COVID-19 preprint data rapidly influenced critical care practice

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Rapid translation of preprint data influenced use of dexamethasone influenced care of COVID-19 patients in Australia. Credit: ATS

In a new research letter published online in the American Thoracic Society's *American Journal of Respiratory and Critical Care Medicine*,

researchers examine whether preprint data on the use of the corticosteroid dexamethasone influenced clinical practice in treating COVID-19 critical care patients throughout Australia.

Preprints are scientific papers that are posted online rapidly, before peer review. Preprint services have been increasingly used by researchers since the beginning of the COVID-19 pandemic, in order to disseminate their findings quickly, prior to peer-review publication.

In "Rapid Translation of COVID-19 Preprint Data into Critical Care Practice," Andrew A. Udy, Ph.D., professor and deputy director, Australian and New Zealand Intensive Care Research Centre, Monash University, Melbourne, Australia, and colleagues looked at findings from the RECOVERY trial and whether the study's recommendations were adopted after their preprint posting.

The RECOVERY clinical trial tested the efficacy of dexamethasone in hospitalized patients with clinically suspected or confirmed infection with SARS-CoV-2, the virus that causes COVID-19. The study demonstrated a reduction in COVID-related 30-day mortality, especially in patients receiving mechanical ventilation or oxygen. Prior to preprint publication of these results, the Australian and New Zealand Intensive Care Society (ANZICS) Guidelines recommended against the routine use of corticosteroids.

"Our study demonstrated widespread, wholesale adoption of corticosteroid therapy for critically ill patients with COVID-19," said Prof. Udy. "This occurred almost immediately after preprint release of the RECOVERY trial results. This intervention was rapidly translated into bedside clinical care, prior to peer-reviewed publication in an established medical journal."

Dr. Udy and colleagues came to these conclusions after studying the

SPRINT-SARI Australia database, which covers nearly all confirmed COVID-19 patients admitted to the ICU throughout the country. They compared corticosteroid use in adult COVID patients in the database before the study's June 22, 2020 preprint, after the preprint, and then after July 17, 2020 journal publication. They calculated the percentage of patients receiving corticosteroids per week, and used statistical methodologies to make comparisons across time periods.

"To our knowledge, this is the first report to quantify the impact of a preprint release on clinical practice across an entire country," the authors state. They found that the preprint led to significant practice change, with little additional change after peer-reviewed publication.

Dr. Udy notes that a number of factors may have influenced this change, including: (1) the high-quality nature of the clinical trial; (2) clinicians' urgent desire to provide some form of disease-modifying therapy to address the effects of a global potentially deadly viral pandemic; (3) the widespread availability of dexamethasone, which has been used broadly in medicine for decades, and (4) established clinical familiarity with this drug and its known side effects.

Dr. Udy cautions that not all clinical interventions disseminated via preprint may have the same risk profile, and the external validity of research findings should always be considered before widespread clinical implementation.

"Preprint publication relies on close inspection of the study findings, and we can only hope that with higher risk interventions, or those with a more questionable risk-benefit profile, such widespread adoption would not be so rapid."

More information: Aidan JC Burrell et al. Rapid Translation of COVID-19 Preprint Data into Critical Care Practice, *American Journal*

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