

Summary of the Evidence for Ivermectin in COVID-19

August 29, 2021

Ivermectin is an anti-parasite medicine whose discovery won the Nobel Prize in 2015 for its impacts in ridding large parts of the globe of parasitic diseases via the distribution of over 3.7 billion doses within public health campaigns since 1987.

Since 2012, numerous in-vitro and in-vivo studies began to report highly potent anti-viral effects of ivermectin against a diverse array of viruses including [SARS-CoV-2](#). Further, increasing [anti-inflammatory and immuno-modulating effects](#) are being identified

Our [comprehensive narrative review](#) of the “totality of the evidence” supporting ivermectin was published in The American Journal of Therapeutics in April, 2021 where we reviewed data on efficacy from a diverse array of scientific sources beyond just the randomized controlled trial evidence as illustrated in the diagram below.



Currently, as of August 29, 2021, the totality of the evidence is as follows.

- **IN-VITRO (BASIC SCIENCE):** ivermectin has been shown to inhibit the replication [of many viruses](#), including West-Nile, Zika, Dengue, Influenza, and most recently [SARS-CoV-2](#) [[1,2,3,4,5,6,7](#)]
- **IN-VIVO:** ivermectin diminishes viral load and [protects against organ damage](#) in animal models of SARS-CoV-2 infection and has multiple, potent [anti-inflammatory](#) and [immune-modulating](#) properties [[1, 2, 3](#)]

- **IN-SILICO:** numerous [computer modeling studies](#) have found ivermectin to have one of the [highest binding affinities](#) to the SARS-CoV-2 spike protein
- **PHARMACOLOGIC:** unparalleled safety profile over decades, prior WHO guidelines report side effects that are “[primarily minor and transient](#)” and experts have found severe adverse events to be “[unequivocally and exceedingly rare](#).” Further, the IC-50 against SARS-CoV2 in lung and adipose tissue easily achieved with standard dosing (Caly/Wagstaff personal communication)
- **CLINICAL OBSERVATIONS/EXPERIENCE:** numerous cases series, most notably one [published from the Dominican Republic](#) in June 2020 where over 3,000 consecutive patients presented to the ER, were treated with ivermectin, and only 16 were hospitalized and only 1 died. Also, innumerable doctors from multiple countries around the world report [observing consistent clinical responses](#) in treated patients with few treatment failures.
- **OBSERVATIONAL CONTROLLED TRIALS (OCT):** As of August 8, 2021, the results from 31 OCT’s including over 6,800 patients find that treatment with ivermectin [reduces time to recovery, rates of hospitalization, and mortality](#), the latter finding best reported in the sophisticated propensity-matched study of [Rajter et al.](#) published in the major medical journal *Chest*.
- **META-ANALYSES OF RANDOMIZED CONTROLLED TRIALS (RCT):** 27 RCT’s including over 3,400 patients have been completed. Meta-analyses find that ivermectin reduces time to [viral clearance](#), [hastens recovery](#), and reduces [mortality](#).
- **OBSERVATIONAL AND RANDOMIZED TRIALS IN THE PREVENTION OF COVID-19:** A series of 13 RCT’s and OCT’s consistently find that single or repeated ivermectin use strongly reduces the risk of contracting COVID-19, with an average level of protection of 86% with higher levels of protection found amongst the trials with more frequent dosing [[1,2,3,4,5,6,7](#)(Table 2), [8,9,10,11,12](#)].
- **EPIDEMIOLOGIC:** ivermectin distribution campaigns in Peru led to [far lower COVID-19 case-fatality rates](#) in those regions with widespread use. Further, large “test and treat” programs conducted by increasing numbers of Health Ministries [report up to 75% reductions](#) in the need for hospitalization (Mexico City) and [massive reductions in mortality](#) (Misiones, Argentina and [La Pampas, Argentina](#)).

The reports most relevant to public health officials are from the national and regional health ministries that employed either distribution or “test and treat” programs with ivermectin:

- Mexico City – The IMSS Health Agency compared over 50,000 patients treated early with ivermectin to over 70,000 not treated and found [up to a 75% reduction in need for hospitalization](#).

- Peru – A nationwide mass-distribution program called “[Mega-Operación Tayta](#)” (MOT), initiated at various times across 25 states of Peru in May 2020, led to a 74% drop in regional excess deaths within a month, with *each drop* beginning 11 days after each MOT region’s varied start times
- La Pampas, Argentina – Health Ministry compared over 2,000 patients they treated early with ivermectin to over 12,000 without treatment and found a [40% reduction in hospitalization and 35% less ICU or death in older patients](#)
- La Misiones, Argentina – Health Ministry just analyzed the first 800 of 4,000 ivermectin treated patients and compared to the rest of the population over the same time period, they found a [75% reduction in need for hospital](#) and an [88% reduction in death](#).

Finally, in both “long-haul” COVID and post-vaccine syndromes, ivermectin is proving to be highly effective at eliminating symptoms based on the rapidly accumulating clinical experiences of the FLCCC and a number of allied experts that co-developed the [I-RECOVER protocol](#), centered around the use of ivermectin in these syndromes.

CONCLUSION: Based on the totality of the existing evidence above, the FLCCC strongly recommends ivermectin be used in both the prevention and treatment of all phases of COVID-19 in both vaccinated and unvaccinated populations.

Retracted Research

The totality of evidence for ivermectin is large enough that removal of any single data set, trial or study has minimal impacts. The integrity of one study in Egypt (Elgazzar et al) out of the then 28 RCT results available, was recently called into question. While we share the concerns about this study, the removal of its data from the most comprehensive meta-analyses did not change the conclusion that ivermectin is highly effective in both prevention and treatment.