Condensed Summary of the Emerging Evidence Supporting the Use of Ivermectin in the Prophylaxis and Treatment of COVID-19

Front-Line COVID-19 Critical Care Alliance (FLCCC)

This review summarizes the increasing and rapidly emerging evidence base supporting the efficacy of the drug ivermectin in the prophylaxis and treatment of COVID-19. The information below is largely condensed from a mature scientific manuscript that the FLCCC recently posted to the OSF medical pre-print server (https://osf.io/wx3znand) and which contains a detailed and comprehensive review of ivermectin's history, safety, pathophysiologic activity and existing clinical trials data. It should be noted that both documents rely on "emerging" data in that, although convincing, as of November 15, 2020, only a minority of studies have been published in peer-reviewed publications with the majority of results compiled from manuscripts uploaded to medicine pre-print servers or posted on clinicaltrials.gov.

Introduction

The world is in a worsening crisis with the potential of again overwhelming hospitals and ICU's. As of November 10th, 2020, the number of deaths attributed to COVID-19 in the United States reached 245,799 with over 3.7 million active cases, the highest number to date.[1] Multiple European countries have now begun to impose new rounds of restrictions and lockdowns.[2]

Compounding these alarming developments is a wave of recently published negative results from therapeutic trials done on medicines thought effective for COVID-19. One year into the pandemic, the only therapy considered "proven" as an effective treatment in COVID-19 is the use of corticosteroids in patients with moderate to severe illness.[3] Similarly most concerning is the fact that little has proven effective to prevent disease progression to prevent hospitalization.

Despite this growing list of failed therapeutics in COVID-19, it now appears that ***ivermectin,*** a widely used anti-parasitic medicine with known anti-viral and anti-inflammatory properties is proving a highly potent and multi-phase effective treatment against COVID-19. Based on this "emerging" evidence base, the FLCCC expert panel, in their prolonged and continued commitment to reviewing the emerging medical evidence base, and considering the impact of the recent surge, has now reached a consensus in recommending that ivermectin for both prophylaxis and treatment of COVID-19 should be systematically and globally adopted.

The FLCCC recommendation is based on the following set of conclusions derived from the existing data, which will be comprehensively reviewed below:

1) Since 2012, multiple in-vitro studies have demonstrated that Ivermectin inhibits the replication of many viruses, including influenza, Zika, Dengue and others[4-12]

2) Ivermectin inhibits SARS-CoV-2 replication, leading to absence of nearly all viral material by 48h in infected cell cultures[13]
3) Ivermectin has potent anti-inflammatory properties with in-vitro data demonstrating profound inhibition of both cytokine production and transcription of nuclear factor-κB (NF-κB), the most potent mediator of inflammation[14-16]
4) Ivermectin significantly diminishes viral load and protects against organ damage when administered to mice upon infection with a virus similar to SARS-CoV-2[17]
5) Ivermectin prevents transmission and development of COVID-19 disease in those exposed to infected patients[18-20,52]
6) Ivermectin hastens recovery and prevents deterioration in patients with mild to moderate disease treated early after symptoms[21-26,52]
7) Ivermectin hastens recovery and avoidance of ICU admission and death in hospitalized patients[26,27,52]
8) Ivermectin reduces mortality in critically ill patients with COVID-19[27,28]
9) Ivermectin leads to striking reductions in case-fatality rates in regions with widespread use[29-31]
10) The safety, availability, and cost of ivermectin is nearly unparalleled given its near nil drug interactions along with only mild and rare side effects observed in almost 40 years of use and billions of doses administered[32]
11) The World Health Organization has long included ivermectin on its "List of Essential Medicines"[33]

In-vitro and animal studies of ivermectin activity against SARS-CoV-2

Since 2012, a growing number of cellular studies have demonstrated that ivermectin has anti-viral properties against an increasing number of RNA viruses, including influenza, Zika, HIV, Dengue, and most importantly, in SARS-CoV-2 infected cell cultures exposed to ivermectin, Caly et al observed the near absence of all viral material within 48h. [4-12,13] Insights into the mechanisms of action by which ivermectin both interferes with the entrance and replication include; 1) high binding activity to the SARS-CoV-2 spike protein limiting binding to the ACE-2 receptor and preventing cellular entry of the virus, 2) interference with multiple essential structural and non-structural proteins required by the virus in order to replicate, and 3) binding to the SARS-CoV-2 RNA-dependent RNA polymerase (RdRp), also inhibiting viral replication. [34-36] Just recently, the first murine model showed high efficacy of ivermectin against a coronavirus similar to SARS-CoV-2 called the mouse hepatitis virus, essentially preventing damage in the livers of ivermectin treated mice while the control groups showed massive necrosis and inflammation within the liver tissue.[17]

Exposure prophylaxis studies of ivermectin's ability to prevent transmission of COVID-19

Data is also now available showing large and statistically significant decreases in the transmission of COVID-19 among human subjects based on data from three randomized controlled trials (RCT) and one retrospective observational study (OCT); however, none of the studies have been peer-reviewed yet.[18-20] The largest RCT was posted on the Research Square pre-print server on November 13, 2020 while the two other RCT's have submitted data to clinicaltrials.gov, which then performed a quality control review and posted the results.[18,19,37] The OCT was posted on the pre-print server medRxiv on November 3, 2020.[20] Table 1 below contains a summary of the critical features and outcomes reported by those trials, which now include over 1,000 subjects and all consistently demonstrate high efficacy in preventing transmission amongst those taking ivermectin prophylaxis.

Table 1. Clinical studies on the efficacy of ivermectin as a prophylactic agent against COVID-19

Prophylaxis Trials					% Ivermectin vs. % Controls
AUTHOR, COUNTRY, SOURCE	STUDY DESIGN, SIZE	STUDY SUBJECTS	IVERMECTIN DOSE	DOSE FREQUENCY	CLINICAL OUTCOMES REPORTED
Elgazzar A, Egypt ResearchSquare doi.org/10.21203/rs.3.rs-100956/v1	RCT N=200	Health care and Household contacts of pts with +COVID-19 PCR test	0.4mg/kg	Two doses, Day 1 and Day 7	2% vs. 10% tested positive for COVID-19 p<.05
Shouman W, Egypt *www.clinicaltrials.gov* NCT0442256	RCT N=304	Household members of pts with +COVID-19 PCR test	40–60kg: 15mg 60–80kg: 18mg > 80kg: 24mg	Two doses, 72 hours apart	7.4% vs. 58.4% developed COVID-19 symptoms, p<.001
Carvallo H, Argentina *www.clinicaltrials.gov* NCT04425850	RCT N=229	Healthy patients negative for COVID-19 PCR	0.2mg drops	1 drop five times a day x 28 days	0.0% vs. 11.2% contracted COVID-19 p<.001
Behera P, India *medRxiv* doi.org/10.1101/2020.10.29.20222661	OCT N=186 case control pairs	Health Care Workers	0.3 mg/kg	Day 1 and Day 4	2 doses reduced odds of contracting COVID-19 (OR 0.27 95% CI 0.16–0.53)

Further data supporting a role for ivermectin in decreasing transmission rates can be found from Brazil where, in retrospect, large "natural experiments" appear to have occurred after the three cities (depicted in bold in Table 2 below), initiated massive ivermectin distribution campaigns. [30]

Table 2. Case count decreases in Brazilian cities with ivermectin distribution programs
(bolded cities distributed ivermectin, neighboring city listed below did not)

Region	Confirmed new cases/month	June	July	August	Population 2020 (1000)	% August vs. June/July
South	**Itajaí**	**2123**	**2854**	**998**	**223**	**40%**
	Chapecó	1760	1754	1405	224	80%
North	**Macapá**	**7966**	**2481**	**2370**	**503**	**45%**
	Ananindeua	1520	1521	1014	535	67%
North East	**Natal**	**9009**	**7554**	**1590**	**890**	**19%**
	João Pessoa	9437	7963	5384	817	62%

Similar examples of temporally associated declines in case counts and death rates in regions that undertook ivermectin distribution campaigns are rapidly emerging and will be discussed in more depth below.

Clinical studies on the efficacy of ivermectin in treating mildly ill outpatients

Currently, six studies which include a total of over 3,000 patients with mild outpatient illness have been completed, a set comprised of 4 RCT's and three case series.[22-25,28,38,39] Of the RCTs, the smallest one by Podder et al. was peer-reviewed and published, two RCTs have been posted on pre-print servers, and the largest RCT passed quality control review and the data is now available on clinicaltrials.gov. Table 3 below, contains a summary of the critical features and outcomes reported by these outpatient treatment trials, with the RCT's including over 540 subjects and the case series more than 3,000. Again, nearly all show statistically significant improvements in important clinical outceoms such as time to symptom recovery and reduced rates of deterioration or hospitalization.

Table 3. Clinical studies on the efficacy of ivermectin in mildly ill outpatients with COVID-19

Clinical Trials – Outpatients					
AUTHOR, COUNTRY, SOURCE	STUDY DESIGN, SIZE	STUDY SUBJECTS	IVERMECTIN DOSE	DOSE FREQUENCY	CLINICAL OUTCOMES REPORTED
Carvallo H, Argentina *medRxiv* doi.org/10.1101/2020.09.10.20191619	Case Series N=167	Outpatients and hospitalized	24mg=mild, 36mg=moderate, 48mg=severe	Days 0 and 7	All 135 with mild illness survived, 1/32 (3.1% of hospitalized patients died
Mahmud R, Bangladesh *www.clinicaltrials.gov* NCT0452383	RCT N=363	Outpatients and hospitalized	12mg + doxycycline	Once, within 3 days of PCR+ test	Early improvement 60.7% vs. 44.4%, p<.03, deterioration 8.7% vs 17.8%, p<.02
Podder CS, Bangladesh *IMC J Med Sci 2020;14(2)*	RCT, N=62	Outpatients	0.2 mg/kg	Once	Recovery time 10.1 vs 11.5 days (NS), average time 5.3 vs 6.3 (NS)
Alam A, Bangladesh, *J of Bangladesh College Phys and Surg*, 2020;38:10-15 doi.org/10.3329/jbcps.v38i0.47512	Case series N=100	Outpatients	0.2 mg/kg/kg + doxycycline	Once	All improved within 72 hours

Clinical Trials – Outpatients					
AUTHOR, COUNTRY, SOURCE	STUDY DESIGN, SIZE	STUDY SUBJECTS	IVERMECTIN DOSE	DOSE FREQUENCY	CLINICAL OUTCOMES REPORTED
Chowdhury A, Bangladesh *Research Square* doi:10.21203/rs.3.rs-38896/v1	RCT N=116	Outpatients	0.2 mg//kg + doxycycline	Once	Recovery time 5.93 vs 9.33 days (p=.071)
Morgenstern J, Dominican Republic *medRxiv* doi: https://doi.org/10.1101/2020.10.29.20222505	Case Series N=3,099	Outpatients and hospitalized	Outpatients: 0.4mg/kg Hospital Patients: 0.3mg/kg	Outpatients:0.3mg/kg x 1 dose Inpatients: 0.3mg/kg, Days 1,2,6,7	Mortality = 0.03% in 2688 outpatients, 1% in 300 non-ICU hospital patients, 30.6% in 111 ICU patients

Clinical studies of the efficacy of ivermectin in hospitalized patients

Studies of ivermectin amongst more severely ill hospitalized patients include 3 OCTs, two RCTs, a database analysis study and one case series.[24,25,27,28,40] Two of the OCTs were published in major medical journals, with the two RCTs and one OCT and the database analysis posted on pre-print servers. The RCT's include 540 patients while the OCT's contain over 2,000. With the exception of the hospital database analysis study below (not included in tally), all again find large and statistically significant decreases in morbidity or mortality.

Table 4. Clinical studies on the efficacy of ivermectin in hospitalized patients with COVID-19

Clinical Trials – Hospitalized Patients					
AUTHOR, COUNTRY, SOURCE	STUDY DESIGN, SIZE	STUDY SUBJECTS	IVERMECTIN DOSE	DOSE FREQUENCY	CLINICAL OUTCOMES REPORTED
Elgazzar A, Egypt ResearchSquare doi.org/10.21203/rs.3.rs-100956/v1	RCT N=400	Hospitalized Patients	0.4 mg/kg	Once	Moderate Illness worsened (1% vs 22%, p<.001. Severe illness worsened 4% vs 30%, mortality 2% vs 20%, p<.001
Rajter JC, Florida *Chest 2020* doi.org/10.1016/j.chest.2020.10.009	OCT N=280	All hospitalized patients	0.2 mg/kg + azithromycin	Day 1 and Day 7 if needed	Overall mortality 15.0% vs. 25.2%, p=.03, Severe illness mortality 38.8 vs. 80.7%, p=.001)
Khan X, Bangladesh *Arch Bronconeumol. 2020* doi.org/10.1016/j.arbres.2020.08.007	OCT N=248	All hospitalized patients	12 mg	Once on admission	Mortality 0.9% vs. 6.8%, p<.05, LOS 9 vs. 15 days, p<.001
Gorial FI, Iraq *medRxiv* doi.org/10.1101/2020.07.07.20145979	OCT N=87	All Hospitalized patients	0.2 mg/kg + HCQ and azithromycin	Once on admission	LOS 7.6 vs. 13.2, p<.001, 0/15 vs. 2/71 died
Soto-Beccerra P, Peru *medRxiv* doi.org/10.1101/2020.10.06.20208066	OCT N=5683, IVM, N=563	Hospitalized patients, database analysis	Unknown dose <48hrs after admission	Unknown	No benefits found
Hashim H, Iraq *medRxiv* doi.org/10.1101/2020.10.26.20219345	RCT N=140	2/3 outpatients, 1/3 hospital pts	0.2 mg/kg + doxycycline	Daily for 2–3 days	Recovery time 6.3 vs 13.6 days (p<.001), 0% vs 27.3% mortality in severely ill (p=.052)
Portman-Baracco A, Brazil *Arch Bronconeumol. 2020* Doi.org/10.1016/j.arbres.2020.06.011	OCT N=1408	All Hospitalized patients	0.15 mg/kg	Once	Overall mortality 1.4% vs. 8.5%, HR 0.2, 95% CI 0.11-0.37, p<.0001

Anti-inflammatory properties of ivermectin supporting efficacy in late phase disease

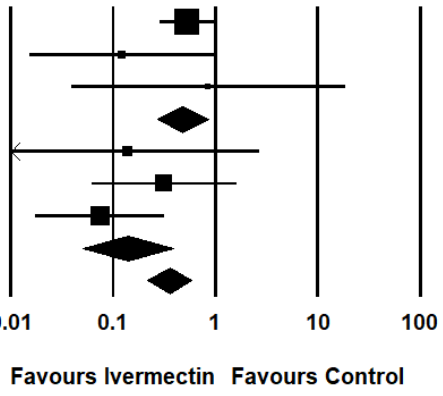
The large, beneficial impacts reviewed in the preceding section on hospitalized and ICU patient populations suggest that the potent anti-inflammatory properties of ivermectin also play a major role. This assumption is based on the fact that little viral replication is occurring in the later phases of COVID-19, nor can virus be cultured, and only in a minority of autopsies can viral cytopathic changes be found.[41,42,43] This supports the finding by Li et al. that it is the non-viable RNA fragments of SARS-CoV-2 that lead to the high mortality and morbidity in COVID-19 via the provocation of an overwhelming and injurious inflammatory response.[44] Based on these insights, it appears that the increasingly well described in-vitro properties of ivermectin as an inhibitor of inflammation are far more clinically potent than previously recognized. The growing list of studies demonstrating the anti-inflammatory properties of ivermectin include its ability to; inhibit cytokine production after lipopolysaccharide exposure, downregulate transcription of NF-kB, and limit the production of both nitric oxide and prostaglandin E_2.[14-16]

Meta-analysis of ivermectin clincal trials data

The below meta-analysis includes the mortality data from the OCTs and RCTs separately (Figure 1). The consistent and reproducible signals leading to an overall statistically significant mortality benefit from within both study designs is remarkable, especially given that in several of the studies treatment was initiated late in the disease course.

Figure 1. Meta-analysis of ivermectin clinical studies

Group by RCT-Obs	Study name	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value
OBS	Rajter	0.524	0.287	0.958	-2.099	0.036
OBS	Khan	0.121	0.015	0.969	-1.990	0.047
OBS	Gorial	0.842	0.039	18.393	-0.109	0.913
OBS		0.477	0.270	0.844	-2.546	0.011
RCT	Mahmud	0.138	0.007	2.694	-1.306	0.192
RCT	Hashim	0.314	0.061	1.611	-1.389	0.165
RCT	Elgazzar	0.074	0.017	0.318	-3.502	0.000
RCT		0.140	0.050	0.389	-3.772	0.000
Overall		0.357	0.217	0.587	-4.060	0.000



Epidemiological data showing impacts of widespread ivermectin use on population mortality

Similar to the individual cities in Brazil that measured large decreases in case counts soon after distributing ivermectin in comparison to neighboring cities without such campaigns, similar events took place in Peru, when , based on the Caly et al invitro study from Australia, multiple state health ministries initiated ivermectin distribution campaigns in an effort to decrease what was at that time some of the highest COVID-19 morbidity and mortality rates in the world.[29,45] In a recent paper posted to the preprint server Research Square by a data analyst named Juan Chamie, two critical sets of data were compiled and compared:

1) The effective dates of delivery of the ivermectin, based on a review of official communications, press releases, and the Peruvian Situation Room database in order to
2) data on the mortality and fatality in selected age groups over time compiled from the registry of the National Computer System of Deaths (SINADEF), and from the National Institute of Statistics and Informatics.[29] With these data, he was then able to compare the timing of major decreases in both excess deaths and case fatality rates among the 8 states in Peru with the initiation dates of their respective ivermectin distribution campaigns as shown in Figure 2 below. Excess deaths were calculated by comparison to death rates at the same time in the 3 years prior to the COVID-19 pandemic. The analysis was restricted solely to patients over 60 in order to remove any confounding due to increases in infections amongst healthier younger, adults.

Figure 2. Total deaths/population and case incidence for COVID-19/population in population older than 60 years old for eight Peruvian states deploying mass ivermectin treatment

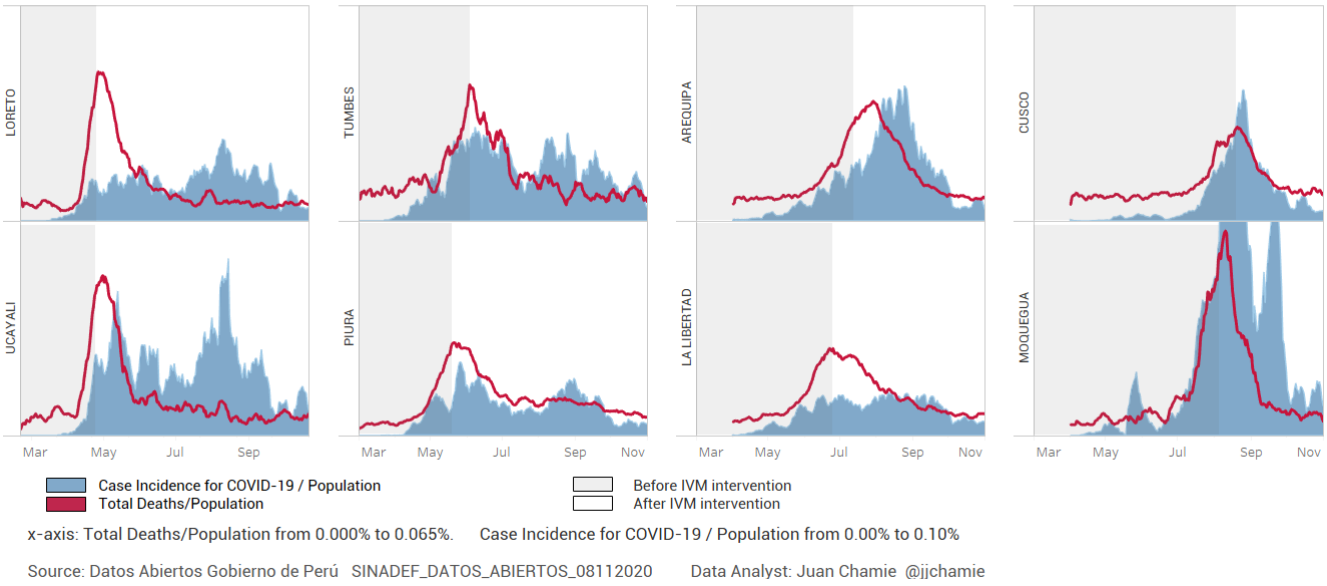
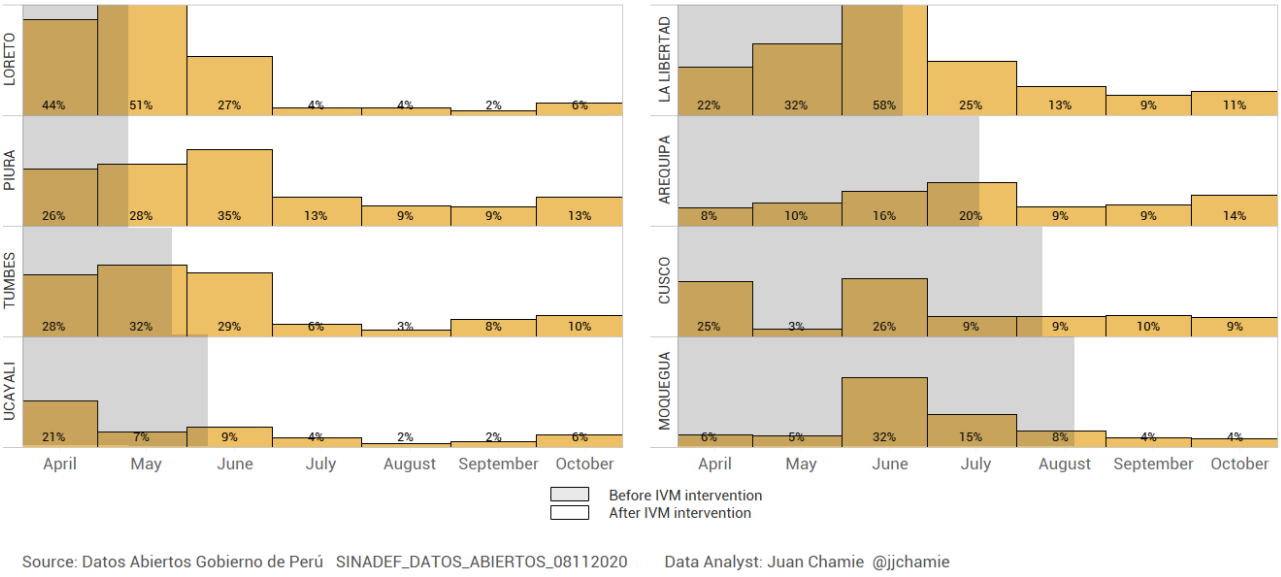


Figure 3 below from the same paper presents data on the case fatality rates in patients over 60, again among the 8 states in Peru. Note the dramatically decreased case fatality rates among older patients with COVID-19 after ivermectin became widely distributed in those areas.

Figure 3. Case fatality rate in population older than 60 years old for eight Peruvian states deploying mass ivermectin treatment



The reduced mortality rates achieved throughout Peru can also be seen from the analysis of the three Brazilian cities reviewed above, shown in Table 3 below.

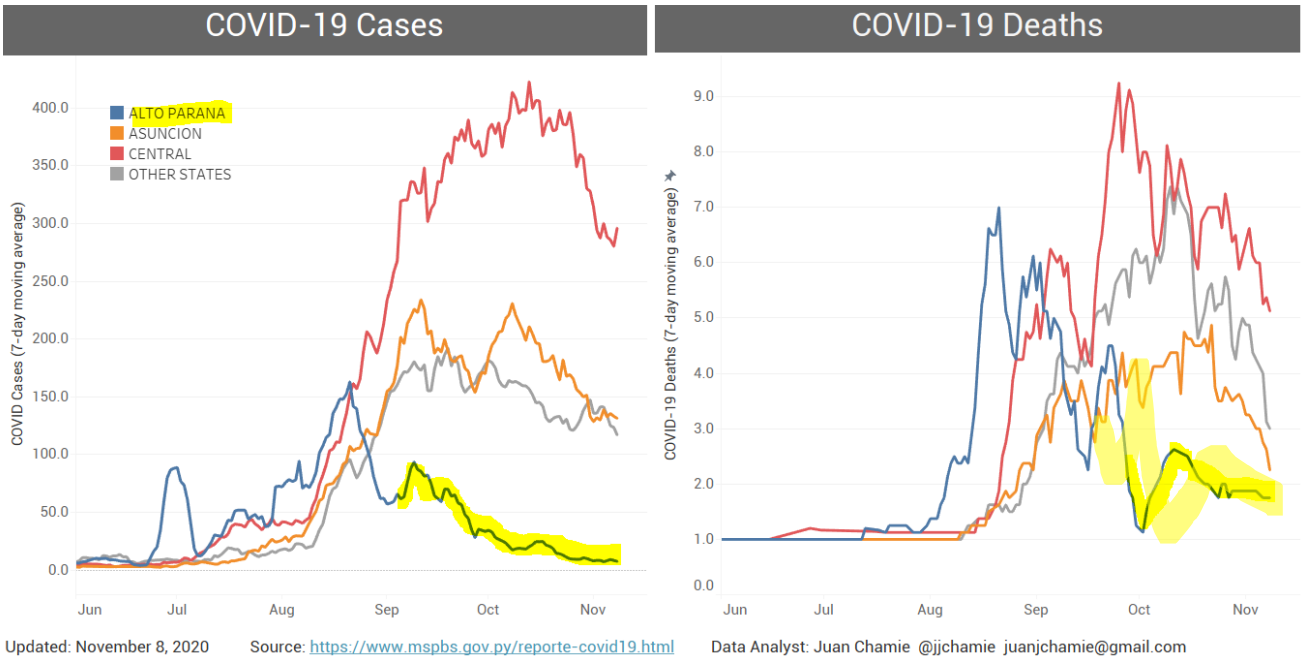
Table 5. Change in death rates among neighboring regions in Brazil
(bolded regions contained a major city that distributed Ivermectin to its citizens, the other regions did not)

REGION	STATE	% CHANGE IN AVERAGE DEATHS/ WEEK COMPARED TO 2 WEEKS PRIOR	TOTAL COVID-19 RELATED DEATHS	DEATHS/100K
South	**Santa Catarina**	**–36**	**2,529**	**35.6**
	PARANÁ	–3	3,823	35.3
	Rio Grande do Sul	–5	4,055	33.4
North	**Amapá**	**–75**	**678**	**80.2**
	AMAZONAS	–42	3,892	93.9
	Pará	13	6,344	73.7
North East	**Rio Grande do Norte**	**–65**	**2,315**	**66.0**
	CEARÁ	62	8,666	95.1
	Paraíba	–30	2,627	65.4

Another compelling example can be seen from the data compiled from Paraguay, again by Chamie, who noted that the government of the state of Alto Parana had launched an ivermectin distribution campaign in early September. Although the campaign was officially described as a “de-worming”

program, this was interpreted as a guise by the regions governor to avoid reprimand or conflict with the National Ministry of Health that recommended against use of ivermectin to treat COVID-19 in Paraguay.[46] The program began with a distribution of 30,000 boxes of ivermectin and by October 15, the governor declared that there were very few cases left in the state as can be seen in Figure 4 below.[31,47]

Figure 4. Paraguay – COVID-19 case counts and deaths in Alto Parana (blue) after Ivermectin distribution began (yellow highlight), compared to other departments[31,48]



History and safety of ivermectin

The discovery of Ivermectin in 1975 was awarded the 2015 Nobel Prize in Medicine given its global impact in reducing onchocerciasis (river blindness), lymphatic filiariasis, and scabies in endemic areas of central Africa, Latin America, India and Southeast Asia.[49] It has since been included on the WHO's "List of Essential Medicines." In one example, The Meztican (ivermectin) Donation Program established in 1987 to combat river blindness in over 33 countries provided more than 570 million treatments in its first 20 years alone.[49] Numerous studies report low rates of adverse events, with the majority mild, transient, and largely attributed to the body's inflammatory response to the death of the parasites and include itching, rash, swollen lymph nodes, joint paints, fever and headache.[32] In a study which combined results from trials including over 50,000 patients, serious events occurred in less than 1% and largely associated with administration in Loa loa.[50] The knowledge base establishing its high margin of safety and low rate of adverse effects is nearly unparalleled given it is based on the experience of billions of doses dispensed. Further, according the pharmaceutical reference standard Lexicomp, the only medications contraindicated for use with ivermectin are the anti-tuberculosis and cholera vaccines while the anticoagulant warfarin would requires dose monitoring.

Conclusion/recommendation of the FLCCC

Currently, (November 15, 2020), based on the data from the in-vitro, animal, prophylaxis, clinical, safety, and large scale epidemiologic analyses demonstrating decreases in both case counts and fatality rates in regions with widespread ivermectin use, the FLCCC recommends that ivermectin should be used in both the prophylaxis and treatment of COVID-19.[51] In the presence of a global COVID-19 surge, the widespread use of this safe, inexpensive, and effective intervention could lead to a drastic reduction in transmission rates as well as the morbidity and mortality in mild, moderate, and even severe disease phases.

A concern with this interpretation and conclusion is that, many of these trial results have not yet passed peer review however it is hoped that the journals to which the study manuscripts have been submitted will undertake an expedited review due to the critical importance of those studies in providing the world the appropriate level of scientific evidence required to undertake a potentially major shift in public health policy against this pandemic.

In light of this recommendation, the FLCCC developed the **I-MASK+ Prophylaxis & Early Out-patient Treatment Protocol for COVID-19**, centered around the use of Ivermectin — the I-MASK+ protocol can be downloaded from www.flccc.net/flccc-ivermectin-protocol and is detailed in Tables 6 and 7 below. It is our collective hope that if this protocol is followed it may prove a highly effective regional and global solution to the COVID-19 pandemic.

** The weekly prophylaxis dose in Table 6 below will be revised soon to a likely less frequent interval and possibly lower dose. We will make this change upon the completion of our review of the pharmacokinetic and dosing data from other disease states. Please re-visit the I-MASK protocol at www.flccc.net for the most updated dosing strategy.

Table 6. I-MASK+ Prophylaxis & Early Outpatient Treatment Protocol for COVID-19

PROPHYLAXIS PROTOCOL	
MEDICATION	RECOMMENDED DOSING
Ivermectin	*Weekly Prophylaxis for high risk individuals*: 0.15–0.2 mg/kg* once weekly
	*Post COVID-19 exposure prophylaxis***: 0.2 mg/kg × 1 dose on day 1 and day 3
Vitamin D3	1,000–3,000 IU/day
Vitamin C	1,000 mg twice daily
Quercetin	250 mg/day
Zinc	50 mg/day elemental zinc
Melatonin	6 mg before bedtime (causes drowsiness)
Aspirin	80–100 mg/day (unless contraindicated)

Table 6. (continued)

EARLY OUTPATIENT TREATMENT PROTOCOL***	
MEDICATION	RECOMMENDED DOSING
Ivermectin	0.2 mg/kg x 1 dose on day 1 and day 3
Vitamin D3	4,000 IU/day
Vitamin C	2,000 mg 2–3 times daily
Quercetin	250 mg/day
Zinc	100 mg/day elemental zinc
Melatonin	10 mg before bedtime
Aspirin	325 mg/day (unless contraindicated)

* Example for a person of 50 kg (body weight): 50 kg × 0.15 mg = 7.5 mg (1 kg = 2.2 lbs)= 2.5 tablets (3mg/tablet). See table 6 for weight-based dose calculations

** To use if a household member is COVID-19 positive, or if you have had prolonged exposure to a COVID-19+ patient without wearing a mask

*** For late phase – hospitalized patients – see the FLCCC's "MATH+" protocol on www.flccc.net

Table 7. Suggested ivermectin dose by body weight for prophylaxis and treatment of COVID-19

Body weight (doses calculated per upper end of weight range)		**Weekly Prophylaxis dose*** (0.15 mg/kg) Weekly (Each tablet = 3 mg; doses rounded to nearest half tablet)		**Treatment dose*** (0.2 mg/kg) Take two doses, day 1 and day 3 (Each tablet = 3 mg; doses rounded to nearest half tablet above)	
70–90 lb	32–40 kg	6 mg	(2 tablets)	8 mg	(3 tablets=9 mg)
91–110 lb	41–50 kg	7.5 mg	(2.5 tablets)	10 mg	(3.5 tablets)
111–130 lb	51–59 kg	9 mg	(3 tablets)	12 mg	(4 tablets)
131–150 lb	60–68 kg	10 mg	(3.5 tablets)	13.5 mg	(4.5 tablets)
151–170 lb	69–77 kg	11.5 mg	(4 tablets)	15 mg	(5 tablets)
171–190 lb	78–86 kg	13 mg	(4.5 tablets)	16 mg	(5.5 tablets)
191–210 lb	87–95 kg	14.3 mg	(5 tablets)	18 mg	(6 tablets)
211–230 lb	96–104 kg	15 mg	(5 tablets)	20 mg	(7 tablets=21 mg)
231–250 lb	105–113 kg	17 mg	(5.5 tablets)	22 mg	(7.5 tablets=22.5 mg)
251–270 lb	114–122 kg	18 mg	(6 tablets)	24 mg	(8 tablets)
271–290 lb	123–131 kg	19.7 mg	(6.5 tablets)	26 mg	(9 tablets =27 mg)
291–310 lb	132–140 kg	21.1 mg	(7 tablets)	28 mg	(9.5 tablets=28.5 mg)

* "Post-exposure prophylaxis" dose = 0.2mg/kg on day 1 and day 3 (i.e. for persons with a household member that tests positive for COVID-19 or after they have had prolonged indoor exposure to a COVID-19 patient without a mask)

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