

Figure S1. Risk of bias graph

Review authors' judgments about each bias risk item presented as a percentage across all included studies.

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
A.B. Cavalcanti 2020	+	?	?	?	+	?	?
A.C. Kalil 2021	+	+	?	+	+	+	?
Ahmed Hanei Elshafie 2022	+	+	+	+	+	+	?
B. Cao 2020	+	?	?	?	+	?	?
Carmen Hernandez-Cardenas 2021	+	+	+	+	+	+	+
Chuan Huan Chuah 2021	+	+	?	+	?	?	?
Eduardo López-Medina 2021	+	+	+	+	+	+	?
E Wesley Ely 2022	+	+	+	+	?	?	+
Filippo Albani 2020	+	+	?	?	+	+	?
Florence Ader 2021	+	+	?	+	?	?	?
H. Pan 2020	+	+	+	?	+	+	+
Jose Lenin Beltran Gonzalez 2022	+	+	+	?	?	?	+
Luis Enrique Bermejo Galan 2021	+	+	+	?	+	+	+
Manaf AlQahtani 2022	+	?	?	+	?	?	?
Marianne Schoorla 2020	+	?	+	+	+	+	+
Marinella Lauriola 2020	+	+	+	?	?	?	+
Masoud Solaymani-Dodaran 2021	+	?	+	+	+	+	?
Mehdi Hassaniazad 2021	+	+	?	+	+	+	?
Mohammad Sadegh Rezai 2022	+	+	+	+	+	+	+
Morteza Shakhsi Niaee 2021	+	+	+	?	+	+	?
Peter Horby 2020	+	+	?	+	+	+	?
Peter W Horby 2020	+	+	?	+	?	?	?
Rajkamal Choudhary 2022	+	+	+	+	?	?	+
Ravikirti 2021	+	+	+	+	+	+	+
Robert J. Ulrich 2020	+	+	?	?	+	+	?
Robert W. Finberg 2021	+	?	?	+	+	+	?
Salil Gupta 2021	+	?	?	?	+	+	?
Sherief Abd-Elsalam 2020	+	+	+	+	?	?	?
Sherief Abd-Elsalam 2021	+	?	?	?	+	+	?
Srinivas Shenoy 2021	+	+	+	+	+	+	+
Steven Chee Loon Lim 2022	+	?	?	?	+	+	?
Vincent C Marconi 2021	+	+	+	+	+	+	?
Vincent Dubée 2021	+	+	+	+	+	+	+
Wesley H. Self 2020	+	+	+	+	+	+	?
Yaseen M. Arabi 2021	+	+	+	+	+	+	+
Zarir F. Udwadia 2020	?	+	?	+	+	+	?

Figure S2. Risk of bias summary

Review authors' judgments about each bias risk item for each included study

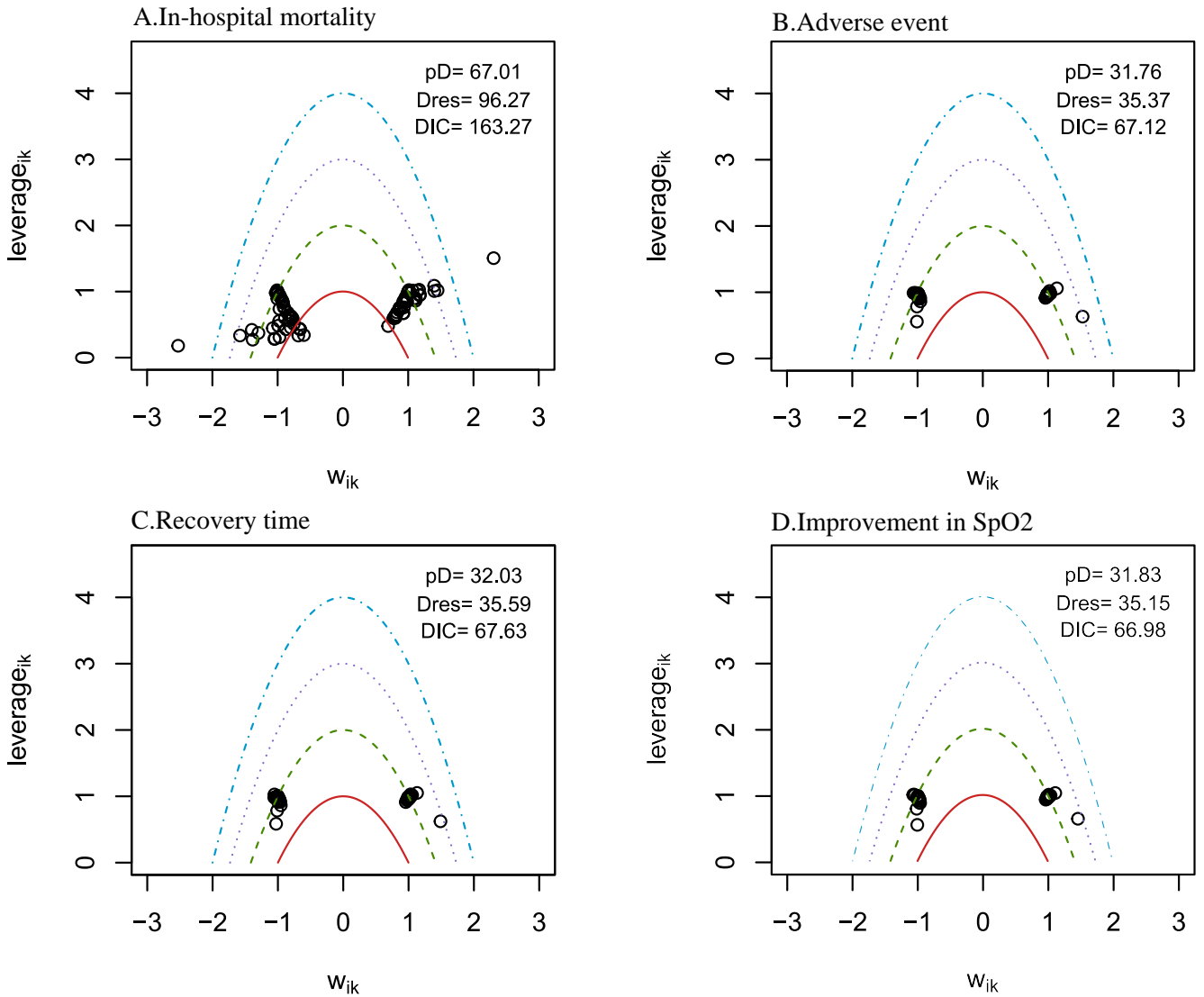


Figure S3. Leverage plot

The leverage plot of each outcome (A. In-hospital mortality, B. Adverse event, C. Recovery time, D. Improvement in SpO2) in the study showed low heterogeneity, as indicated by the majority of data points with small leverage values, suggesting low heterogeneity in the study.  
 effective number of parameters: pD, Deviance Residual: Dres, Deviance Information Criterion: DIC

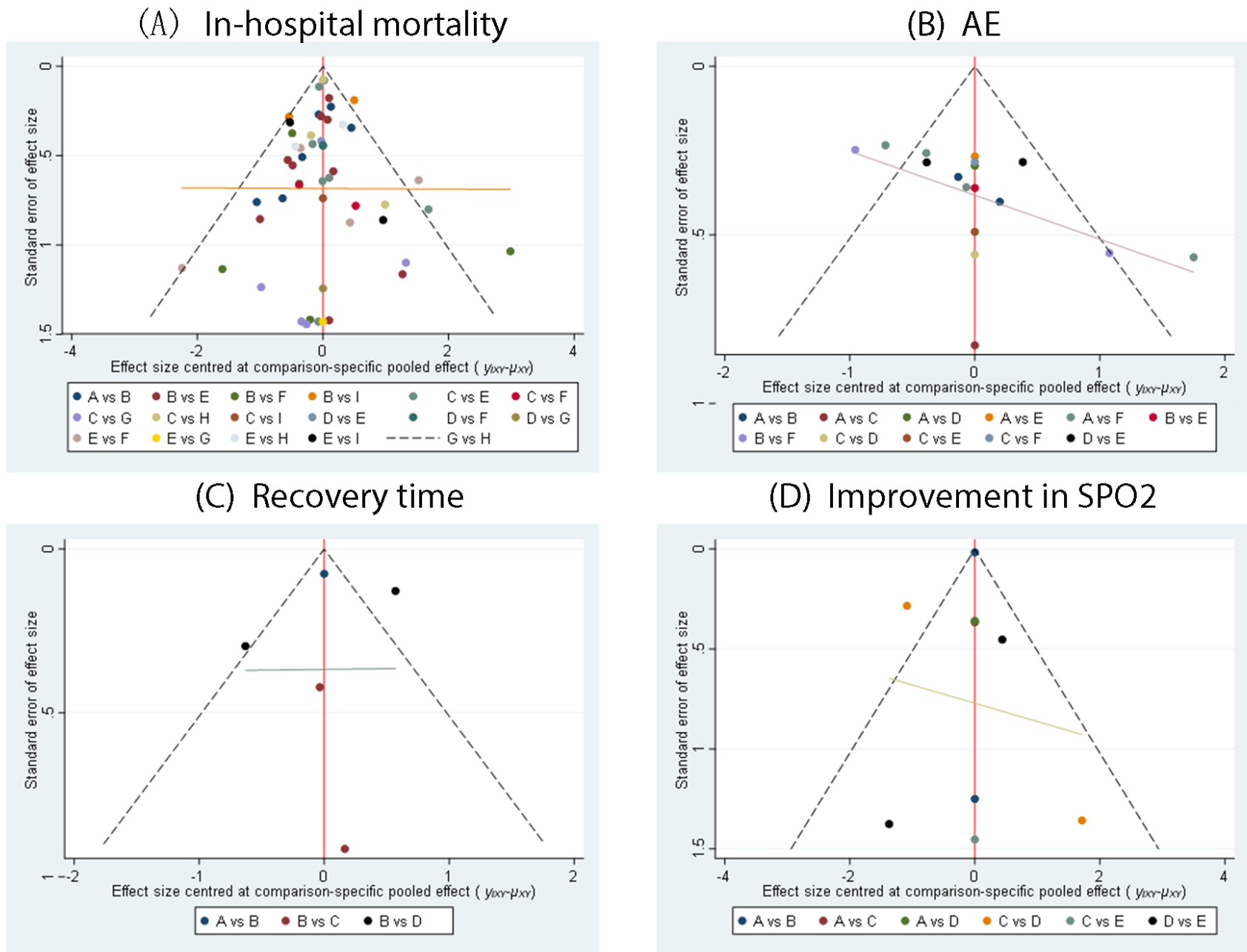


Figure S4. Funnel plots of publication bias

(A, baricitinib; B, placebo; C, SOC; D, CQ; E, HCQ; F, IVM; G, FVP; H, LPV/RTV; and I, HCQ+AZT)

Standard of care: SOC, Chloroquine: CQ, Hydroxychloroquine: HCQ, Ivermectin: IVM, Favipiravir: FVP, Lopinavirandritonavir: LPV/RTV, Hydroxychloroquine+plusazithromycin: HCQ +AZT, AE: adverse event; oxygen saturation: SpO2

**PRISMA NMA Checklist of Items to Include When Reporting A Systematic Review Involving a Network Meta-analysis**

Section/Topic	Item #	Checklist Item	Reported on Page #
<b>TITLE</b>			
Title	1	Identify the report as a systematic review <i>incorporating a network meta-analysis (or related form of meta-analysis)</i> .	Page 1
<b>ABSTRACT</b>			
Structured summary	2	Provide a structured summary including, as applicable: <b>Background:</b> main objectives <b>Methods:</b> data sources; study eligibility criteria, participants, and interventions; study appraisal; and <i>synthesis methods, such as network meta-analysis</i> . <b>Results:</b> number of studies and participants identified; summary estimates with corresponding confidence/credible intervals; <i>treatment rankings may also be discussed. Authors may choose to summarize pairwise comparisons against a chosen treatment included in their analyses for brevity.</i> <b>Discussion/Conclusions:</b> limitations; conclusions and implications of findings. <b>Other:</b> primary source of funding; systematic review registration number with registry name.	Page 1; Page 3-4
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of what is already known, <i>including mention of why a network meta-analysis has been conducted</i> .	Page 5-7
Objectives	4	Provide an explicit statement of questions being addressed, with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	Page 7
<b>METHODS</b>			
Protocol and registration	5	Indicate whether a review protocol exists and if and where it can be accessed (e.g., Web address); and, if available, provide registration information, including registration number.	Page 1; Page 8 PROSPERO #CRD 42023415743
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale. <i>Clearly describe eligible treatments included in the treatment network, and note whether any have been clustered or merged into the same node (with justification)</i> .	Page 8-9; Figure 1; Table S1
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	Page 8; Table S3
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Page 8; Table S3

Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	Page 8-9; Figure 1;
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	Page 8-10; Figure 1
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	Page 1; Page 21
<b>Geometry of the network</b>	<b>S1</b>	Describe methods used to explore the geometry of the treatment network under study and potential biases related to it. This should include how the evidence base has been graphically summarized for presentation, and what characteristics were compiled and used to describe the evidence base to readers.	Page 9-10
Risk of bias within individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	Page 10; Table S5
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means). <i>Also describe the use of additional summary measures assessed, such as treatment rankings and surface under the cumulative ranking curve (SUCRA) values, as well as modified approaches used to present summary findings from meta-analyses.</i>	Page 9-10
Planned methods of analysis	14	Describe the methods of handling data and combining results of studies for each network meta-analysis. This should include, but not be limited to: <ul style="list-style-type: none"> <li>• <i>Handling of multi-arm trials;</i></li> <li>• <i>Selection of variance structure;</i></li> <li>• <i>Selection of prior distributions in Bayesian analyses; and</i></li> <li>• <i>Assessment of model fit.</i></li> </ul>	Page 9-10
<b>Assessment of Inconsistency</b>	<b>S2</b>	Describe the statistical methods used to evaluate the agreement of direct and indirect evidence in the treatment network(s) studied. Describe efforts taken to address its presence when found.	Page 9-10
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	Page 10-11
Additional analyses	16	Describe methods of additional analyses if done, indicating which were pre-specified. This may include, but not be limited to, the following: <ul style="list-style-type: none"> <li>• Sensitivity or subgroup analyses;</li> <li>• Meta-regression analyses;</li> <li>• <i>Alternative formulations of the treatment network; and</i></li> <li>• <i>Use of alternative prior distributions for Bayesian analyses (if applicable).</i></li> </ul>	Page 10-11; Figure S3; Figure S4; Table S4

## RESULTS†

Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	Page 11; Figure 1
<b>Presentation of network structure</b>	<b>S3</b>	Provide a network graph of the included studies to enable visualization of the geometry of the treatment network.	Page 12-14; Figure 2
<b>Summary of network geometry</b>	<b>S4</b>	Provide a brief overview of characteristics of the treatment network. This may include commentary on the abundance of trials and randomized patients for the different interventions and pairwise comparisons in the network, gaps of evidence in the treatment network, and potential biases reflected by the network structure.	Page 12-14; Table 1; Table S1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Page 11; Table S1
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment.	Page 11; Table S5; Figure S1; Figure S2
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: 1) simple summary data for each intervention group, and 2) effect estimates and confidence intervals. <i>Modified approaches may be needed to deal with information from larger networks.</i>	Page 12-14; Table 1; Figure 3
Synthesis of results	21	Present results of each meta-analysis done, including confidence/credible intervals. <i>In larger networks, authors may focus on comparisons versus a particular comparator (e.g. placebo or standard care), with full findings presented in an appendix. League tables and forest plots may be considered to summarize pairwise comparisons.</i> If additional summary measures were explored (such as treatment rankings), these should also be presented.	Page 12-14; Table 1; Figure 3
<b>Exploration for inconsistency</b>	<b>S5</b>	Describe results from investigations of inconsistency. This may include such information as measures of model fit to compare consistency and inconsistency models, <i>P</i> values from statistical tests, or summary of inconsistency estimates from different parts of the treatment network.	Page 12-14
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies for the evidence base being studied.	Page 14; Figure S1; Figure S2; Figure S4;
Results of additional analyses	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression analyses, <i>alternative network geometries studied, alternative choice of prior distributions for Bayesian analyses, and so forth.</i>	Page 14-15; Table S4; Figure S3
<b>DISCUSSION</b>			
Summary of evidence	24	Summarize the main findings, including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy-	Page 15-20

		makers).	
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review level (e.g., incomplete retrieval of identified research, reporting bias). <i>Comment on the validity of the assumptions, such as transitivity and consistency. Comment on any concerns regarding network geometry (e.g., avoidance of certain comparisons).</i>	Page 20
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	Page 20
<b>FUNDING</b>			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review. This should also include information regarding whether funding has been received from manufacturers of treatments in the network and/or whether some of the authors are content experts with professional conflicts of interest that could affect use of treatments in the network.	Page 1; Page 21

PICOS = population, intervention, comparators, outcomes, study design.

\* Text in italics indicate wording specific to reporting of network meta-analyses that has been added to guidance from the PRISMA statement.

† Authors may wish to plan for use of appendices to present all relevant information in full detail for items in this section.



Table S2. Basic information of the included studies

ID	Author	Set up	Country(n)	Population	Age	Male(%)	Drug	Dose(mg)	Frequency	Duration(days)	Mortality events	Adverse events	Clinical outcomes
1	A.C. Kalil 2021	m	8	hospitalized patients with COVID-19	55.0±15.4	319/515(61.9)	Baricitinib	4	qd	14	24	207	①②③
					55.8±16.0	333/518(64.3)	Placeo			37	238		
2	Vincent C Marconi 2021	m	12	hospitalized patients with COVID-19	57.8±14.3	490/764(64.0)	Baricitinib	4	qd	14	62	334	①②
					57.5±13.8	473/761(62.0)	Placeo			100	334		
3	E Wesley Ely 2022	m	4	hospitalized patients with COVID-19	58.4±12.4	25/51(49.0)	Baricitinib	4	qd	14	20	44	①②③
					58.8±15.2	30/50(60.0)	Placeo			29	47		
4	Luis Enrique Bermejo Galan 2021	s	1	hospitalized patients with COVID-19	54.8±15.5	29/54(56.8)	HCQ	400	bid	4	12	NR	①
					51.9±14.0	35/61(57.8)	CQ	450	bid	4	13	NR	
					53.2±17.3	31/53(60.7)	IVM	14	qd	4	12	NR	
5	Hany M. Dabbous 2021	m	1	hospitalized patients with COVID-19	36.2±17.7	25/48(52.1)	CQ	600	bid	10	2	10	①③
					34.9±15.9	20/44(45.5)	FVP	600	bid	10	1	14	
6	Mehdi Hassaniazad 2022	s	1	hospitalized patients with COVID-19	51.0±10.4	20/32(62.5)	FVP	600	bid	5	1	8	①③④
					56.6±15.8	16/31(51.6)	LPV/RTV	200/50	bid	7	1	10	
7	Zarir F. Udwardia 2020	m	1	hospitalized patients with COVID-19	43.6±12.2	51/72(70.8)	FVP	800	bid	14	0	20	①③
					43.0±11.2	57/75(76.0)	SOC			1	5		
8	Chuan Huan Chuah 2021	m	1	hospitalized patients with COVID-19	62.6±7.5	131/250(52.4)	FVP	800	bid	5	5	17	①③④
					62.4±8.4	111/250(44.4)	SOC			0	1		
9	Srinivas Shenoy 2021	m	1	hospitalized patients with COVID-19	51.9±12.5	118/175(67.4)	FVP	800	bid	10	14	35	①③④

						120/178(67.4)	Placeo					11	27	
10	Robert W. Finberg 2021	m	1	hospitalized patients with COVID-19	55.4±12.4	16/25(64.0)	FVP	1000	bid	14	1	15	①③④	
					58.9±13.9	14/25(56.0)	SOC				0	19		
11	Manaf AlQahtani 2022	m	1	hospitalized patients with COVID-19	44.5±12.6	23/54(43.0)	FVP	600	bid	10	1	2	①③④	
					40.0±16.3	25/51(50.0)	HCQ	200	bid	10	0	7		
					48.5±15.9	27/52(52.0)	SOC				0	0		
12	Masoud Solaymani-Dodaran 2021	m	1	hospitalized patients with COVID-19	58.6±17.5	115/190(60.5)	FVP	600	tid	7	26	65	①②③④	
					56.6±17.1	90/183(49.2)	LPV/RTV	800/200	bid	7	21	118		
13	Yaseen M. Arabi 2021	m	1	hospitalized patients with COVID-19	61.0±13.0	182/255(71.7)	LPV/RTV	400/100	bid	5-14	88	13	①③④	
					56.3±13.0	35/50(70.0)	HCQ	400	bid		17	3		
14	Peter W Horby 2020	m	1	hospitalized patients with COVID-19	66.0±16.0	973/1616(60.0)	LPV/RTV	400/100	bid	10	350	NR	①	
					66.4±15.8	2104/3424(61.0)	SOC				712	NR		
15	Marinella Lauriola 2020	s	1	hospitalized patients with COVID-19	70.8±13.6	198/297(66.6)	HCQ + AZT	200/500	tid	10	102	NR	①	
					76.3±13.1	8/17(47.1)	HCQ	200	tid	10	7	NR		
					75.4±11.9	42/63(66.6)	Placeo				35	NR		
16	Peter Horby 2020	m	1	hospitalized patients with COVID-19	65.2±15.2	960/1561(61.5)	HCQ	200	bid	9	311	1	①③	
					65.4±15.4	1974/3155(62.6)	SOC				574	0		
17	Wesley H 2022	m	1	hospitalized patients with COVID-19	58.0±17.8	135/242(55.8)	HCQ	200	bid	5	25	14	①②③	
					57.0±18.5	132/237(55.7)	Placeo				25	11		
18	Jose Lenin Beltran Gonzalez 2022	s	1	hospitalized patients with COVID-19	48.9±15.3	22/33(66.6)	HCQ	200	bid	4	2	0	①	
					56.0±16.5	21/36(58.3)	IVM	12/18	bid	4	5	0		
					53.8±16.9	23/37(62.1)	Placeo				6	0		

19	Sherief Abd-Elsalam 2020	m	1	hospitalized patients with COVID-19	40.4±18.7	56/97(57.7)	HCQ	200	bid	15	6	NR	①③
					41.1±20.1	58/97(59.8)	SOC				5	NR	
20	Carmen Hernandez-Cardenas 2021	m	1	hospitalized patients with COVID-19	50.0±11.0	87/106(82.0)	HCQ	200	bid	10	NR	NR	①③
					49.0±12.0	74/108(68.0)	Placeo				NR	NR	
21	Vincent Dubee 2021	m	2	hospitalized patients with COVID-19	76.0±18.5	65/125(52.0)	HCQ	200	bid	8	6	70	①③
					78.0±22.2	56/125(44.8)	Placeo				11	61	
22	Morteza Shakhsi Niaee 2022	m	1	hospitalized patients with COVID-19	55.0±18.5	16/30(53.3)	HCQ	200	bid	7	5	NR	①
					61.0±19.3	12/30(40.0)	IVM	14	bid	7	0	NR	①②③④
23	Ahmed Hanei Elshafie 2022	s	1	hospitalized patients with COVID-19	59.8±16.3	51/104(49.0)	IVM	36	qd	6	49	74	
					61.1±18.8	49/97(50.5)	HCQ	200	qd	5	60	76	
					59.1±16.7	59/10(57.8)	Placeo				43	98	
24	Salil Gupta 2021	m	1	hospitalized patients with COVID-19	57.8±12.6	43/55(76.8)	HCQ	400	qd	5	10	NR	①
					57.3±14.1	37/55(68.5)	SOC				2	NR	
25	Florence Ader 2021	m	1	hospitalized patients with COVID-19	65.0±11.9	104/145(71.7)	HCQ	400/100	bid	14	11	109	
					62.0±14.1	105/148(70.9)	SOC				12	105	
26	Rajkamal Choudhary 2022	m	1	hospitalized patients with COVID-19	43.4	47/99(47.6)	HCQ	600	qd	5	0	NR	①②
					42.6	48/99(48.3)	Placeo				1	NR	
27	Robert J. Ulrich 2020	m	1	hospitalized patients with COVID-19	66.5±16.4	45/67(67.2)	HCQ	200	bid	5	7	63	①③
					65.8±16.0	31/61(50.8)	Placeo				6	59	
28	H. Pan, R. Peto 2020	m	30	hospitalized patients with	NA	574/947(60.6)	HCQ	200	bid	10	104	NR	①

				COVID-19	NA	535/7036(7.6)	SOC				749	NR	
29	Filippo Albani 2020	s	1	hospitalized patients with COVID-19	68.0±11.1	155/211(73.5)	HCQ	200	bid	5-7	60	NR	
					70.0±9.6	120/166(72.3)	HCQ + AZT	200/500	bid/qd	5-7	53	NR	①
					72.0±15.6	387/605(64.0)	Placeo				172	NR	
30	Sherief Abd-Elsalam 2021	m	1	hospitalized patients with COVID-19	42.4±16.0	37/82(45.1)	IVM	12	qd	3	3	NR	①
					39.4±16.9	45/82(54.9)	SOC				4	NR	
31	Eduardo López-Medina 2021	s	1	hospitalized patients with COVID-19	37.0±13.9	78/200(39.0)	IVM	0.3mg/kg	qd	5	0	154	①②③
					37.0±15.2	89/198(44.9)	Placeo				1	161	
32	Steven Chee Loon Lim 2022	m	1	hospitalized patients with COVID-19	63.0±8.9	111/241(46.1)	IVM	0.4mg/kg	qd	5	3	33	①③
					62.0±8.4	112/249(45.0)	SOC				10	11	
33	Ravikirti 2021	s	1	hospitalized patients with COVID-19	50.7±12.7	40/55(72.7)	IVM	12mg	qd	6	0	NR	①
					54.2±16.3	41/57(71.9)	placeo				4	NR	
34	Mohammad Sadegh Rezai 2022	m	1	hospitalized patients with COVID-19	53.0±18.0	151/311(48.6)	IVM	0.4 mg/kg	qd	3	13	5	①③④
					54.0±17.8	140/298(47.0)	Placeo				18	10	
35	B. Cao, Y. Wang 2020	s	1	hospitalized patients with COVID-19	58.0±4.5	61/99(61.6)	LPV/RTV	400/100	bid	14	15	19	①③
					58.0±5.0	59/100(59.0)	SOC				17	32	
36	A.B. Cavalcanti 2022	m	1	hospitalized patients with COVID-19	49.6±14.2	123/217(56.7)	HCQ+AZT	400/500	qd	7	5	94	①③
					51.3±14.5	142/221(64.3)	HCQ	400	bid	7	7	67	
					49.9±15.1	123/227(54.2)	SOC				6	40	

①In-hospitalial mortality; ②Recovery time ; ③Adverse event; ④Improvement in SpO2;

m: multi-center; s: single-center; NR: not reported; NA: not available;

IVM: Ivermectin; FVP: Favipiravir; CQ: Chloroquine; LPV/RTV: Lopinavir/Ritonavir; HCQ: Hydroxychloroquine;

HCQ + AZT: Hydroxychloroquine + Azithromycin; SOC: Standard of care;

qd: once a day; bid: twice a day; tid: three times a day.

Table S3. Search strategy

Search strategy in PubMed (Search date: 2022/11/30)

PICO	Search	Query	Items found	Time
	62	#56 AND #61	258	17:22:11
	61	#57 OR #58 OR #59 OR #60	1,611,687	17:21:07
	60	random*	1,606,088	17:19:45
<b>PI</b>	59	RCT	32,251	17:18:46
	58	Randomized Controlled Trial*	863,474	17:18:46
	57	Randomized Controlled Trial (MeSH)	161,986	17:17:19
	56	#10 AND #55	5,347	17:14:11
	55	#11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44 OR #45 OR #46 OR #47 OR #48 OR #49 OR #50 OR #51 OR #52 OR #53 OR #54	3,656,340	17:10:43
	54	Oxychloroquine	9,871	17:08:33
	53	Plaquenil	9,899	17:06:04
	52	hydroxychloroquine	9,868	17:18:46
	51	Niclosamide	1,288	17:05:52
	50	Ensitrelvir	8	17:05:38
	49	S-217622	15	17:05:13
	48	GT-0918	19	17:04:59
	47	Proxalutamide	19	17:04:16
	46	RO-7496998	167	17:04:03
	45	AT-511	167	17:03:47
	44	AT-527	285	17:02:33
	43	LY3009104	1,023	16:59:43
	42	INCB-028050	1,023	16:59:30
	41	Olumiant	1,023	16:59:12
<b>P</b>	40	Baricitinib	1,023	16:58:55
	39	JT-001	5	16:58:27
	38	GS 621763	3	16:58:13
	37	VV-116	3	16:57:58
	36	Avigan	1,503	16:57:43
	35	T-705 cpd	1,181	16:57:31
	34	favipiravir	1,181	16:57:14
	33	ABT-378	4,284	16:56:56
	32	Lopinavir	4,253	16:56:43

	31	Mectizan	9,777	16:56:31
	30	MK933	9,741	16:56:16
	29	Ivomec	9,773	16:56:01
	28	Ivermectin	9,767	16:53:30
	27	Paxlovid	179	16:55:48
	26	PF-07321332	293	16:55:32
	25	nirmatrelvir	279	16:52:49
	24	'EIDD-2801'	347	16:51:59
	23	'MK-4482'	329	16:50:36
	22	Lagevrio	328	16:49:39
	21	Molnupiravir	327	16:48:08
	20	Floxyfral	3,222	16:47:41
	19	Fevarin	3,223	16:46:33
	18	DU-23000	3,222	16:45:23
	17	fluvoxamine	3,225	16:44:51
	16	Luvox	3,228	16:43:23
	15	Bucillamine	254	16:42:48
	14	Rimatil	255	16:41:23
	13	2'-deoxy-2'-beta-fluoro-4'-azidocytidine	23	16:40:42
	12	RO-0622	21	16:39:40
<b>I</b>	11	Azvudine	20	16:38:23
	10	#1 OR #2 OR #3 OR #4 OR #9	327,265	16:37:56
	9	#5 AND (#6 OR #7 OR #8)	5,347	16:35:36
	8	infection*	2,317,154	16:34:33
	7	viral	980,455	16:33:39
	6	virus	1,372,922	16:32:43
	5	corona	17,694	16:31:08
	4	sars-cov-2	180,785	16:27:39
	3	covid*	296,781	16:26:44
	2	coronavir*	146,303	16:25:28
<b>P</b>	1	Coronavirus Infections [MeSH term]	202,399	16:23:38

Search strategy in E M B A S E (Search date: 2022/10/23)

PICO	No.	Query	Results
	#65	#56 AND #64	2021
	#64	#61OR #62 OR #63	2,114,755
	#63	random*	2102392
	#62	rct	55,496
	#61	'randomized controlled trial'/exp [Emtree term]	12
PI	#56	#11 AND #55	17,677
	#55	#12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44 OR #45 OR #46 OR #47 OR #48 OR #49 OR #50 OR #51 OR #52 OR #53 OR #54	99,905
	#54	Oxychloroquine	9
	#53	Plaquenil	1,474
	#52	hydroxychloroquine	43,455
	#51	Niclosamide	2,694
	#50	Ensitrelvir	16
	#49	S-217622	14
	#48	GT-0918	15
	#47	Proxalutamide	52
	#46	RO-7496998	0
	#45	AT-511	298
	#44	AT-527	134
	#43	LY3009104	24
	#42	INCB-028050	45
	#41	Olumiant	99
	#40	Baricitinib	3,693
	#39	JT-001	2
	#38	GS 621763	3
	#37	VV-116	1
	#36	Avigan	598
	#35	favipiravir	3,965
	#34	ABT-378	149
	#33	Lopinavir	20,494
	#32	Mectizan	600
	#31	MK933	8
	#30	Ivomec	830
	#29	Ivermectin	16,192



	#28	Paxlovid	266
	#27	PF-07321332	78
	#26	nirmatrelvir	514
	#25	'EIDD-2801'	102
	#24	'MK-4482'	46
	#23	Lagevrio	28
	#22	Molnupiravir	574
	#21	Floxyfral	302
	#20	Fevarin	259
	#19	DU-23000	5
	#18	fluvoxamine	15,181
	#17	Luvox	882
	#16	Bucillamine	1020
	#15	Rimatil	18
	#14	2'-deoxy-2'-beta-fluoro-4'-azidocytidine	7
	#13	RO-0622	6
<b>I</b>	#12	Azvodine	40
	#11	#1 OR #2 OR #3 OR #4 OR #5 OR #10	381,640
	#10	#6 AND (#7 OR #8 OR #9)	6,787
	#9	infection*	3,171,344
	#8	viral	654,730
	#7	virus	1,733,928
	#6	corona	24,824
	#5	'sars-cov-2'	120,494
	#4	covid*	308,765
	#3	coronavir*	322,371
	#2	'coronavirus disease 2019'/exp [emtree term]	262,707
<b>P</b>	#1	'coronavirinae'/exp [emtree term]	107,533

Search strategy in Web of Science Core Collection (Search date: 2022/10/23)

PICO	#	Query	Results
	#60	#55 AND #59	800
	#59	#56 OR #57 OR #58	2,271,932
	#58	ALL=(random*)	2,263,604
	#57	ALL=(rct)	35,061
<b>PI</b>	#56	ALL=('randomized controlled trial')	501,808
	#55	#9 AND #54	5,785
	#54	#10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44 OR #45 OR #46 OR #47 OR #48 OR #49 OR #50 OR #51 OR #52 OR #53	35,164
	#53	ALL=(Oxychloroquine)	2
	#52	ALL=(Plaquenil)	144
	#51	ALL=(hydroxychloroquine)	10,003
	#50	ALL=(Niclosamide)	1,073
	#49	ALL=(Ensitrelvir)	4
	#48	ALL=(S-217622)	7
	#47	ALL=(GT-0918)	7
	#46	ALL=(Proxalutamide)	30
	#45	ALL=(RO-7496998)	0
	#44	ALL=(AT-511)	632
	#43	ALL=(AT-527)	385
	#42	ALL=(LY3009104)	6
	#41	ALL=(INCB-028050)	2
	#40	ALL=(Olumiant)	14
	#39	ALL=(Baricitinib)	1,373
	#38	ALL=(JT-001)	2
	#37	ALL=(GS 621763)	2
	#36	ALL=(VV-116)	1
	#35	ALL=(Avigan)	617
	#34	ALL=(T-705 cpd)	1
	#33	ALL=(favipiravir)	1,414
	#32	ALL=(ABT-378)	70
	#31	ALL=(Lopinavir)	4,880
	#30	ALL=(Mectizan)	233
	#29	ALL=(MK933)	0

	#28	ALL=(Ivomec)	169
	#27	ALL=(Ivermectin)	10,820
	#26	ALL=(Paxlovid)	114
	#25	ALL=(PF-07321332)	47
	#24	ALL=(nirmatrelvir)	157
	#23	ALL=('EIDD-2801')	54
	#22	ALL=('MK-4482')	32
	#21	ALL=(Lagevrio)	6
	#20	ALL=(Molnupiravir)	257
	#19	ALL=(Floxyfral)	2
	#18	ALL=(Fevarin)	8
	#17	ALL=(DU-23000)	0
	#16	ALL=(fluvoxamine)	4,349
	#15	ALL=(Luvox)	13
	#14	ALL=(Bucillamine)	222
	#13	ALL=(Rimatil)	0
	#12	ALL=(2'-deoxy-2'-beta-fluoro-4'-azidocytidine)	13
	#11	ALL=(RO-0622)	1
<b>I</b>	#10	ALL=(Azvudine)	7
	#9	#1 OR #2 OR #3 OR #8	394,085
	#8	#4 AND (#5 OR #6 OR #7)	7,000
	#7	ALL=(infection*)	1,971,431
	#6	ALL=(viral)	478,990
	#5	ALL=(virus)	1,084,384
	#4	ALL=(corona)	71,071
	#3	ALL=('sars-cov-2')	98,067
	#2	ALL=(covid*)	348,817
<b>P</b>	#1	ALL=(coronavir*)	133,234

Search strategy in Cochrane Library (Search date: 2022/10/23)

PICO	Search	Query	Results
P	#1	Coronavirus Infections [MeSH term]	2,875
	#2	coronavir*	7,656
	#3	covid*	13,859
	#4	sars-cov-2	491
	#5	corona	1,073
	#6	virus	37,349
	#7	viral	24,976
	#8	infection*	137,439
	#9	#5 AND (#6 OR #7 OR #8)	542
	#10	#1 OR #2 OR #3 OR #4 OR #9	14,477
I	#11	Azvudine	14
	#12	RO-0622	0
	#13	2'-deoxy-2'-beta-fluoro-4'-azidocytidine	0
	#14	Rimatil	0
	#15	Bucillamine	51
	#16	Luvox	14
	#17	fluvoxamine	1064
	#18	DU-23000	1
	#19	Fevarin	10
	#20	Floxyfral	3
	#21	Molnupiravir	48
	#22	Lagevrio	3
	#23	'MK-4482'	14
	#24	'EIDD-2801'	11
	#25	nirmatrelvir	14
	#26	PF-07321332	15
	#27	Paxlovid	10
	#28	Ivermectin	936
	#29	Ivomec	4
	#30	MK933	2
	#31	Mectizan	18
	#32	Lopinavir	1428
	#33	ABT-378	11
	#34	favipiravir	221
	#35	T-705 cpd	0
	#36	Avigan	51
	#37	VV-116	0
	#38	GS 621763	0
	#39	JT-001	1

	#40	Baricitinib	584
	#41	Olumiant	33
	#42	INCB-028050	3
	#43	LY3009104	84
	#44	AT-527	1,803
	#45	AT-511	3,316
	#46	RO-7496998	0
	#47	Proxalutamide	17
	#48	GT-0918	1
	#49	S-217622	3
	#50	Ensitrelvir	0
	#51	Niclosamide	68
	#52	hydroxychloroquine	1,967
	#53	Plaquenil	84
	#54	Oxychloroquine	5
	#55	#11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44 OR #45 OR #46 OR #47 OR #48 OR #49 OR #50 OR #51 OR #52 OR #53 OR #54	11,125
	#56	#10 AND #55	1459



		Treatment											
		Baricitinib	CQ	FVP	HCQ	HCQ+AZT	LPV/RTV	LPV/RTV+HCQ	SOC	FVP	IVM	placebo	RDV
Comparator	Baricitinib		1.61 (0.45, 5.37)	2.05 (0.60, 6.65)	1.44 (0.65, 3.03)	1.23 (0.46, 2.90)	1.52 (0.61, 3.72)	2.65 (0.66, 10.37)	1.38 (0.60, 3.04)	1.25 (0.37, 3.90)	1.67 (0.70, 3.72)	1.75 (0.85, 3.44)	1.44 (0.46, 4.18)
	CQ	0.62 (0.19, 2.25)		1.28 (0.31, 5.30)	0.89 (0.33, 2.50)	0.75 (0.23, 2.43)	0.94 (0.31, 2.91)	1.65 (0.36, 7.72)	0.86 (0.30, 2.51)	0.78 (0.21, 2.65)	1.03 (0.37, 2.93)	1.08 (0.38, 3.22)	0.88 (0.24, 3.26)
	FVP	0.49 (0.15, 1.67)	0.78 (0.19, 3.18)		0.70 (0.26, 1.85)	0.59 (0.19, 1.82)	0.74 (0.26, 2.14)	1.29 (0.29, 5.85)	0.67 (0.27, 1.66)	0.61 (0.16, 2.11)	0.81 (0.27, 2.37)	0.85 (0.31, 2.41)	0.70 (0.20, 2.34)
	HCQ	0.69 (0.33, 1.54)	1.12 (0.40, 3.07)	1.42 (0.54, 3.90)		0.85 (0.45, 1.53)	1.06 (0.63, 1.84)	1.85 (0.58, 5.95)	0.96 (0.64, 1.42)	0.87 (0.34, 2.13)	1.16 (0.70, 1.92)	1.21 (0.85, 1.77)	1.00 (0.44, 2.26)
	HCQ + AZT	0.82 (0.35, 2.16)	1.33 (0.41, 4.31)	1.69 (0.55, 5.38)	1.18 (0.65, 2.22)		1.25 (0.58, 2.86)	2.17 (0.60, 8.44)	1.13 (0.58, 2.32)	1.03 (0.34, 3.03)	1.37 (0.66, 2.89)	1.43 (0.80, 2.72)	1.17 (0.44, 3.26)
	LPV/RTV	0.66 (0.27, 1.63)	1.06 (0.34, 3.20)	1.35 (0.47, 3.88)	0.95 (0.54, 1.60)	0.80 (0.35, 1.72)		1.74 (0.56, 5.38)	0.91 (0.54, 1.50)	0.83 (0.35, 1.79)	1.09 (0.54, 2.15)	1.14 (0.62, 2.13)	0.94 (0.36, 2.35)
	LPV/RTV+HCQ	0.38 (0.10, 1.52)	0.60 (0.13, 2.79)	0.78 (0.17, 3.46)	0.54 (0.17, 1.72)	0.46 (0.12, 1.68)	0.57 (0.19, 1.78)		0.52 (0.16, 1.68)	0.48 (0.11, 1.81)	0.63 (0.17, 2.21)	0.66 (0.20, 2.23)	0.54 (0.13, 2.17)
	SOC	0.72 (0.33, 1.67)	1.17 (0.40, 3.36)	1.48 (0.60, 3.71)	1.04 (0.70, 1.56)	0.88 (0.43, 1.73)	1.10 (0.67, 1.87)	1.92 (0.60, 6.33)		0.91 (0.36, 2.19)	1.21 (0.68, 2.15)	1.26 (0.78, 2.12)	1.03 (0.45, 2.35)
	FVP	0.80 (0.26, 2.73)	1.27 (0.38, 4.67)	1.63 (0.47, 6.06)	1.14 (0.47, 2.98)	0.97 (0.33, 2.93)	1.21 (0.56, 2.87)	2.10 (0.55, 8.71)	1.10 (0.46, 2.81)		1.33 (0.50, 3.70)	1.39 (0.54, 3.83)	1.13 (0.36, 3.93)
	IVM	0.60 (0.27, 1.43)	0.97 (0.34, 2.69)	1.23 (0.42, 3.67)	0.86 (0.52, 1.43)	0.73 (0.35, 1.50)	0.91 (0.46, 1.86)	1.59 (0.45, 5.74)	0.83 (0.47, 1.48)	0.75 (0.27, 2.02)		1.05 (0.66, 1.73)	0.86 (0.34, 2.23)
	placebo	0.57 (0.29, 1.17)	0.93 (0.31, 2.62)	1.17 (0.42, 3.26)	0.82 (0.56, 1.18)	0.70 (0.37, 1.25)	0.87 (0.47, 1.62)	1.52 (0.45, 5.09)	0.79 (0.47, 1.28)	0.72 (0.26, 1.85)	0.95 (0.58, 1.52)		0.82 (0.34, 1.98)
	RDV	0.70 (0.24, 2.19)	1.13 (0.31, 4.14)	1.44 (0.43, 4.90)	1.00 (0.44, 2.30)	0.85 (0.31, 2.29)	1.06 (0.43, 2.76)	1.85 (0.46, 7.59)	0.97 (0.42, 2.20)	0.89 (0.25, 2.81)	1.16 (0.45, 2.96)	1.22 (0.51, 2.98)	

### A.In-hospital mortality

		Treatment					
		FVP	HCQ	LPV/RTV	SOC	IVM	placebo
Comparator	FVP		1.13 (0.41, 3.35)	0.82 (0.23, 2.93)	0.40 (0.12, 1.30)	0.76 (0.24, 2.53)	1.06 (0.41, 2.99)
	HCQ	0.88 (0.30, 2.47)		0.72 (0.20, 2.59)	0.35 (0.11, 1.08)	0.67 (0.27, 1.66)	0.94 (0.47, 1.95)
	LPV/RTV	1.22 (0.34, 4.37)	1.39 (0.39, 5.11)		0.49 (0.15, 1.50)	0.93 (0.23, 3.81)	1.31 (0.36, 5.10)
	SOC	2.49 (0.77, 8.26)	2.83 (0.92, 9.15)	2.04 (0.67, 6.53)		1.89 (0.58, 6.52)	2.65 (0.85, 9.32)
	IVM	1.32 (0.39, 4.24)	1.49 (0.60, 3.74)	1.07 (0.26, 4.34)	0.53 (0.15, 1.73)		1.40 (0.61, 3.46)
	placebo	0.94 (0.33, 2.43)	1.07 (0.51, 2.13)	0.77 (0.20, 2.81)	0.38 (0.11, 1.17)	0.71 (0.29, 1.65)	

### B.Adverse event

		Treatment					
		placebo	FVP	HCQ	IVM	LPV/RTV	SOC
Comparator	placebo		0.95 (0.33, 2.44)	1.07 (0.51, 2.15)	0.71 (0.29, 1.65)	0.78 (0.19, 2.89)	0.38 (0.11, 1.18)
	FVP	1.05 (0.41, 3.00)		1.13 (0.41, 3.35)	0.75 (0.23, 2.57)	0.82 (0.23, 3.04)	0.40 (0.12, 1.33)
	HCQ	0.94 (0.47, 1.96)	0.89 (0.30, 2.47)		0.67 (0.26, 1.67)	0.73 (0.19, 2.60)	0.36 (0.11, 1.08)
	IVM	1.40 (0.61, 3.48)	1.34 (0.39, 4.33)	1.50 (0.60, 3.86)		1.09 (0.26, 4.53)	0.54 (0.16, 1.75)
	LPV/RTV	1.29 (0.35, 5.19)	1.22 (0.33, 4.38)	1.37 (0.38, 5.15)	0.92 (0.22, 3.83)		0.49 (0.16, 1.51)
	SOC	2.62 (0.84, 9.09)	2.50 (0.75, 8.12)	2.78 (0.92, 9.16)	1.86 (0.57, 6.38)	2.05 (0.66, 6.42)	

### C.Recovery time

		Treatment					
		placebo	FVP	HCQ	IVM	LPV/RTV	SOC
Comparator	placebo		0.95 (0.33, 2.44)	1.07 (0.51, 2.15)	0.71 (0.29, 1.65)	0.78 (0.19, 2.89)	0.38 (0.11, 1.18)
	FVP	1.05 (0.41, 3.00)		1.13 (0.41, 3.35)	0.75 (0.23, 2.57)	0.82 (0.23, 3.04)	0.40 (0.12, 1.33)
	HCQ	0.94 (0.47, 1.96)	0.89 (0.30, 2.47)		0.67 (0.26, 1.67)	0.73 (0.19, 2.60)	0.36 (0.11, 1.08)
	IVM	1.40 (0.61, 3.48)	1.34 (0.39, 4.33)	1.50 (0.60, 3.86)		1.09 (0.26, 4.53)	0.54 (0.16, 1.75)
	LPV/RTV	1.29 (0.35, 5.19)	1.22 (0.33, 4.38)	1.37 (0.38, 5.15)	0.92 (0.22, 3.83)		0.49 (0.16, 1.51)
	SOC	2.62 (0.84, 9.09)	2.50 (0.75, 8.12)	2.78 (0.92, 9.16)	1.86 (0.57, 6.38)	2.05 (0.66, 6.42)	

### D.Improvement in SpO2

Table S4. The result of meta-regression

ivermectin: IVM, favipiravir: FVP, chloroquine: CQ, lopinavir and ritonavir: LPV/RTV, hydroxychloroquine: HCQ, hydroxychloroquine plus azithromycin: HCQ+AZT, standard of care: SOC, peripheral capillary oxygen saturation: SpO2

Table S5 Cochrane risk of bias table

Study ID	Selection Bias		Performance Bias	Detection Bias	Attrition Bias	Reporting Bias	Other Bias
	Random sequence generation	Allocation concealment	Blinding of participants and personnel	Blinding of outcome assessment	Incomplete outcome data	Selective reporting	Other Bias
A.C. Kalil 2021	low	low	unclear	low	low	unclear	unclear
Vincent C Marconi 2021	low	low	low	low	low	unclear	unclear
E Wesley Ely 2022	low	low	low	low	unclear	unclear	unclear
Luis Enrique Bermejo Galan 2021	low	low	low	unclear	low	unclear	unclear
Marianne Schoorla 2020	low	unclear	low	low	low	unclear	unclear
Mehdi Hassaniazad 2021	low	high	unclear	low	low	unclear	high
Zarir F. Udwardia 2020	high	high	unclear	low	low	unclear	unclear
Chuan Huan Chuah 2021	low	high	unclear	low	unclear	unclear	unclear
Srinivas Shenoy 2021	low	low	low	low	low	unclear	unclear
Robert W. Finberg 2021	low	unclear	unclear	low	low	low	unclear
Manaf AlQahtani 2022	low	unclear	unclear	low	unclear	unclear	unclear
Masoud Solaymani-Dodaran 2021	low	unclear	low	low	low	unclear	unclear
Yaseen M. Arabi 2021	low	low	low	low	low	unclear	unclear
Peter W Horby 2020	low	high	unclear	low	unclear	unclear	unclear
Marinella Lauriola 2020	low	low	low	unclear	unclear	unclear	unclear
Peter Horby 2020	low	high	unclear	low	low	unclear	unclear
Wesley H. Self 2020	low	low	low	low	low	unclear	unclear
Jose Lenin Beltran Gonzalez 2022	low	low	low	unclear	unclear	unclear	unclear
Sherief Abd-Elsalam 2020	low	low	low	low	unclear	unclear	unclear
Carmen Hernandez-Cardenas 2021	low	low	low	low	low	unclear	unclear
Vincent Dubée 2021	low	low	low	low	low	unclear	unclear
Morteza Shakhshi Niaee 2021	low	low	low	unclear	low	unclear	unclear
Ahmed Hanei Elshafie 2022	low	low	low	low	low	unclear	unclear
Salil Gupta 2021	low	unclear	unclear	unclear	low	unclear	unclear
Florence Ader 2021	low	high	unclear	low	unclear	unclear	unclear
Rajkamal Choudhary 2022	low	low	low	low	unclear	unclear	unclear
Robert J. Ulrich 2020	low	low	unclear	unclear	low	unclear	unclear
H. Pan 2020	low	low	low	unclear	low	unclear	unclear
Filippo Albani 2020	low	low	unclear	unclear	low	unclear	unclear
Sherief Abd-Elsalam 2021	low	unclear	unclear	unclear	low	unclear	unclear
Eduardo López-Medina 2021	low	low	low	low	low	unclear	unclear
Steven Chee Loon Lim 2022	low	unclear	unclear	unclear	low	unclear	unclear
Ravikirti 2021	low	low	low	low	low	unclear	unclear
Mohammad Sadegh Rezai 2022	low	low	low	low	low	unclear	unclear



B. Cao 2020	low	unclear	unclear	unclear	low	unclear	unclear
A.B. Cavalcanti 2020	low	unclear	unclear	unclear	low	unclear	unclear

## Included references

- [1]Kalil, A. C., Patterson, T. F., Mehta, A. K., Tomashek, K. M., Wolfe, C. R., Ghazaryan, V., et al. Baricitinib plus Remdesivir for Hospitalized Adults with Covid-19. *N Engl J Med.* 2021;384(9):795-807. <https://doi.org/10.1056/NEJMoa2031994>
- [2]Marconi, V. C., Ramanan, A. V., de Bono, S., Kartman, C. E., Krishnan, V., Liao, R., et al. Efficacy and safety of baricitinib for the treatment of hospitalised adults with COVID-19 (COV-BARRIER): a randomised, double-blind, parallel-group, placebo-controlled phase 3 trial. *Lancet Respir Med.* 2021;9(12):1407-1418. [https://doi.org/10.1016/S2213-2600\(21\)00331-3](https://doi.org/10.1016/S2213-2600(21)00331-3)
- [3]Ely, E. W., Ramanan, A. V., Kartman, C. E., de Bono, S., Liao, R., Piruzeli, M. L. B., et al. Efficacy and safety of baricitinib plus standard of care for the treatment of critically ill hospitalised adults with COVID-19 on invasive mechanical ventilation or extracorporeal membrane oxygenation: an exploratory, randomised, placebo-controlled trial. *Lancet Respir Med.* 2022;10(4):327-336.[http://doi.org/10.16/S2213-2600\(22\)00006-6](http://doi.org/10.16/S2213-2600(22)00006-6)
- [4]Galan, L. E. B., Santos, N. M. D., Asato, M. S., Araújo, J. V., de Lima Moreira, A., Araújo, A. M. M., et al. Phase 2 randomized study on chloroquine, hydroxychloroquine or ivermectin in hospitalized patients with severe manifestations of SARS-CoV-2 infection. *Pathog Glob Health.* 2021;115(4):235-242. <https://doi.org/10.1080/20477724.2021.1890887>
- [5]Dabbous, H. M., Abd-Elsalam, S., El-Sayed, M. H., Sherief, A. F., Ebeid, F. F. S., El Ghafar, M. S. A., et al. Efficacy of favipiravir in COVID-19 treatment: a

multi-center randomized study. Archives of virology. Arch Virol. 2021;166(3):949-95

4. <https://doi.org/10.1007/s00705-021-04956-9>

[6]Hassaniazad, M., Farshidi, H., Gharibzadeh, A., Bazram, A., Khalili, E., Noormandi, A., et al. Efficacy and safety of favipiravir plus interferon-beta versus lopinavir/ritonavir plus interferon-beta in moderately ill patients with COVID-19: a randomized clinical trial. J Med Virol. 2022;94(7):3184-3191. <http://doi.org/10.1002/jmv.27724>

[7]Udwadia, Z. F., Singh, P., Barkate, H., Patil, S., Rangwala, S., Pendse, A., et al. Efficacy and safety of favipiravir, an oral RNA-dependent RNA polymerase inhibitor, in mild-to-moderate COVID-19: A randomized, comparative, open-label, multicenter, phase 3 clinical trial. Int J Infect Dis. 2021;103:62-71. <https://doi.org/10.1016/j.ijid.2020.11.142>

[8]Chuah, C. H., Chow, T. S., Hor, C. P., Cheng, J. T., Ker, H. B., Lee, H. G., et al. Efficacy of Early Treatment With Favipiravir on Disease Progression Among High-Risk Patients With Coronavirus Disease 2019 (COVID-19): a Randomized, Open-Label Clinical Trial. Clin Infect Dis. 2022;75(1):e432-e439. <https://doi.org/10.1093/cid/ciab962>

[9]Srinivas Shenoy, Sagar Munjal, Kuwait Clinical Trial Group(2021), et al. Favipiravir in Adults with Moderate to Severe COVID-19: a Phase 3 Multi-centre, Randomized, Double-Blinded, Placebo-Controlled Trial. <https://doi.org/10.1101/2021.11.08.21265884>

[10]Finberg, R. W., Ashraf, M., Julg, B., Ayoade, F., Marathe, J. G., Issa, N. C., et al.

US201 Study: a Phase 2, Randomized Proof-of-Concept Trial of Favipiravir for the Treatment of COVID-19. *Open Forum Infect Dis.* 2021;8(12):ofab563. <https://doi.org/10.1093/ofid/ofab563>

[11]AlQahtani, M., Kumar, N., Aljawder, D., Abdulrahman, A., Mohamed, M. W., Alnashaba, F., et al. Randomized controlled trial of favipiravir, hydroxychloroquine, and standard care in patients with mild/moderate COVID-19 disease. *Sci Rep.* 2022; 12(1):4925. <https://doi.org/10.1038/s41598-022-08794-w>

[12]Solaymani-Dodaran, M., Ghanei, M., Bagheri, M., Qazvini, A., Vahedi, E., Hassan Saadat, S., et al. Safety and efficacy of Favipiravir in moderate to severe SARS-CoV-2 pneumonia. *Int Immunopharmacol.* 2021;95:107522. <https://doi.org/10.1016/j.intimp.2021.107522>

[13]Arabi, Y. M., Gordon, A. C., Derde, L. P. G., Nichol, A. D., Murthy, S., Beidh, F. A., et al. Lopinavir-ritonavir and hydroxychloroquine for critically ill patients with COVID-19: REMAP-CAP randomized controlled trial. *Intensive Care Med.* 2021;47(8):867-886. <https://doi.org/10.1007/s00134-021-06448-5>

[14]RECOVERY Collaborative Group. Lopinavir-ritonavir in patients admitted to hospital with COVID-19 (RECOVERY): a randomised, controlled, open-label, platform trial. *Lancet.* 2020;396(10259):1345-1352.[https://doi.org/10.1016/S0140-6736\(20\)32013-4](https://doi.org/10.1016/S0140-6736(20)32013-4)

[15]Lauriola, M., Pani, A., Ippoliti, G., Mortara, A., Milighetti, S., Mazon, M., et al. Effect of Combination Therapy of Hydroxychloroquine and Azithromycin on Mortality in Patients With COVID-19. *Clin Transl Sci.* 2020;13(6):1071-1076.<http://d>

oi.org/10.1111/cts.12860

[16]RECOVERY Collaborative Group, Horby, P., Mafham, M., Linsell, L., Bell, J. L., Staplin, N., et al. Effect of Hydroxychloroquine in Hospitalized Patients with Covid-19. *N Engl J Med.* 2020;383(21):2030-2040. <https://doi.org/10.1056/NEJMoa2022926>

[17]Self, W. H., Semler, M. W., Leither, L. M., Casey, J. D., Angus, D. C., Brower, R. G., et al. Effect of Hydroxychloroquine on Clinical Status at 14 Days in Hospitalized Patients With COVID-19: a Randomized Clinical Trial. *JAMA.* 2020;324(21):2165-2176. <https://doi.org/10.1001/jama.2020.22240>

[18]Beltran Gonzalez, J. L., González Gámez, M., Mendoza Enciso, E. A., Esparza Maldonado, R. J., Hernández Palacios, D., Dueñas Campos, S., et al. Efficacy and Safety of Ivermectin and Hydroxychloroquine in Patients with Severe COVID-19: a Randomized Controlled Trial. *Infect Dis Rep.* 2022;14(2):160-168. <https://doi.org/10.3390/idr14020020>

[19]Abd-Elsalam, S., Esmail, E. S., Khalaf, M., Abdo, E. F., Medhat, M. A., Abd El Ghafar, M. S., et al. Hydroxychloroquine in the Treatment of COVID-19: a Multicenter Randomized Controlled Study. *Am J Trop Med Hyg.* 2020;103(4):1635-1639. <https://doi.org/10.4269/ajtmh.20-0873>

[20]Hernandez-Cardenas, C., Thirion-Romero, I., Rodríguez-Llamazares, S., Rivera-Martinez, N. E., Meza-Meneses, P., Remigio-Luna, A., et al. Hydroxychloroquine for the treatment of severe respiratory infection by COVID-19: a randomized controlled trial. *PLoS One.* 2021;16(9):e0257238. <https://doi.org/10.1371/journal.pone.0257238>

- [21]Dubée, V., Roy, P. M., Vielle, B., Parot-Schinkel, E., Blanchet, O., Darsonval, A., et al. Hydroxychloroquine in mild-to-moderate coronavirus disease 2019: a placebo-controlled double blind trial. *Clin Microbiol Infect.* 2021;27(8):1124-1130. <https://doi.org/10.1016/j.cmi.2021.03.005>
- [22]Shakhsi Niaee M, Namdar P, Allami A, et al. Ivermectin as an adjunct treatment for hospitalized adult COVID-19 patients: A randomized multi-center clinical trial. *Asian Pacific journal of tropical medicine.* 2021;2021, 14(6):8
- [23]Elshafie, A. H., Elsawah, H. K., Hammad, M., Sweed, E. M., Seif, A. S., Abdel Ghaffar, M. M., et al. Ivermectin role in COVID-19 treatment (IRICT): single-center, adaptive, randomized, double-blind, placebo-controlled, clinical trial. *Expert Rev Anti Infect Ther.* 2022;20(10):1341-1350. <https://doi.org/10.1080/14787210.2022.2098113>
- [24]Gupta, S., Dixit, P. K., Ghana, P., Abhisheka, K., Khurana, H., Jha, V. K., et al. Open-label randomized control trial of hydroxychloroquine in patients with moderate to severe coronavirus disease 2019 infection. *Med J Armed Forces India.* 2021;77: S305-S311. <https://doi.org/10.1016/j.mjafi.2021.02.007>
- [25]Ader, F., Peiffer-Smadja, N., Poissy, J., Bouscambert-Duchamp, M., Belhadi, D., Diallo, A., et al. An open-label randomized controlled trial of the effect of lopinavir/ritonavir, lopinavir/ritonavir plus IFN- $\beta$ -1a and hydroxychloroquine in hospitalized patients with COVID-19. *Clin Microbiol Infect.* 2021;27(12):1826-1837. <https://doi.org/10.1016/j.cmi.2021.05.020>
- [26]Choudhary R, Ali O, Singh BK. Study on Hydroxychloroquinine Sulfate Being Given to the Admitted COVID -19 Positive Patients at Institute of JLN MCH,

Bhagalpur, Bihar, India. *Cureus*. 2022;14(6):e26388. <https://doi.org/10.7759/cureus>.

26388

[27]Ulrich, R. J., Troxel, A. B., Carmody, E., Eapen, J., Bäcker, M., DeHovitz, J. A., et al. Treating COVID-19 With Hydroxychloroquine (TEACH): a Multicenter, Double-Blind Randomized Controlled Trial in Hospitalized Patients. *Open Forum Infect Dis*. 2020;7(10):ofaa446. <https://doi.org/10.1093/ofid/ofaa446>

[28]WHO Solidarity Trial Consortium, Pan, H., Peto, R., Henao-Restrepo, A. M., Preziosi, M. P., Sathiyamoorthy, V., et al. Repurposed Antiviral Drugs for Covid-19 - Interim WHO Solidarity Trial Results. *N Engl J Med*. 2021;384(6):497-511. <https://doi.org/10.1056/NEJMoa2023184>

[29]Albani, F., Fusina, F., Giovannini, A., Ferretti, P., Granato, A., Prezioso, C., et al. Impact of Azithromycin and/or Hydroxychloroquine on Hospital Mortality in COVID-19. *J Clin Med*. 2020;9(9):2800. <https://doi.org/10.3390/jcm9092800>

[30]Abd-Elsalam, S., Noor, R. A., Badawi, R., Khalaf, M., Esmail, E. S., Soliman, S., et al. Clinical study evaluating the efficacy of ivermectin in COVID-19 treatment: a randomized controlled study. *J Med Virol*. 2021;93(10):5833-5838. <https://doi.org/10.1002/jmv.27122>.

[31]López-Medina, E., López, P., Hurtado, I. C., Dávalos, D. M., Ramirez, O., Martínez, E., et al. Effect of Ivermectin on Time to Resolution of Symptoms Among Adults With Mild COVID-19: a Randomized Clinical Trial. *JAMA*.2021;325(14):1426-1435. <https://doi.org/10.1001/jama.2021.3071>

[32]Lim, S. C. L., Hor, C. P., Tay, K. H., Mat Jelani, A., Tan, W. H., Ker, H. B., et al.

Efficacy of Ivermectin Treatment on Disease Progression Among Adults With Mild to Moderate COVID-19 and Comorbidities: The I-TECH Randomized Clinical Trial. *JAMA Intern Med.* 2022;182(4):426-435. <https://doi.org/10.1001/jamainternmed.2022.0189>

[33]Ravikirti, Roy, R., Pattadar, C., Raj, R., Agarwal, N., Biswas, B., et al. Evaluation of Ivermectin as a Potential Treatment for Mild to Moderate COVID-19: a Double-Blind Randomized Placebo Controlled Trial in Eastern India. *J Pharm Pharm Sci.* 2021;24:343-350. <https://doi.org/10.18433/jpps32105>

[34]Rezai, M. S., Ahangarkani, F., Hill, A., Ellis, L., Mirchandani, M., Davoudi, A., et al. Non-effectiveness of Ivermectin on Inpatients and Outpatients With COVID-19; Results of Two Randomized, Double-Blinded, Placebo-Controlled Clinical Trials. *Front Med.* 2022;9:919708. <https://doi.org/10.3389/fmed.2022.919708>

[35]Cao, B., Wang, Y., Wen, D., Liu, W., Wang, J., Fan, G., et al. A Trial of Lopinavir-Ritonavir in Adults Hospitalized with Severe Covid-19. *N Engl J Med.* 2020;382(19):1787-1799. <https://doi.org/10.1056/NEJMoa2001282>

[36]Cavalcanti, A. B., Zampieri, F. G., Rosa, R. G., Azevedo, L. C. P., Veiga, V. C., Avezum, A., et al. Hydroxychloroquine with or without Azithromycin in Mild-to-Moderate Covid-19. *N Engl J Med.* 2020;383(21):2041-2052. <https://doi.org/10.1056/NEJMoa2019014>