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## COVID-19 Is Not Comparable to H1N1 Influenza

To the Editor:

The study by Neto and colleagues (1) compared critical care bed occupancy and outcomes of critically ill patients during the coronavirus disease (COVID-19) pandemic with the 2009 H1N1 influenza pandemic in Australian intensive care units (ICUs). The study showed that the patients with COVID-19 had similar unadjusted mortality (11.5% in COVID-19 vs. 16.1% in H1N1;  $P = 0.10$ ) and a lower adjusted risk of death in patients with COVID-19 (odds ratio, 0.46 [95% confidence interval, 0.25–0.84];  $P = 0.01$ ). Patients admitted with COVID-19 also had a shorter length of ICU stay and the need for invasive mechanical ventilation. Although the authors acknowledged some limitations of the study, they ignored significant changes that were introduced to health care both as a public health response as well as hospital-based practices during the COVID-19 pandemic.

A combination of healthcare factors and patient-related factors, not accounted for by the investigators, affect the validity of the comparisons in this study.

Australia was fortunate to learn about the impact of COVID-19 in other countries such as China and Italy and had time to prepare in both the public health sector and hospital-based health care to limit COVID-19 spread and hospital admissions (2). Public health changes introduced owing to the COVID-19 pandemic in Australia included liberal COVID-19 testing policy to identify asymptomatic or minimally symptomatic patients, practicing social distancing, the use of masks, border closures, and strict lockdowns. The liberal testing provided early diagnosis of COVID-19 and initiation of appropriate management early in the course of disease. Such early interventions are likely to improve the outcomes (3). The lockdowns and social distancing reduced the burden on hospitals with a significant reduction in hospital presentations owing to respiratory infections and road traffic-related injuries (4). The hospital-based modification to healthcare delivery included cancelling of elective surgical procedure to reduce burden on ICUs (5). Further, clinical factors such altered clinical practice guidelines for early admission to ICUs, early interventions, and strict infection control procedures may make the comparison in outcomes between COVID-19 and the H1N1 influenza pandemic rather elusive. These measures ensured that the

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ICU workforce was not overburdened owing to the COVID-19 pandemic. In contrast, during the H1N1 influenza pandemic in 2009 in Australia, there were no public health measures in place. Australian ICUs and hospitals were expected to cope with patients with H1N1 influenza in addition to routine ICU practice, including elective surgical admissions and patients suffering polytrauma. Several factors, including lack of active screening for H1N1 influenza in the community, delay in diagnosis of the disease in the community, a lesser degree of awareness, preparedness of hospital systems, lack of readily available intensive care beds, and delayed referral to intensive care during H1N1 influenza, led to a higher degree of acuity that may have contributed to higher mortality with H1N1 influenza.

The policy of early ICU admissions during the COVID-19 pandemic was reflected by the lower acuity of patients with COVID-19 as evidenced by lower acute physiologic assessment and chronic health evaluation score and lower need for invasive mechanical ventilation. Such lower acuity of patients led to lower mortality and shorter ICU length of stay in patients with COVID-19 (1). The ICU length of stay is significantly affected by the availability of hospital ward beds (6). During the COVID-19 pandemic, a reduction in emergency department presentations and cancellation of elective surgical admissions increased ward bed availability and would have reduced the delay in discharge from ICU during the COVID-19 pandemic.

These factors make the comparison between the H1N1 influenza pandemic in 2009 and COVID-19 pandemic in 2021 unnatural and are less likely to be generalizable either in Australian or in other comparable healthcare settings in actuality. ■

**Author disclosures** are available with the text of this letter at [www.atsjournals.org](http://www.atsjournals.org).

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## Reply: COVID-19 Is Not Comparable to H1N1 Influenza

From the Authors:

We thank Dr. Tiruvoipati and colleagues for their interest in our paper (1). Indeed, as they allude to, the public health response to coronavirus disease (COVID-19) over winter in 2020 in Australia was dramatically different to that for the influenza A (H1N1) pandemic in 2009. As has occurred in

many regions, strict public health measures (such as social distancing, border closures, curfew, and mask wearing) were all enacted in 2020 in an attempt to slow the community spread of COVID-19 in Australia and reduce the potential burden on the healthcare system. None of this occurred with the 2009 H1N1 pandemic, a point we reinforced frequently in our manuscript. In this respect, we agree that the differential use of intensive care unit (ICU) resources over winter in 2020 for COVID-19 in Australia (as compared with that for H1N1 influenza over the same seasonal period in 2009) is in part related to the public health measures implemented. However, the inference that Australian hospitals were under more “strain” over the winter of 2009 remains entirely speculative and unproven, particularly in reference to the availability of general ward beds. We would also contend that the older, more comorbid demographic infected with COVID-19 (1)

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