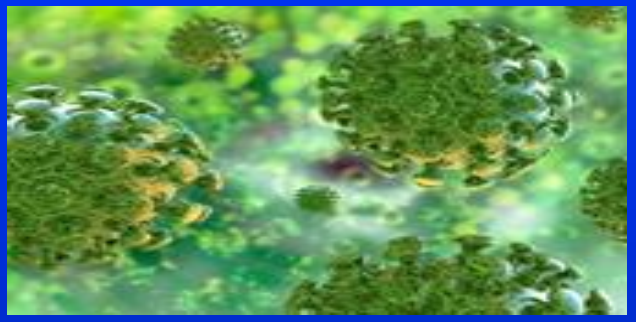
Coronavirus COVID-19
Clinical Picture and Management



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21 march 2020

Clinical picture and management

KEY POINTS

- Clinical presentation
- Risk factors
- Diagnostic criteria
- Initial investigations
- Manangement
  - Supportive care
  - medical therapy
- Conclusion

Clinical Presentation

History

- Take a detailed history to ascertain the level of risk for COVID-19 and assess the possibility of other causes.
- Travel history may be key; it is crucial for timely diagnosis and to prevent further transmission.
- The diagnosis should be suspected in patients with :

  - ✓ fever and/or signs/symptoms of acute respiratory illness (e.g., cough, dyspnoea)
  - ✓ who reside in or have travelled to a country/area or territory reporting local transmission of COVID-19 or
  - ✓ who report close contact with a confirmed or probable case of COVID-19 in the 14 days prior to symptom onset

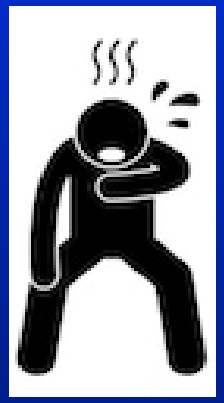
CDCP Criteria to guide ,,,,for COVID-19. March 2020 [internet publication].
WHO (COVID-19). February 2020 [internet publication].

Clinical presentation

fever ≥ 38 c

cough

dyspnoea



Chen et al The Lancet 2020 S0140-6736(20)30211-7

Clinical Presentation

- most common symptoms

- ✓ Fever 99%
- ✓ Cough 59%
- ✓ Dyspnoea 31%
- ✓ Myalgia 35%
- ✓ Fatigue 60%

- Less common symptoms

- ✓ Anorexia
- ✓ Sputum production
- ✓ Sore throat
- ✓ Confusion
- ✓ Dizziness
- ✓ Headache
- ✓ Rhinorrhoea
- ✓ Chest pain
- ✓ Haemoptysis
- ✓ Diarrhoea
- ✓ Nausea/vomiting
- ✓ Abdominal pain
- ✓ Conjunctival congestion

Wang d, and all,JAMA. 2020 Feb 7 [Epub ahead of print]
Chen et al The Lancet 2020 S0140-6736(20)30211-7

TABLE 1: Basic Clinical and Epidemic Features

Feature	All Patients ($n = 101$)
Sex	
Male	56 (55.4)
Female	45 (44.6)
Age (y)	
Mean	44.44
Range	17–75
Age group (y)	
≤ 20	1 (1.0)
21–40	44 (43.6)
41–50	27 (26.6)
51–60	14 (13.9)
61–70	14 (13.9)
≥ 70	1 (1.0)
Epidemiologic history	
Direct exposure	84 (83.2)
Indirect exposure	12 (11.9)
No exposure	5 (4.9)
Onset symptoms	
Fever	79 (78.2)
Cough	63 (62.4)
Myalgia or fatigue	17 (16.8)
Sore throat	12 (11.9)
Dyspnea	1 (1.0)
Diarrhea	3 (3.0)
Nausea and vomiting	2 (2.0)
More than one symptom	67 (66.3)
None	2 (2.0)
Underlying disease[a]	
Cardiovascular and cerebrovascular diseases	16 (15.8)
Surgical history	7 (6.9)
Digestive system disease	6 (5.9)
Respiratory system disease	5 (4.9)
Endocrine system disease	3 (3.0)
None	71 (70.3)

Relation Between Chest CT Findings and Clinical Conditions of Coronavirus Disease (COVID-19) Pneumonia: A Multicenter Study

Zhao et al, AJR:215, February 18, 2020

Table 1. Clinical Characteristics of the Study Patients, According to Disease Severity and the Presence or Absence of the Primary Cor

Characteristic	All Patients (N = 1099)	Disease Severity	
		Nonsevere (N = 926)	Severe (N = 173)
Age			
Median (IQR) — yr	47.0 (35.0–58.0)	45.0 (34.0–57.0)	52.0 (40.0–65.0)
Distribution — no./total no. (%)			
0–14 yr	9/1011 (0.9)	8/848 (0.9)	1/163 (0.6)
15–49 yr	557/1011 (55.1)	490/848 (57.8)	67/163 (41.1)
50–64 yr	292/1011 (28.9)	241/848 (28.4)	51/163 (31.3)
≥65 yr	153/1011 (15.1)	109/848 (12.9)	44/163 (27.0)
Female sex — no./total no. (%)	459/1096 (41.9)	386/923 (41.8)	73/173 (42.2)
Smoking history — no./total no. (%)			
Never smoked	927/1085 (85.4)	793/913 (86.9)	134/172 (77.9)
Former smoker	21/1085 (1.9)	12/913 (1.3)	9/172 (5.2)
Current smoker	137/1085 (12.6)	108/913 (11.8)	29/172 (16.9)
Exposure to source of transmission within past 14 days — no./total no.			
Living in Wuhan	483/1099 (43.9)	400/926 (43.2)	83/173 (48.0)
Contact with wildlife	13/687 (1.9)	10/559 (1.8)	3/128 (2.3)
Recently visited Wuhan‡	193/616 (31.3)	166/526 (31.6)	27/90 (30.0)
Had contact with Wuhan residents‡	442/611 (72.3)	376/522 (72.0)	66/89 (74.2)
Median incubation period (IQR) — days§	4.0 (2.0–7.0)	4.0 (2.8–7.0)	4.0 (2.0–7.0)
Fever on admission			
Patients — no./total no. (%)	473/1081 (43.8)	391/910 (43.0)	82/171 (48.0)
Median temperature (IQR) — °C	37.3 (36.7–38.0)	37.3 (36.7–38.0)	37.4 (36.7–38.1)
Distribution of temperature — no./total no. (%)			
<37.5°C	608/1081 (56.2)	519/910 (57.0)	89/171 (52.0)
37.5–38.0°C	238/1081 (22.0)	201/910 (22.1)	37/171 (21.6)
38.1–39.0°C	197/1081 (18.2)	160/910 (17.6)	37/171 (21.6)
>39.0°C	38/1081 (3.5)	30/910 (3.3)	8/171 (4.7)
Fever during hospitalization			
Patients — no./total no. (%)	975/1099 (88.7)	816/926 (88.1)	159/173 (91.9)
Median highest temperature (IQR) — °C	38.3 (37.8–38.9)	38.3 (37.8–38.9)	38.5 (38.0–39.0)
<37.5°C	92/926 (9.9)	79/774 (10.2)	13/152 (8.6)
37.5–38.0°C	286/926 (30.9)	251/774 (32.4)	35/152 (23.0)
38.1–39.0°C	434/926 (46.9)	356/774 (46.0)	78/152 (51.3)
>39.0°C	114/926 (12.3)	88/774 (11.4)	26/152 (17.1)
Symptoms — no. (%)			
Conjunctival congestion	9 (0.8)	5 (0.5)	4 (2.3)
Nasal congestion	53 (4.8)	47 (5.1)	6 (3.5)
Headache	150 (13.6)	124 (13.4)	26 (15.0)
Cough	745 (67.8)	623 (67.3)	122 (70.5)
Sore throat	153 (13.9)	130 (14.0)	23 (13.3)
Sputum production	370 (33.7)	309 (33.4)	61 (35.3)
Fatigue	419 (38.1)	350 (37.8)	69 (39.9)
Hemoptysis	10 (0.9)	6 (0.6)	4 (2.3)
Shortness of breath	205 (18.7)	140 (15.1)	65 (37.6)
Nausea or vomiting	55 (5.0)	43 (4.6)	12 (6.9)
Diarrhea	42 (3.8)	32 (3.5)	10 (5.8)
Myalgia or arthralgia	164 (14.9)	134 (14.5)	30 (17.3)
Chills	126 (11.5)	100 (10.8)	26 (15.0)
Signs of infection — no. (%)			
Throat congestion	19 (1.7)	17 (1.8)	2 (1.2)
Tonsil swelling	23 (2.1)	17 (1.8)	6 (3.5)
Enlargement of lymph nodes	2 (0.2)	1 (0.1)	1 (0.6)
Rash	2 (0.2)	0	2 (1.2)
Coexisting disorder — no. (%)			
Any	261 (23.7)	194 (21.0)	67 (38.7)
Chronic obstructive pulmonary disease	12 (1.1)	6 (0.6)	6 (3.5)
Diabetes	81 (7.4)	53 (5.7)	28 (16.2)
Hypertension	165 (15.0)	124 (13.4)	41 (23.7)
Coronary heart disease	27 (2.5)	17 (1.8)	10 (5.8)
Cerebrovascular disease	15 (1.4)	11 (1.2)	4 (2.3)
Hepatitis B infection¶	23 (2.1)	22 (2.4)	1 (0.6)
Cancer‖	10 (0.9)	7 (0.8)	3 (1.7)
Chronic renal disease	8 (0.7)	5 (0.5)	3 (1.7)
Immunodeficiency	2 (0.2)	2 (0.2)	0

The NEW ENGLAND JOURNAL of MEDICINE

Clinical Characteristics of Coronavirus Disease 2019 in China

1. Most of the patient cohort hospitalized did not initially have fever
2. median age 47, and 42% were women.
3. 25% had a preexisting condition, such as hypertension or COPD.
4. patients with severe disease were older than the non-severe patients
5. 5% were admitted to the ICU, 2.3% required mechanical ventilation, and 1.4% died.
6. Cough 60%, 40% presented with fever, all developed fever while hospitalized.
7. 16% of patients developed "severe illness" after admission
8. 80% of patients had lymphocytopenia at admission, and most had elevated C-reactive protein.
9. median incubation 4 days.
10. ground-glass opacity was the most common on chest CT ,18% of non-severe cases, no radiographic or CT abnormality was found.
11. 60% of patients received IV antibiotics, 35% received oseltamivir therapy. 40% required oxygen therapy.

12. Patients stayed in the hospital for a median of 12 days, during which time most received a diagnosis of pneumonia.

Severity and Risk factors

- The clinical presentation resembles viral pneumonia

- severity of illness ranges from :
  - ✓ Mild 80%
  - ✓ Severe 14%
  - ✓ Critical illness 5 %
  - ✓ Minimally symptomatic or asymptomatic

- Illness severity is associated with :
  - ✓ older age
  - ✓ Presence of underlying health conditions :
  - – hypertension
  - – diabetes
  - – cardiovascular disease
  - – respiratory disease

Zhonghua Liu Xing Bing Xue Za Zhi. 2020 Feb 17;41(2):145-51
Yang, J, Int J Infect Dis. 2020 Mar 12 [Epubahead of print].

Initial investigations

- Pulse oximetry
- ABG (as indicated to detect hypercarbia or acidosis)
- FBC
- Comprehensive metabolic panel
- Coagulation screen
- Inflammatory markers (serum procalcitonin and C-reactive protein)
- Serum troponin
- Serum lactate dehydrogenase
- Blood and sputum cultures
- Serum creatine kinase

Qin C, Zhou L, Hu Z, et al. Wuhan, China. Clin Infect Dis. 2020 Mar 12 [Epub ahead of print].

Initial investigations

Test	Result
pulse oximetry • Order in patients with severe illness. • Recommended in patients with respiratory distress and cyanosis.	may show low oxygen saturation (SpO_2 <90%
ABG • Order in patients with severe illness as indicated to detect hypercarbia or acidosis. • Recommended in patients with respiratory distress and cyanosis who have low oxygen saturation (SpO_2 <90%).	may show low partial oxygen pressure
FBC • Order in patients with severe illness. • The most common laboratory abnormalities in patients hospitalised with pneumonia include leukopenia, lymphopenia, and leukocytosis. Other abnormalities include neutrophilia, thrombocytopenia, and decreased haemoglobin.[6] [7] [8] [81]	leukopenia; lymphope leukocytosis
coagulation screen • Order in patients with severe illness. • The most common abnormalities are elevated D-dimer and prolonged prothrombin time.[6] [7] [8] • Non-survivors had significantly higher D-dimer levels and longer prothrombin time and activated partial thromboplastin time compared with survivors in one study.[95]	elevated D-dimer; prolonged prothrombi time
comprehensive metabolic panel • Order in patients with severe illness. • The most common laboratory abnormalities in patients hospitalised with pneumonia include elevated liver transaminases. Other abnormalities include decreased albumin and renal impairment.[6] [7] • Liver function abnormalities may be more common in patients with COVID-19 compared with other types of pneumonia.[91]	elevated liver transaminases; decreased albumin; re impairment
serum procalcitonin • Order in patients with severe illness. • May be elevated in patients with secondary bacterial infection.[6] [7] May be more common in children.[77]	may be elevated
serum C-reactive protein • Order in patients with severe illness. • May be elevated in patients with secondary bacterial infection.[6] [7]	may be elevated
serum lactate dehydrogenase • Order in patients with severe illness. • Elevated lactate dehydrogenase has been reported in 73% to 76% of patients.[6] [7] May be more common in patients with COVID-19 compared with other types of pneumonia.[91] • Indicates liver injury or lysis of blood erythrocytes.	may be elevated
serum creatine kinase • Order in patients with severe illness.	may be elevated
serum troponin level • Order in patients with severe illness. • May be elevated in patients with cardiac injury.[6]	may be elevated
blood and sputum cultures • Collect blood and sputum specimens for culture in all patients to rule out other causes of lower respiratory tract infection and sepsis, especially patients with an atypical epidemiological history.[5] • Specimens should be collected prior to starting empirical antimicrobials if possible.	negative for bacterial infection
real-time reverse transcription polymerase chain reaction (RT-PCR) • Molecular testing is required to confirm the diagnosis. Nucleic acid sequencing may be required to confirm the diagnosis.[83] • Collect upper respiratory specimens (nasopharyngeal and oropharyngeal swab or wash) in ambulatory patients and/or lower respiratory specimens (sputum and/or endotracheal aspirate or	positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) viral RNA; may be positive for influenza A and B viruses and other respiratory pathogens

BMJ Publishing Group Ltd 2020.
Last updated: Mar 18, 2020

Case Report : COVID19

d1

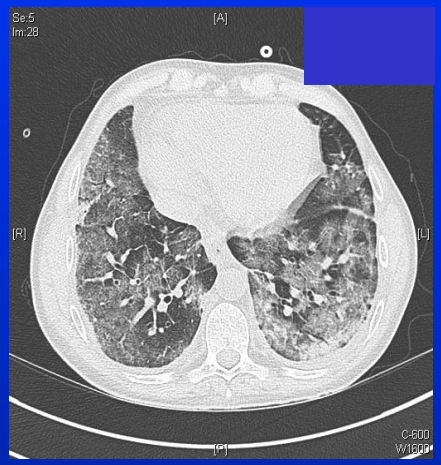
46-yer-old man
Lung Transplatation 9 years ago

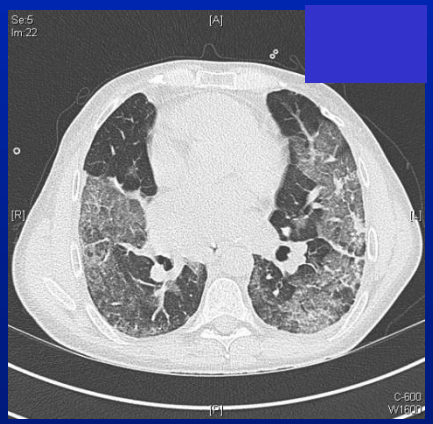
Fever,dypnea,dry coughs

Tacrolimus, MMF, Pred

RSV –
Influenza –
PCR covid19 –
ATB, O2

d3

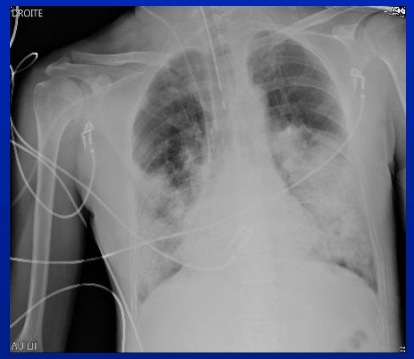




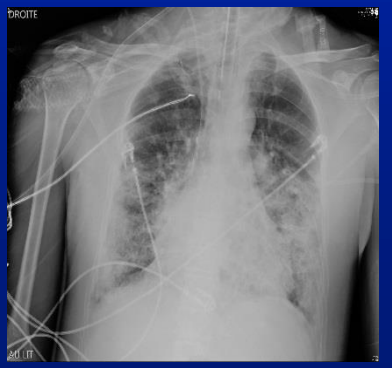
(PCR) testing may not return positive initially

PCR covid19 + BAL
ATB, O2
Mechanical ventilation
NAD
Ventral Decubutus
Corticosteroids ??

d5



d6



Hôpital FOCH, Dr HAMID

Manangement of COVID 19

- Isolation
- Supportive care
- Medical therapy

Initial		(summary)
suspected COVID-19		
	1st	infection prevention and control procedures
	plus	supportive care plus monitoring
	plus	empirical antimicrobials

Acute		(summary)
confirmed COVID-19		
severe illness	1st	hospital admission and infection prevention and control procedures
	plus	supportive care plus monitoring
	adjunct	mechanical ventilation
	adjunct	experimental therapies
mild illness	1st	consider home care and isolation
	plus	supportive care plus monitoring

No therapeutics have yet been proven effective for the treatment of severe illness caused by SARS-CoV-2.

BMJ Publishing Group Ltd 2020. Last updated: Mar 18, 2020

Medical Therapy

Treatement for COVID 19

Drug	Clincal Studies	Mechanisme of action
REMDESIVIR used against Ebola	ongoing	Interaction with viral polymerase
Chloroquine Phosphate Used for malaria	ongoing	Inertaction with ACE2 receptor Immunomodulation
Hydroxy-Chloroquine Used for lupus	ongoing	
Lopinavir/ritonavir (Kaletra) sused in VIH	ongoing	protease inhibition

Chin Med J (Engl). 2020 Mar 5 (Epub ahead of print)

European clinical trial

Supportive Care
treating the symptoms

Kaletra and
beta interferon

European clinical Studie
on 3,200 patients
with Covid-19
Pr Yazdanpanah
PARIS

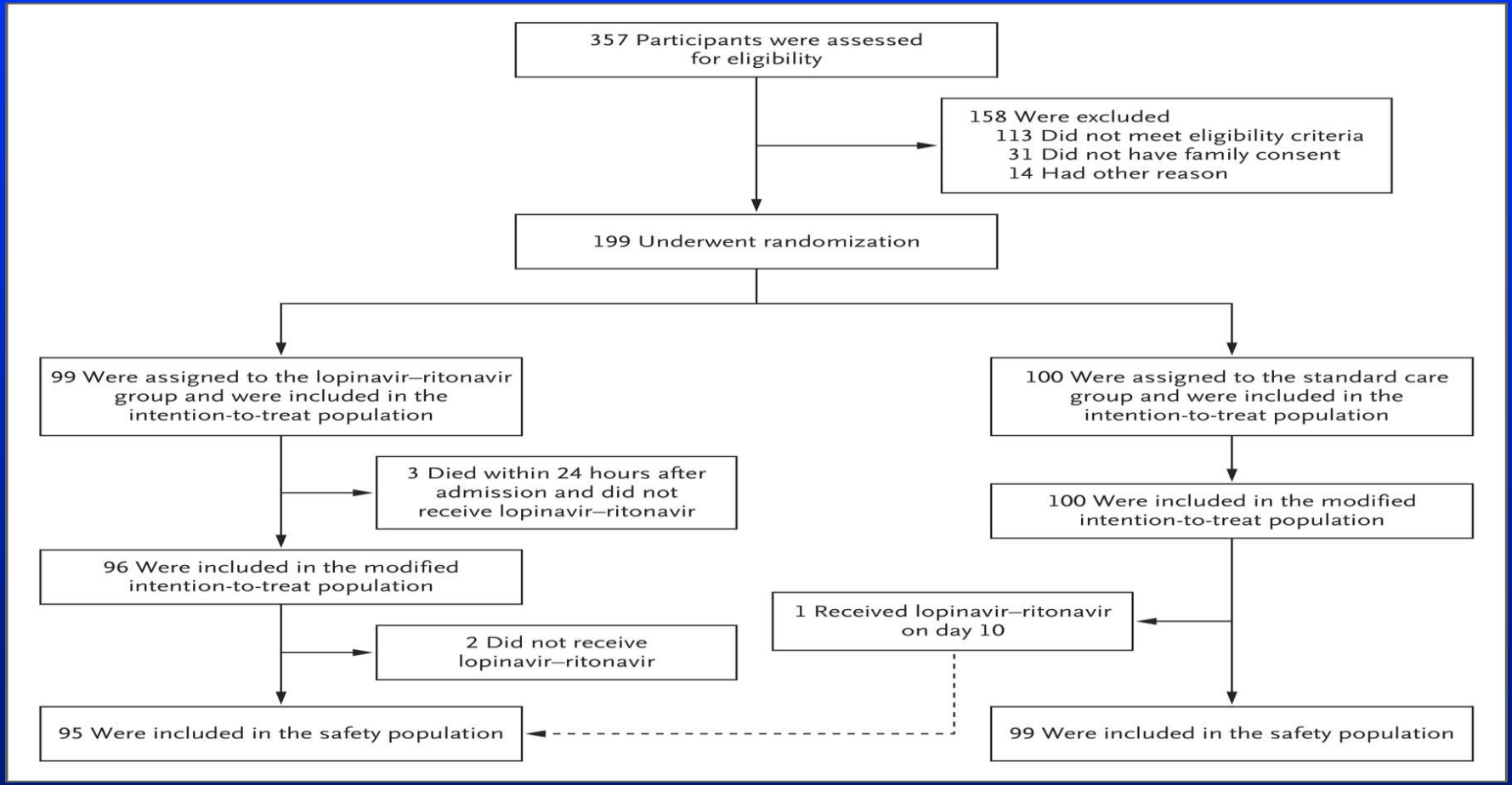
Kaletra
Lopinavir/ritonavir
sused in VIH

Remdesivir
used against Ebola

https://www.sciencesetavenir.fr/sante/coronavirus-lancement-d-un-essai-clinique-sur-3-200-patients-atteint-de-covid-19-testera-des-traitements_142386

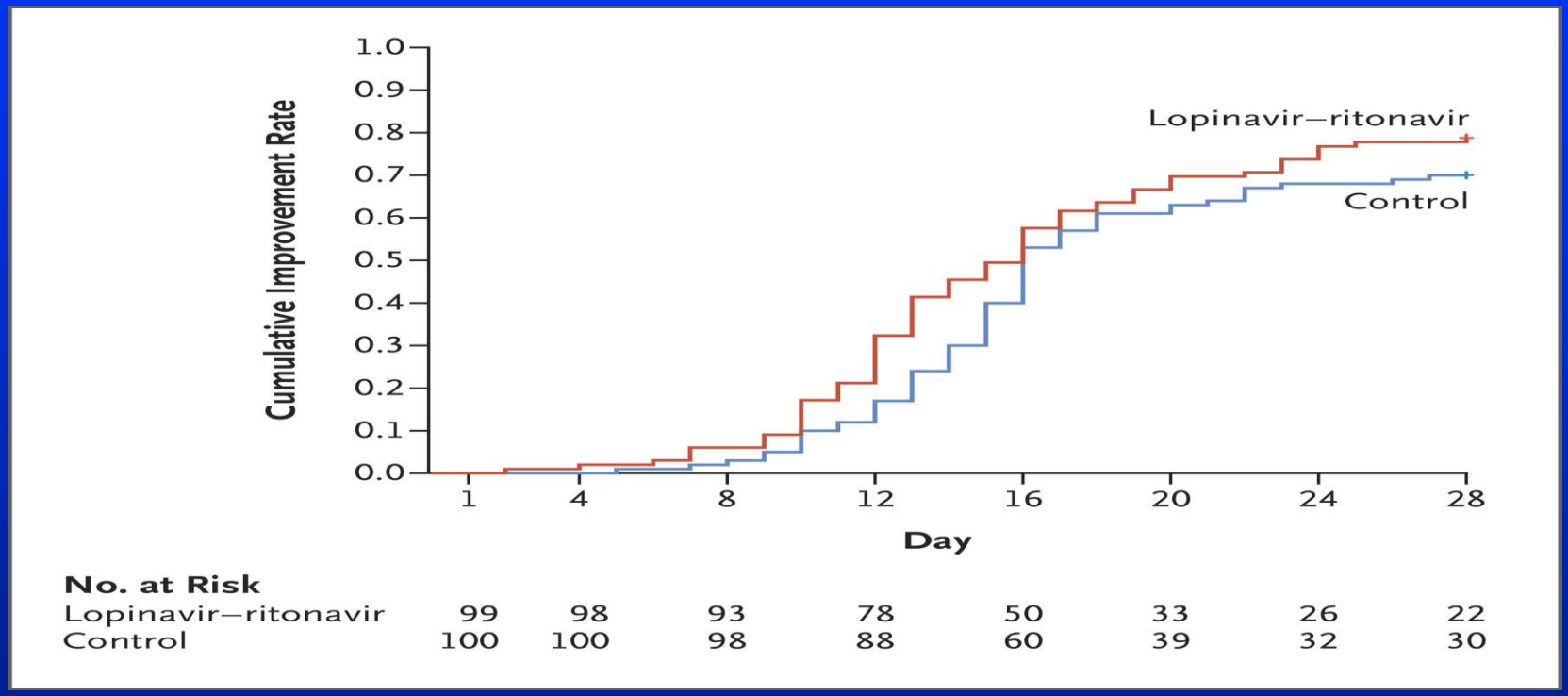
A Trial of Lopinavir–Ritonavir in Adults Hospitalized with Severe Covid-19

a randomized, controlled, open-label trial involving hospitalized adult patients with confirmed SARS-CoV-2 infection, which causes the respiratory illness Covid-19, and an oxygen



March 18, 2020 DOI: 10.1056/NEJMoa2001282

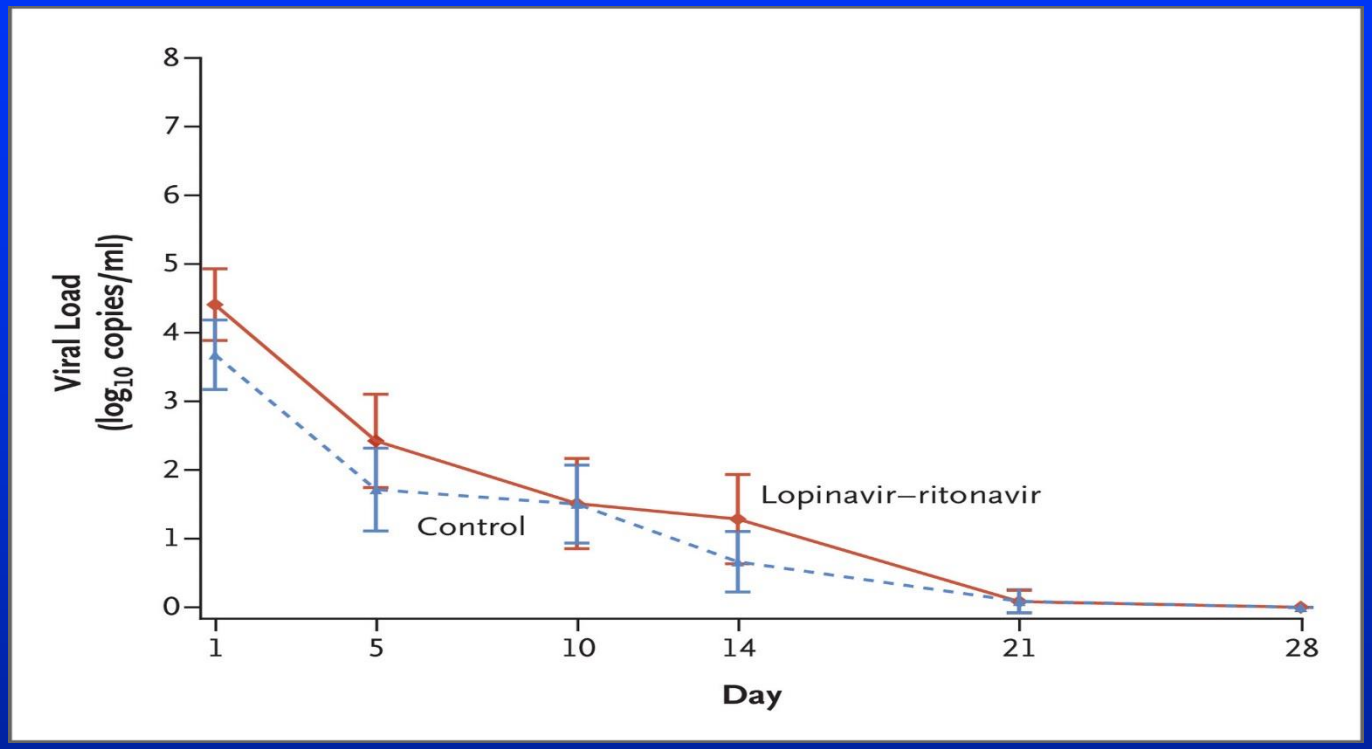
A Trial of Lopinavir–Ritonavir in Adults Hospitalized with Severe Covid-19



Patients assigned to lopinavir–ritonavir did not have a time to clinical improvement different from that of patients assigned to standard care alone

March 18, 2020 DOI: 10.1056/NEJMoa2001282

A Trial of Lopinavir–Ritonavir in Adults Hospitalized with Severe Covid-19



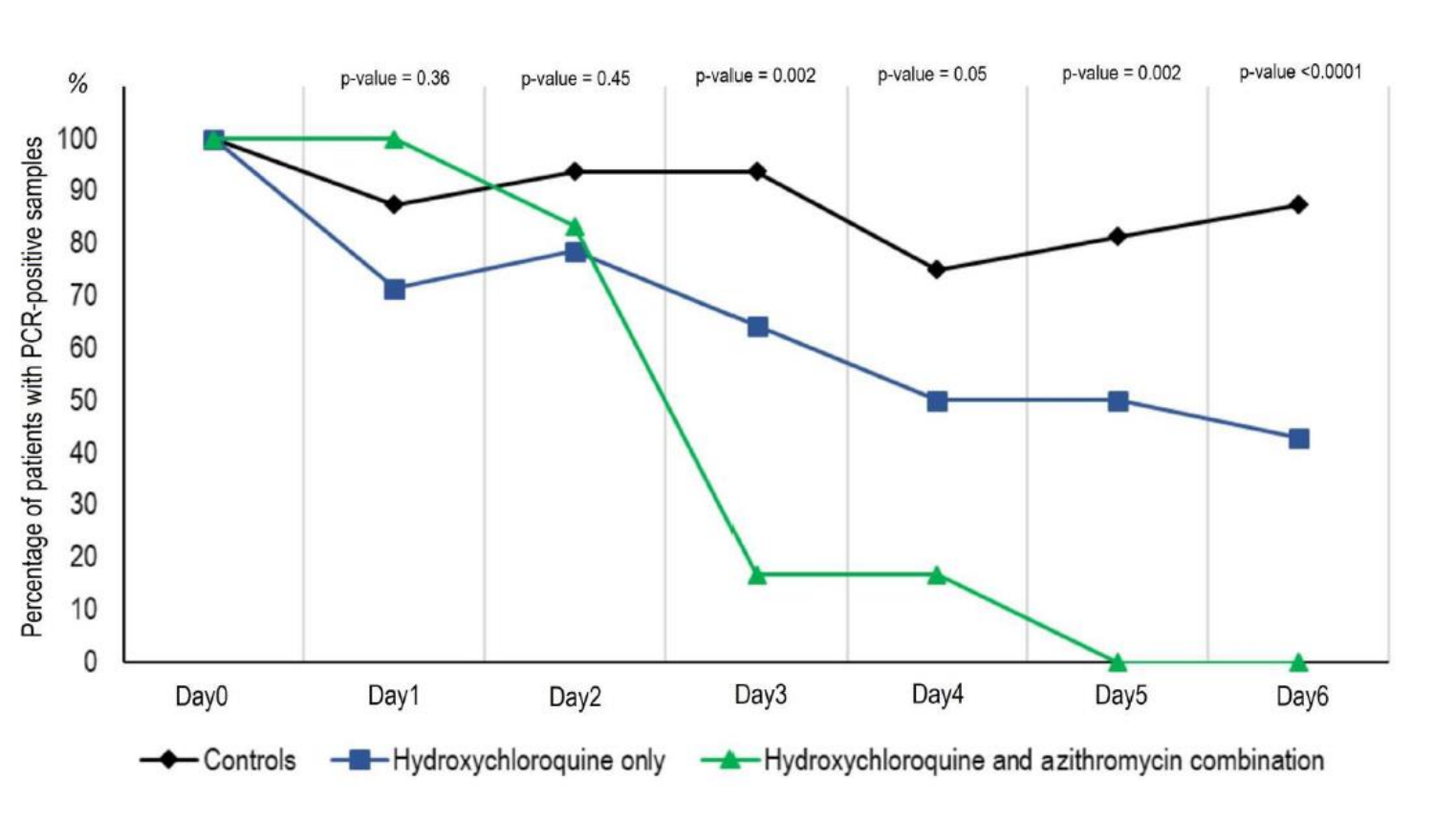
In hospitalized adult patients with severe Covid-19, no benefit was observed with lopinavir–ritonavir treatment beyond standard care

Treatment with lopinavir–ritonavir was not associated with a difference from standard care in the time to clinical improvement

Mortality at 28 days was similar in the lopinavir–ritonavir group and the standard-care group

March 18, 2020 DOI: 10.1056/NEJMoa2001282

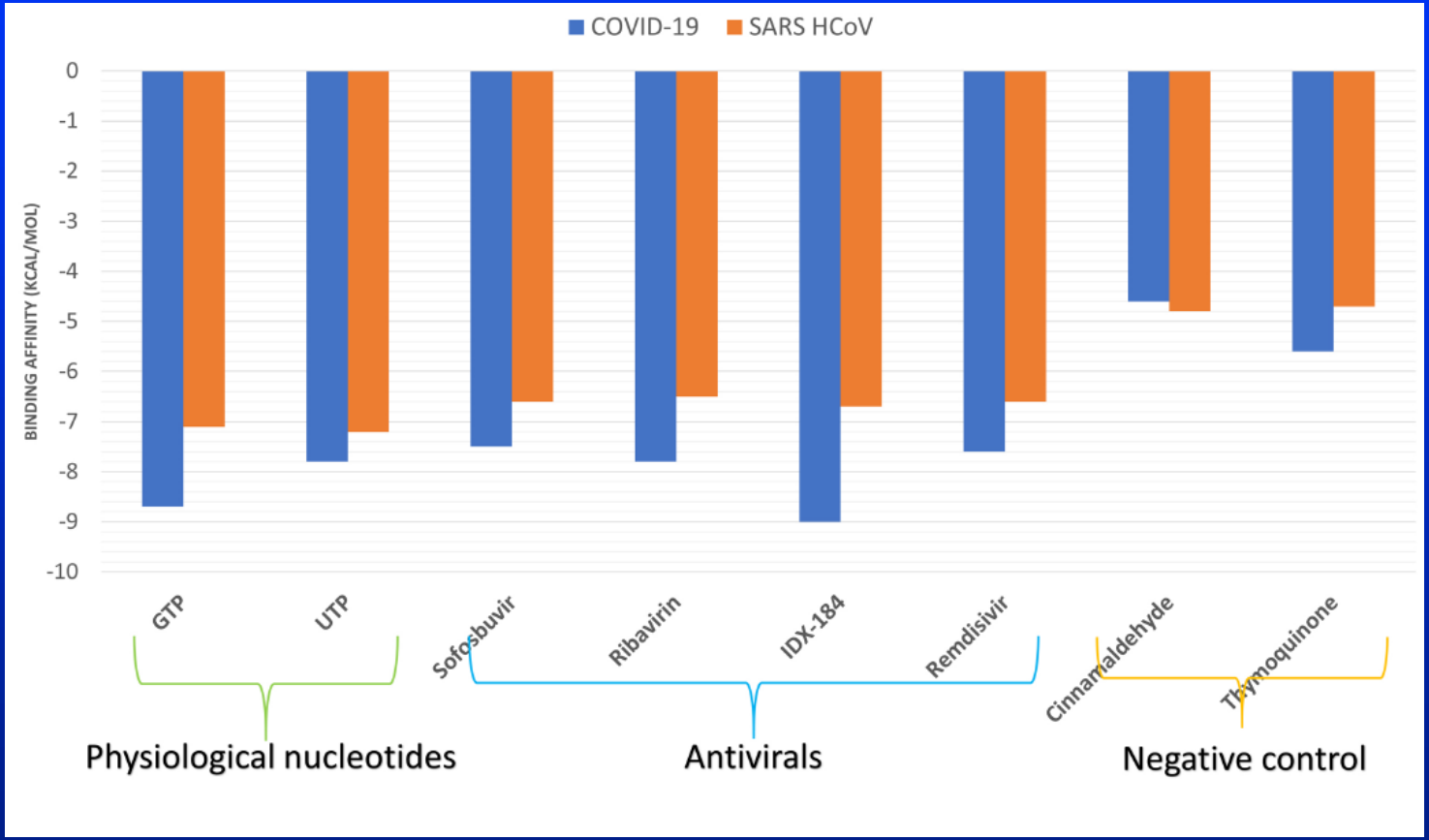
Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial



hydroxychloroquine treatment is significantly associated with viral load reduction/disappearance in COVID-19 patients and its effect is reinforced by azithromycin.

Gautret et al. IJAA– In Press 17 March 2020 –DOI : 10.1016/j.ijantimicag.2020.105949

Anti-HCV, nucleotide inhibitors, repurposing against COVID-19



A.A. Elfiky, *Life Sciences*(2020), https://doi.org/10.1016/j.lfs.2020.117477

Take home message

- The 2019 novel coronavirus, called 'SARS-CoV-2' is a new strain that has not been identified in humans before. The disease that is caused by SARS-CoV-2 is called COVID-19
- The clinical presentation resembles viral pneumonia, Fever , Cough, and Dyspnoea
- The severity of illness ranges from mild to severe, Illness severity is associated with older age and the presence of underlying health conditions. hypertension, diabetes, cardiovascular disease, and respiratory disease.
- No specific treatments are known to be effective for COVID-19 yet
- Treatment protocols and clinical studies ongoing for COVID-19 in Europe, China, USA
- Patients should be managed in a hospital setting where possible; however, home care may be suitable for selected patients with mild illness unless

Take home message