

# Corticosteroid Therapy in COVID-19 Disease

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## ABSTRACT

Corticosteroid therapy has been used for many years and is still controversial in use. In the Coronavirus disease 2019 (COVID-19) outbreak, it is very important to find reliable treatment information for clinicians and patients. Low dose corticosteroids are also used in patients with septic shock, relative adrenal insufficiency and acute respiratory distress syndrome (ARDS). There is not enough evidence for its use in COVID-19. However, low dose use is recommended in the case of ARDS and septic shock in COVID-19 patients. Caution should be exercised until further evidence emerges surrounding the use of corticosteroids in COVID-19 patients.

**Keywords:** Septic Shock, Coronavirus Infections, Respiratory Failure, Corticosteroids

## Introduction

The incidence and mortality rates of severe acute respiratory syndrome due to Coronavirus disease 2019 disease continue to rise. Alongside uncertainty related to infection aetiology and outcomes, emerging concerns relate to the use of corticosteroids. Routine use of corticosteroids in adult patients with COVID-19 disease is controversial. Although controversial routine use of corticosteroids in adult patients with ARDS and septic shock is still unclear, it may be a guide for its use in patients with COVID-19 disease in the light of previous studies. Corticosteroid use should be evaluated on a patient-specific basis.

## Corticosteroids Using

Routine use of corticosteroids is not recommended in mechanically ventilated adult patients with COVID-19 disease and respiratory failure acute respiratory distress syndrome (ARDS) (1). There is no controlled, clinical trial on corticosteroid use in COVID-19 patients and other coronaviruses. In a systematical meta-analysis including randomized-controlled studies, it was shown that corticosteroid use can reduce need for mechanical ventilation and length of hospital stay but may increase risk for hyperglycemia requiring treatment. In a systematical review including observational studies on corticosteroid

use, it was found that corticosteroids had no survival benefit with potential harm (avascular necrosis, psychosis, diabetes mellitus and delayed viral clearance) (1,2). Clinicians considering corticosteroids for patients with COVID-19 disease and sepsis should closely monitor patients for hyperglycemia, hyponatremia and hypokalemia. After withdrawal of corticosteroids, signs for adrenal insufficiency and potential secondary infections should be monitored (3, 4).

Low-dose systemic corticosteroid therapy should be employed in mechanically ventilated adult patients with COVID-19 disease and ARDS (1). For patients with progressive worsening in oxygenation markers, rapidly evolving radiological signs and over-activation in inflammatory response, glucocorticoids can be used for short-term (3-to-5 days) at doses not exceeding methyl prednisolone equivalent. It should be kept in mind that higher doses of glucocorticoid can delay coronavirus clearance due to its immunosuppressive effects (5). Methyl prednisolone (40-80 mg/day) should be considered based on disease severity and total daily dose should not exceed 2 mg/kg (5).

Low-dose corticosteroid therapy should be employed in adult patients with COVID-19 disease and refractory sepsis (1). Typical steroid

dose is 200 mg/day for hydrocortisone or 40 mg/day for methyl prednisolone. The effects of corticosteroids may differ in patients with COVID-19 disease than in patients with sepsis or septic shock. In pregnant women presenting with COVID-19 disease, clinical benefit of corticosteroids given before delivery may outweigh potential harm. In such case, benefit: harm ratio in the mother and fetus should be discussed with mother. The decision may vary maternal clinical picture, mother's wish and available healthcare sources (1,6-8).

## Conclusion

In conclusion, though there appears to be some evidence that corticosteroids may be beneficial when utilised in the early acute phase of infection. Routine use of corticosteroids is not recommended adult patients with COVID-19 disease. Low-dose systemic corticosteroid therapy should be employed in mechanically ventilated adult patients with COVID-19 disease and ARDS, and refractory sepsis. Further studies are needed for the use of corticosteroids in patients with COVID-19 disease.

## References

1. Alhazzani W, Møller MH, Arabi YM, et al. Surviving Sepsis Campaign: guidelines on the management of critically ill adults with Coronavirus Disease 2019 (COVID-19.) *Intensive Care Med* 2020;1–34.
2. Siemieniuk RA, Meade MO, Alonso-Coello P, et al. Corticosteroid therapy for patients hospitalized with community-acquired pneumonia: a systematic review and meta-analysis. *Annals of internal medicine*. 2015;163(7):519-28.
3. Organization WH. Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected: interim guidance, 2020. [https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected)
4. Stockman LJ, Bellamy R, Garner P. SARS: systematic review of treatment effects. *PLoS medicine*. 2006;3(9).
5. Jin Y-H, Cai L, Cheng Z-S, et al. A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia. *Military Medical Research*. 2020;7(1):4.
6. Rygård SL, Butler E, Granholm A, et al. Low-dose corticosteroids for adult patients with septic shock: a systematic review with meta-analysis and trial sequential analysis. *Intensive care medicine*. 2018;44(7):1003-16.
7. Rochweg B, Oczkowski SJ, Siemieniuk RA, et al. Corticosteroids in sepsis: an updated systematic review and meta-analysis. *Critical care medicine*. 2018;46(9):1411-20.
8. Lian X-J, Huang D-Z, Cao Y-S, et al. Reevaluating the Role of Corticosteroids in Septic Shock: An Updated Meta-Analysis of Randomized Controlled Trials. *BioMed research international*. 2019:3175047.