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Variation in Strategies to Increase Critical Care Services During the COVID-19 Pandemic

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Since the COVID-19 pandemic swept through the United States in early 2020, the acute, yet sustained, need for increased critical care services has been a top priority for hospitals in the United States. Reports suggest that 15% to 30% of hospitalized patients with COVID-19 require intensive care, usually for treatment of ARDS and the need for mechanical ventilation.^{1,2} The impact of the COVID-19 pandemic and the high percentage of patients whose illness includes ARDS has created an extraordinary volume of patients with COVID-19 in ICUs in the United States.

Despite being a well-resourced country with an abundance of hospital and ICU beds,³ many hospitals in the United States faced (and continue to endure) shortages of ICU capacity over the past year. Although individual hospital systems have published their own experience in building surge capacity⁴⁻⁶ and guidelines do exist,⁷ no systematic evaluation of how ICUs in the United States expanded to accommodate surge capacity has been published to date.

In this issue of *CHEST*, Kerlin et al⁸ describe the actions taken by US hospitals in response to the COVID-19 surge over the last year, using information collected

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from surveys sent to chief nursing officers. Most striking in their study, 96.7% of hospitals canceled or postponed elective surgeries; 70.7% of them obtained additional ventilators; 61.3% had ICU staff work additional hours, and 59.5% created specialized procedure teams devoted to patients with COVID-19.

There were notable additional findings, all of which are important for further analysis and future planning.⁸ Most hospitals prepared to transform other clinical spaces into ICUs but did not need to do so, and only a few of them (12.9%) created entirely new medical units. Efforts to preserve staff, in addition to increased working hours and the creation of procedure teams, included reassigning providers from other units to their ICUs. Nursing models were changed, and, in some hospitals, advance practice providers had their roles expanded. The majority of hospitals (85.3%) either brought in ICU providers or were prepared to do so if needed, which included adding or expanding tele-ICU providers.

Though their survey response rate was limited (31%), the authors' system of both random and purposeful sampling allowed them to capture the diversity of surge responses in areas under different levels of strain.⁸ They enriched their sample by including all hospitals in areas that had seen the most COVID-19 at the time of the survey, which was an important strategy because, in June 2020, many areas of the United States had not yet been overwhelmed by COVID-19 ICU admissions. For example, in New York City, hospitals reported tripling their number of ICU beds in a matter of weeks,⁴ although other areas of the country had seen very few cases of COVID-19 by the time the surveys were completed.

Of 540 surveys sent to hospitals, 169 were completed. Unfortunately, though not surprisingly, hospitals that did not respond tended to be larger and in areas with more cases of COVID-19. These results are not unexpected because those hospital leaders who felt the greatest strain from COVID-19 may have had the least time to participate. This sampling bias may have skewed results towards those hospitals that were never overwhelmed. To their credit, the authors did evaluate the differences in responses between high-prevalence regions and low-prevalence regions.⁸ They found that hospitals in higher prevalence areas were less likely to

accept interhospital transfers and were more likely to transform nonclinical areas into ICUs, alter traditional provider/patient ratios, and adopt protocols to use one ventilator for multiple patients.

These results provide a broad strokes view of responses to unprecedented ICU needs. The authors conclude that the health care system the United States was able to meet the demand for ICU beds created by this pandemic, although it remains unclear if “creating ICU beds” and the lack of “explicit rationing” is equivalent to providing pre-pandemic standards-of-care. Limited data suggest otherwise. In fact, ICU strain has been associated with increased mortality rates during this pandemic.⁹ As the authors acknowledge,⁸ ICU beds are one small part of ICU capacity. Increasing work hours for providers in an effort to extend staff, requiring non-ICU physicians to care for critically ill patients, adjusting ICU nurse staffing ratios, and the countless limitations encountered when transforming non-critical care areas into ICUs all contribute to the difficulties hospitals in the United States faced in their pandemic response. These efforts to increase ICU staffing with limited resources affect not only patient care but also staff well-being, contributing to a “second pandemic” of burnout in health care workers.¹⁰ Although beyond the scope of this study, any discussion of expanding ICU capacity by increasing the workload for staff must acknowledge the toll taken on nurses, doctors, respiratory therapists, among others, and should prompt further studies on ways to provide expanded care while mitigating the strain on health care workers.

Despite its limitations, this article provides the first comprehensive, nationwide data on ICU pandemic expansion and will help inform strategies for future

surge planning.⁸ Future work should evaluate comparative strategies in high-prevalence areas and seek to explore the consequences of delayed elective procedures, which is the most common step taken by surging hospitals, and the impact on health care workers, the ICU’s most precious commodity.

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