

# Characterization of the Pathogen Distribution and Drug Resistance in Bloodstream Infections During COVID-19 Pandemic in Tertiary Hospital in Eastern China: Comparison with the Pre-Pandemic Period [Letter]

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## Dear editor

We have read the paper written by Min Gu et al Characterization of the Pathogen Distribution and Drug Resistance in Bloodstream Infections During COVID-19 Pandemic in Tertiary Hospital in Eastern China: Comparison with the Pre-Pandemic Period.<sup>1</sup> We congratulate all authors who have provided information about the distribution of pathogens and drug resistance in bloodstream infections (BSIs) during the COVID-19 pandemic shifted from pre-pandemic patterns, coinciding with a rise in bacterial resistance. COVID-19 mortality is primarily caused by direct complications like pulmonary, haematological, and cardiovascular issues, or secondary infections such as sepsis. Bloodstream infections (BSIs) and bacterial or fungal co-infections affect 4–13% of hospitalized patients, significantly increasing mortality.<sup>2</sup> The pandemic led to a rise in critically ill patients requiring ICU care, where the increased prevalence of bloodstream infections (BSIs) and other co-infections has negatively impacted patient outcomes.<sup>3</sup>

The study conducted by Min Gu et al conducted a retrospective cohort study at the First Affiliated Hospital of Nanjing Medical University, in eastern China. The study analysed patient data from January 2017 to December 2019 (pre-pandemic) and from January 2020 to December 2022 (pandemic), utilizing electronic medical records to collect information on age, gender, department of admission, and pathogens related to bloodstream infections.<sup>1</sup> The method used was in accordance with the targets to be achieved, however we recommend adding the timing of BSI development after hospital admission should be included as one of criteria on information collection, as previous research shows that the time of infection onset may affect antibiotic resistance outcomes. Prompt initiation of empirical antibiotics and rapid de-escalation are crucial for improving patient outcomes and may influence antibiotic resistance data in BSI pathogens.<sup>4</sup>

In this research, Min Gu et al found that during the COVID-19 pandemic, the distribution of pathogens and antibiotic resistance in bloodstream infections (BSIs) changed significantly, highlighting the need for improved clinical management of antibiotic use and infection control.<sup>1</sup> However it should be noted that other factors such as the use of steroids for treatment can elevate the risk of bloodstream infections (BSIs).<sup>5</sup> In addition, given that the data were collected during the COVID-19 pandemic, the majority of patients with bloodstream infections (BSIs) were also infected with COVID-19. Most COVID-19 patients were treated according to the WHO clinical practice guidelines, which strongly recommend corticosteroids for those with severe disease. The use of corticosteroids significantly affects both the duration between hospital admission and the onset of bloodstream infections (BSIs) and the risk of antimicrobial resistance. Therefore, corticosteroids should not be routinely used in COVID-19 patients unless there are specific clinical indications.<sup>6</sup>

In conclusion we agree that the pathogen distribution of BSIs altered during the COVID-19 pandemic, and antibiotic resistance increased. However, it is necessary to consider the time for BSI development in the current patient admission in hospital, starting antibiotics quickly and adjusting them promptly may influence data on drug resistance in BSI pathogens.<sup>4</sup> In addition, early steroid use may facilitate the occurrence of large proportion of BSI which are caused by antibiotic-resistant bacteria.<sup>5,6</sup>

## Disclosure

All authors report no conflicts of interest in this communication.

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