

## Cohort study

# Critical care survival rates in COVID-19 patients improved as the first wave of the pandemic developed

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**Commentary on:** Dennis JM, McGovern AP, Vollmer SJ, *et al.* Improving survival of critical care patients with coronavirus disease 2019 in England: a National cohort study, March to June 2020. *Crit Care Med* 2021;49:209–14

## Implications for practice and research

- ▶ It is essential that clinicians understand the evolving outcomes of patients admitted to hospital with COVID-19 in order to improve services and undertake further, targeted research.
- ▶ In parallel with research evaluating the treatment of COVID-19, future research must address the impact of care delivery and organisation on patient-centred outcomes.

## Context

During the first 12 months, the COVID-19 pandemic affected more than 87 million individuals worldwide and caused almost 2 million deaths.<sup>1</sup> Over the course of the first wave of the pandemic, UK national data suggested that there may be an improvement in survival for those patients admitted to hospital with COVID-19.<sup>2</sup> However, measurement issues such as increased testing capacity, and changes in patient-level characteristics such as age and pre-existing comorbidities, may account for this observation. The aim of this cohort study was to establish trends in 30-day mortality among critically ill patients with suspected or confirmed COVID-19 over 4 months (March–June 2020) and evaluate if patient-level characteristics contributed to the outcomes noted.<sup>3</sup>

## Methods

Data were obtained from the COVID-19 Hospitalisation in England Surveillance System (CHESS), which collects data on patients with COVID-19 admitted to critical care. At the time of this study, 108 English National Health Service trusts had submitted data to CHESS. Unadjusted 30-day mortality rates were calculated separately for high-dependency unit (HDU) and intensive care unit (ICU) patients by week of admission over the 4-month analysis period. The effect of age, gender, comorbidities, ethnicity and hospital region on trends in mortality was also reported.

## Findings

The study included 21 082 critical care patients of which, 15 367 received care in a HDU and 5715 in an ICU. The number of patients admitted to critical care with COVID-19 rose sharply over the 4 weeks from 8th March to 5th April 2020. The unadjusted 30-day mortality of people with COVID-19 requiring critical care peaked in March 2020 with an HDU mortality of 28.4% and ICU

mortality of 42.0%. Survival subsequently improved with unadjusted 30-day mortality dropping to 7.3% in HDU and 19.6% in ICU patients by the end of the analysis cycle. The improvement in survival was found to be unaffected by age, sex, ethnicity or comorbidity.

## Commentary

The improved survival of critical care patients with COVID-19 in this study is consistent with recent research and suggests that this improvement is unlikely to be due to changes in the characteristics of patients admitted.<sup>2,3</sup> A range of potential reasons for the fall in mortality are offered by Dennis and colleagues, including advances in clinical management and reduction in strain on critical care services across the analysis period.<sup>3</sup> Patient outcomes are likely to have benefited from advances in the management of COVID-19, as understanding of the disease rapidly progressed. Evolving research findings have been central to informing and improving treatment strategies. For example, the early use of dexamethasone in the COVID-19 disease trajectory has been shown to reduce mortality in those requiring respiratory support.<sup>4</sup> The speed and magnitude of the rise in critical care patients reported in this study reflects the mass expansion of critical care capacity in response to the pandemic, the challenges of which are well documented.<sup>5</sup> The parallel between the fall in the critical care population and reduction in mortality across the study period may have been influenced by the established association between critical care staffing, service strain and patient mortality.<sup>6</sup> However, further research is required to understand this relationship more fully beyond the initial wave of the pandemic. While the reasons for the reduction in COVID-19-related mortality are still to be fully understood, this study demonstrates the evolving nature of care delivery and clinical outcomes. As the pandemic unfolds, future research is needed to understand not only pharmaceutical treatments, but also the impact of critical care organisation and models of nursing care delivery on patient outcomes.

**Competing interests** None declared.

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