

## COVID-19 Information

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Meta-Analysis [Am J Ther.](#) 2021 Jun 21;28(4):e434-e460.

doi: 10.1097/MJT.0000000000001402.

# Ivermectin for Prevention and Treatment of COVID-19 Infection: A Systematic Review, Meta-analysis, and Trial Sequential Analysis to Inform Clinical Guidelines

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PMID: 34145166 PMID: [PMC8248252](#) DOI: [10.1097/MJT.0000000000001402](#)

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## Abstract

**Background:** Repurposed medicines may have a role against the SARS-CoV-2 virus. The antiparasitic ivermectin, with antiviral and anti-inflammatory properties, has now been tested in numerous clinical trials.

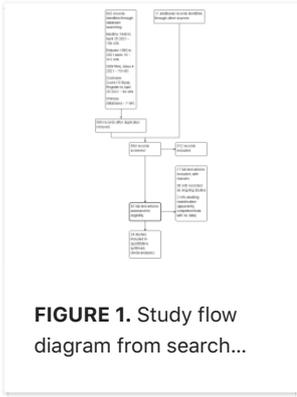
**Areas of uncertainty:** We assessed the efficacy of ivermectin treatment in reducing mortality, in secondary outcomes, and in chemoprophylaxis, among people with, or at high risk of, COVID-19 infection.

**Data sources:** We searched bibliographic databases up to April 25, 2021. Two review authors sifted for studies, extracted data, and assessed risk of bias. Meta-analyses were conducted and certainty of the evidence was assessed using the GRADE approach and additionally in trial sequential analyses for mortality. Twenty-four randomized controlled trials involving 3406 participants met review inclusion.

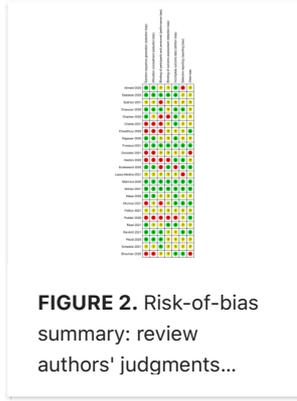
**Therapeutic advances:** Meta-analysis of 15 trials found that ivermectin reduced risk of death compared with no ivermectin (average risk ratio 0.38, 95% confidence interval 0.19-0.73; n = 2438; I<sup>2</sup> = 49%; moderate-certainty evidence). This result was confirmed in a trial sequential analysis using the same DerSimonian-Laird method that underpinned the unadjusted analysis. This was also robust against a trial sequential analysis using the Biggerstaff-Tweedie method. Low-certainty evidence found that ivermectin prophylaxis reduced COVID-19 infection by an average 86% (95% confidence interval 79%-91%). Secondary outcomes provided less certain evidence. Low-certainty evidence suggested that there may be no benefit with ivermectin for "need for mechanical ventilation," whereas effect estimates for "improvement" and "deterioration" clearly favored ivermectin use. Severe adverse events were rare among treatment trials and evidence of no difference was assessed as low certainty. Evidence on other secondary outcomes was very low certainty.

**Conclusions:** Moderate-certainty evidence finds that large reductions in COVID-19 deaths are possible using ivermectin. Using ivermectin early in the clinical course may reduce numbers progressing to severe disease. The apparent safety and low cost suggest that ivermectin is likely to have a significant impact on the SARS-CoV-2 pandemic globally.

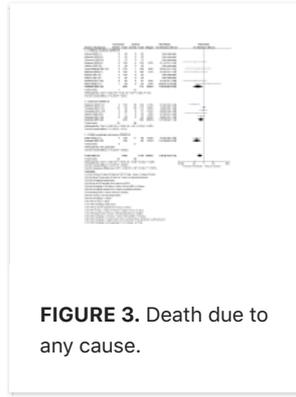
## Figures



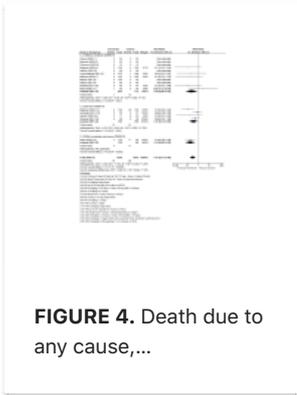
**FIGURE 1.** Study flow diagram from search...



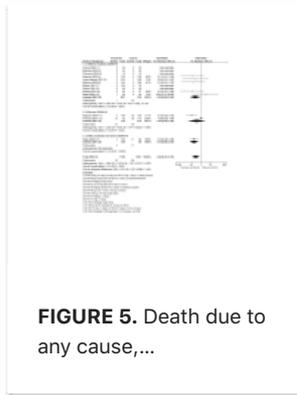
**FIGURE 2.** Risk-of-bias summary: review authors' judgments...



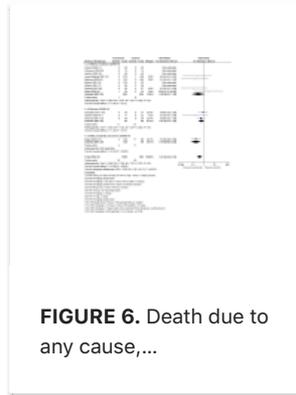
**FIGURE 3.** Death due to any cause.



**FIGURE 4.** Death due to any cause,...



**FIGURE 5.** Death due to any cause,...



**FIGURE 6.** Death due to any cause,...

All figures (15)

## Comment in

Ivermectin for Prevention and Treatment of COVID-19 Infection: A Systematic Review, Meta-analysis, and Trial Sequential Analysis to Inform Clinical Guidelines. *American Journal of Therapeutics*, 28, e434-e460, July 2021.

Bryant A, Lawrie TA, Fordham EJ.

*Am J Ther*. 2021 Aug 27;28(5):e573-e576. doi: 10.1097/MJT.0000000000001442.

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