

Supplemental file

Table 1. Search strategies

1	COVID-19
2	SARS-CoV-2
3	1 OR 2
4	hospitalized
5	admitted
6	4 OR 5
7	Remdesivir
8	Chloroquine
9	Hydroxychloroquine
10	Lopinavir
11	Ritonavir
12	Plasma
13	Dexamethasone
14	7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13
15	3 AND 6 AND 14

























Table 2. Risk of bias assessment

N	Study ID	Experimental	Comparator	Outcome	Randomization process	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
1	Cao 2020	Lopinavir-Ritonavir	Standard care	Early mortality	+	?	+	-	+	-
2	Wang 2020	Remdesivir	Placebo	Early mortality	+	+	+	+	+	+
3	Cao 2020	Lopinavir-Ritonavir	Standard care	Late mortality	+	?	+	-	+	-
4	Wang 2020	Remdesivir	Placebo	Late mortality	+	+	+	+	+	+
5	Cao 2020	Lopinavir-Ritonavir	Standard care	28 days mortality	+	?	+	-	+	-
6	Hung 2020	Lopinavir-Ritonavir-Rivabirin-Interferon	Lopinavir-Ritonavir	30 days mortality	?	?	+	+	+	!
7	Wang 2020	Remdesivir	Placebo	28 days mortality	+	+	+	+	+	+
8	Borba 2020	Chloroquine high dosage	Chloroquine low dosage	28 days mortality	+	+	+	+	+	+



9	Horby 2020	Dexamethasone	Standard care	28 days mortality						
10	Li 2020	Convalescent plasma	Standard care	28 days mortality						
11	Tomazini 2020	Dexamethasone	Standard care	28 days mortality						
12	Cao 2020	Lopinavir-Ritonavir	Standard care	Clinical improvement 7 days						
13	Hung 2020	Lopinavir-Ritonavir-Rivabirin-Interferon	Lopinavir-Ritonavir	Clinical improvement 7 days						
14	Wang 2020	Remdesivir	Placebo	Clinical improvement 7 days						
15	Li 2020	Convalescent plasma	Standard care	Clinical improvement 7 days						
16	Spinner 2020	Remdesivir	Standard care	Clinical improvement 7 days						
17	Cao 2020	Lopinavir-Ritonavir	Standard care	Clinical improvement 14 days						
18	Wang 2020	Remdesivir	Placebo	Clinical improvement 14 days						
19	Li 2020	Convalescent plasma	Standard care	Clinical improvement 14 days						
20	Spinner 2020	Remdesivir	Standard care	Clinical improvement 14 days						
21	Cao 2020	Lopinavir-Ritonavir	Standard care	Clinical improvement 28 days						
22	Wang 2020	Remdesivir	Placebo	Clinical improvement 28 days						
23	Li 2020	Convalescent plasma	Standard care	Clinical improvement 28 days						
24	Spinner 2020	Remdesivir	Standard care	Clinical improvement 28 days						
25	Cao 2020	Lopinavir-Ritonavir	Standard care	Duration of ventilation						

26	Wang 2020	Remdesivir	Placebo	Duration of ventilation	+	+	+	+	+	+
27	Cao 2020	Lopinavir-Ritonavir	Standard care	Duration of oxygen support	+	?	+	-	+	-
28	Wang 2020	Remdesivir	Placebo	Duration of oxygen support	+	+	+	+	+	+
29	Cao 2020	Lopinavir-Ritonavir	Standard care	Hospital stay	+	?	+	-	+	-
30	Hung 2020	Lopinavir-Ritonavir-Rivabirin-Interferon	Lopinavir-Ritonavir	Hospital stay	?	?	+	+	+	!
31	Wang 2020	Remdesivir	Placebo	Hospital stay	+	+	+	+	+	+
32	Cao 2020	Lopinavir-Ritonavir	Standard care	Virus clearance	+	?	-	-	+	-
33	Hung 2020	Lopinavir-Ritonavir-Rivabirin-Interferon	Lopinavir-Ritonavir	Virus clearance	?	?	-	+	+	-
34	Wang 2020	Remdesivir	Placebo	Virus clearance	+	+	-	+	+	-
35	Chen 2020	Hydroxychloroquine	Standard care	Virus clearance	?	?	+	+	+	!
36	Gautret 2020	Hydroxychloroquine	Standard care	Virus clearance	-	-	+	+	+	-
37	Tang 2020	Hydroxychloroquine	Standard care	Virus clearance	-	?	+	+	+	-
38	Li 2020	Convalescent plasma	Standard care	Virus clearance	-	-	+	+	+	-
39	Cao 2020	Lopinavir-Ritonavir	Standard care	Severe adverse events	+	?	+	+	+	!
40	Hung 2020	Lopinavir-Ritonavir-Rivabirin-Interferon	Lopinavir-Ritonavir	Severe adverse events	?	?	+	+	+	!
41	Wang 2020	Remdesivir	Placebo	Severe adverse events	+	+	+	+	+	+
42	Chen 2020	Hydroxychloroquine	Standard care	Severe adverse events	?	?	+	+	+	!

43	Tang 2020	Hydroxychloroquine	Standard care	Severe adverse events						
44	Borba 2020	Chloroquine high dosage	Chloroquine low dosage	Severe adverse events						
45	Spinner 2020	Remdesivir	Standard care	Severe adverse events						
46	Tomazini 2020	Dexamethasone	Standard care	Severe adverse events						

Meta-analysis

Figure S.1. Forest plot of drugs employed in hospitalized patients with SARS-CoV-2 infection.

Comparison: Remdesivir versus Standard care or Placebo.

Outcome: Severe adverse events.

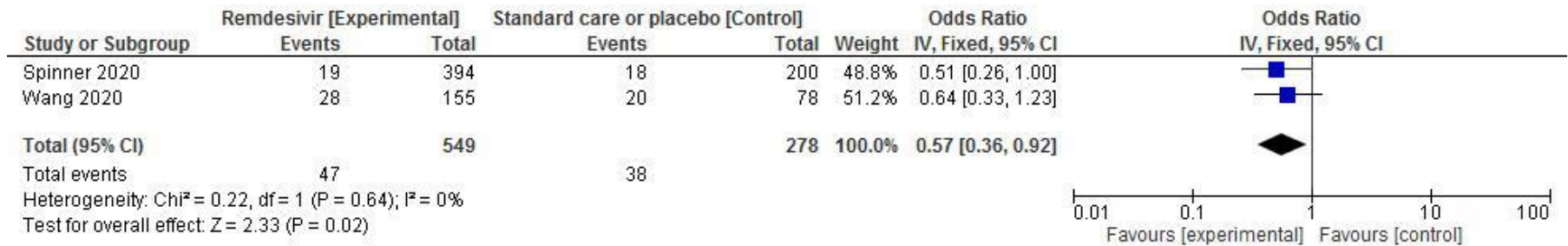


Figure S.2. Forest plot of drugs employed in hospitalized patients with SARS-CoV-2 infection.

Comparison: Hydroxychloroquine versus Standard care.

Outcome: Virological clearance at day 7.

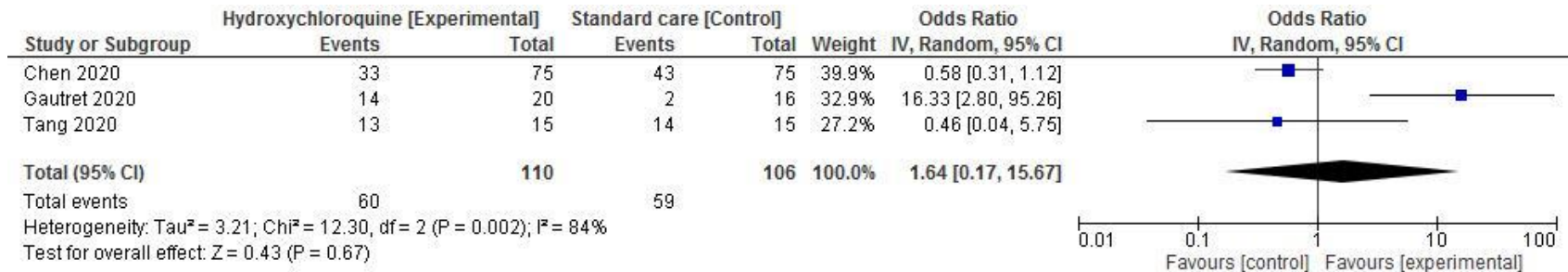


Figure S.3. Forest plot of drugs employed in hospitalized patients with SARS-CoV-2 infection.

Comparison: Hydroxychloroquine versus Standard care.

Outcome: Severe adverse events.

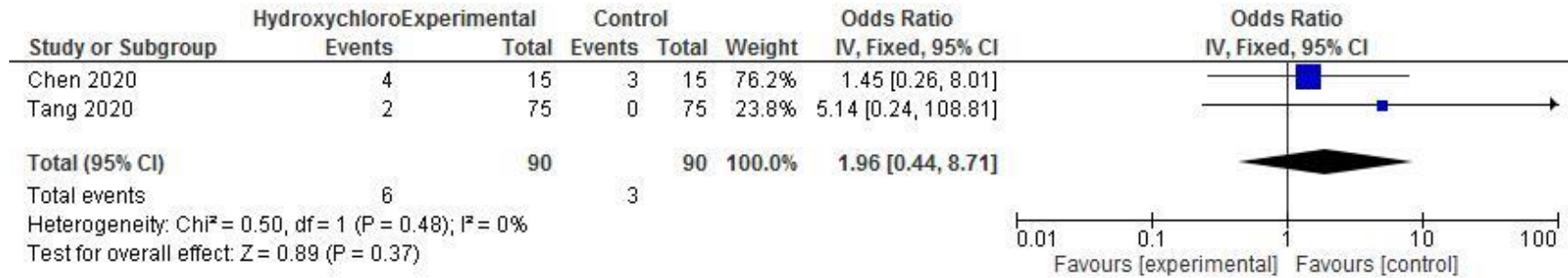


Table 3. Excluded studies with reasons

Author	Reference	Reason for excluding
Lecronier 2020	1	retrospective
Saiz Rodriguez 2020	2	protocol
Duska 2020	3	protocol
Doggrell 2020	4	expert opinion article
Bosch Barrera 2020	5	monograph
Liu 2020	6	protocol
Singh 2020	7	monograph
Maillart 2020	8	case report
Jean 2020	9	monograph
Abena 2020	10	monograph
Ahmad 2020	11	monograph
Plaze 2020	12	monograph
Wang 2020	13	protocol
Lother 2020	14	protocol
Thibodeaux 2020	15	case report
Shen 2020	16	case report
Martínez 2020	17	monograph
Kakodkar 2020	18	review
Ye 2020	19	retrospective
Lai 2020	20	monograph
Gao 2020	21	letter
Şimşek Yavuz 2020	22	review
Monteiro 2020	23	letter
Yousefifard 2020	24	review
Viveiros Rosa 2020	25	review
González 2020	26	protocol
Sivapalam 2020	27	protocol

References of excluded articles

1. Lecronier M, Beurton A, Burrell S, et al. Comparison of hydroxychloroquine, lopinavir/ritonavir, and standard of care in critically ill patients with SARS-CoV-2 pneumonia: an opportunistic retrospective analysis. *Crit Care* 2020; 24: 418.
2. Saiz-Rodríguez M, Peña T, Lázaro L, et al. Outpatient treatment of COVID-

19 with steroids in the phase of mild pneumonia without the need for admission as an opportunity to modify the course of the disease: A structured summary of a randomised controlled trial. *Trials* 2020; 21: 632.

3. Duška F, Waldauf P, Halačová M, et al. Azithromycin added to hydroxychloroquine for patients admitted to intensive care due to coronavirus disease 2019 (COVID-19)—protocol of randomised controlled trial AZIQUINE-ICU. *Trials* 2020; 21: 631.
4. Doggrell SA. Does lopinavir measure up in the treatment of COVID-19? *Expert Opin Investig Drugs* 2020; 1–4.
5. Bosch-Barrera J, Martin-Castillo B, Buxó M, et al. Silibinin and SARS-CoV-2: Dual Targeting of Host Cytokine Storm and Virus Replication Machinery for Clinical Management of COVID-19 Patients. *J Clin Med* 2020; 9: 1770.
6. Liu X, Chen H, Shang Y, et al. Efficacy of chloroquine versus lopinavir/ritonavir in mild/general COVID-19 infection: a prospective, open-label, multicenter, randomized controlled clinical study. *Trials* 2020; 21: 622.
7. Singh AK, Singh A, Shaikh A, et al. Chloroquine and hydroxychloroquine in the treatment of COVID-19 with or without diabetes: A systematic search and a narrative review with a special reference to India and other developing countries. *Diabetes Metab Syndr Clin Res Rev* 2020; 14: 241–246.
8. Maillart E, Leemans S, Van Noten H, et al. A case report of serious haemolysis in a glucose-6-phosphate dehydrogenase-deficient COVID-19 patient receiving hydroxychloroquine. *Infect Dis (Auckl)* 2020; 52: 659–661.
9. Jean S-S, Hsueh P-R. Old and re-purposed drugs for the treatment of COVID-19. *Expert Rev Anti Infect Ther* 2020; 1–5.
10. Abena PM, Decloedt EH, Bottieau E, et al. Chloroquine and Hydroxychloroquine for the Prevention or Treatment of COVID-19 in Africa: Caution for Inappropriate Off-label Use in Healthcare Settings. *Am J Trop Med Hyg* 2020; 102: 1184–1188.
11. Ahmad M., Dasgupta A, Chopra S. Remdesivir. RNA-dependent RNA polymerase inhibitor, Treatment of Ebola virus infection, Treatment of SARS-CoV-2 infection (COVID-19). *Drugs Future* 2020; 45: 369.
12. Plaze M, Attali D, Petit A-C, et al. Repositionnement de la chlorpromazine dans le traitement du COVID-19 : étude reCoVery. *Encephale* 2020; 46: S35–S39.
13. Wang Y, Zhou F, Zhang D, et al. Evaluation of the efficacy and safety of intravenous remdesivir in adult patients with severe COVID-19: study protocol for a phase 3 randomized, double-blind, placebo-controlled, multicentre trial. *Trials* 2020; 21: 422.

14. Lothar SA, Abassi M, Agostinis A, et al. Post-exposure prophylaxis or pre-emptive therapy for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): study protocol for a pragmatic randomized-controlled trial. *Can J Anesth Can d'anesthésie* 2020; 67: 1201–1211.
15. Thibodeaux K, Speyrer M, Raza A, et al. Hyperbaric oxygen therapy in preventing mechanical ventilation in COVID-19 patients: a retrospective case series. *J Wound Care* 2020; 29: S4–S8.
16. Shen C, Wang Z, Zhao F, et al. Treatment of 5 Critically Ill Patients With COVID-19 With Convalescent Plasma. *JAMA* 2020; 323: 1582.
17. Martinez MA. Compounds with Therapeutic Potential against Novel Respiratory 2019 Coronavirus. *Antimicrob Agents Chemother*, 64. Epub ahead of print 9 March 2020. DOI: 10.1128/AAC.00399-20.
18. Kakodkar P, Kaka N, Baig M. A Comprehensive Literature Review on the Clinical Presentation, and Management of the Pandemic Coronavirus Disease 2019 (COVID-19). *Cureus*. Epub ahead of print 6 April 2020. DOI: 10.7759/cureus.7560.
19. Ye XT, Luo YL, Xia SC, et al. Clinical efficacy of lopinavir/ritonavir in the treatment of Coronavirus disease 2019. *Eur Rev Med Pharmacol Sci* 2020; 24: 3390–3396.
20. Lai C-C, Shih T-P, Ko W-C, et al. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents* 2020; 55: 105924.
21. Gao J, Tian Z, Yang X. Breakthrough: Chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia in clinical studies. *Biosci Trends* 2020; 14: 72–73.
22. ŞİMŞEK YAVUZ S, ÜNAL S. Antiviral treatment of COVID-19. *TURKISH J Med Sci* 2020; 50: 611–619.
23. Monteiro WM, Brito-Sousa JD, Baía-da-Silva D, et al. Driving forces for COVID-19 clinical trials using chloroquine: the need to choose the right research questions and outcomes. *Rev Soc Bras Med Trop*; 53. Epub ahead of print 2020. DOI: 10.1590/0037-8682-0155-2020.
24. Yousefifard M, Zali A, Mohamed Ali K, et al. Antiviral therapy in management of COVID-19: a systematic review on current evidence. *Arch Acad Emerg Med* 2020; 8: e45.
25. Rosa SGV, Santos WC. Clinical trials on drug repositioning for COVID-19 treatment. *Rev Panam Salud Pública* 2020; 44: 1.
26. González R, García-Otero L, Pons-Duran C, et al. Hydroxychloroquine efficacy and safety in preventing SARS-CoV-2 infection and COVID-19

disease severity during pregnancy (COVID-Preg): a structured summary of a study protocol for a randomised placebo controlled trial. *Trials* 2020; 21: 607.

27. Sivapalan P, Ulrik CS, Bojesen RD, et al. Proactive Prophylaxis With Azithromycin and HydroxyChloroquine in Hospitalised Patients With COVID-19 (ProPAC-COVID): A structured summary of a study protocol for a randomised controlled trial. *Trials* 2020; 21: 513.