# Summary of the Clinical Trials Evidence for Ivermectin in COVID-19

Ivermectin, an anti-parasitic medicine whose discovery won the Nobel Prize in 2015, has proven, highly potent, anti-viral and anti-inflammatory properties in laboratory studies. In the past 4 months, numerous, controlled clinical trials from multiple centers and countries worldwide are reporting consistent, large improvements in COVID-19 patient outcomes when treated with ivermectin. Several comprehensive scientific reviews of these and more recent referenced trials can be found here:
Kory et al, 2021: https://osf.io/wx3zn/
Bryant et al, 2021: https://osf.io/k37ft/
Nardeli et al, 2021: https://www.signavitae.com/articles/10.22514/sv.2021.043

**Properties of Ivermectin**
1) Ivermectin inhibits the replication of many viruses, including SARS-CoV-2, influenza, and others;
2) Ivermectin has potent anti-inflammatory properties with multiple mechanisms of inhibition;
3) Ivermectin diminishes viral load and protects against organ damage in animal models;
4) Ivermectin prevents transmission of COVID-19 when taken either pre- or post-exposure;
5) Ivermectin hastens recovery and decreases hospitalization and mortality in patients with COVID-19;
6) Ivermectin leads to far lower case-fatality rates in regions with widespread use.

**British Ivermectin Recommendation Development (BIRD) – Recommendation on Ivermectin for COVID-19**
Dr. Tess Lawrie of the Evidence-Based Medicine Consultancy Ltd. In Bath, UK, together with a team of expert systematic reviewers, conducted a systematic review and meta-analysis of the evidence on ivermectin for covid-19. A panel of 65 clinicians, medical researchers and patient representatives then evaluated the evidence following the World Health Organization's standard DECIDE Evidence-to-Decision Framework for recommendation development. Based on the evidence, the BIRD panel recommended the rapid implementation of ivermectin in both the prophylaxis and treatment of all phases of COVID-19 in the UK and globally. This recommendation was shared with policy- and decision-makers, relevant health agencies, and committees in England, Scotland, Wales and Northern Ireland. Since then, BIRD has engaged in awareness raising activities, public and media outreach, as well as networking with international researchers and clinicians.
Furthermore, we encourage all regulatory agencies to review the existing evidence presented in the various systematic reviews and country case studies showing that the widespread use of ivermectin resulted in a significant reduction in cases and mortality rates. As a whole, the evidence suggests that ivermectin may be an essential and vital treatment component in achieving control of the pandemic.

**Meta Analyses to date:**

- Kory, P. *et al.* (2021). Review of the Emerging Evidence Demonstrating the Efficacy of Ivermectin in the Prophylaxis and Treatment of COVID-19. To appear in *American Journal of Therapeutics*, May-June 2021
- Hill, A. *et al.* (2021). Meta-analysis of randomized trials of ivermectin to treat SARS-CoV-2 infection. *Research Square* preprint. DOI: 10.21203/rs.3.rs-148845/v1
- Cobos-Campos, R. *et al.* (2021). Potential use of Ivermectin for the treatment and profilaxis. *Clinical Research and Trials*, 7, 1-5. DOI: 10.15761/CRT.1000333 (over-ridden)
- Bryant, A., Lawrie, T.A., Dowswell, T., Fordham, E.J., Mitchell, S., Hill, S.R. & Tham, T.C. (2021). Ivermectin for prevention and treatment of COVID-19 infection: a systematic review and meta-analysis. *OSF* preprint, https://osf.io/k37ft/ DOI: 10.31219/osf.io/k37ft
- Castañeda-Sabogal, A. *et al.* (2021). Outcomes of Ivermectin in the treatment of COVID-19: a systematic review and meta-analysis. *medRxiv* preprint, DOI: 10.1101/2021.01.26.21250420
- Nicolas, P., Maia, M. F., Bassat, Q., Kobylinski, K. C., Monteiro, W. & Rabinovich, N. R. (2020). Safety of oral ivermectin during pregnancy: a systematic review and meta-analysis. *The Lancet Global Health*, 8, E92 – E100. doi: https://doi.org/10.1016/S2214-109X(19)30453-X
- Navarro, M. et al. (2020). Safety of high-dose ivermectin: a systematic review and meta-analysis. *Journal of Antimicrobial Chemotherapy,* DOI: 10.1093/jac/dkz524

**Reviews to date:**

- Crump, A. (2017). Ivermectin: enigmatic multifaceted 'wonder' drug continues to surprise and exceed expectations. *The Journal of Antibiotics*, **70**, 495-505. doi: 10.1038/ja.2017.11
- Heidary, F. & Gharebaghi, R. (2020). Ivermectin: a systematic review from antiviral effects to COVID-19 complementary regimen. *The Journal of Antibiotics*, 73, 593–602. doi: 10.1038/s41429-020-0336-z
- Nardelli, P. *et al.* (2021). Crying wolf in time of Corona: the strange case of ivermectin and hydroxychloroquine. Is the fear of failure withholding potential life-saving treatment from clinical use? *Signa Vitae*, DOI: 10.22514/sv.2021.043
- Schmith, V. D., Zhou, J. (J. & Lohmer, L. R. (2020). The Approved Dose of Ivermectin Alone is not the Ideal Dose for the Treatment of COVID-19. *Clinical Pharmacology and Therapeutics,* DOI: https://doi.org/10.1002/cpt.1889
- Caly, L. *et al.* (2020). The FDA-approved drug ivermectin inhibits the replication of SARS-CoV-2 in vitro. *Antiviral Research*, **178**, 104787. DOI: https://doi.org/10.1016/j.antiviral.2020.104787
-

**Quick facts:**

- Meta-analysis of 13 trials, assessing 1892 participants, found that ivermectin reduced the risk of 240 death by an average of 68% compared with no ivermectin treatment.

- Meta-analysis of 3 trials, assessing 738 participants, found that ivermectin prophylaxis among health care workers and covid-19 contacts probably reduces the risk of covid-19 infection by an average of 86%
- Ivermectin has a well-established safety profile with billions of doses of ivermectin having been used worldwide for parasitic indications. Various WHO documents on parasitic infections refer to ivermectin's long safety record.
- Ivermectin is affordable, and can be distributed by various means, e.g. post, and self-administered. It can therefore effectively reach traditionally 'hard-to-reach' and vulnerable populations such as undocumented migrants, homeless, the elderly living alone or in care homes, those lacking transport to reach health facilities, and those who lack access to adequate health care for other reasons.