

Study: High-performance ICUs reduce mortality rates during pandemics and other health crises

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A new study published in the journal [CHEST](#) shows that high-performance intensive care units (ICUs) might also have better patient outcomes during health crises. The study used as a benchmark the mortality rate observed in Brazilian ICUs before and during the COVID-19 pandemic, and analyzed data from over 380,000 patients of private hospital ICUs across 10 Brazilian states.

The research was coordinated by the D'Or Institute for Research and Education (IDOR) and concluded that the mortality rate during the [pandemic](#) was significantly reduced in ICUs that exhibited high efficiency before the pandemic.

The COVID-19 pandemic, which peaked just a few years ago, has left an indelible mark on the [global population](#) and, unfortunately, we may face similar pandemics in the future. Nevertheless, the lessons learned from COVID-19 can be our greatest resource to prevent extreme outcomes in future health crises.

In an effort to understand how ICU efficiency during regular times would impact treatment outcomes during a pandemic, the study conducted a retrospective analysis of data from 33 private hospitals in the country. This analysis considered [adult patients](#) admitted to their ICUs between January 2018 and December 2021. The data was collected through a software developed by the company Epimed Solutions, which prospectively gathers standardized information from all participating ICUs.

Using the database, the performance of ICUs was assessed before and during the pandemic through two different metrics. One metric considered patient [mortality rates](#), while the other evaluated resource management in the intensive care centers. ICUs that performed well in both aspects were considered [high-efficiency](#) centers. These metrics were also adjusted for disease severity, age, sex, and comorbidities of

the patients, as these factors would impact the clinical outcome of COVID-19.

Of the 386,528 patients included in the analysis, 35,619 were admitted to ICUs with a COVID-19 diagnosis during the pandemic. The median profile of patients with the disease ranged from 53 to 70 years of age, with the majority being male, and 64.7% of those admitted had one or more comorbidities.

During the pandemic, the study observed the ICUs displayed a striking range in mortality rates for COVID-19 patients, ranging from 3.6% to 63.2%. These mortality rates also showed variability within ICUs over time, reflecting the dynamics of the pandemic.

The study's results indicate that ICUs with better performance before the pandemic also achieved more favorable outcomes during the health crisis. This included a lower risk and less variation in mortality rates, as well as a faster recovery after the peak of cases, and this stability was held even when considering patient comorbidities and [disease severity](#).

The research highlights that the effective management of patients outside of a pandemic context not only improves overall outcomes but also serves as preparation for addressing a global health crisis. Proper preparation, continuous improvement of efficiency, and the resilience of ICUs in times of stress and high demand for health care are essential for providing high-quality care and saving lives.

Dr. Jorge Salluh, a critical care researcher at IDOR and the study's coordinator, commented that the study's results are relevant not only for addressing future pandemics but also for establishing a standard of operation for ICUs. "Regardless of pandemics, ICUs routinely face periods of high stress and occupancy. Efficient management is a constant benefit for health care professionals and their patients. While

the risk of death is partly related to the severity of the disease and patient fragility, our study reveals that ICUs management has a direct impact on clinical outcomes. This information is the most relevant because it's something we can actually control within the hospital environment."

This study, in addition to serving as a warning for future health adversities, provides an extremely valuable contribution to the functionality of health care systems, emphasizing that optimizing ICU efficiency is a crucial strategy for both regular critical care and future challenges similar to the COVID-19 pandemic.

More information: Leonardo S.L. Bastos et al, The association between pre-pandemic ICU performance and mortality variation in COVID-19: A multicenter cohort study of 35,619 critically ill patients, *CHEST* (2023). [DOI: 10.1016/j.chest.2023.10.011](https://doi.org/10.1016/j.chest.2023.10.011)

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