Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

COVID-19 control measures.[4-6] However, the clinical impact of COVID-19 on the Legionella disease was unclear. Therefore, we conduct this study to investigate the incidence of Legionella between, and during pandemic in Taiwan – a country with low burden of COVID-19.

We used the database of the National Notifiable Disease Surveillance System for analysis. This surveillance system could provide the regular, frequent, and timely information of notifiable infectious diseases in Taiwan.[7] To assess the potential impact of COVID-19 on the occurrence of Legionella in Taiwan, we compared the number of the Legionella cases including locally transmitted and imported cases between January and August in 2019 (pre-pandemic), 2020 and 2021 (pandemic). In addition, we also collected the occurrence of invasive pneumococcal disease – another important pathogen of community-acquired pneumonia for comparison.

Overall, the total case number of Legionella increased from179 in 2019 to 189 in 2020, and 221 in 2021 (Fig 1A). The increase of Legionella case during COVID-19 pandemic was observed for locally transmitted cases (167, 182, 221 in 2019, 2020 and 2021, respectively. In contrast, the number of imported Legionella cases decreased from 12 in 2019 to 7 in 2020, and even zero in 2021. About invasive pneumococcal diseases, their total case number largely decreased from 285 in 2019 to 165 and 156 in 2020 and 2021, respectively (Fig 1B). The similar trend of decreasing invasive pneumococcal disease was observed for locally transmitted cases and imported cases.

This study had 3 major findings. First, in contrast to most of the airborne and/or droplet transmitted notifiable infectious diseases showed decreasing trend due to the measures for the prevention and containment of COVID-19 outbreak in Taiwan, this study found that Legionella disease was increasing during COVID-19 pandemic in Taiwan, which echoed the findings of Liang et al's study. However, we only investigated the trend of notifiable Legionella diseases, we did not exam the prevalence of Legionella in the water system. In addition, lock down was not conducted in Taiwan. Therefore, further study is warranted to investigate the impact of water system on the increasing Legionella during pandemic in Taiwan.

Second, in line with previous report,[6] this study found the number of invasive pneumococcal disease in Taiwan decreased during pandemic, compared to pre-pandemic. This finding was supposed to be caused by aggressive COVID-19 control measures, particularly for universal masking in Taiwan.

Finally, we found the imported case number of Legionella and invasive pneumococcal disease had decreased or even became zero from 2019 to 2020 and 2021. This reduction could be caused by the implementation of border control in Taiwan since the early outbreak of COVID-19.

In conclusion, Liang et al's study[1] reminded us possible increasing risk of Legionella exposure after lock down, and we demonstrated Legionella disease was increasing during pandemic in Taiwan. Both these findings suggest that clinician should keep alert the development of Legionella disease during COVID-19 pandemic.

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Impact of the COVID-19 pandemic on the incidence of multidrug-resistant bacterial infections in an acute care hospital in Brazil

Dear editor,

We appreciate the contribution of Lima et al to the discussion of this important issue. While their results appear different, it is important to appreciate the numerous differences in our methodologies when making that comparison. (1) While we both analyzed the incidence of MDR infections, Lima et al looked only at ICU populations, while we looked more broadly at all inpatient units (ICU and non-ICU). (2) Lima et al considered CRAB, while we looked at 5 pathogens, noting differences in CRAB and MRSA. (3) The median of *Acinetobacter baumannii* MDR infections calculated by Lima et al is per patient-day/100 beds, while our median was calculated using the number of MDR infection cases in the period as numerator and the number of patient-days in the same period multiplied by 1,000. (4) While we both used the same statistical test to compare medians (Mann-Whitney), we used different denominators.[1] (5) Our definitions of MDR are also different. While Lima et al considered MDR to be a pathogen resistant to at least 1 agent in 3 or more categories of antimicrobials,[2] we used the definition for *A. baumannii* of resistance to the carbapenem class, which is one of the main drugs for the treatment of serious infections caused by them.

Our approach to analysis also differed due to different objectives. We agree with Lima et al that time series analysis is the preferred

statistical method for before and after studies, but the purpose of this study was to verify whether there was a statistical difference in the incidence of resistant bacteria between prepandemic years and during the early months of the pandemic. While time series events on preliminary or indicator data can be useful[3]—as Lima et al demonstrate, we are deferring a time series analysis of our data until after the pandemic is over.

We were able to identify the outbreaks and both are well described in the article, but the increased use of the number of invasive devices is only a hypothesis, as neither study compared their usage rates in the pre and pandemic periods, although we know that COVID patients are more severe and require a greater number of invasions.

We recognize the limitations of our study, as it is a single center, but with exclusive dedication to the care of COVID for 5 months. We believe that in this period exclusively dedicated and with 200 beds of ICU the impact of COVID-19 can really be measured, despite the biases described.

In summary, the results found by Lima et al may show a transient impact on the incidence of *A. baumannii* MDR by their definition, but they are different from our results. We agree that the impact of COVID-19 on hospital-acquired MDR infections may be heterogeneous across healthcare settings.

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Transitional impact on *Acinetobacter baumannii* MDR infections in 5 Brazilian ICUs in 2020

Dear editor,

We read the interesting study published by Polly et al,[1] which found a significant difference in the multidrug-resistant (MDR) infection incidence during the Coronavirus pandemic (COVID-19) in a Brazilian Intensive Care Unit (ICU). We got other results from an ecological study with similar objectives in 5 ICUs of a tertiary hospital in Rio de Janeiro, Brazil (Ethics Committee Approval number 25683019.4.0000.5249). We want to raise some aspects to contribute to this discussion.

We behold a peak of *Acinetobacter baumannii* MDR infection in June 2020 (Fig 1), when Brazil was the epicenter of COVID-19.[2] The median *Acinetobacter baumannii* MDR infections per patient-day/100 beds in 2019 was 0.58 (0.46-0.72) versus 1.1 (0.9-1.16) in 2020 (Mann-Whitney *P* value = .0009).[3] In the Joinpoint regression, we did not observe an overall MDR infection prevalence increase during the pandemic (February to June 2020) (Table 1). Conversely, only *A. baumannii* MDR infections increased during the pandemic period. Following this period, we observed a downward trend. MDR pathogens were defined as recommended by Magiokaros et al[4] in our study.

Considering the rapidly evolving pandemic scenario, we opted for a Joinpoint regression analysis to better evaluate the COVID-19 pandemic's impact on the prevalence of multidrug-resistant bacteria,[5,6] as this analytical approach takes the temporal tendency into account. Although statistical tests as the Mann-Whitney[3] allow visualizing significant differences between consumption averages in the 2 periods, they disregard the baseline temporal tendency, assuming static frequencies of MDR over time.

As Polly et al[1] pointed out, inexperienced healthcare professionals, reduced capacity for auditing practices, and increased antibiotic consumption may have contributed to the increase of the *A. baumannii* MDR infections, as we observed from February to June 2020. In addition, we hypothesized that a higher density of mechanical ventilation (MV) and other invasive circulatory devices might equally have contributed to the outbreak of *A. baumannii*. These bacilli have adhesion ability to biotic and abiotic surfaces,[7] becoming the demand for MV in the first wave of the pandemic a crucial risk factor for these infections.

Nevertheless, the increase of *A. baumannii* infection was transient in the investigated hospital. It could be explained by a better understanding of the disease and its treatment and antimicrobial stewardship resumption. Furthermore, we believe differences in MDR infection definition are crucial aspects that might impair the comparison of findings, especially for *Pseudomonas aeruginosa* and *A. baumannii.*

A. baumannii MDR infections have limited therapeutic options,[8] and outbreaks of these bacilli are a considerable concern. Our results suggest that the COVID-19 pandemic may have only a transitional impact on the infections caused by *A. baumannii* MDR. However, this single-center investigation has limitations regarding the generalizations as to Polly and colleagues' study. In summary, the long-term COVID-19 pandemic impact on hospital-acquired MDR infections