-19). Rows include Age, Sex, Admission source, Admission type, Charlson Comorbidity Score, Top 5 common Charlson comorbidities, Top 5 ICD-10 codes for discharge diagnoses, Receipt of mechanical ventilation during hospitalization, Total number of days receiving mechanical ventilation, Days on mechanical ventilation, ICU stay during the hospitalization, ICU length of stay, Gram-negative pathogen from index culture, and Carbanem resistance status.

P value from chi-squared, t-test or Wilcoxon rank sum test. COVID-19, coronavirus disease 2019; ICD-10, 10th revision of the International Statistical Classification of Diseases and Related Health Problems; ICF, intermediate care facility; ICU, intensive care unit; Q, quartile; SD, standard deviation; SNF, skilled nursing facility.

Table 2. Cefiderocol use

Table with 5 columns: Characteristic, Overall (N=313), COVID-19 (N=65), Non-COVID-19 (N=248), P value (COVID-19 vs. non-COVID-19). Rows include Days on cefiderocol, Total days from cefiderocol initiation to discharge, Days from admission to cefiderocol initiation, Number of Gram-negative antibiotics initiated before cefiderocol initiation, and Number of Gram-negative antibiotics initiated within 14 days of cefiderocol initiation.

P value from chi-squared, t-test or Wilcoxon rank sum test. COVID-19, coronavirus disease 2019; Q, quartile; SD, standard deviation

Table 3. Hospitalization Outcomes

Table with 5 columns: Characteristic, Overall (N=313), COVID-19 (N=65), Non-COVID-19 (N=248). Rows include Discharge Status and Crude all-cause in-hospital mortality [95% CI].

Data are n (%) unless stated otherwise. CI, confidence interval; COVID-19, coronavirus disease 2019.

References

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Results

- 91% of patients were hospitalized via emergency department, trauma center, or urgent admission; the proportion was higher in COVID-19 patients vs. non-COVID-19 patients (98.5% vs. 89.5%, respectively).
The most common conditions were severe sepsis with septic shock, palliative care, and multidrug-resistant infection. Also, 34% had a “do not resuscitate” order with 32% in COVID-19 patients vs. 68% in non-COVID-19 patients.
About 64% of patients received mechanical ventilation and 79% had ICU stay.
Median length of hospital stay was 27 days (range: 3–310 days); this was longer in COVID-19 than non-COVID-19 patients.
Median duration of cefiderocol treatment was 8 days (range: 3–66 days) (Table 2).
Over 58% received ≥2 other Gram-negative antibiotics within 14 days of initiating cefiderocol (Table 2).
Among 187 patients with microbiology results, 75% had index cultures with one pathogen [4], and 73% had confirmed carbapenem-resistant pathogens (Table 1). The most common pathogens were P. aeruginosa, S. maltophilia, K. pneumoniae, and A. baumannii. The most common index culture site was the respiratory tract[4].
The 14-day and 28-day crude in-hospital all-cause mortality after cefiderocol initiation was 16.3% (95% confidence interval [CI]: 12.2–20.4%) and 23.6% (95% CI: 18.9–28.4%), respectively.

Conclusion and Clinical Implications

- During the initial phase of the post-approval period, the most frequent use of cefiderocol was to treat critically ill patients (as shown by the high frequency of ICU stay, mechanical ventilation, and septic shock).
In-hospital all-cause mortality was comparable with other studies [5,6], but it was impacted by COVID-19 status, especially a cluster of COVID-19 patients in one hospital. The crude in-hospital all-cause mortality rate in COVID-19 patients was almost four-fold higher than for non-COVID-19 patients.