**Question or request:** Should ivermectin be used in the treatment of COVID-19?

**Recommendation:**
The NM Medical Advisory Team does not recommend ivermectin therapy in patients with COVID-19 infection outside of clinical trials until more data is available.

Current evidence for using ivermectin in the treatment of COVID-19 is still largely speculative. There is one *in vitro* study showing virus inhibition at concentrations unlikely to be feasible *in vivo*. There are 34 registered clinical trials, mostly international with only 3 noted as completed but with no results available.

**Assessment:**

**Evidence**
Ivermectin has *in vitro* activity against a number of viruses, which suggests that it could be repurposed for treatment against SARS-CoV-2 and other viral infections. However, there is no evidence of clinical efficacy of ivermectin treatment in any viral infection in humans. Ivermectin inhibits SARS-CoV-2 replication *in vitro* at an IC₅₀ of ~ 2.5 µM. These inhibitory concentrations are up to 100-fold the peak concentration measured in plasma after a single dose of 200 µg/kg (common dose used for onchocerciasis). Although safety studies have shown that higher doses are tolerated, peak drug concentrations are still nearly 10-fold less than the inhibitory concentrations reported *in vitro*. There is some suggestion from animal models that higher concentrations could be found in the lungs, but more studies are needed. Importantly, the purported mechanism of action of ivermectin is thought to be through the inhibition of a specific host protein important for intracellular transport. This means that increasing concentrations may come at the risk of increased side-effects.

**Summary of current studies found on clinicaltrials.gov**
- 11 not recruiting – 1 domestic
- 3 completed studies, no results available – all International
- 20 studies recruiting, no results available – 19 international, 1 domestic

**Dosing Information**
- There is no dosing regimen currently approved for the treatment of COVID-19. All dosing is speculative from other indications.
- Standard dosing for most indications is 200 mcg/kg/day for 1 to 2 days with off-label use described up to 400 mcg/kg/day every 7 days for 2 doses.
- Dosing for adults and pediatric patients is similar.
- Additional formulations, including a nasal spray, are reportedly being tested, but are not yet FDA approved.

**Monitoring, Adverse Effects, and Drug-Drug Interactions**
- The primary drug-drug interaction of note is with vitamin K antagonists (e.g. warfarin)
- No monitoring is needed
- Most adverse effects reported in >10% are directly associated with onchocerciasis. There is speculation about adverse neurological effects if the blood brain barrier is compromised, which has led to the recommendation to avoid treating children under 2 years of age.
- Ivermectin is currently not recommended for pregnant or breastfeeding women.
Red flags and concerns:
Currently available evidence supporting the use of ivermectin is a single in vitro study. Importantly there are very serious concerns that the concentrations needed to be effective may not be feasible.

There is a specific FDA warning against the use of ivermectin formulated for animals as a treatment for COVID-19 in humans⁶.

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Resources/Reference: