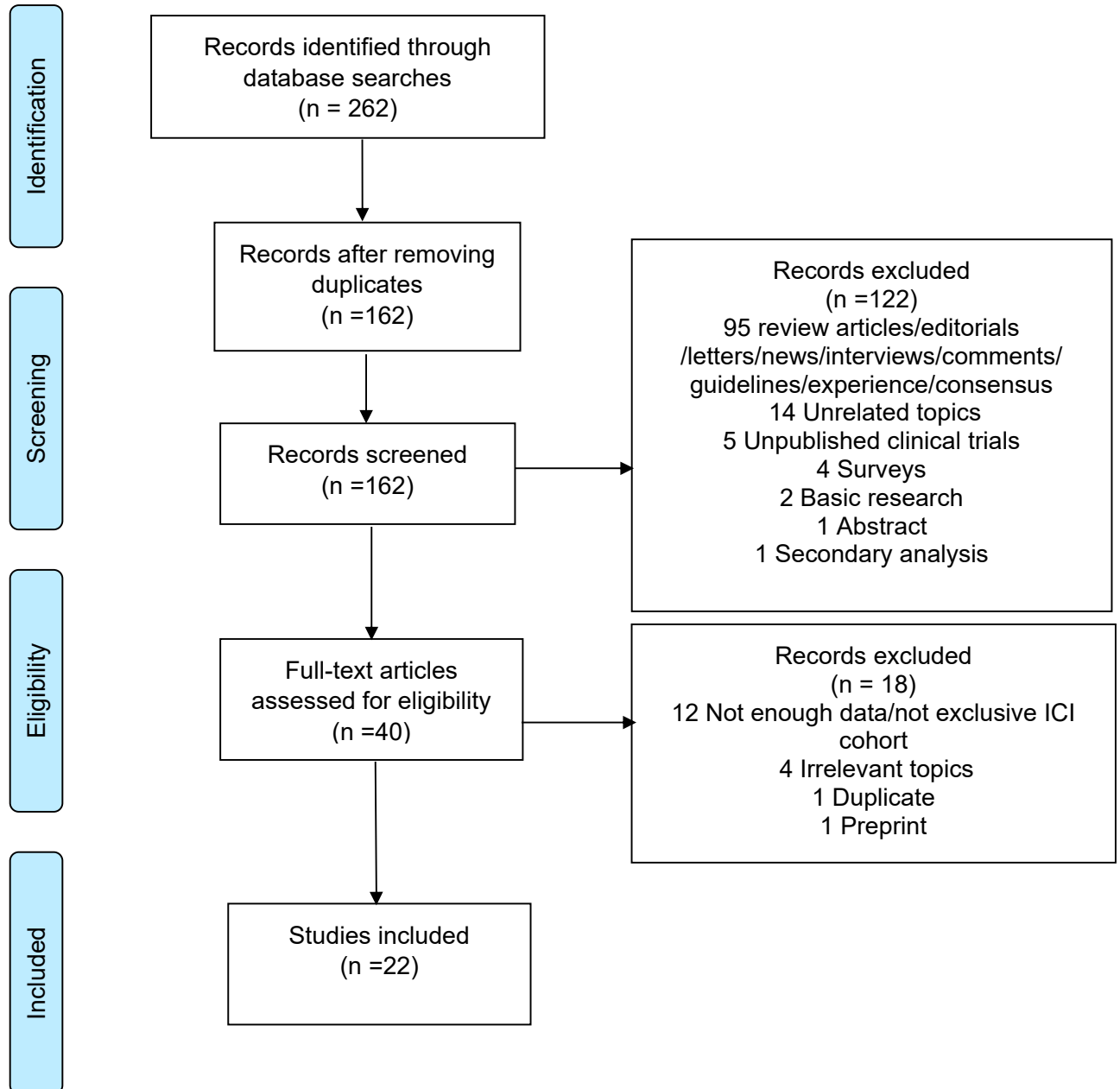
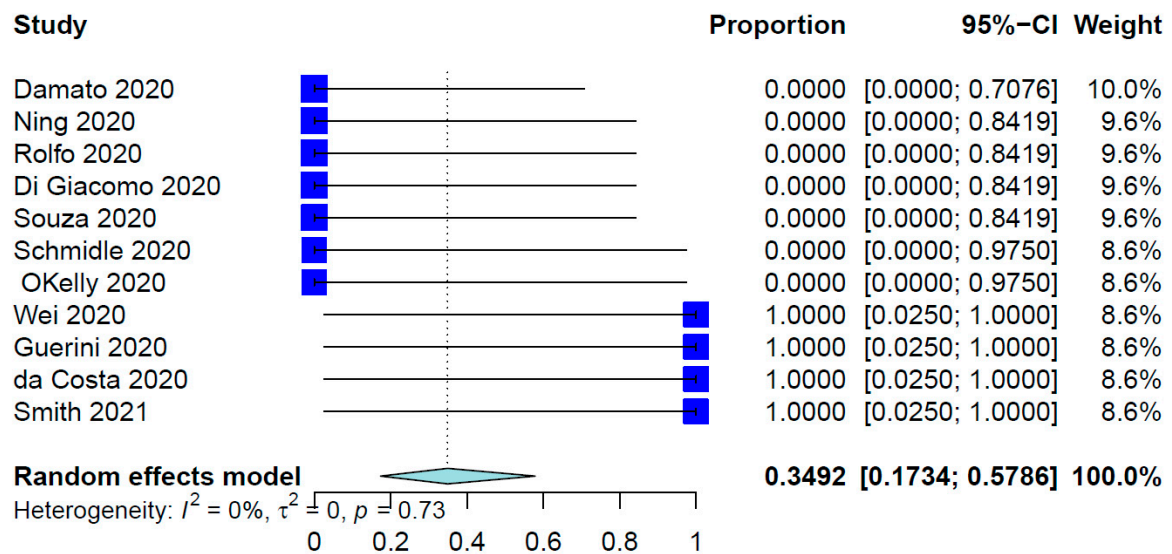


**Supplementary Figure S1: Preferred Reporting Items for Systematic Reviews and Meta-Analyses**

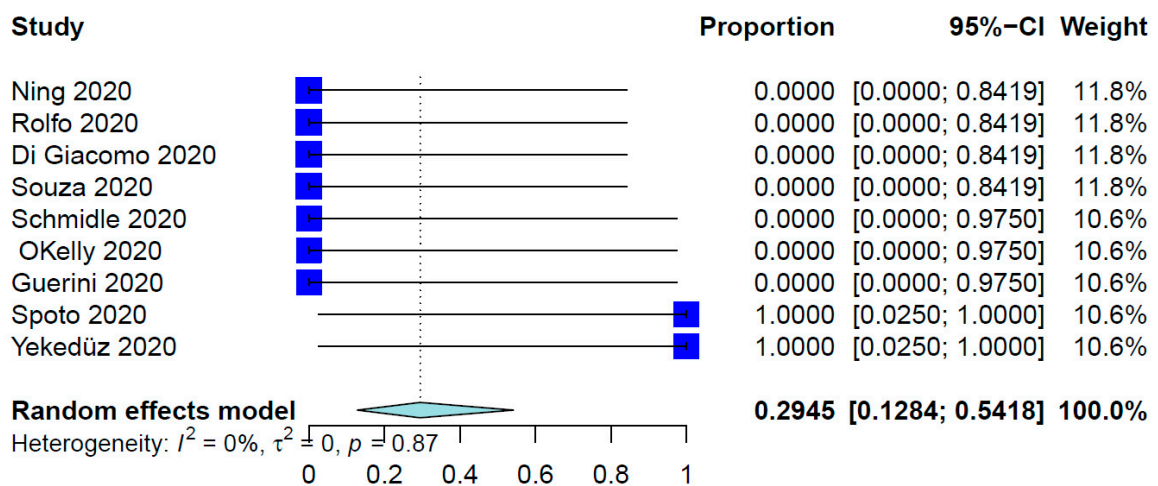
diagram of the included studies.



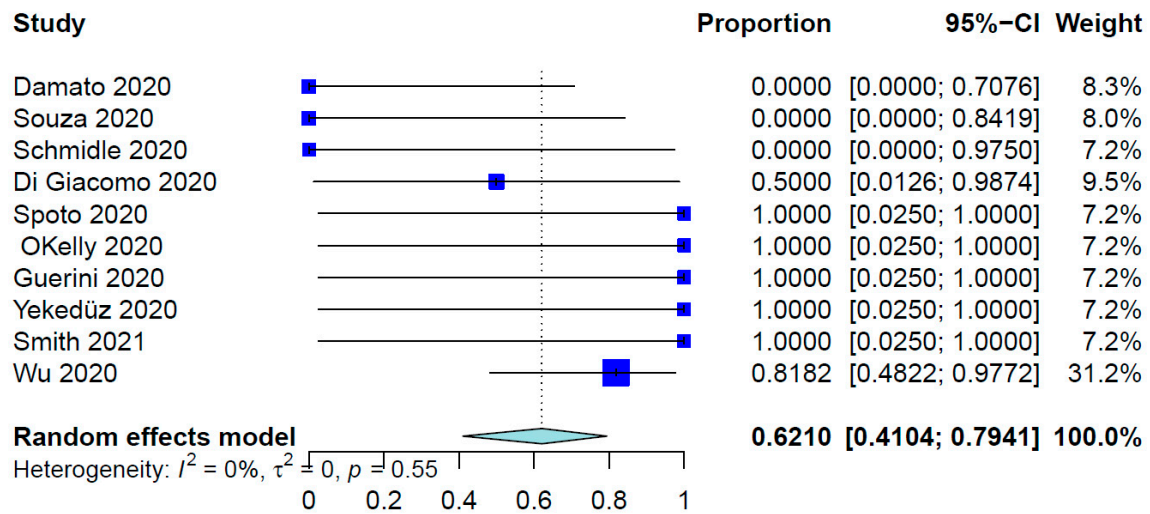
**Supplementary Figure S2: Forest plots of the need for ventilation due to COVID-19 infection.**



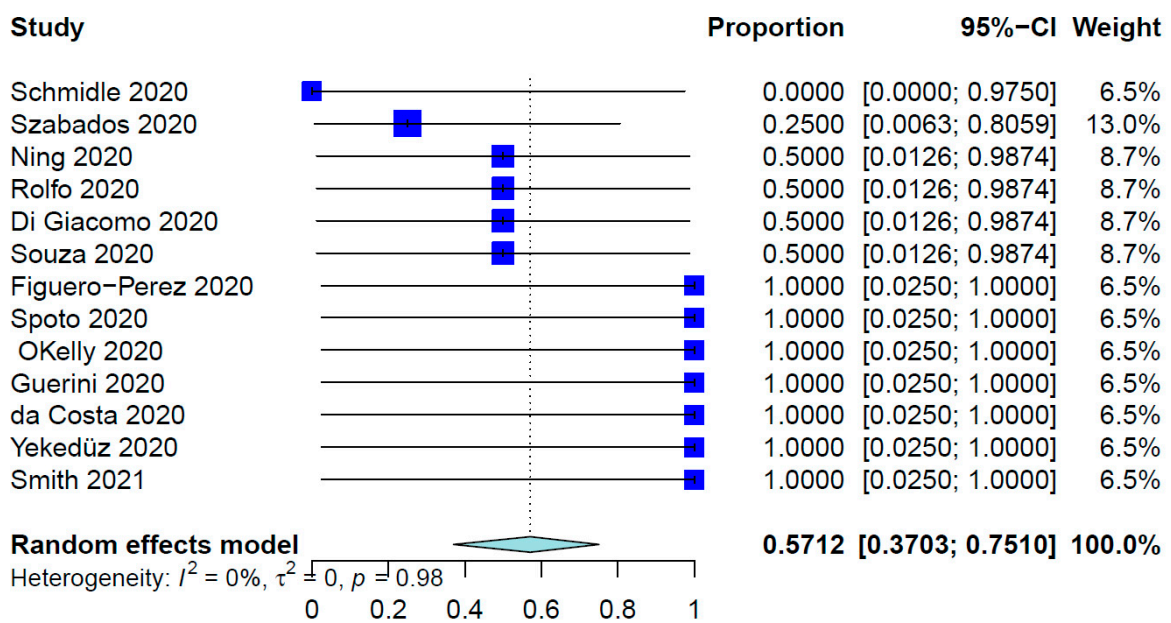
**Supplementary Figure S3: Forest plot of opportunistic infections.**



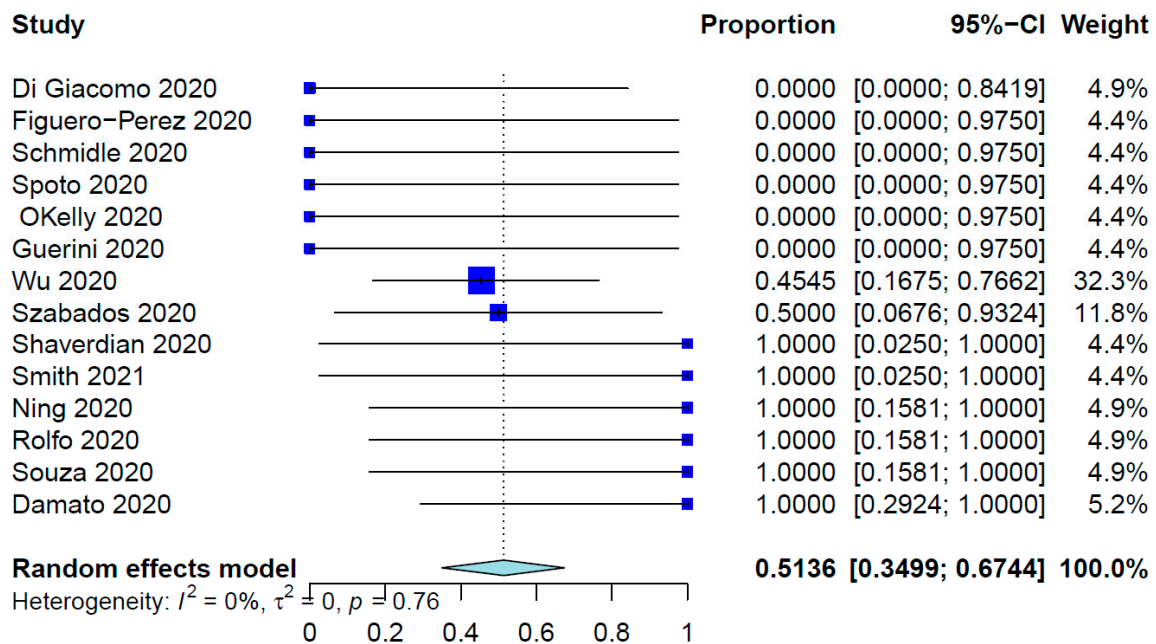
**Supplementary Figure S4: Forest plot of the use of antivirals for COVID-19 infection.**



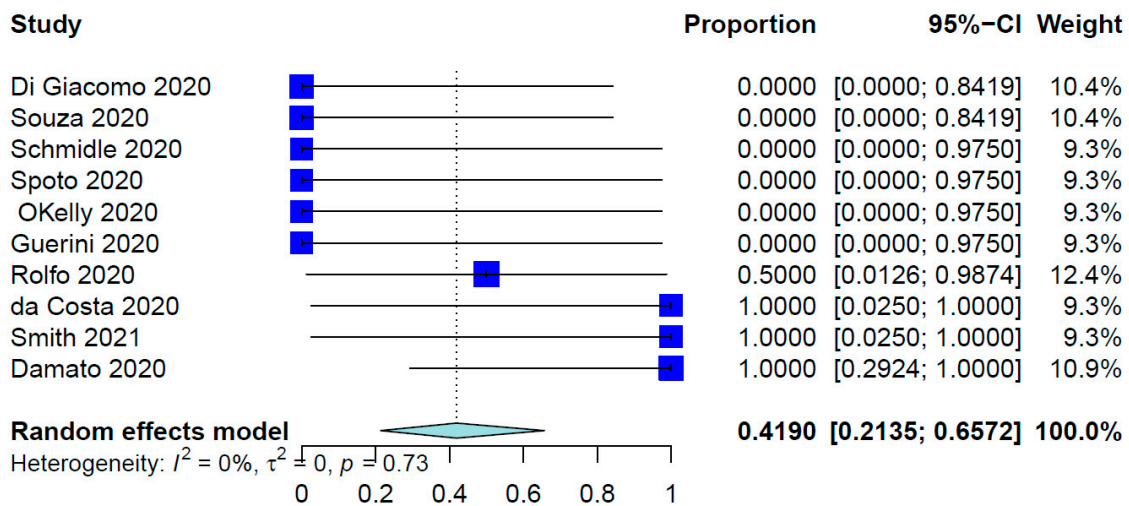
**Supplementary Figure S5: Forest plot of the use of antibiotics for COVID-19 infection.**



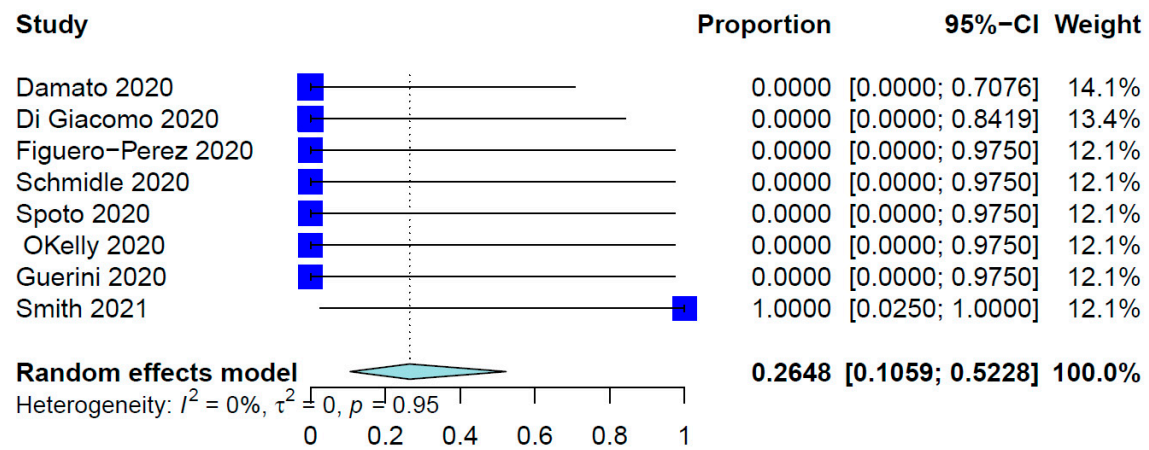
**Supplementary Figure S6: Forest plot of the use of steroids due to COVID-19 infection.**



**Supplementary Figure S7: Forest plot of the use of prophylactic anticoagulants due to COVID-19 infection.**



Supplementary Figure S8: Forest plot of the use of prophylactic convalescent plasma due to COVID-19 infection.



**Supplementary Table S1. Ovid MEDLINE search strategy**

#	Searches
1	COVID-19.rx,px,ox. or severe acute respiratory syndrome coronavirus 2.os.
2	("COVID-19" or COVID19 or "COVID 2019" or "novel coronavirus" or "SARS-CoV" or "SARS-CoV-2" or "SARS2" or "2019-nCoV" or ncov19 or ncov-19 or "2019-novel CoV" or sarscov2 or sarscov-2 or Sars-coronavirus2 or Sars-coronavirus-2 or SARS-like coronavirus* or coronavirus-19).ti,ab,kf.
3	(coronavirus* or "corona virus*").ti,kf.
4	Coronavirus Infections/
5	or/1-4
6	20191201:20301231.(dt).
7	5 and 6 [COVID-19, SARS-COV-2]
8	limit 7 to english language
9	exp Neoplasms/
10	(cancer* or neoplas* or tumor* or leukemia* or lymphoma* or melanoma* or carcinoma* or sarcoma* or oncolog*).ti,ab,kf.
11	9 or 10 [Cancer]
12	8 and 11
13	(checkpoint adj3 (inhibitor* or modulator* or antibod* or block*)).ti,kf,rn.
14	(checkpoint and (inhibitor* or modulator* or antibod* or block*)).nm.
15	(immun* adj3 checkpoint adj3 (inhibitor* or modulator* or antibod* or block*)).ab.
16	((("cytotoxic T lymphocyte associated" adj3 "4") or "CTLA 4" or CTLA4).ti,kf,rn.
17	("Cytotoxic t-lymphocyte antigen" adj3 "4").ti,kf,rn.
18	("Cytotoxic t-lymphocyte antigen" or "cytotoxic T lymphocyte associated").nm.
19	(ipilimumab or "MDX CTLA 4" or Yervoy or "MDX 010" or MDX010 or "BMS-734016" or BMS734016).mp.
20	("Programmed Cell Death 1" or PD1 or "PD 1").ti,kf,rn,nm.
21	(pembrolizumab or Keytruda or Lambrolizumab or "Merck 3475" or Merck3475 or "MK 3475" or MK3475 or "Sch 900475" or Sch900475 or "HSDB 8257").mp.
22	(nivolumab or "BMS 936558" or BMS936558 or "MDX 1106" or MDX1106 or "ONO 4538" or ONO4538 or Opdivo).mp.

2 3	("AMP 514" or AMP514 or MEDI0680 or "MEDI 0680").mp.
2 4	("programmed death ligand 1" or "PD L1" or PDL1 or "B7-H1" or B7HI).ti,kf,rn,nm.
2 5	(atezolizumab or Tecentriq or MPDL3280A or "MPDL 3280A" or RO5541267 or RO-5541267 or RG 7446 or RG7446 or "CD274 ANTIGEN" or "CD274 protein").mp.
2 6	(durvalumab or imfinzi or "MEDI 4736" or MEDI4736).mp.
2 7	(avelumab or Bavencio or MSB0010718C or "MSB 0010718C" or MSB0010682).mp.
2 8	("BMS 936559" or BMS936559 or MDX1105 or "MDX 1105").mp.
2 9	(Cemiplimab or libtayo or REGN2810 or "REGN 2810").mp.
3 0	Immunotherapy, Adoptive/
3 1	((("chimeric antigen receptor" or "t cell" or adoptive or car) adj3 (therap* or immunotherapy*)).ti,ab,kf.
3 2	or/13-31
3 3	12 and 32 [COVID-19 + cancer patients + immunotherapy (checkpoint inhibitors and car t-cell therapy)]

**Supplementary Table S2. Ovid Embase search strategy**

#	Searches
1	("COVID-19" or COVID19 or "COVID 2019" or "novel coronavirus" or "SARS-CoV" or "SARS-CoV-2" or "SARS2" or "2019-nCoV" or ncov19 or ncov-19 or "2019-novel CoV" or sarscov2 or sarscov-2 or Sars-coronavirus2 or Sars-coronavirus-2 or SARS-like coronavirus* or coronavirus-19).ti,ab,kw.
2	(coronavirus* or "corona virus*").ti.
3	severe acute respiratory syndrome/
4	coronavirus infection/
5	"coronavirus disease 2019"/
6	or/1-5
7	limit 6 to english language
8	limit 7 to dc=20191201-20201230
9	exp malignant neoplasm/
10	(cancer* or neoplas* or tumo?r* or leuk?emia* or lymphoma* or melanoma* or carcinoma* or sarcoma* or oncolog*).ti,ab.
11	9 or 10
12	8 and 11
13	(immun* adj3 checkpoint adj3 (inhibitor* or modulator* or antibod* or block*).ti,hw,kw.
14	((("cytotoxic T lymphocyte associated" adj3 "4") or "CTLA 4" or CTLA4).ti,kw,hw.
15	("Cytotoxic t-lymphocyte antigen" adj3 "4").ti,kw,hw.
16	(ipilimumab or "MDX CTLA 4" or Yervoy or "MDX 010" or MDX010 or "BMS-734016" or BMS734016).ti,ab,hw,kw,du,tn.
17	("Programmed Cell Death 1" or PD1 or "PD 1").ti,kw,hw,du,tn.
18	(pembrolizumab or Keytruda or Lambrolizumab or "Merck 3475" or Merck3475 or "MK 3475" or MK3475 or "Sch 900475" or Sch900475 or "HSDB 8257").ti,ab,kw,hw,du,tn.
19	(nivolumab or "BMS 936558" or BMS936558 or "MDX 1106" or MDX1106 or "ONO 4538" or ONO4538 or Opdivo).ti,ab,kw,hw,du,tn.
20	("AMP 514" or AMP514 or MEDI0680 or "MEDI 0680").ti,ab,kw,hw,du,tn.
21	("programmed death ligand 1" or "PD L1" or PDL1 or "B7-H1" or B7HI).ti,kw,hw.
22	(atezolizumab or Tecentriq or MPDL3280A or "MPDL 3280A" or RO5541267 or RO-5541267 or RG 7446 or RG7446 or "CD274 ANTIGEN" or "CD274 protein").ti,ab,kw,hw,du,tn.
23	(avelumab or Bavencio or MSB0010718C or "MSB 0010718C" or MSB0010682).ti,ab,kw,hw,du,tn.
24	("BMS 936559" or BMS936559 or MDX1105 or "MDX 1105").ti,ab,kw,hw,du,tn.
25	(Cemiplimab or libtayo or REGN2810 or "REGN 2810").ti,ab,kw,hw,du,tn.
26	adoptive immunotherapy/
27	((("chimeric antigen receptor" or "t cell" or adoptive or car) adj3 (therap* or immunotherapy*).ti,ab,kw.
28	or/13-27
29	12 and 28 [COVID-19 + cancer patients + immunotherapy (checkpoint inhibitors and car t-cell therapy)]



**Supplementary Table S3. Web of Science search strategy**

#	Searches
1	TOPIC: (((("COVID-19" or COVID19 or "COVID 2019" or "novel coronavirus" or "SARS-CoV" or "SARS-CoV-2" or "SARS2" or "2019-nCoV" or ncov19 or ncov-19 or "2019-novel CoV" or sarscov2 or sarscov-2 or Sars-coronavirus2 or Sars-coronavirus-2 or SARS-like coronavirus* or coronavirus-19) ))
2	TITLE: ((coronavirus* or "corona virus*"))
3	#1 OR #2
4	TS=((cancer OR neoplasm OR tumor OR leukemia OR lymphoma OR melanoma OR carcinoma OR sarcoma OR oncolog*))
5	#4 AND #3
6	TOPIC: ((immun* NEAR/3 checkpoint NEAR/3 (inhibitor* or modulator* or antibod* or block*) ))
7	TOPIC: (((("cytotoxic T lymphocyte associated" NEAR/3 "4") OR "CTLA 4" OR CTLA4)))
8	TOPIC: (("programmed death ligand 1" OR "PD L1" OR PDL1) )
9	TOPIC: ((ipilimumab OR Yervoy OR pembrolizumab OR Keytruda OR Lambrolizumab OR nivolumab OR Opdivo OR atezolizumab OR Tecentriq OR durvalumab OR avelumab OR Bavencio OR Cemiplimab OR libtayo) )
10	TITLE: (immunotherapy OR "immuno therapy")
11	TOPIC: (((("chimeric antigen receptor" or "t cell" or adoptive or car) NEAR/3 (therap* or immunotherapy) ))
12	#6 OR #7 OR #8 OR #9 OR #10 OR #11
7	#5 AND #12 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI

**Supplementary Table S4. Cochrane Library search strategy**

#	Searches
1	MeSH descriptor: [Coronavirus Infections] explode all trees
2	("COVID-19" or COVID19 or "COVID 2019" or "novel coronavirus" or "SARS-CoV" or "SARS-CoV-2" or "SARS2" or "2019-nCoV" or ncov19 or ncov-19 or "2019-novel CoV" or sarscov2 or sarscov-2 or Sars-coronavirus2 or Sars-coronavirus-2 or "SARS-like coronavirus" or coronavirus-19):ti,ab,kw
3	(coronavirus or "corona virus"):ti
4	(coronavirus or "corona virus"):kw
5	{OR #1-#4}
6	(ipilimumab or "MDX CTLA 4" or Yervoy or "MDX 010" or MDX010 or pembrolizumab or Keytruda or Lambrolizumab or "Merck 3475" or Merck3475 or "MK 3475" or MK3475 or "Sch 900475" or Sch900475):ti,ab,kw (Word variations have been searched)
7	(nivolumab or "BMS 936558" or BMS936558 or "MDX 1106" or MDX1106 or "ONO 4538" or ONO4538 or Opdivo or "AMP 514" or AMP514 or MEDI0680 or "MEDI 0680" or atezolizumab or Tecentriq or MPDL3280A or "MPDL 3280A" or durvalumab or "MEDI 4736" or MEDI4736 or avelumab or Bavencio or MSB0010718C or "MSB 0010718C" or "BMS 936559" or BMS936559 or MDX1105 or "MDX 1105" or Cemiplimab or libtayo or REGN2810 or "REGN 2810"):ti,ab,kw (Word variations have been searched)
8	(immun* near/3 checkpoint near/3 (inhibitor* or modulator* or antibod* or block*)):ti,ab,kw (Word variations have been searched)
9	((("cytotoxic T lymphocyte associated" near/3 "4") or "CTLA 4" or CTLA4)):ti,ab,kw (Word variations have been searched)
10	((("Programmed Cell Death 1" or PD1 or "PD 1")):ti,ab,kw (Word variations have been searched)
11	("programmed death ligand 1" or "PD L1" or PDL1):ti,ab,kw (Word variations have been searched)
12	MeSH descriptor: [Immunotherapy, Adoptive] explode all trees
13	((("chimeric antigen receptor" or "t cell" or adoptive or car) NEAR/3 (therap* or immunotherap*)):ti,ab,kw (Word variations have been searched)
14	{OR #6-#13}
15	#5 AND #14

**Supplementary Table S5. Overall baseline patient demographics\***

Variable	Value
Age, mean (years $\pm$ SD)	57.2 $\pm$ 17.4
Male sex, n (%)	29/44 (65.9%)
Smoking history, n (%)	16/30 (53.3%)
Hypertension, n (%)	8/13 (61.5%)
Diabetes, n (%)	3/10 (30.0%)
Dyslipidemia, n (%)	0/10 (0.0%)
CKD, n (%)	0/10 (0.0%)
COPD, n (%)	5/14 (35.7%)
Previous CVA, n (%)	2/13 (15.4%)
Previous cancer treatment, n (%)	7/12 (58.3%)
COVID onset time, median days (IQR)	11.3 (5.5 – 33.3)

CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; CVA = cerebrovascular accident; IQR = interquartile range; SD = standard deviation

\*Denominator based on the data availability among the included studies.

**Supplementary Table S6. Newcastle—Ottawa Scale of included studies**

Author - Year	Selection	Comparability	Outcome	Total
Yu 2020	***		***	*****
Figuro-Perez 2020	***		***	*****
Damato 2020	***		***	*****
Schmidle 2020	***		***	*****
Kalinsky 2020	***		***	*****
Shaverdian 2020	***		***	*****
Ning 2020	***		***	*****
Rolfo 2020	***		***	*****
Spoto 2020	***		***	*****
Di Giacomo 2020	***		***	*****
Wei 2020	***		***	*****
OKelly 2020	***		***	*****
Souza 2020	***		***	*****
Di Noia 2020	***		***	*****
Guerini 2020	***		***	*****
da Costa 2020	***		***	*****
Yekedüz 2020	***		***	*****
Szabados 2020	***		***	*****
Bersanelli 2020	***		***	*****
Grover 2020	***		***	*****
Wu 2020	***		***	*****
Smith 2021	***		***	*****