Coronavirus Disease 2019

(COVID-19)

Progression of Potential Therapeutics

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Apr. 12, 2020

Rationale to Choose Potential Therapeutics in the Context of Disease Patterns*

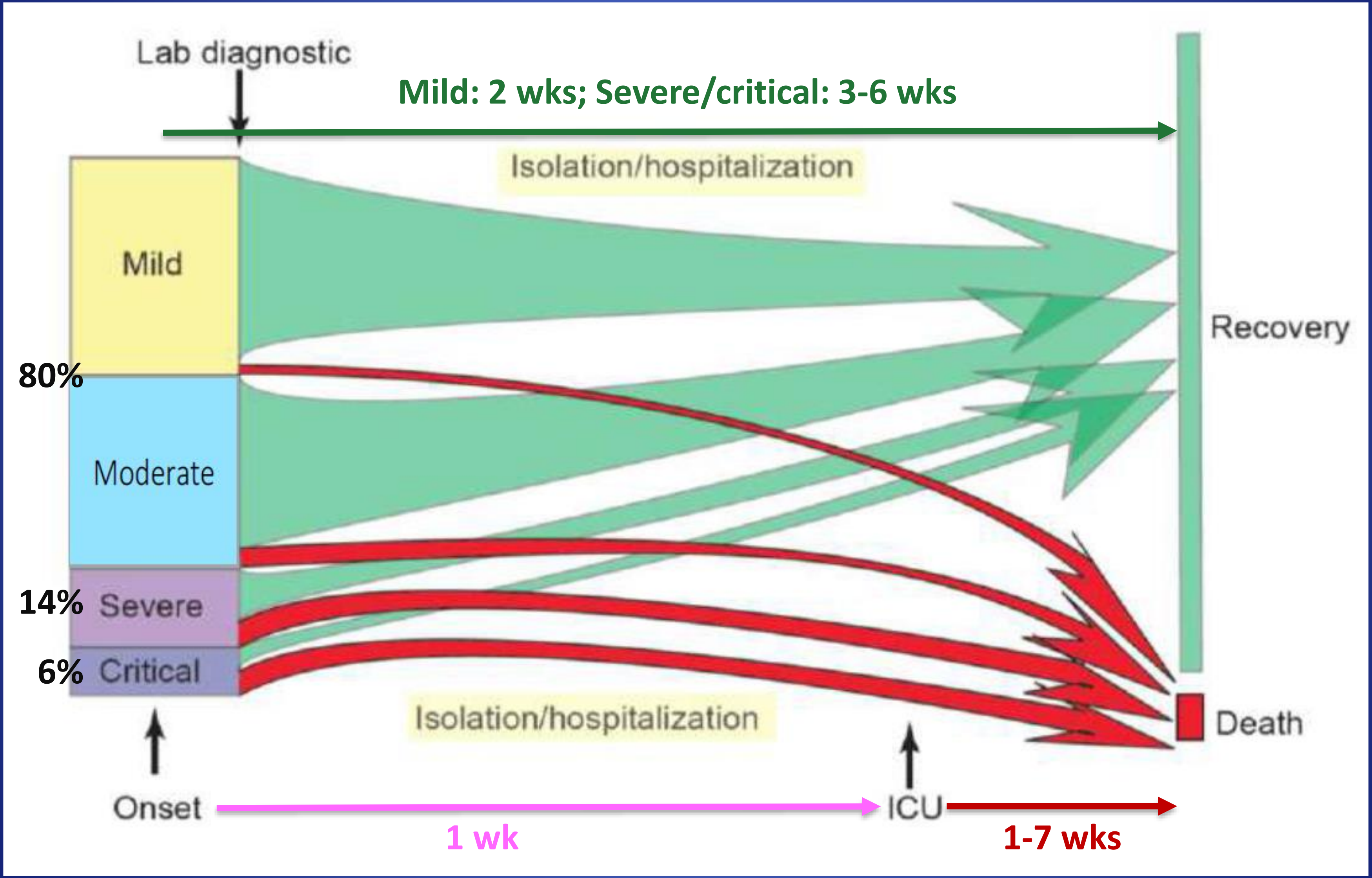
- Currently available

- Antiviral activities against SARS-CoV-2
- **PK/PD**
- **Clinical studies**
- Tolerable safety profile

- Convenient administration

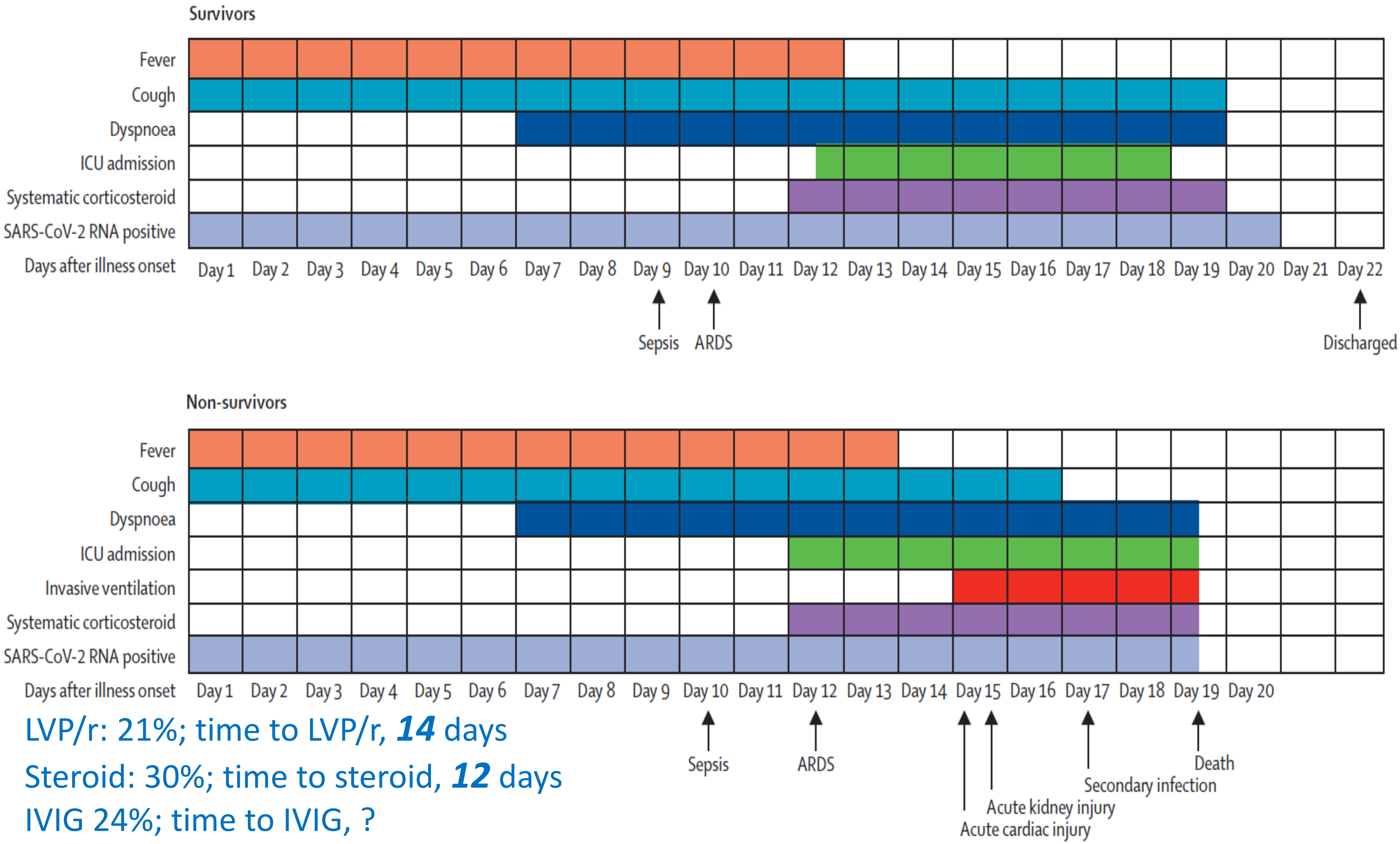
*Viral kinetics & Host response

Disease Pattern of COVID-19



WHO China Joint Mission on Coronavirus Disease 2019

Clinical Courses of Hospitalized COVID-19 Patients



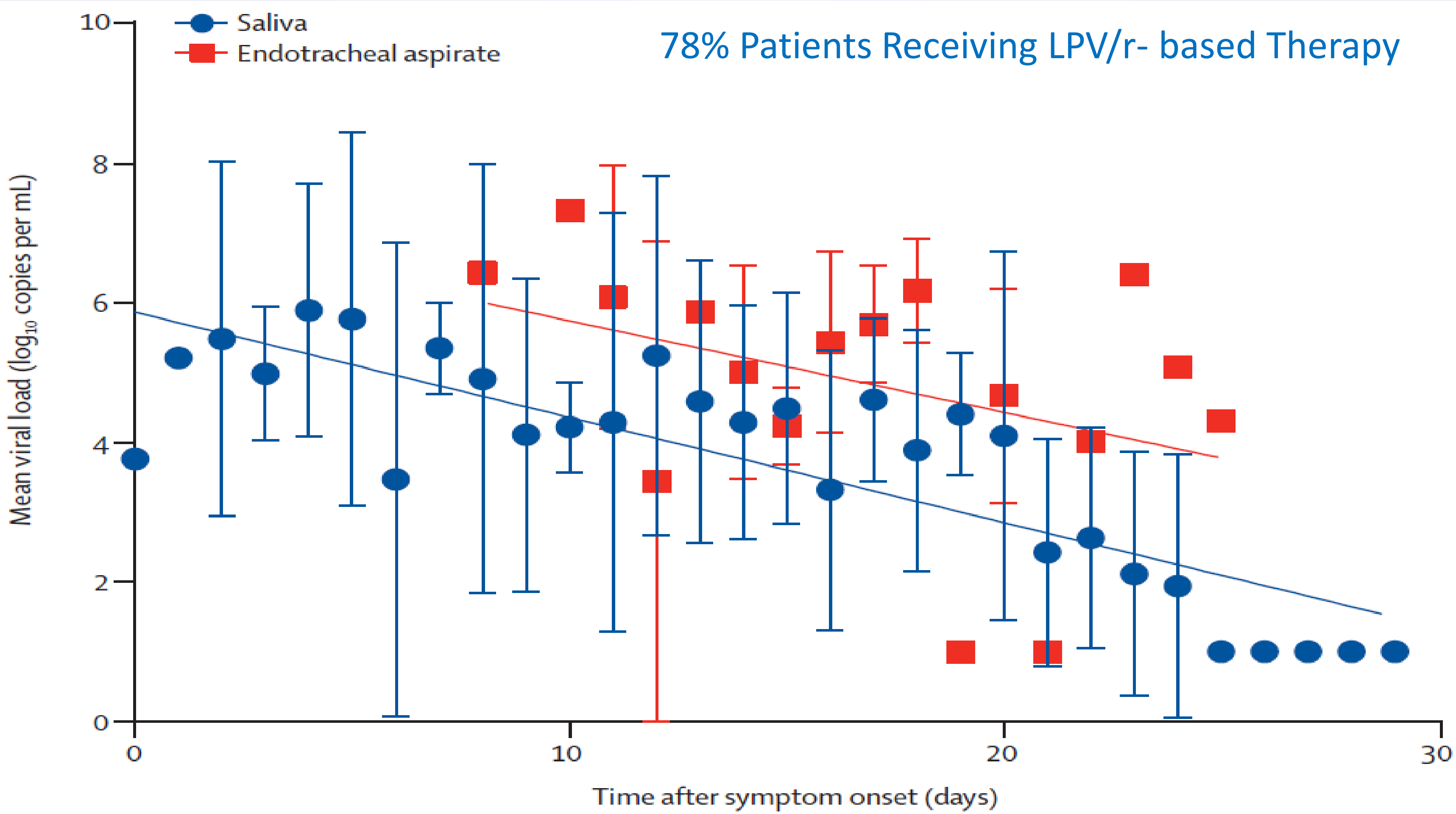
LVP/r: 21%; time to LVP/r, ***14*** days

Steroid: 30%; time to steroid, ***12*** days

IVIG 24%; time to IVIG, ?

Zhou F, *et al. Lancet*. 2020

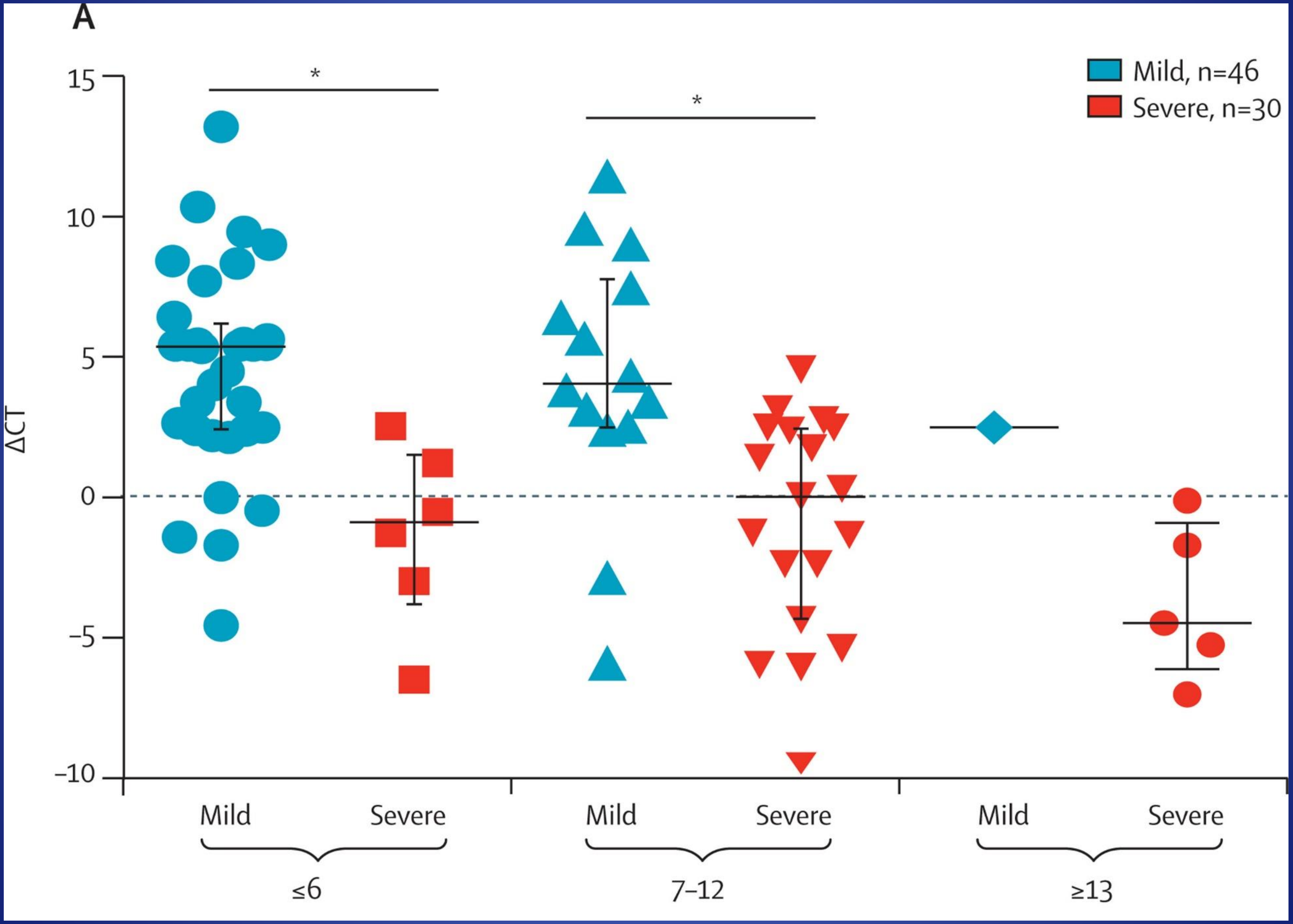
High SARS-CoV-2 Viral Loads at Symptom Onset



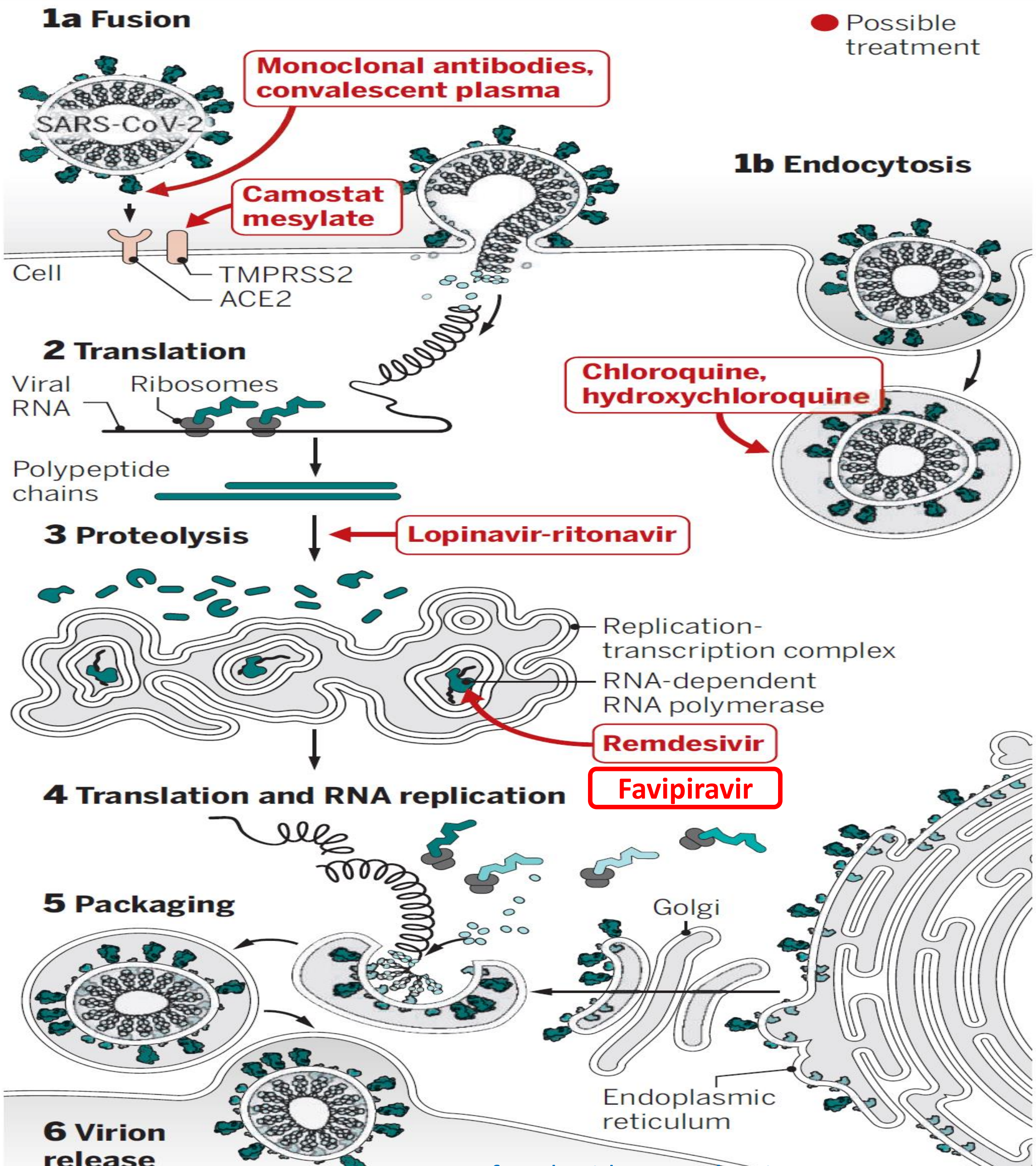
D	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
S	1	1	3	3	5	5	5	4	7	10	5	8	7	7	6	7	8	5	6	5	6	6	5	6	4	3	3	2	2	1
E	0	0	0	0	0	0	0	0	1	0	1	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	0	0	0	0

To K, *et al. Lancet Infect Dis*. 2020

Prolonged SARS-CoV-2 Shedding, Esp. Severe Patients



Liu Y, *et al. Lancet Infect Dis.* 2020



Kupferschmidt K, *et al. Science.* 2020

Repurposing & Developing Therapeutics for SARS-CoV-2

Likely

- **Remdesivir**, favipiravir
- **Chloroquine/ Hydroxychloroquine**
- **Lopinavir/ritonavir ± Interferons**

World Health Organization

Solidarity Trial

- Kinase inhibitors
- Mycophenolic acid
- Cyclosporin
- Estrogen modulating drugs

Zumla A, *et al. Nat Rev Drug Discov.* 2016; Mo Y, *et al. J Antimicrob Chemother.* 2016; Dyall J *et al. Drugs.* 2017

Summary of Potential Therapeutics

Medication	Mechanism of Action	Status	In silico analysis	In Vitro studies	Animal experiments	Human studies
Remdesivir	RdRp inhibitors					
Chloroquine/ Hydroxychloroquine	Increasing the intracellular pH & interfering with ACE2 glycosylation					
Favipiravir	RdRp inhibitors					
Lopinavir	Protease inhibitors					
Interferon	Exogenous interferon					

Marketed for other indications ; Phase III; SARS-CoV; MERS-CoV; SARS-CoV-2; No data.

In Vitro Efficacies ($EC_{50,}$ µM)

	SARS-CoV	MERS-CoV	SARS-CoV-2	Plasma Conc. (µM)
Remdesivir	0.07	0.07-0.3	0.77	4.9-5.6
Chloroquine	**4.4-8.8**	3.0-6.3	1.13-5.47	1.38-10
Hydroxychloroquine	**34**	-	0.72-4.51	1.38-2.99
Favipiravir	-	-	61.88	165.0-412.0
Lopinavir	24.4	8-11.6	-	9.4-19.1

Biot C, *et al. J Med Chem.* 2006; Chan J, *et al. Clin Microbiol Rev.* 2015; Zumla A, *et al. Nat Rev Drug Discov.* 2016; Dyall J *et al. Drugs.* 2017; Sheahan TP, *et al. Sci Transl Med.* 2017; Sheahan TP, *et al. Nat Comm.* 2020; Wang M, *et al. Cell Res.* 2020; Yao X, *et al. Clin Infect Dis.* 2020; Liu J, *et al. Cell Discov.* 2020; Gautret P, *et al. Int J Antimicrob Agent.* 2020; Yao X, *et al. Clin Infect Dis.* 2020; Liu J, *et al. Cell Discov.* 2020

Endpoints for Efficacy/Effectiveness of Therapeutics

- Survival

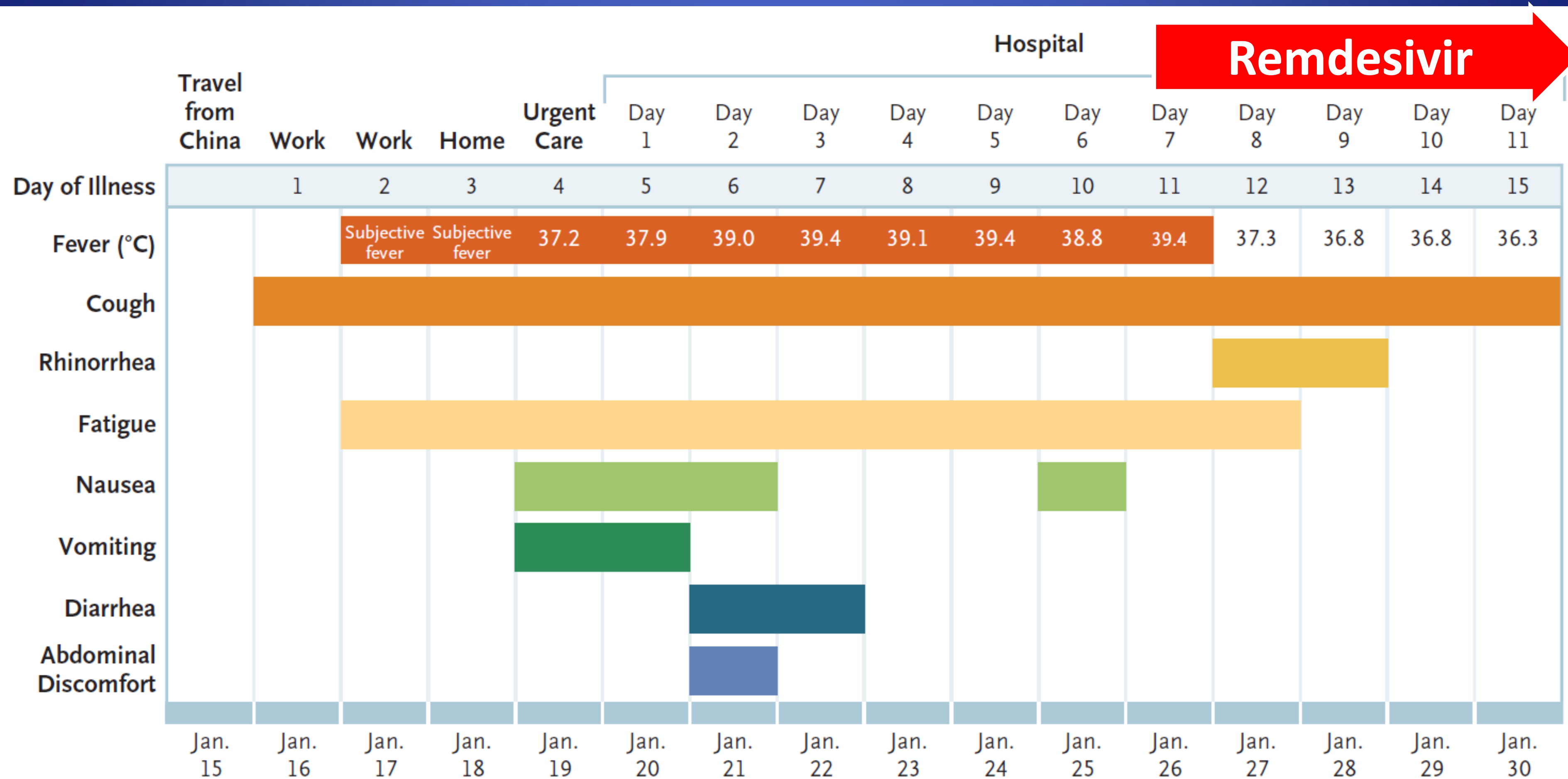
- Clinical response
- Virological response
- Radiological response

- Composite endpoints

REMDESIVIR

Remdesivir, Severe COVID-19

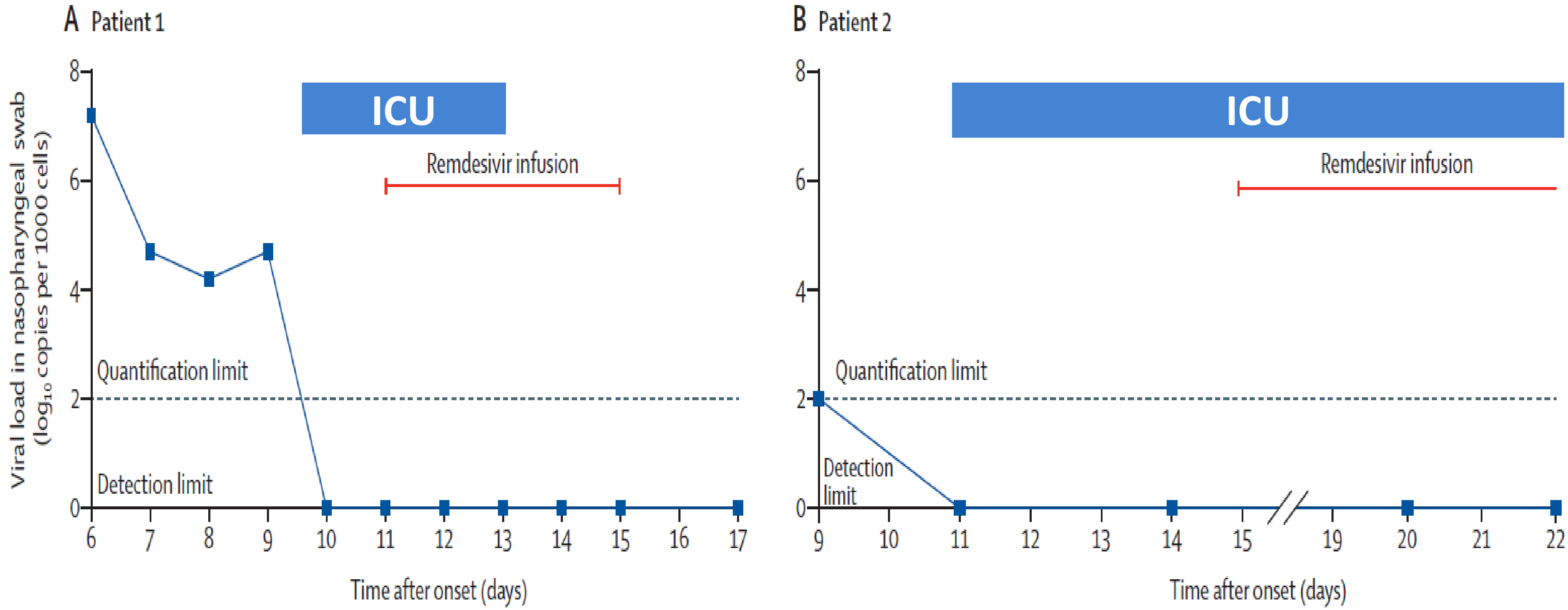
Time to Antiviral: 11d



Nasopharyngeal swab +(18-20, Ct) +(23-24, Ct) +(33-34, Ct) +(37-40, Ct)

Oropharyngeal swab +(21-22, Ct) +(32-33, Ct) +(36-40, Ct) **-ve**

Remdesivir, Severe COVID-19



Virus detection in other samples

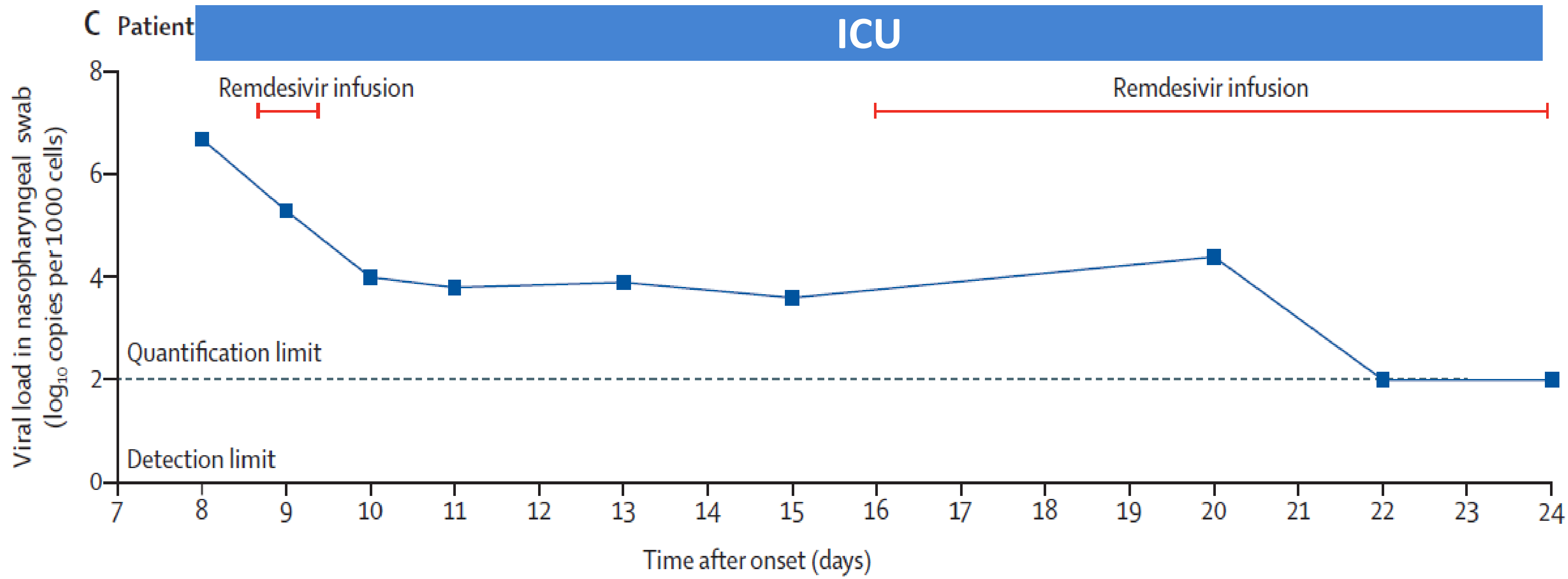
	Jan 24	Jan 25	Jan 26	Jan 27	Jan 28	Jan 29	Jan 30	Jan 31	Feb 1	Feb 2	Feb 3	Feb 4
Plasma	/	-	-	-	-	-	/	/	-	-	/	/
Urine	/	-	-	/	-	/	-	/	/	/	/	/
Stools	/	-	-	/	/	-	-	/	/	-	/	/
Conjunctiva	/	/	-	-	/	-	/	/	-	-	/	/

	Jan 24	Jan 25	Jan 26	Jan 27	Jan 28	Jan 29	Jan 30	Feb 3	Feb 4	Feb 5	Feb 6
Plasma	/	/	-	/	/	/	/	/	/	/	/
Urine	/	/	/	/	/	/	/	/	/	/	/
Stools	/	/	-	/	/	/	/	/	/	/	/
Conjunctiva	/	/	/	/	/	/	/	/	/	/	/

Early discontinuation of RDV in patient 1 due to ALT > 3X ULN with maculopapular rash

Lescure FX, *et al. Lancet Infect Dis.* 2020

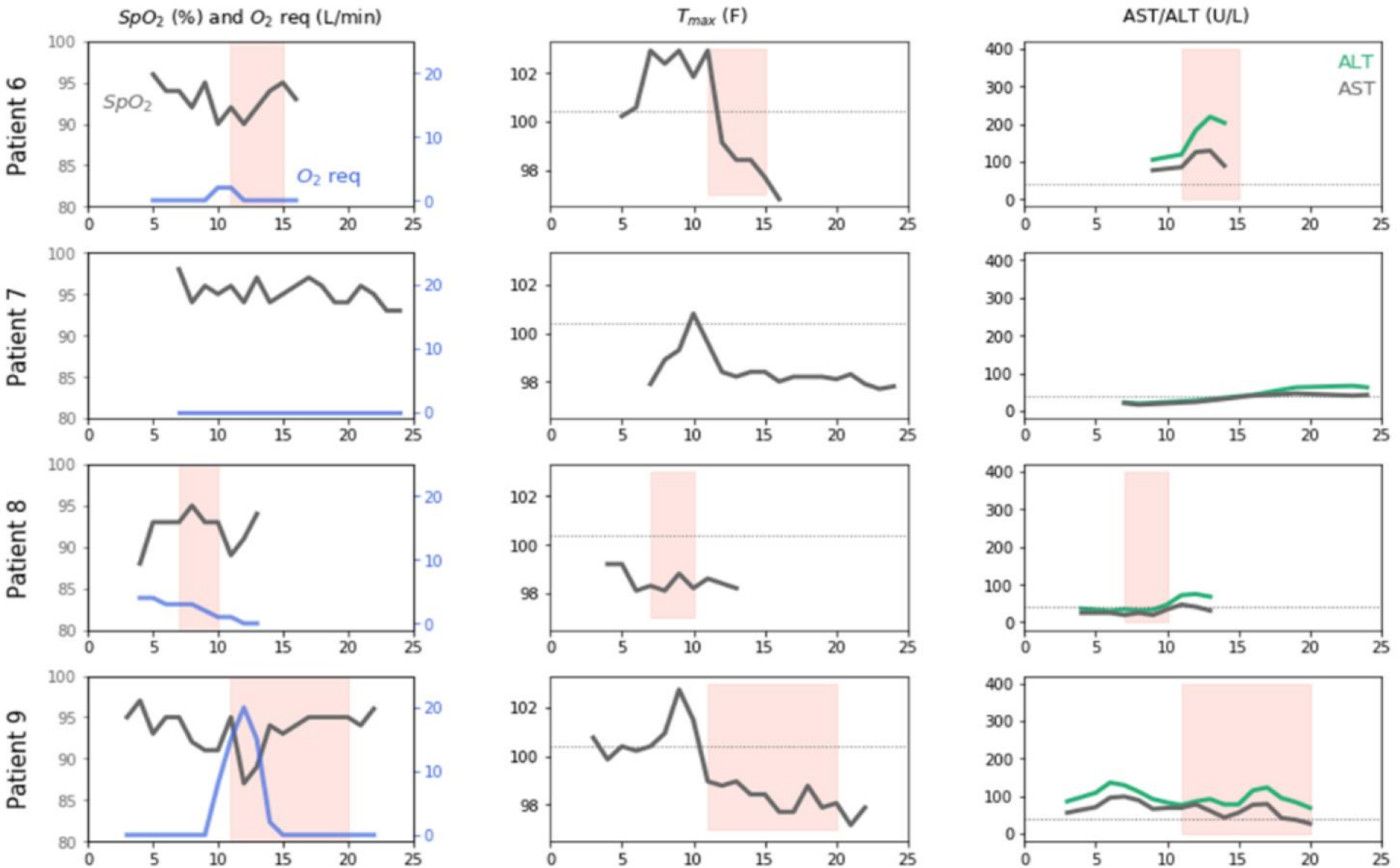
Remdesivir, Critical COVID-19



Virus detection in other samples	Jan 28	Jan 29	Jan 30	Jan 31	Feb 1	Feb 2	Feb 3	Feb 4	Feb 5	Feb 6	Feb 7	Feb 8	Feb 9	Feb 10	Feb 11	Feb 12	Feb 13	Feb 14
Plasma (RT-PCR+CT)	+ (36·9)	+ (38·4)	+ (35·8)	/	/	+ (37·3)	/	/	/	–	/	/	/	–	/	/	–	/
Urine	/	/	/	–	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Stools	/	–	–	–	/	–	/	/	/	/	/	/	/	/	/	/	/	/
Conjunctiva	/	–	–	–	/	/	/	–	/	/	/	/	/	/	/	/	/	/

Lescure FX, *et al. Lancet Infect Dis.* 2020

Remdesivir, Moderate/Severe COVID-19



Kujawski SA, *et al. MedRxiv.* 2020

Excipient: β-cyclodextrin

- **Potential nephrotoxicity**

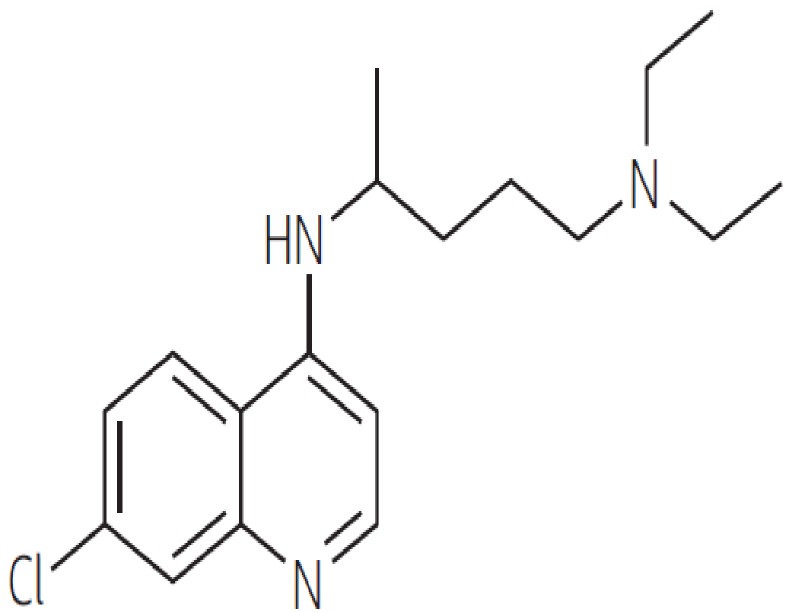
  Renal insufficiency as one of exclusion criteria in current clinical trials

- β-cyclodextrin containing medications: voriconazole

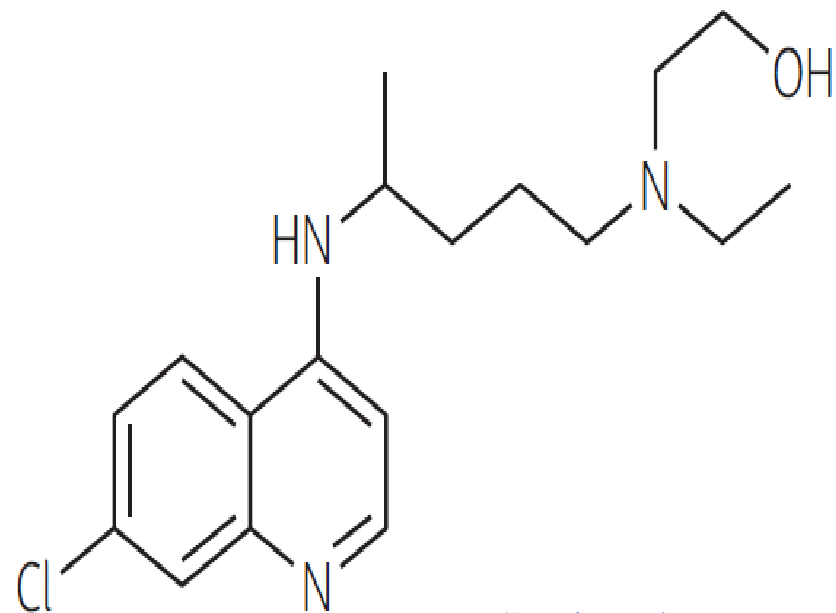
https://clinicaltrials.gov, NCT04280705 & NCT04302766 [As of April 9, 2020]

CHLOROQUINE & HYDROXYCHLOROQUINE

Chemical Structures



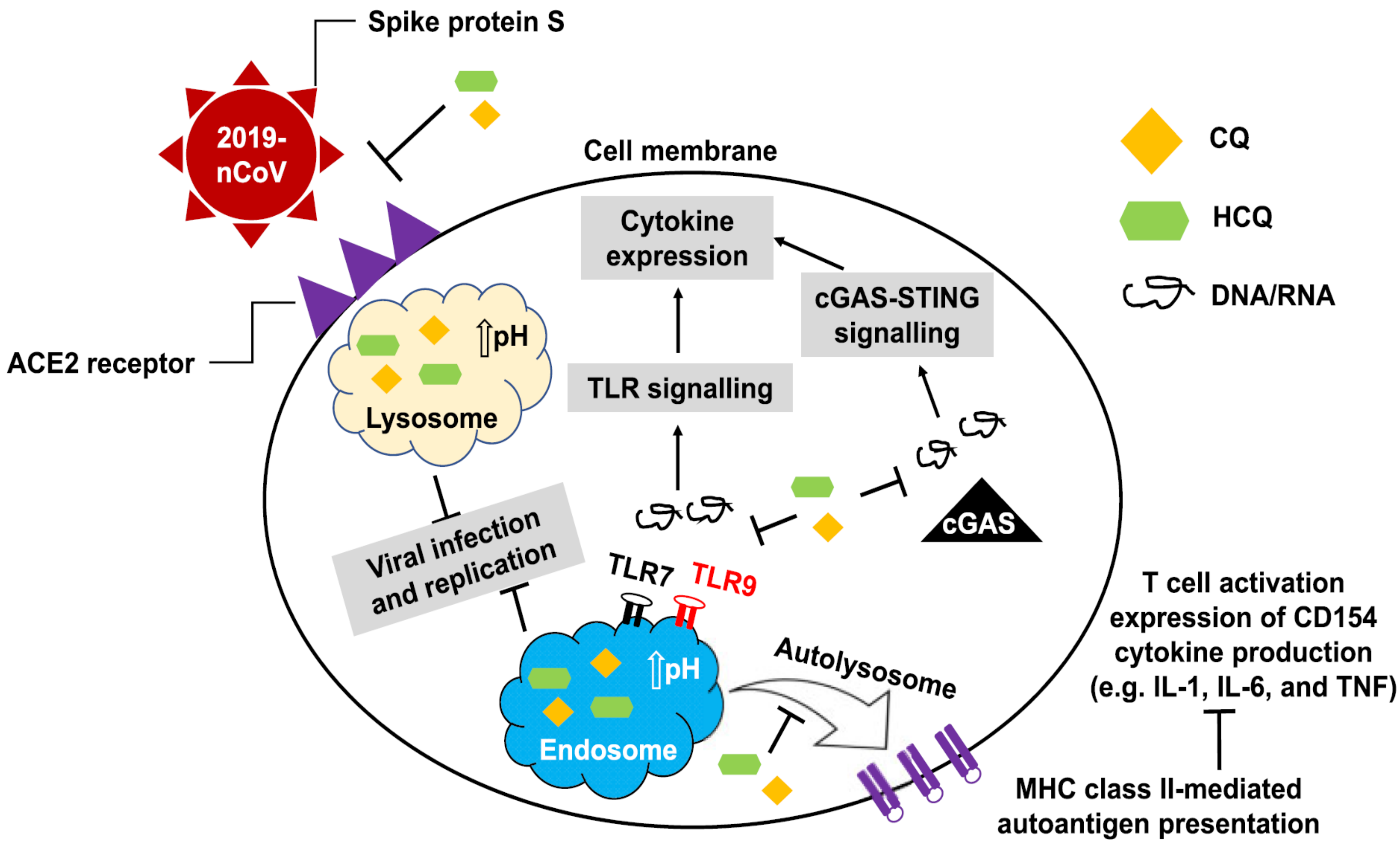
氯喹
Chloroquine (CQ)



羥氯喹
Hydroxychloroquine (HCQ)

Zhou D, *et al. J Antimicrob Chemother.* 2020

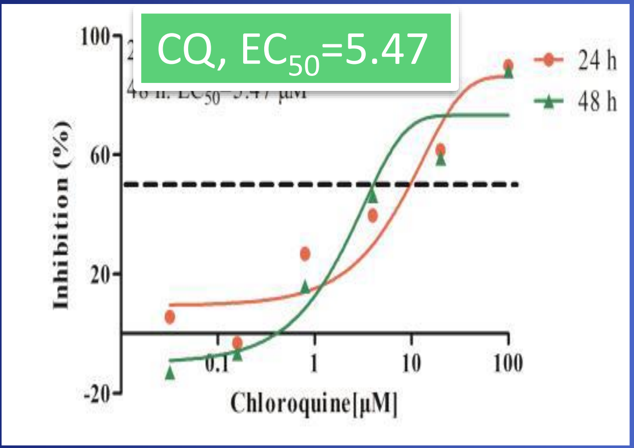
The Proposed Antiviral Mechanisms of CQ & HCQ

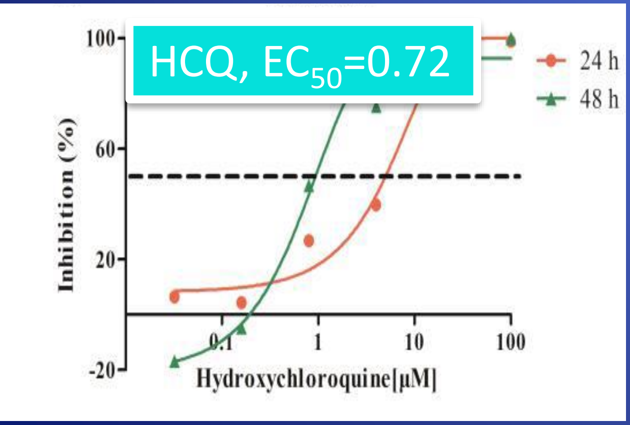


Zhou D, *et al. J Antimicrob Chemother.* 2020

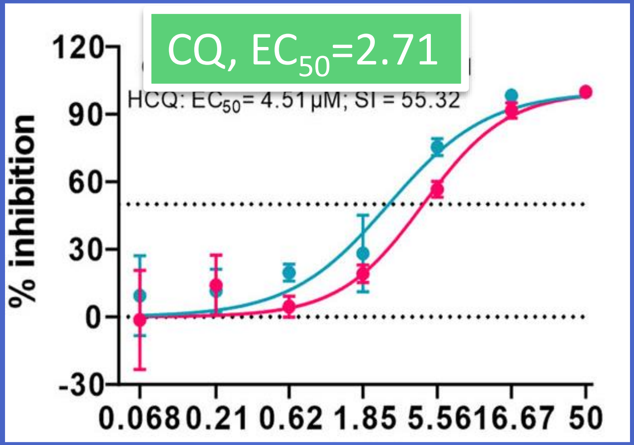
Comparisons of CQ & HCQ Activities Against SARS-CoV-2

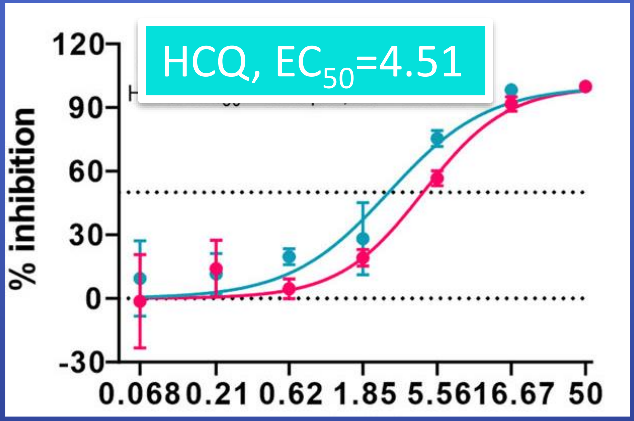
MOI=0.01



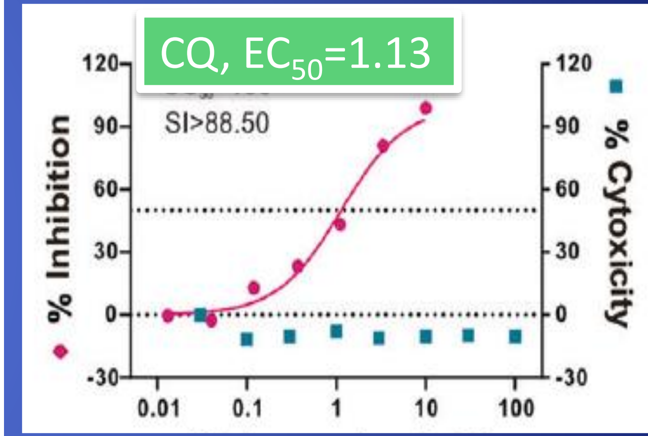


MOI=0.01





MOI=0.05

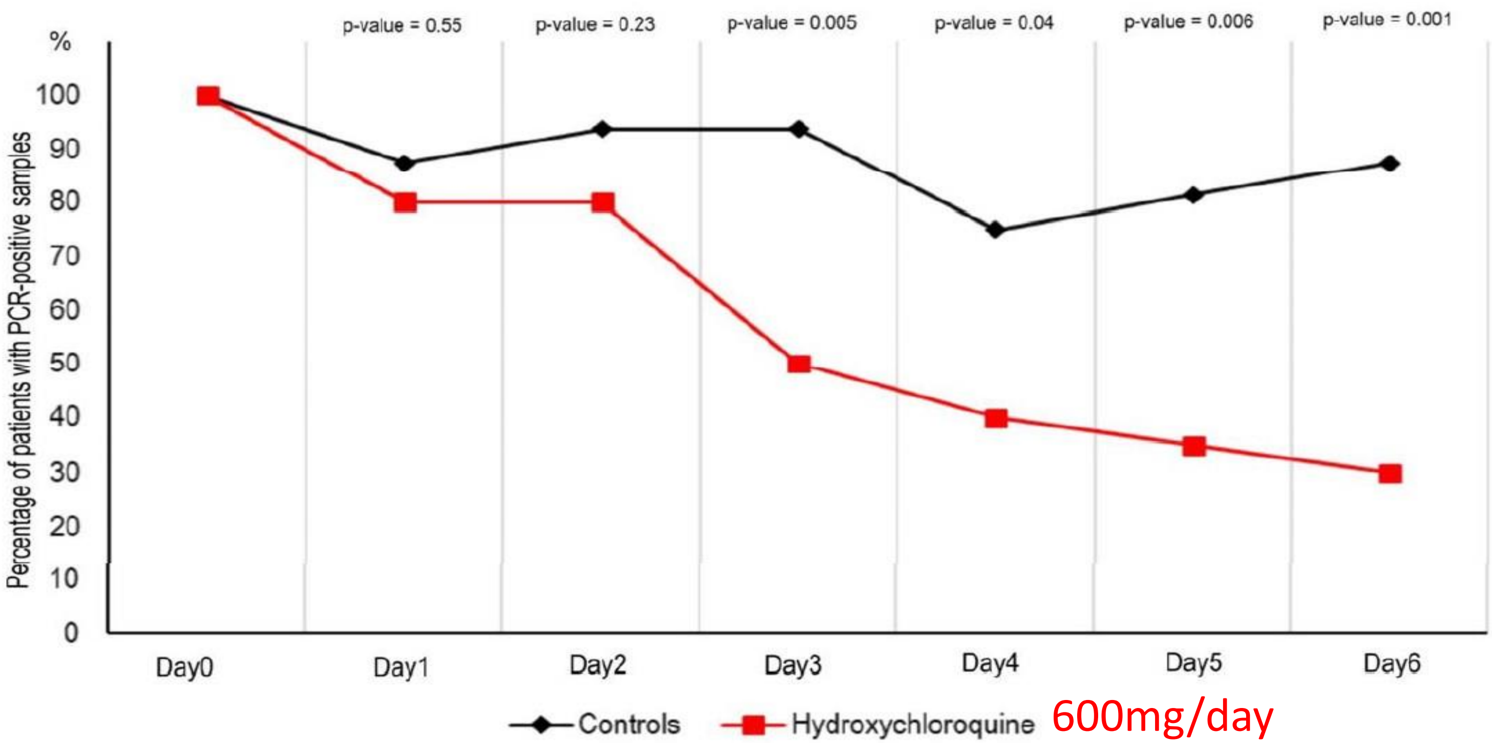


Wang M, *et al. Cell Res.* 2020; Yao X, *et al. Clin Infect Dis.* 2020; Liu J, *et al. Cell Discov.* 2020

HCQ ± Azithromycin vs. Standard, Mild/Moderate COVID-19

Time to Antiviral: 4d

Figure 1. Percentage of patients with PCR-positive nasopharyngeal samples from inclusion to day6 post-inclusion in COVID-19 patients treated with hydroxychloroquine and in COVID-19 control patients.



600mg/day

HCQ conc.
0.45±0.2 µg/ml

Gautret P, *et al. Int J Antimicrob Agent.* 2020

Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial (Gautret P et al. PMID 32205204)

ISAC shares the concerns regarding the above article published recently in the International Journal of Antimicrobial Agents (IJAA). The ISAC Board believes the article does not meet the Society's expected standard, especially relating to the lack of better explanations of the inclusion criteria and the triage of patients to ensure patient safety.

Despite some suggestions online as to the reliability of the article's peer review process, the process did adhere to the industry's peer review rules. Given his role as Editor in Chief of this journal, Jean-Marc Rolain had no involvement in the peer review of the manuscript and has no access to information regarding its peer review. Full responsibility for the manuscript's peer review process was delegated to an Associate Editor.

Although ISAC recognises it is important to help the scientific community by publishing new data fast, this cannot be at the cost of reducing scientific scrutiny and best practices. Both Editors in Chief of our journals (IJAA and Journal of Global Antimicrobial Resistance) are in full agreement.

Andreas Voss

ISAC President

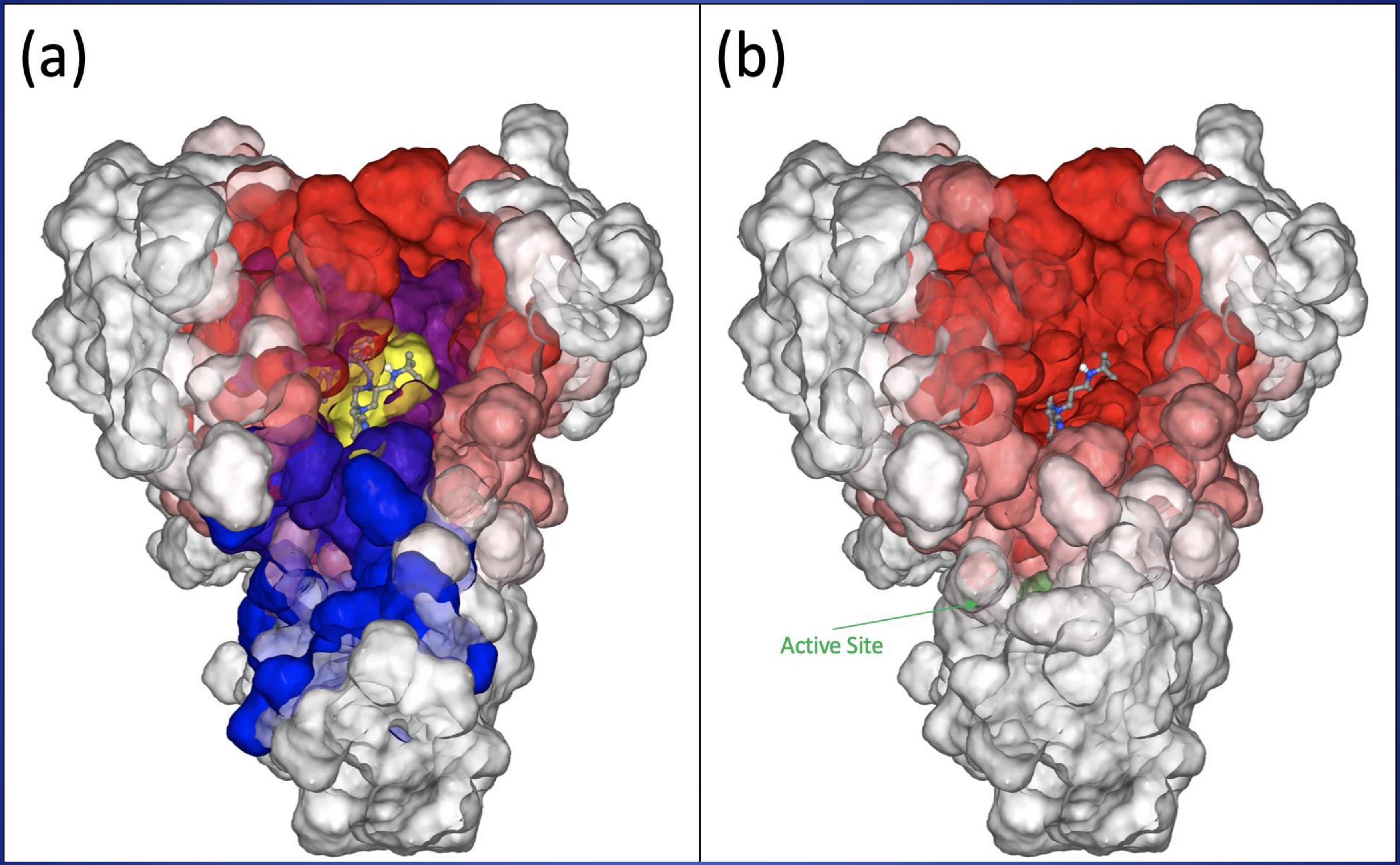
International Society of Antimicrobial Chemotherapy
www.ISAC.world

April 3rd-2020

https://www.isac.world/news-and-publications/official-isac-statement

LOPINAVIR/ RITONAVIR

HIV Protease Inhibitors May Not be Choices Against CoVs

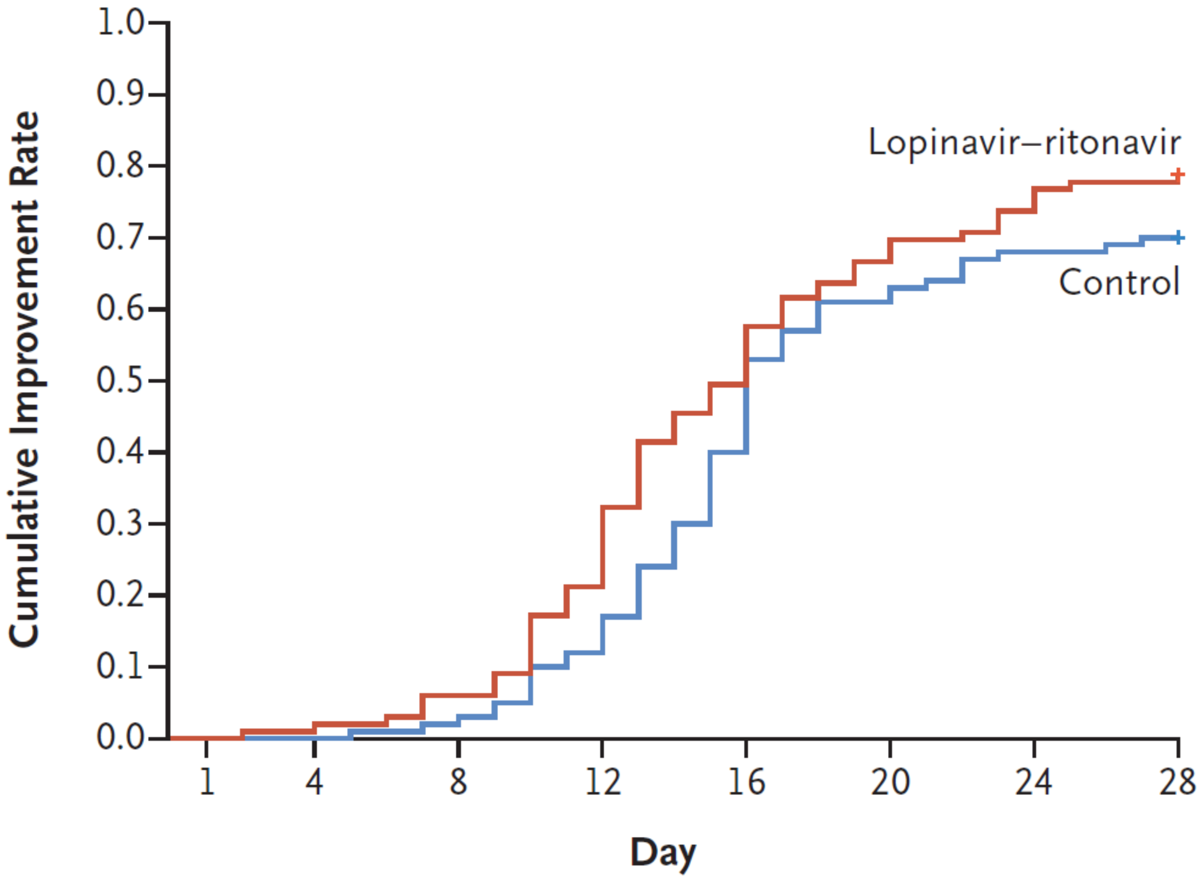


- C2-symmetric site: only existing in HIV
- Aspartate protease vs. Cysteine protease (HIV vs. CoVs)

Li G, *et al. Nat Rev Drug Discov.* 2020;
Chang YC, *et al. Preprint.* 2020

LPV/r vs. Standard, Severe COVID-19

Time to Antiviral: 13d



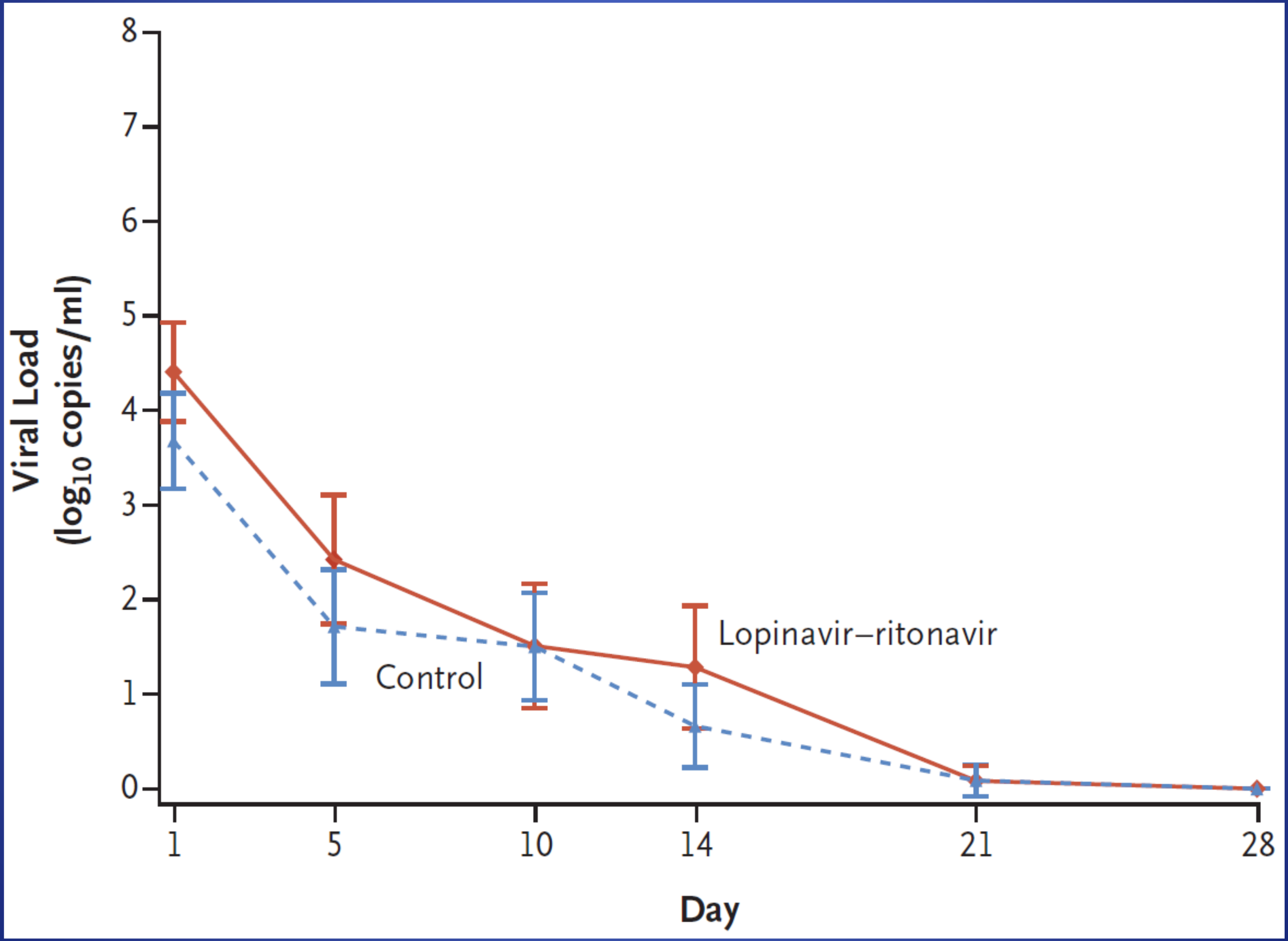
No. at Risk

Lopinavir–ritonavir	99	98	93	78	50	33	26	22
Control	100	100	98	88	60	39	32	30

Cao B, *et al. N Engl J Med.* 2020

LPV/r vs. Standard, Severe COVID-19

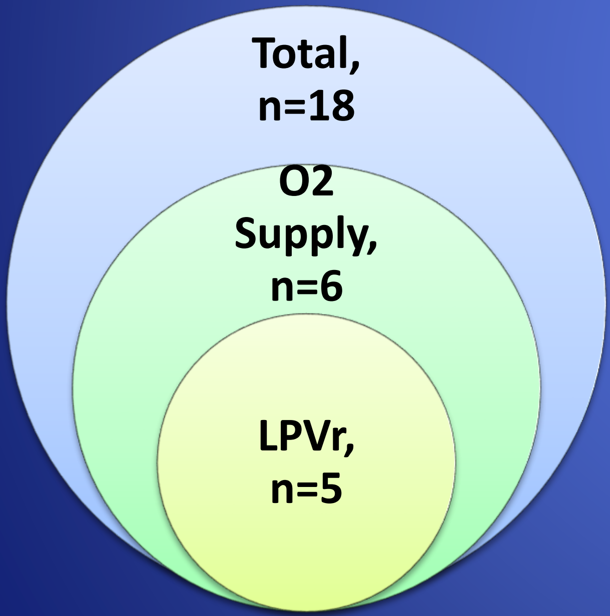
Time to Antiviral: 13d

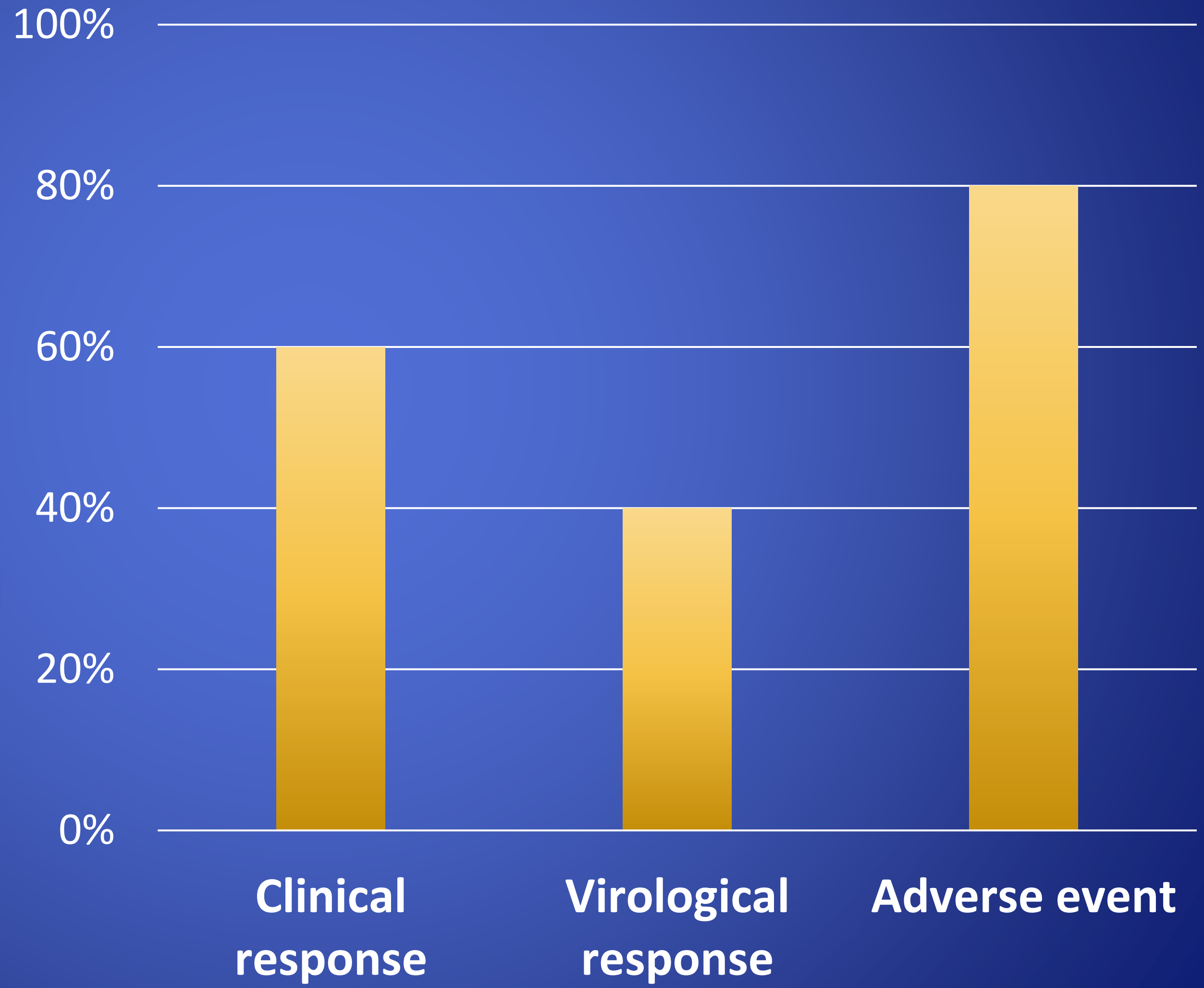


Cao B, *et al. N Engl J Med.* 2020

LPV/r, Severe COVID-19

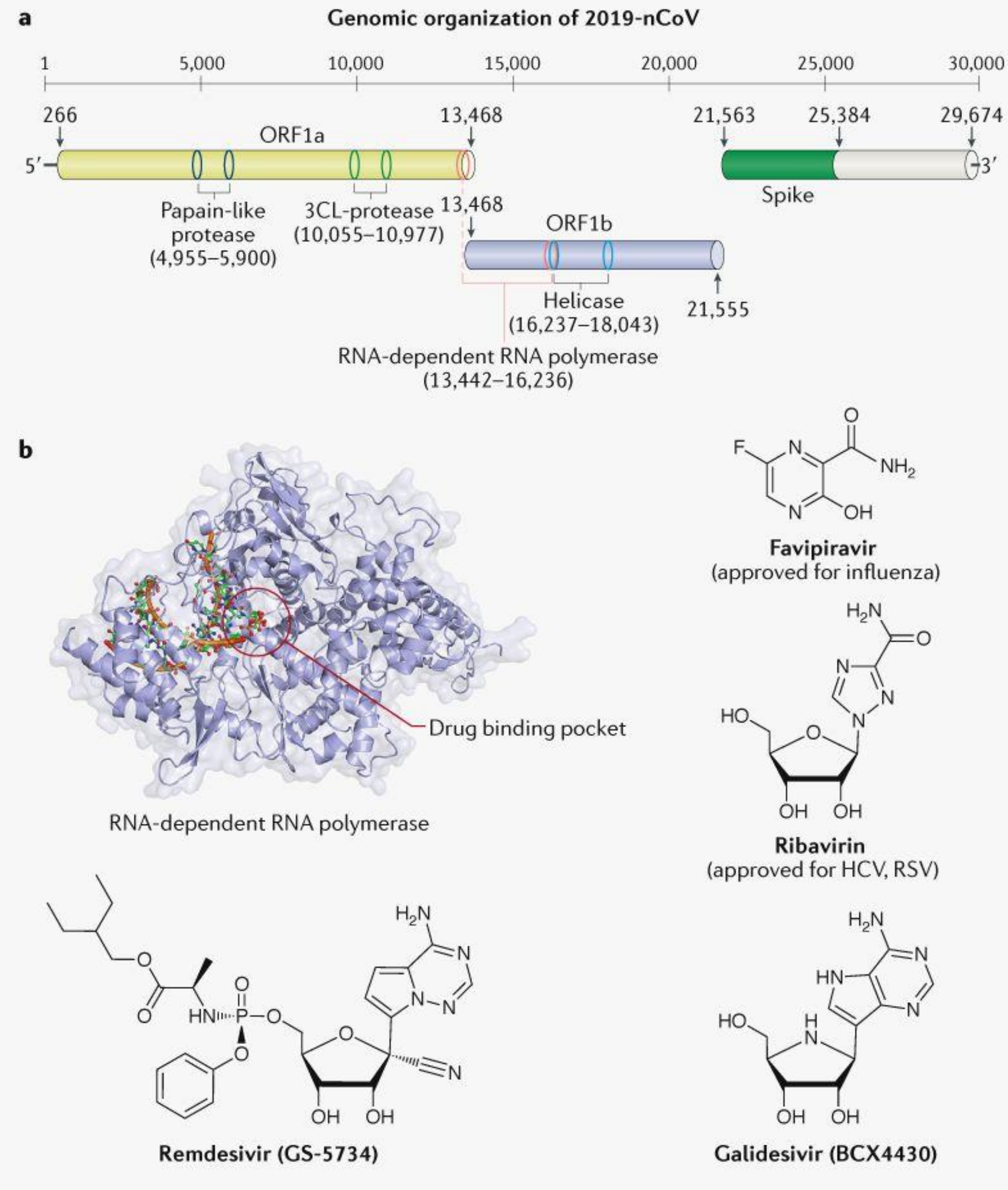
Time to Antiviral: 6d





Young B, *et al. JAMA.* 2020

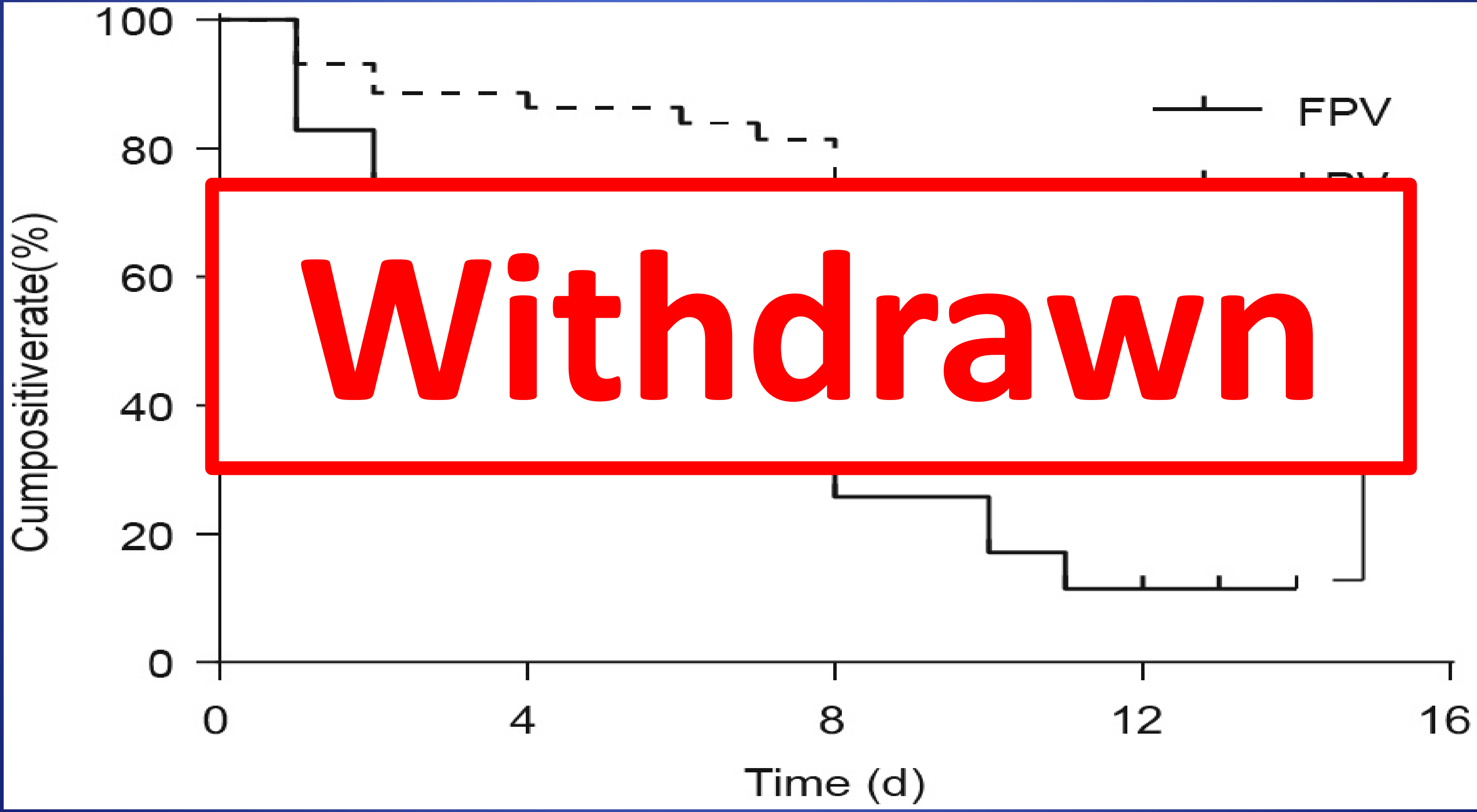
FAVIPIRAVIR



Li G*, et al. Nat Rev Drug Discov.* 2020

FPV+INF-α1b vs. LPV/r+ INF-α1b, Mild/Moderate COVID-19

Time to Antiviral: w/in 7d



Cai Q, *et al. Engineering.* 2020

FPV vs. Arbidol, Mixed Severity

Time to Antiviral: w/in 12d

Table 2. Comparison of 7 day's clinical recovery rate of favipiravir and arbidol in COVID-19 patients.

Variables	Favipiravir group	Arbidol group	Rate ratio (95% CI)	P value
Total patients	(N = 116)	(N = 120)		0.1396
Recovered, n (%)	71 (61.21)	62 (51.67)	0.0954 (-0.0305, 0.2213)	
Ordinary patients	(N = 98)	(N = 111)		
Recovered, n (%)	70 (71.43)	62 (55.86)	0.1557 (0.0271, 0.2843)	0.0199
Critical patients	(N = 18)	(N = 9)		
Recovered, n (%)	1 (5.56)	0 (0.00)	0.0556 (-0.0503, 0.1614)	0.4712
Patients with hypertension and/or diabetes	(N = 42)	(N = 35)		
Recovered, n (%)	23 (54.76)	18 (51.43)	0.0333 (-0.1904, 0.2571)	0.7704

- The recovery of fever, respiratory rate, oxygen saturation and cough relief after treatment were defined as clinical recovery, and the recovery state lasted >72 hrs
- Ordinary: has a fever, respiratory symptom, can be observed by imageology methods

Chen C, *et al. medRxiv.* 2020

Adverse Events

Table 4. Comparison of antiviral-associated adverse effects between two groups.

Adverse effects	Favipiravir group (N = 116)		Arbidol group (N = 120)		P value
	Frequency	Cases, n (%)	Frequency	Cases, n (%)	
Total	43	37 (31.90)	33	28 (23.33)	0.1410
LFT abnormal	9	9 (7.76)	12	12 (10.00)	0.5455
Raised serum uric acid	16	16 (13.79)	3	3 (2.50)	0.0014
Psychiatric symptom reactions	2	2 (1.72)	1	1 (0.83)	0.6171*
Digestive tract reactions	16	16 (13.79)	17	14 (11.67)	0.6239

*Fisher's exact test was used for comparison between groups.

*本藥劑具致**畸胎性**，不可使用於兒童、已知/準備懷孕及授乳者，用藥期間及用藥後7天應避孕，授乳者用藥需停止授乳。

Chen C, *et al. medRxiv.* 2020; 疾病管制署公費流感抗病毒藥劑Avigan使用方案

Other Potential Therapeutics for CoVs

- **Convalescent plasma and immunoglobulins**
- Monoclonal/Polyclonal antibodies
- Vaccines
- Steroid

Zumla A, *et al. Nat Rev Drug Discov.* 2016
Mo Y, *et al. J Antimicrob Chemother.* 2016
Dyall J *et al. Drugs.* 2017
Russell CD, *et al. Lancet.* 2020
Shen C, *et al. JAMA*. 2020

STEROID & OTHER IMMUNOMODULATORS

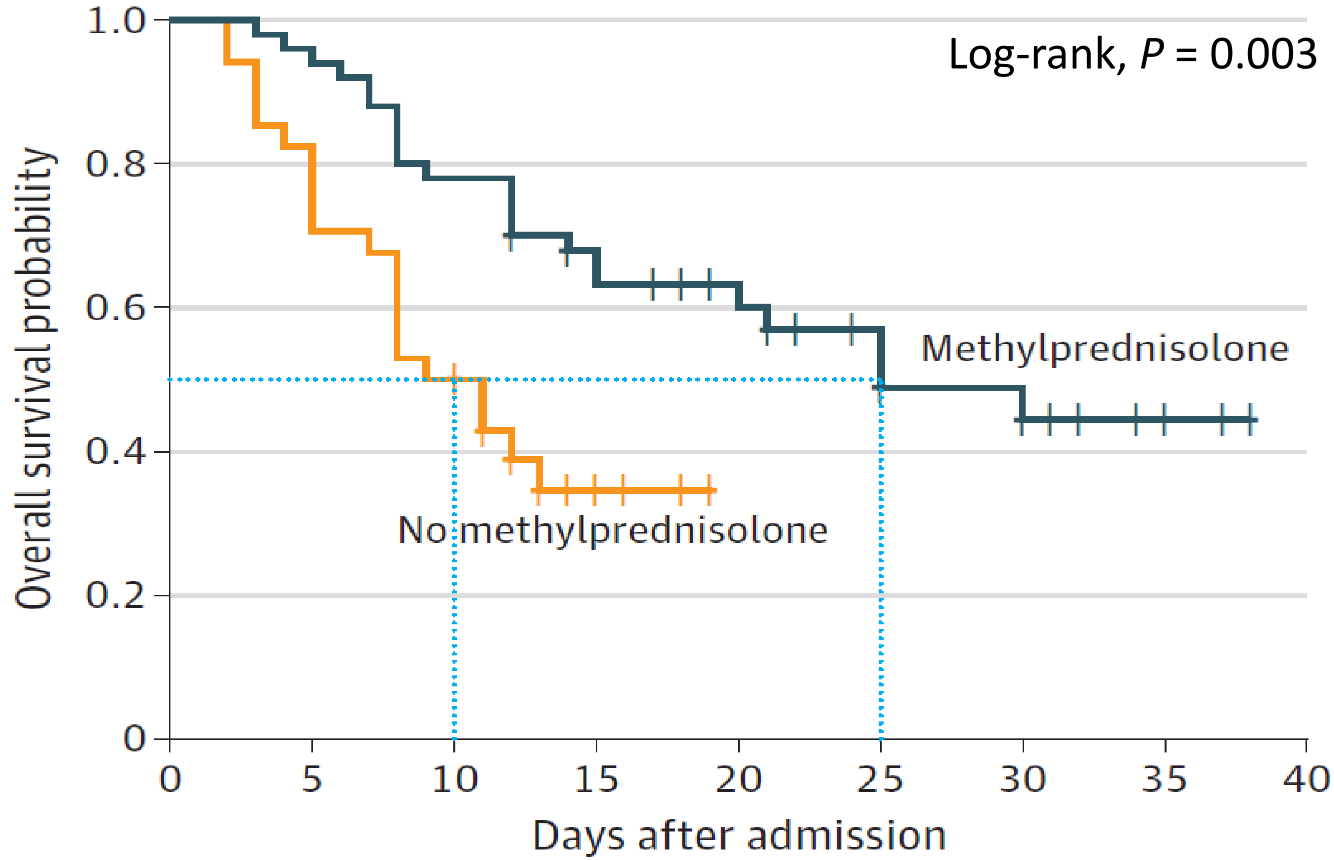
Clinical evidence does not support corticosteroid treatment for 2019-nCoV lung injury

	Outcomes of corticosteroid therapy*	Comment
MERS-CoV	Delayed clearance of viral RNA from respiratory tract[2]	Adjusted hazard ratio 0·4 (95% CI 0·2–0·7)
SARS-CoV	Delayed clearance of viral RNA from blood[5]	Significant difference but effect size not quantified
SARS-CoV	Complication: psychosis[6]	Associated with higher cumulative dose, 10 975 mg vs 6780 mg hydrocortisone equivalent
SARS-CoV	Complication: diabetes[7]	33 (35%) of 95 patients treated with corticosteroid developed corticosteroid-induced diabetes
SARS-CoV	Complication: avascular necrosis in survivors[8]	Among 40 patients who survived after corticosteroid treatment, 12 (30%) had avascular necrosis and 30 (75%) had osteoporosis
Influenza	Increased mortality[9]	Risk ratio for mortality 1·75 (95% CI 1·3–2·4) in a meta-analysis of 6548 patients from ten studies
RSV	No clinical benefit in children[10,11]	No effect in largest randomised controlled trial of 600 children, of whom 305 (51%) had been treated with corticosteroids

Russell CD, *et al. Lancet.* 2020

Steroid, Critical COVID-19 (ARDS)

Time to Steroid/ Dose/ Duration ?



No. at risk

No methylprednisolone	34	28	17	4	0	0	0	0	0
Methylprednisolone	50	48	39	29	20	14	11	4	0

Wu C, *et al. JAMA Int Med.* 2020

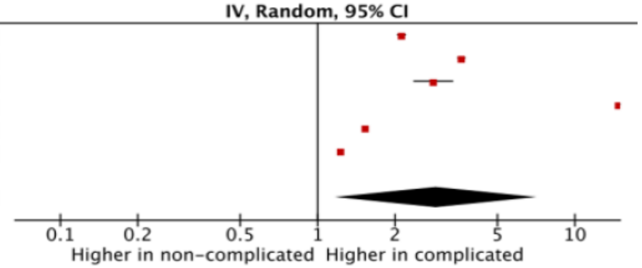
IL-6 as a Risk Factor for Complications

Panel A. Patients with Complicated COVID-19 versus Non-Complicated **2.9X**

Study or Subgroup	log[Ratio of Means]	SE	Complicated Total	Non-Complicated Total	Weight	Ratio of Means IV, Random, 95% CI
Chen et al. 2020a	0.75030559	0.01700847	14	15	16.7%	2.12 [2.05, 2.19]
Diao et al. 2020	1.2861085	0.01523892	20	479	16.7%	3.62 [3.51, 3.73]
Huang et al. 2020a	1.03489647	0.08752466	13	28	16.6%	2.81 [2.37, 3.34]
Liu 2020	2.69261639	0.00539448	69	11	16.7%	14.77 [14.61, 14.93]
Qin et al. 2020	0.42527895	0.0036103	286	166	16.7%	1.53 [1.52, 1.54]
Wu et al. 2020	0.20490848	0.00385624	84	117	16.7%	1.23 [1.22, 1.24]
Total (95% CI)			**486**	**816**	**100.0%**	**2.90 [1.17, 7.19]**

Heterogeneity: $Tau^2 = 1.28$; $Chi^2 = 158694.72$, $df = 5$ ($P < 0.00001$); $I^2 = 100\%$
Test for overall effect: $Z = 2.30$ ($P = 0.02$)

Ratio of Means
IV, Random, 95% CI

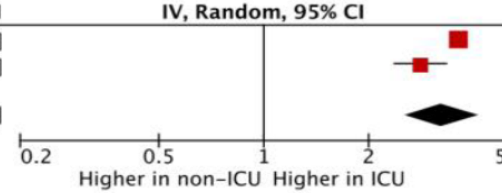


Panel B. Patients Requiring ICU Admission versus Not Requiring ICU Admission **3.24X**

Study or Subgroup	log[Ratio of Means]	SE	Complicated Total	Non-Complicated Total	Weight	Ratio of Means IV, Random, 95% CI
Diao et al. 2020	1.2861085	0.01523892	20	479	55.9%	3.62 [3.51, 3.73]
Huang et al. 2020a	1.03489647	0.08752466	13	28	44.1%	2.81 [2.37, 3.34]
Total (95% CI)			**33**	**507**	**100.0%**	**3.24 [2.54, 4.14]**

Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 8.00$, $df = 1$ ($P = 0.005$); $I^2 = 87\%$
Test for overall effect: $Z = 9.42$ ($P < 0.00001$)

Ratio of Means
IV, Random, 95% CI

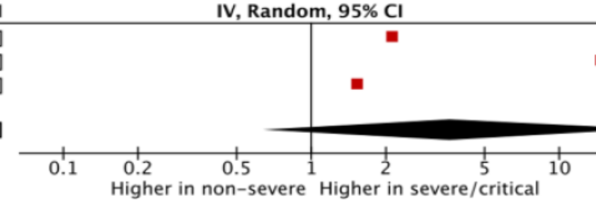


Panel C. Patients with Severe or Critical COVID-19 versus Mild COVID-19

Study or Subgroup	log[Ratio of Means]	SE	Complicated Total	Non-Complicated Total	Weight	Ratio of Means IV, Random, 95% CI
Chen et al. 2020a	0.75030559	0.01700847	14	15	33.3%	2.12 [2.05, 2.19]
Liu 2020	2.69261639	0.00539448	69	11	33.3%	14.77 [14.61, 14.93]
Qin et al. 2020	0.42527895	0.0036103	286	166	33.3%	1.53 [1.52, 1.54]
Total (95% CI)			**369**	**192**	**100.0%**	**3.63 [0.65, 20.37]**

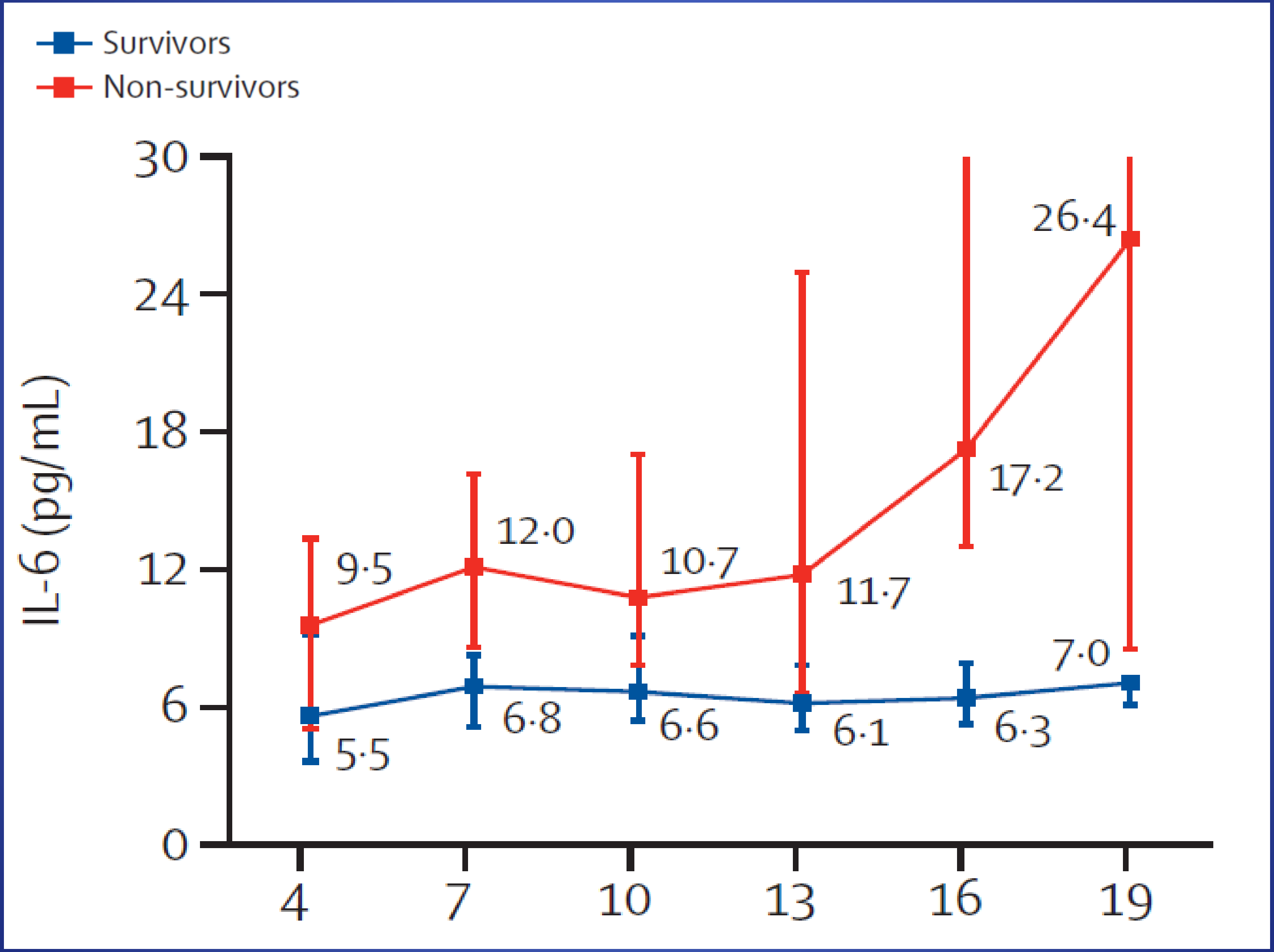
Heterogeneity: $Tau^2 = 2.32$; $Chi^2 = 122484.25$, $df = 2$ ($P < 0.00001$); $I^2 = 100\%$
Test for overall effect: $Z = 1.47$ ($P = 0.14$)

Ratio of Means
IV, Random, 95% CI



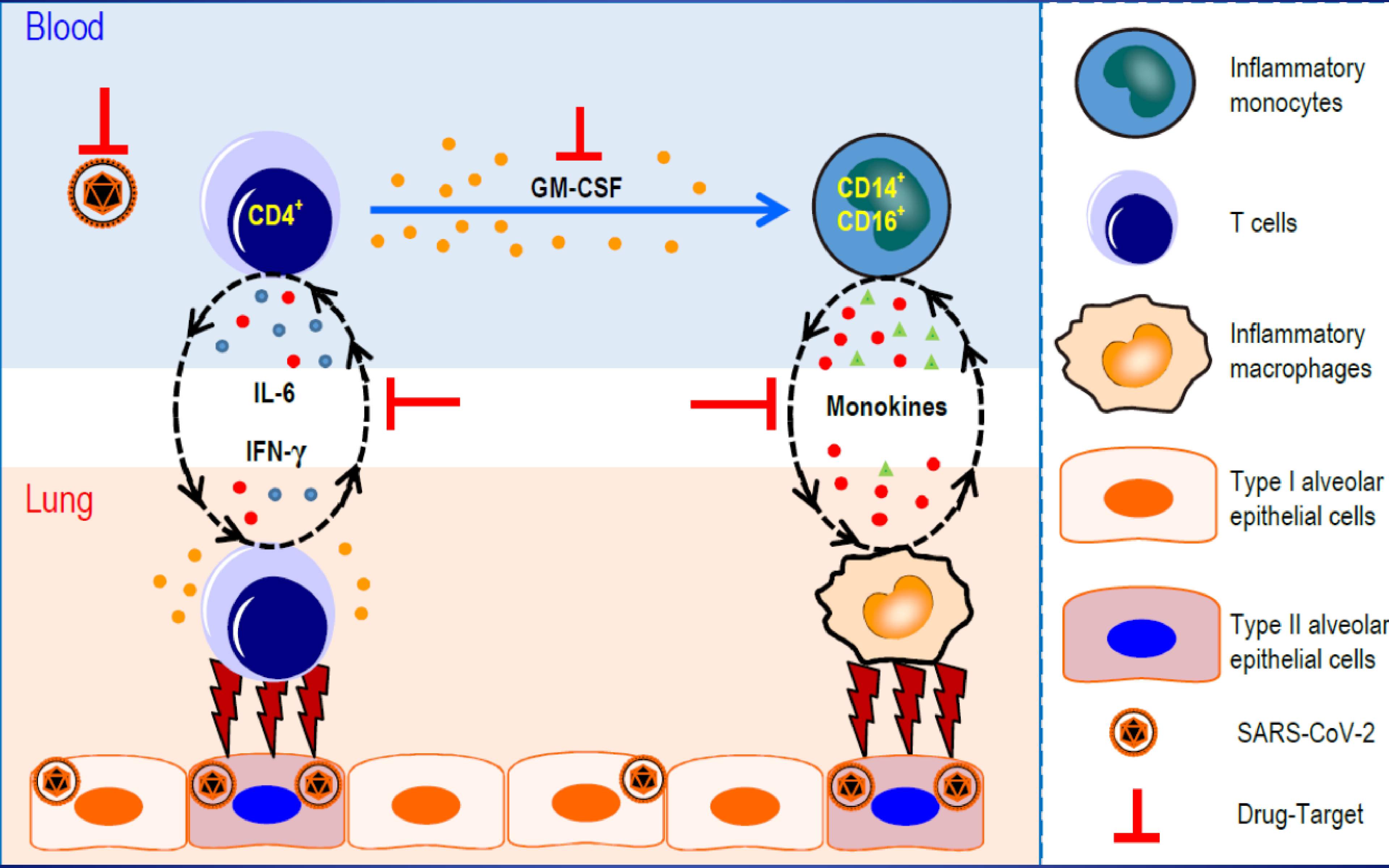
Coomes, EA, *et al. MedRxiv*. 2020

IL-6 as a Risk Factor for Mortality



Zhou F, *et al. Lancet*. 2020; Wu C, *et al. JAMA Int Med.* 2020

Immune & Inflammatory Response to COVID-19 - Rationale



Zhou Y, *et al. Natl Sci Rev*. 2020

Annex I

Summary Monoclonal Antibodies against IL-6

General Overview:

IL-6 is a cytokine relevant to many inflammatory diseases, therefore mAB against IL-6 have been used as treatments.

Examples: Tocilizumab (Actemra), Siltuximab (Sylvant), Sarilumab (Kevzara)

Mechanism of Action:

Binds the IL-6 receptor

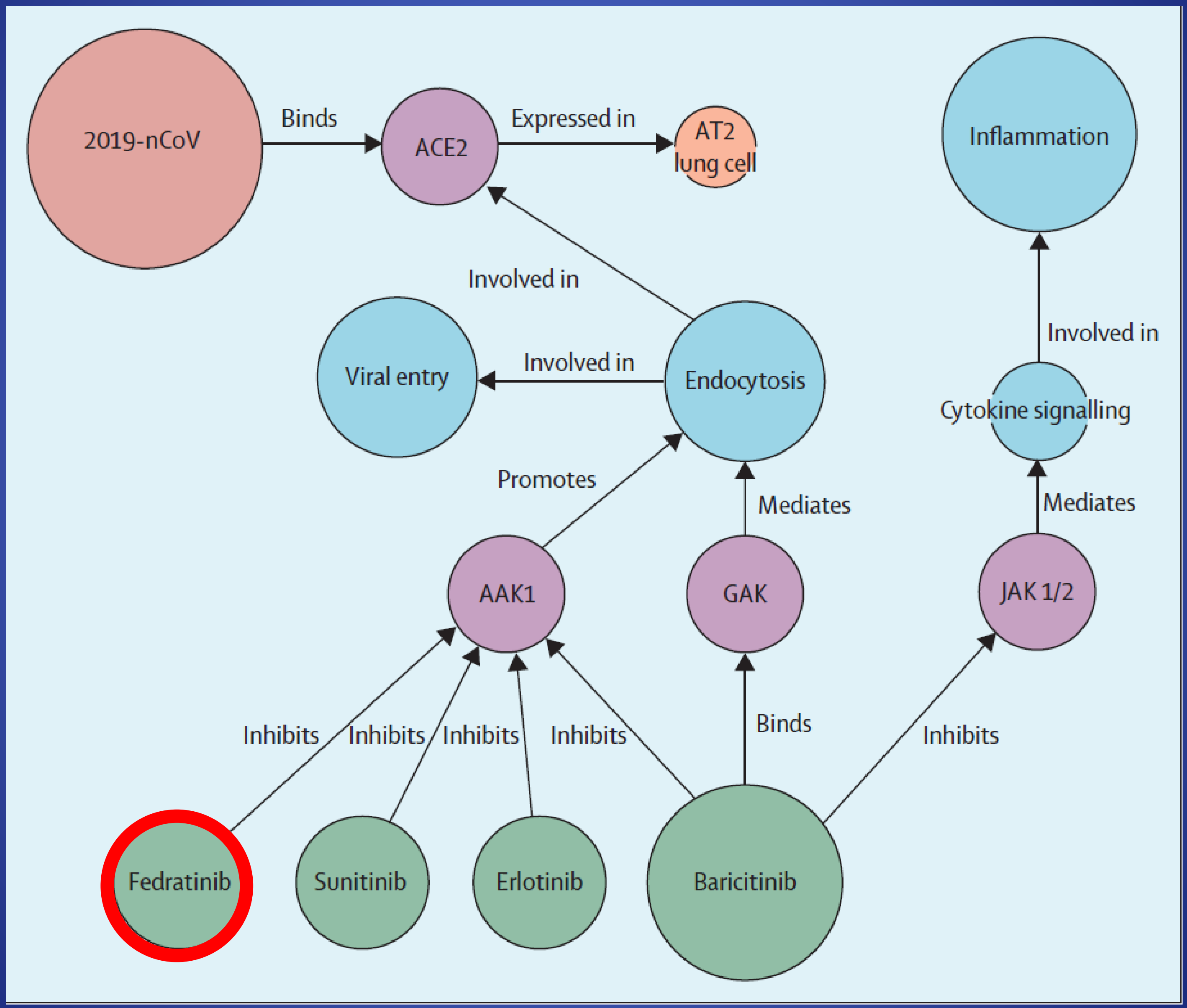
License Details:

Tocilizumab licensed for use against Large-cell lung carcinoma, cytokine release syndrome

Siltuximab licensed for use against Castlemans disease (lymphproliferative disorders)

Sarilumab licensed for use against Rheumatoid arthritis

Blockade of AP2-associated Protein Kinase 1



Richardson P, *et al. Lancet*. 2020; Wu D, *et al, JMII*. 2020

Adverse Events

Medication	Common	Occasional	Rare
Remdesivir	Elevated transaminases, N/V	?	?
Hydroxychloroquine	Prolonged QTc	Visual disturbance, Hemolysis with G6PD deficiency	Retinopathy, peripheral neuropathy, Rash
Favipiravir	Elevated transaminases, leukopenia, hyperuricemia	N/V, Diarrhea	Elevated CPK
Lopinavir	Diarrhea	Hepatitis, N/V	Rash, prolonged OTc
Interferon	Flu-like syndrome, GI intolerance, Neuropsychiatric toxicity, Hepatitis, Rash	Marrow suppression	Suicidal ideation or behavior, thyroiditis, ITP/TTP, retinopathy

Chan J, *et al. Clin Microbiol Rev.* 2015; Zumla A, *et al. Nat Rev Drug Discov.* 2016; Dyall J *et al. Drugs.* 2017
Sheahan TP, *et al. Sci Transl Med.* 2017; Sheahan TP, *et al. Nat Comm.* 2020

Interactions with Experimental COVID-19 Therapies

Please check www.covid19-druginteractions.org for updates.

Please note that if a drug is not listed it cannot automatically be assumed it is safe to coadminister. No recommendation to use experimental therapy for COVID-19 is made. Drug interaction data for many agents are limited or absent; therefore, risk-benefit assessment for any individual patient rests with prescribers.

Antibacterials

https://www.covid19-druginteractions.org/ [As of April 9, 2020]

	ATV	LPV/r	RDV	FAVI	CLQ	HCLQ	RBV	TCZ	IFN-β
Azithromycin	↑ ♥	↔ ♥	↔	↔	↔ ♥	↔ ♥	↔	↔	↔
Bedaquiline	↑ ♥	↑22% ♥	↔	↔	↔ ♥	↔ ♥	↔	↔	↔
Cefalexin	↔	↔	↔	↑	↔	↔	↔	↔	↔
Clarithromycin	↑⇑ ♥	↑ ♥	↔	↔	↔ ♥	↔ ♥	↔	↔	↔
Clindamycin	↑	↑	↔	↔	↔	↔	↔	↔	↔
Clofazimine	↔ ♥	↔ ♥	↔	↔	↔ ♥	↔ ♥	↔	↔	↔
Delamanid	↑ ♥	↑ ♥	↔	↔	↔ ♥	↔ ♥	↔	↔	↔
Erythromycin	↑ ♥	↑ ♥	↔	↔	↔ ♥	↔ ♥	↔	↔	↔
Flucloxacillin	↔	↔	↔	↑	↔	↔	↔	↔	↔
Isoniazid	↔	↔	↔	↔	↔	↔	↔	↔	↔
Levofloxacin	↔ ♥	↔ ♥	↔	↔	↔ ♥	↔ ♥	↔	↔	↔
Linezolid	↔	↔	↔	↔	↔	↔	↔	↔	↔
Metronidazole	↔	↔	↔	↔	↔	↔	↔	↔	↔
Moxifloxacin	↑ ♥	↓ ♥	↔	↔	↔ ♥	↔ ♥	↔	↔	↔
Ofloxacin	↔ ♥	↔ ♥	↔	↔	↔ ♥	↔ ♥	↔	↔	↔
Penicillins	↔	↔	↔	↑	↔	↔	↔	↔	↔
Piperacillin	↔	↔	↔	↑	↔	↔	↔	↔	↔
Pyrazinamide	↔	↔	↔	↔	↔	↔	↔	↔	↔
Rifabutin	↑	↑	⇓	↔	⇓	⇓	↔	↔	↔
Rifampicin	⇓	⇓ 75%	⇓	↔	⇓	⇓	↔	↔	↔
Rifapentine	⇓	⇓	⇓	↔	⇓	⇓	↔	↔	↔
Sulfadiazine	↔	↓	↔	↔	↔	↔	↔	↔	↔
Tazobactam	↔	↔	↔	↑	↔	↔	↔	↔	↔
Telithromycin	↑⇑ ♥	↑⇑ ♥	↔	↔	↔ ♥	↔ ♥	↔	↔	↔
Tinidazole	↑	↑	↔	↔	↔	↔	↔	↔	↔

EDITORIAL

Underpromise, overdeliver

"…engendering false hope will cause…lasting damage if science overpromises."

H. Holden Thorp

Editor-in-Chief, Science journals.

新型冠狀病毒感染臨床處置暫行指引

! 目前沒有來自RCT研究的證據支持任何抗病毒藥物治療疑似或確診SARS-CoV-2感染病例。

! 目前國外有多個SARS-CoV-2治療的相關臨床試驗正在進行中...WHO正進行中之多國臨床試驗(SOLIDARITY trial) 則包括remdesivir、lopinavir/ritonavir、lopinavir/ritonavir加interferon-β與chloroquine或hydroxychloroquine四組。

2020年3月26日第五版 [As of April 1, 2020]

新型冠狀病毒感染臨床處置暫行指引

! 考量SARS-CoV-2個案臨床嚴重度、傳播力、治療可能的效益與風險及藥物適應症外使用之倫理議題與hydroxychloroquine藥物動力學參數，建議經主治醫師評估與充分告知後，可考慮對確診個案早期給予治療。建議可以使用hydroxychloroquine治療七天：...

- 懷孕或已告知對治療藥物過敏之患者，則不建議給予治療
- Hydroxychloroquine曾被報告有視網膜病變、心臟毒性(QT prolongation)等不良反應，使用時應特別注意...

2020年3月26日第五版 [As of April 1, 2020]

新型冠狀病毒感染臨床處置暫行指引

✔ 由於SARS-CoV-2臨床實證資料不停更新，本指引將依最新實證修訂治療建議。

✔ 由於抗病毒藥物亦有藥物交互作用，使用時須注意其並用藥物。

✔ 未獲官方同意的治療方案僅能在倫理委員會批准的臨床研究中採用，且需要進行嚴密的監測。

Thanks! Any Comments?