



# Pharmacologic Interventions for Critically Ill Patients

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## Empiric Broad-Spectrum Antibiotic Therapy

### Recommendations

- In the absence of a proven or suspected bacterial infection, the COVID-19 Treatment Guidelines Panel (the Panel) **recommends against** the use of **empiric broad-spectrum antibiotics** in patients with severe or critical COVID-19 (**BIII**).
- As with any hospitalized patient, patients with COVID-19 who receive antibiotics should be reassessed daily to minimize the adverse consequences of unnecessary antimicrobial therapy (**AIII**).

### Rationale

Variable rates of community- and hospital-acquired infections have been reported in adult patients with COVID-19. Bacterial coinfection at the time of hospitalization has been reported in 1% to 3.5% of patients with COVID-19.<sup>1,2</sup> Secondary infections have been reported in 14% to 37% of intensive care unit patients, but the reported rates have been influenced by differences in the severity of illness, duration of hospitalization, method of diagnosis, and time period studied.<sup>3,4</sup>

There are no clinical trials that have evaluated the use of empiric broad-spectrum antibiotics in patients with severe or critical COVID-19 or other coronavirus infections. Routine, empiric use of antibiotics in patients with severe or critical COVID-19 **is not recommended (BIII)**; this recommendation is intended to mitigate the unintended consequences of side effects and resistance. The use of antibiotics may be considered in specific situations, such as the presence of a lobar infiltrate on a chest X-ray, leukocytosis, an elevated serum lactate level, microbiologic data, or shock.

The use of antibiotics in patients with severe or critical COVID-19 should follow guidelines established for other hospitalized patients (i.e., for hospital-acquired pneumonia, ventilator-associated pneumonia, or central line-associated bloodstream infection). It is unclear whether using the corticosteroids or other immunomodulatory agents that are recommended in the Guidelines should alter such approaches.

## Therapeutic Management of Hospitalized Adults With COVID-19

See [Therapeutic Management of Hospitalized Adults With COVID-19](#) for the Panel's recommendations on when to use baricitinib, dexamethasone, remdesivir, and tocilizumab.

## Immune-Based Therapy

See the [Immunomodulators](#) section for recommendations on the use of immunomodulators.

## Adjunctive Therapy

Recommendations regarding the use of adjunctive therapies in critical care settings, including antithrombotic therapy and vitamin C, can be found in [Antithrombotic Therapy in Patients With COVID-19](#), [Therapeutic Management of Hospitalized Adults With COVID-19](#), and [Vitamin C](#).

## References

1. Langford BJ, So M, Raybardhan S, et al. Bacterial co-infection and secondary infection in patients with COVID-19: a living rapid review and meta-analysis. *Clin Microbiol Infect.* 2020;26(12):1622-1629. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/32711058>.
2. Garcia-Vidal C, Sanjuan G, Moreno-Garcia E, et al. Incidence of co-infections and superinfections in hospitalized patients with COVID-19: a retrospective cohort study. *Clin Microbiol Infect.* 2021;27(1):83-88. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/32745596>.
3. Zangrillo A, Beretta L, Scandroglio AM, et al. Characteristics, treatment, outcomes and cause of death of invasively ventilated patients with COVID-19 ARDS in Milan, Italy. *Crit Care Resusc.* 2020;22(3):200-211. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/32900326>.
4. Yang X, Yu Y, Xu J, et al. Clinical course and outcomes of critically ill patients with SARS-CoV-2 pneumonia in Wuhan, China: a single-centered, retrospective, observational study. *Lancet Respir Med.* 2020;8(5):475-481. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/32105632>.