

## Healthcare System Stress Due to Covid-19: Evading an Evolving Crisis

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During the early phase of the novel coronavirus disease 2019 (COVID-19) epidemic in the United States, public health strategies focused on “flattening the curve” to ensure that healthcare systems in hard-hit regions had the ability to care for surges of acutely ill patients. Now, COVID-19 cases and hospitalizations are rising sharply throughout the country, and many healthcare systems are facing intense strain due to an influx of patients.

In this issue of *JHM*, Horwitz et al provide important insights on evolving inpatient care and healthcare system strain for patients with COVID-19. The authors evaluated 5,121 adults hospitalized with SARS-CoV-2 infection at a 3-hospital health system in New York City from March through August 2020,<sup>1</sup> and found that patients hospitalized later during the time period were much younger and had fewer comorbidities. Importantly, the authors observed a marked decline in adjusted in-hospital mortality or hospice rates, from 25.6% in March to 7.6% in August.

What might explain the dramatic improvement in risk-adjusted mortality? The authors' use of granular data from the electronic health record allowed them to account for temporal changes in demographics and clinical severity of hospitalized patients, indicating that other factors have contributed to the decline in adjusted mortality. One likely explanation is that increasing clinical experience in the management of patients with COVID-19 has resulted in the delivery of better inpatient care, while the use of evidence-based therapies for COVID-19 has also grown. Although important gains have been made in treatment, the care of patients with COVID-19 largely remains supportive. But supportive care requires an adequate number of hospital beds, healthcare staff, and sufficient critical care resources, at minimum.

Healthcare system strain has undoubtedly played a critical role in the outcomes of hospitalized patients. Horwitz et al found that the number of COVID-19 hospitalizations in March and April, when death rates were highest, was more than 10 times greater than in July and August, when death rates were

lowest. As noted in the early epidemic in China, COVID-19 death rates partially reflect access to high-quality medical care.<sup>2</sup> And, in the US, hospitals' capacity to care for critically ill patients with COVID-19 is an important predictor of death.<sup>3</sup>

As COVID-19 cases now surge across the country, ensuring that healthcare systems have the resources needed to care for patients will be paramount. Unfortunately, the spread of COVID-19 is exponential, while hospitals' ability to scale-up surge capacity over a short timeframe is not. Already, reports are emerging across the country of hospitals reaching bed capacity and experiencing shortages of physicians and nurses.

To curtail escalating healthcare system stress in the coming months, we must minimize the cluster-based super-spreading that drives epidemic surges. Approximately 15% to 20% of infected cases account for up to 80% of disease transmission.<sup>4</sup> Therefore, strategies must address high-risk scenarios that involve crowding, close prolonged contact, and poor ventilation, such as weddings, sporting events, religious gatherings, and indoor dining and bars.

Without adequate testing or tracing capacity during viral surges, employing nonpharmaceutical interventions to mitigate spread is key. Japan, which created the “3 Cs” campaign (avoid close contact, closed spaces, and crowds), utilized a response framework that specifically targeted super-spreading. The US should follow a similar strategy in the coming months to protect healthcare systems, healthcare workers, and most importantly, our patients.

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