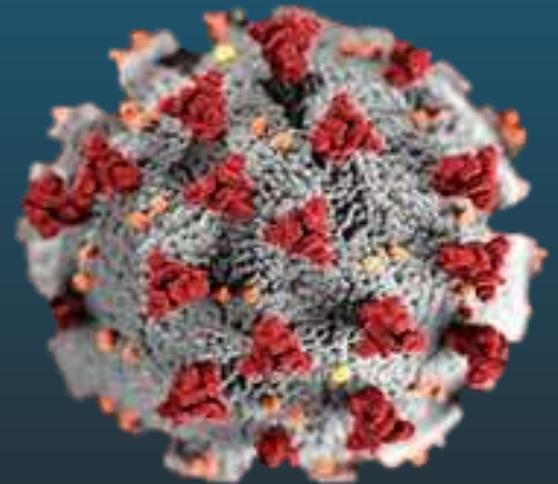


Critical care of patients with Covid 19

Dr. Shaimaa A. Mostafa (MD)

Assistant professor of cardiovascular medicine

Benha University, Egypt.

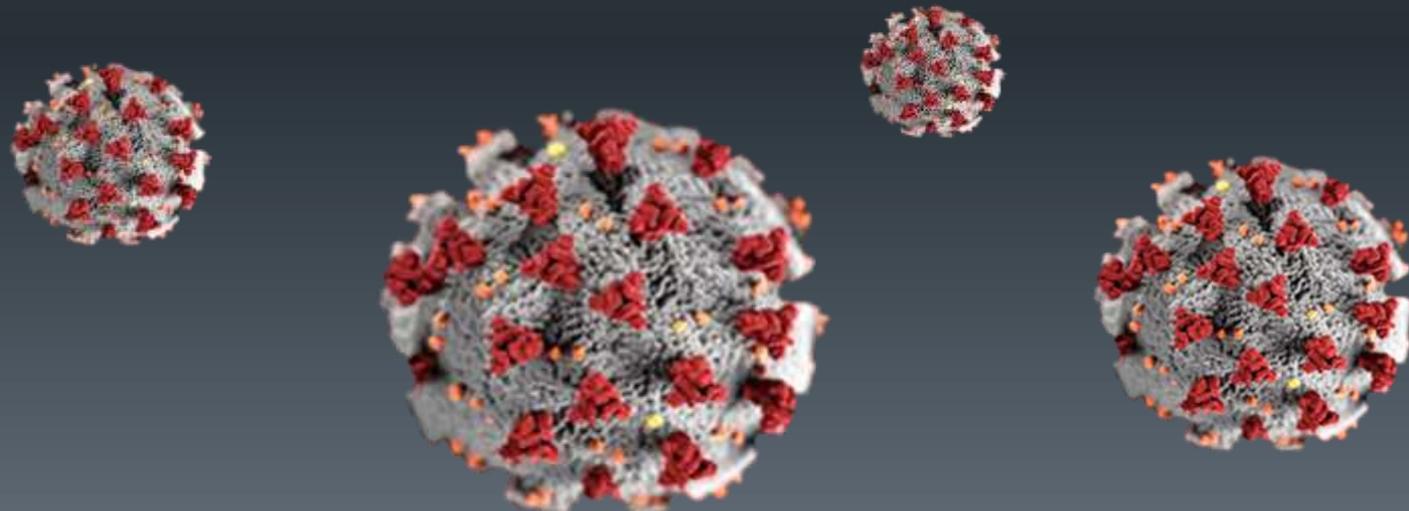
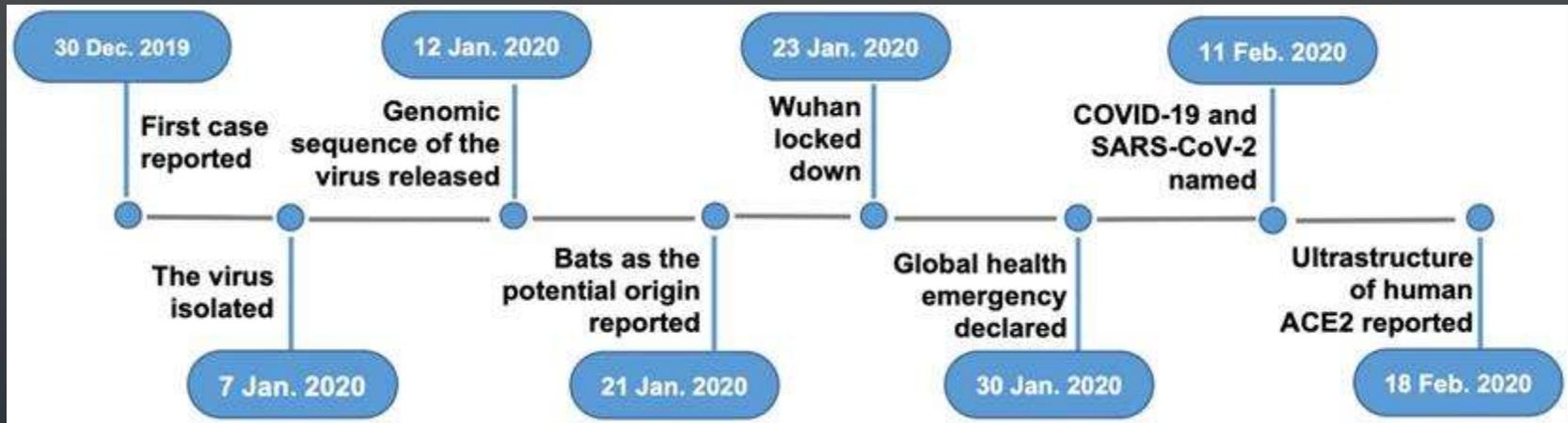


Agenda



- ❖ Overview of Covid 19 symptoms and complication
- ❖ Management : supportive
medical

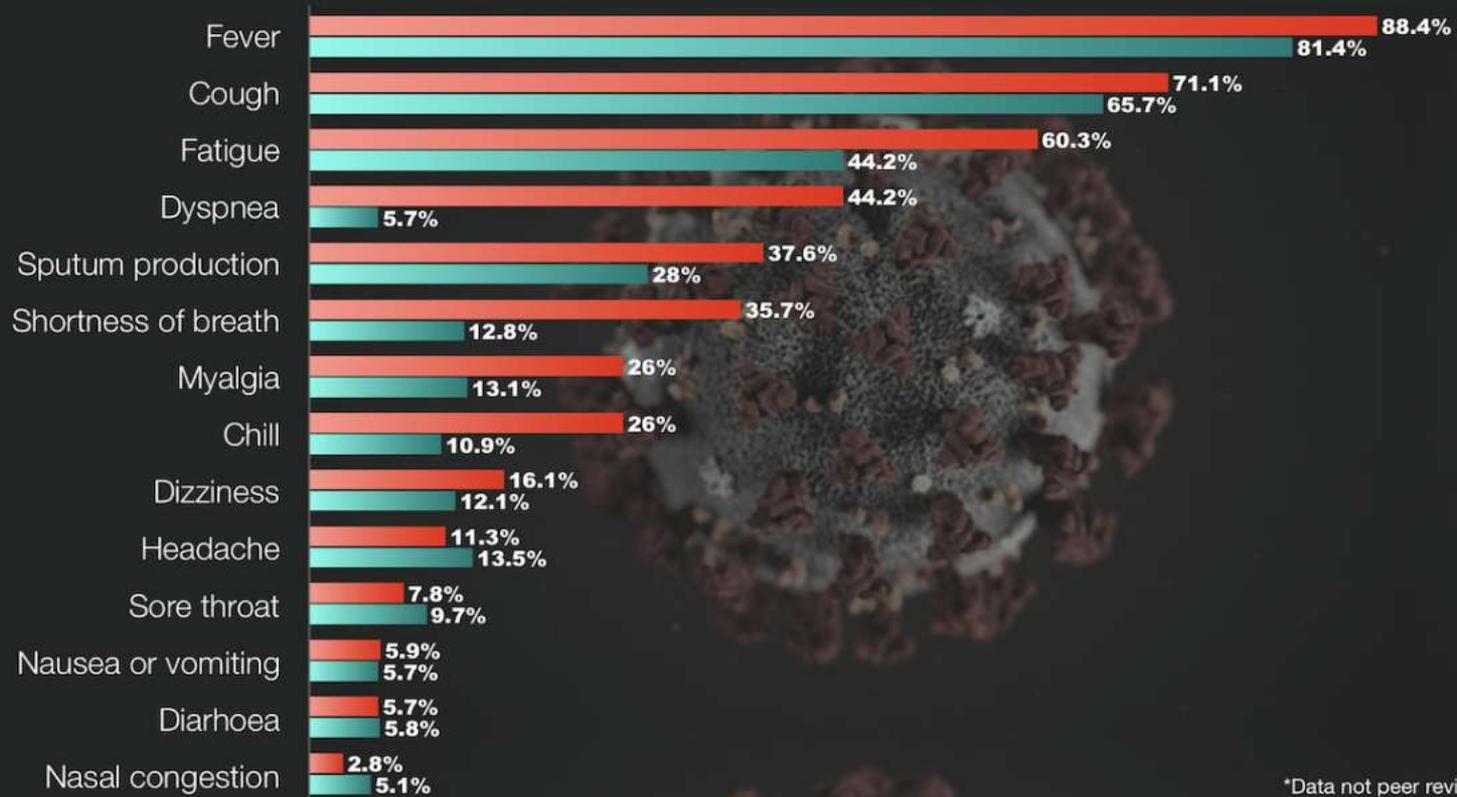
A novel coronavirus (nCoV) is a new strain that has not been previously identified in humans.



CORONAVIRUS SYMPTOMS

29th March 2020

In people with severe (■ n=1376) and non-severe (■ n=4324) COVID-19*



*Data not peer reviewed



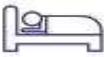
NUFFIELD DEPARTMENT OF
PRIMARY CARE
HEALTH SCIENCES

<https://www.cebm.net/covid-19/covid-19-signs-and-symptoms-tracker/>



Oxford COVID-19
Evidence Service

COVID-19: IDENTIFYING THE SYMPTOMS

SYMPTOMS		COVID-19	COLD	FLU
		Symptoms range from mild to severe	Gradual onset of symptoms	Abrupt onset of symptoms
Fever		Common	Rare	Common
Cough		Common (usually dry)	Mild	Common (usually dry)
Sore Throat		Sometimes	Common	Sometimes
Shortness of Breath		Sometimes	No	No
Fatigue		Sometimes	Sometimes	Common
Aches & Pains		Sometimes	Common	Common
Headaches		Sometimes	Rare	Common
Runny or Stuffy Nose		Rare	Common	Sometimes
Diarrhea		Rare	No	Sometimes for children
Sneezing		No	Common	No

Adapted from material produced by WHO, Centres for Disease Control and Prevention.



TOGETHER WE CAN HELP STOP THE SPREAD AND STAY HEALTHY.

For more information about Coronavirus (COVID-19) visit [health.gov.au](https://www.health.gov.au)



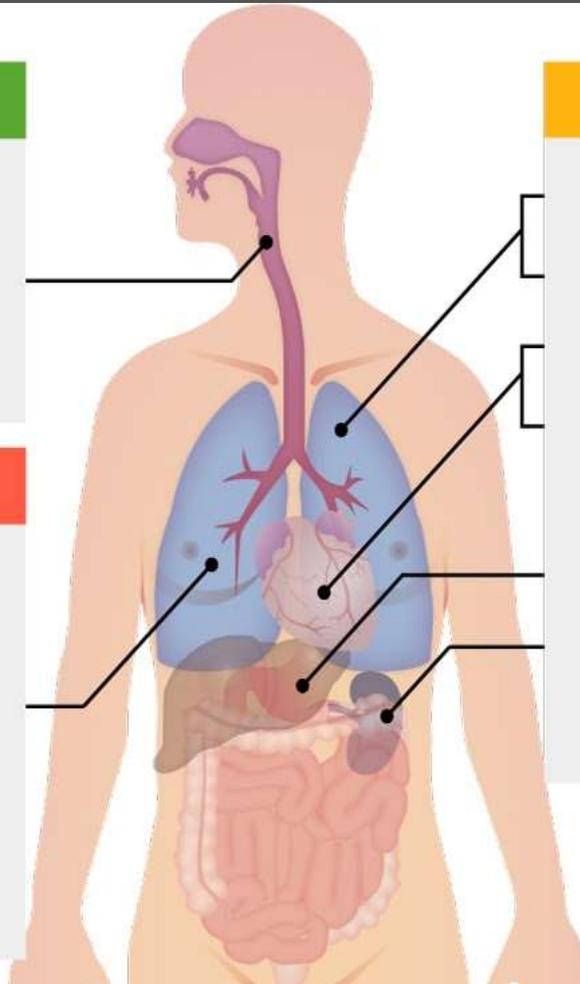
Australian Government

Common symptoms

- Fever
- Dry cough
- Flu-like symptoms

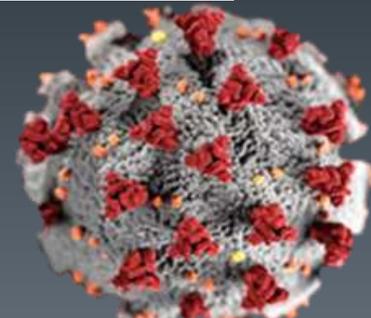
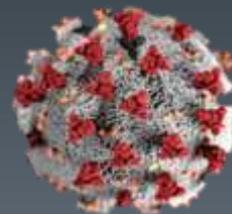
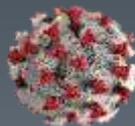
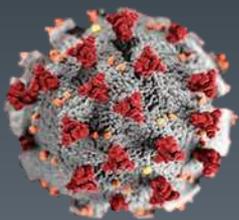
Severe cases

- Dyspnea
- Chest pain
- Hemoptysis
- Crackles
- Respiratory insufficiency



Complications

- Pneumonia
- ARDS
- Cardiac injury
- Arrhythmia
- Septic shock
- Liver dysfunction
- Acute kidney injury
- Multi-organ failure



SARS-CoV-2 viral load and the severity of COVID-19

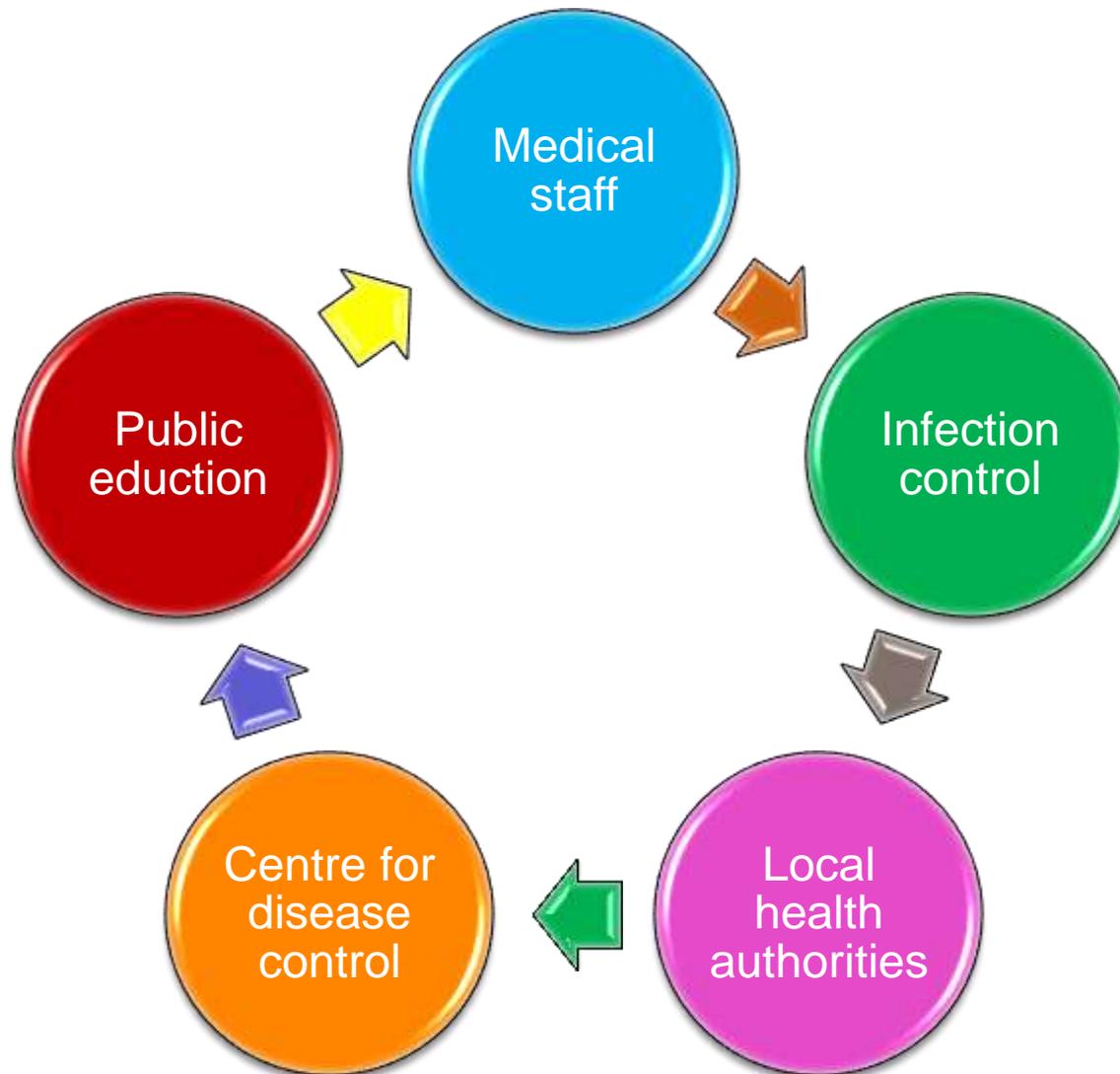


We discuss the relationship of viral load and severity of the disease in SARs, SARS-CoV-2 and Influenza, and provide a summary of sources the verify mortality of healthcare workers mortality across different countries.

evidence-cov.id/viral-load
#EvidenceCOVID

Heneghan C, Brassey J, Jefferson T.
26th March 2020

Management:





COVID-19 Illness in Native and Immunosuppressed States: A Clinical-Therapeutic Staging Proposal

Hasan K. Siddiqi, MD, MSCR, [Mandeep R. Mehra, MD, MSc](#) *  

Department of Internal Medicine, Brigham and Women's Hospital and Harvard Medical School, Boston, MA

 PlumX Metrics

DOI: <https://doi.org/10.1016/j.healun.2020.03.012>



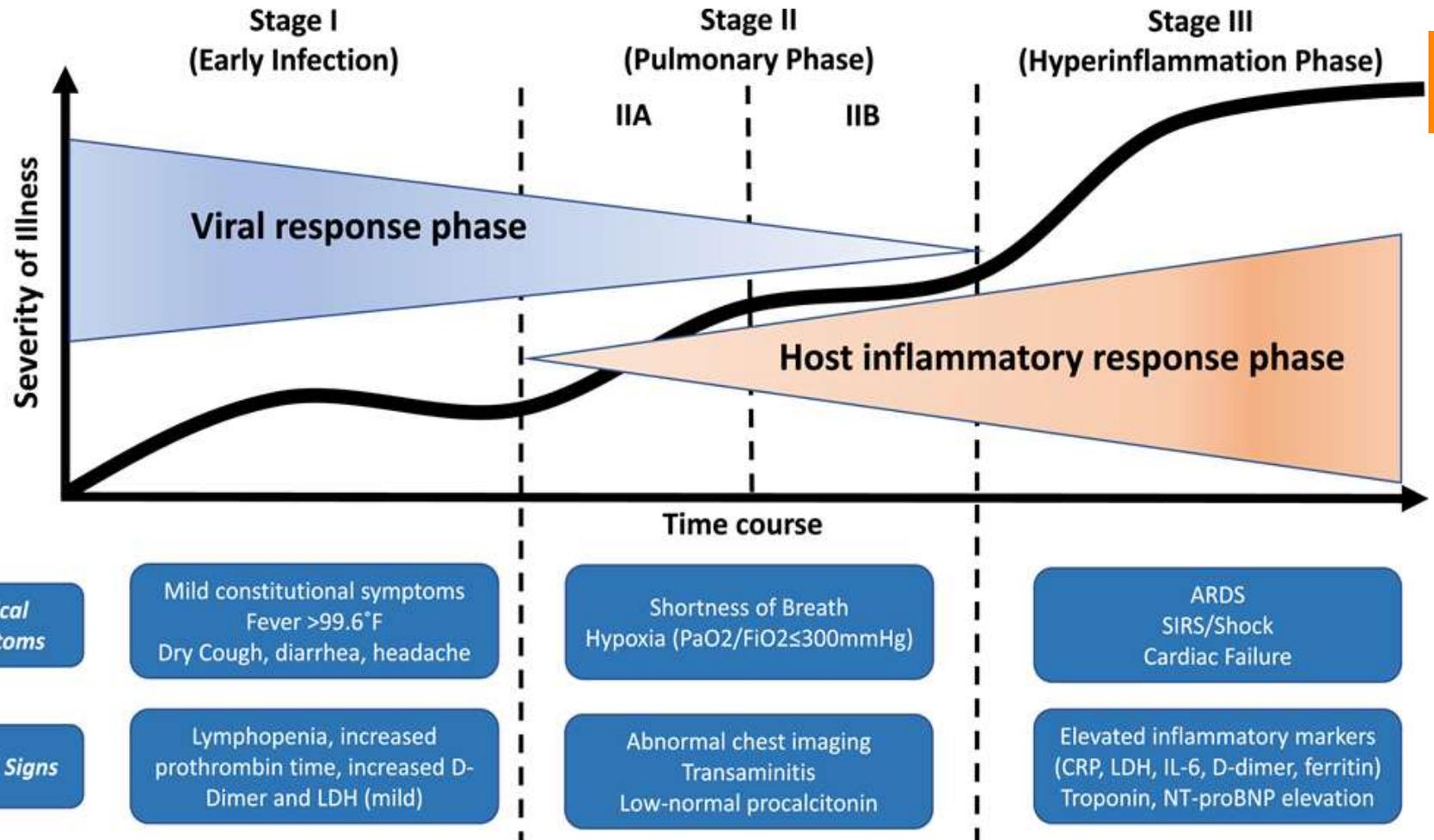
 Article Info

Abstract **Full Text** Images References

Article Outline

- I. [Stage I \(mild\) – Early Infection](#)
- II. [Stage II \(moderate\) - Pulmonary Involvement \(IIa\) without and \(IIb\) with hypoxia](#)
- III. [Stage III \(severe\) – Systemic Hyperinflammation](#)
- IV. [Disclosure](#)
- V. [References](#)

The onslaught of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) associated coronavirus disease 2019 (COVID-19) has gripped the world in a pandemic and challenged the culture, economy and healthcare infrastructure of its population. It has become increasingly important that health systems and their clinicians adopt a universal consolidated framework to recognize the staged progression of COVID-19 illness in order to deploy and investigate targeted therapy likely to save lives. The largest report of COVID-19 from the Chinese Centers for Disease Control and Prevention summarized findings from 72, 314 cases and noted that while 81% were of a mild nature with an overall case fatality rate of 2.3%, a small sub-group of 5% presented with respiratory failure, septic shock and multi-organ dysfunction resulting in fatality in half of such cases, a finding that suggests that it is within this group that the opportunity for life saving measures may be most pertinent.¹ Once the disease is manifest, supportive measures are initiated with quarantines; however a systematic disease modifying therapeutic approach



ARDS = Acute respiratory distress syndrome; CRP = C-reactive protein; IL = Interleukin; JAK = Janus Kinase; LDH=Lactate DeHydrogenase; SIRS = Systemic inflammatory response syndrome.

A Clinical-Therapeutic Staging Proposal

Stage I

- **symptomatic relief**
- anti-viral therapy (such as remdesivir) be proven beneficial
- In patients who can keep the virus limited to this stage prognosis and recovery is excellent.

Stage IIA

- supportive measures and available anti-viral therapies
- corticosteroids in patients with COVID-19 may be avoided

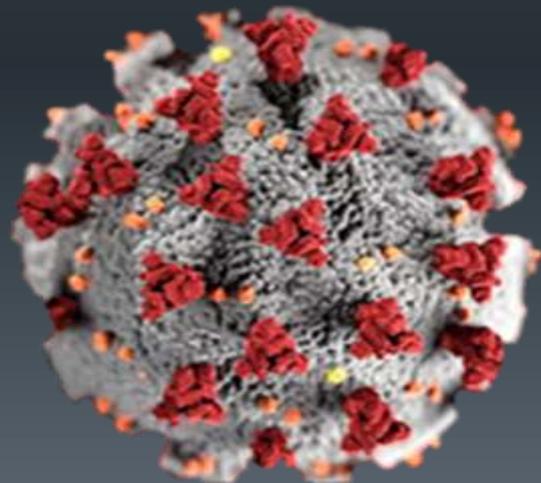
Stage IIB

- anti-inflammatory therapy such as with corticosteroids

Stage III

- immunomodulatory agents to reduce systemic inflammation before it overwhelmingly results in multi-organ dysfunction.
- cytokine inhibitors such as tocilizumab
- Intravenous immune globulin

The most important point is to interfere with the appropriate therapy at the appropriate stage this explain heterogeneity of the effect of drug therapy



When to transfer patient with Covid 19 to ICU?



LETTER TO THE EDITOR

Open Access



Lower mortality of COVID-19 by early recognition and intervention: experience from Jiangsu Province

Qin Sun¹, Haibo Qiu¹, Mao Huang^{2*} and Yi Yang^{1*}

A cluster of patients of novel coronavirus pneumonia (NCP) have been identified in Wuhan in December 2019 and soon this virus spread at a tremendous rate which swept through the whole China and more than 93 countries and regions around the world [1, 2]. This emerging, rapidly evolving situation has threatened the health of all mankind and WHO has raised COVID-19 risk to “very high” at global level.

Up to now, 80,859 cases were confirmed, among which 10–15% patients were critically ill and 3100 (3.83%) died in China. The large number of transmission population between Jiangsu and Hubei provinces led to the infinite burden in controlling the COVID-19 epidemic in Jiangsu Province [3, 4]. By 24:00 on March 7, a total of 631 confirmed cases of NCP were reported with a portion of

Since the severity of disease is closely related to the prognosis, the basic and essential strategies to improve outcomes that we should adhere to remain the early detection of high-risk and critically ill patients [9, 10]. During the clinical work in Jiangsu Province, critical care was shifted forward and early screening was measured. All NCP patients were screened twice every day and respiratory rate (RR), heart rate (HR), SpO₂ (room air) were monitored regularly. Once SpO₂ < 93%, RR > 30/min, HR > 120/min or any signs of organ failure were observed, patients would be transferred to intensive care unit (ICU) and ICU physicians and nurses would take over their treatment. Acti

From our data of more than 600 NCP patients in Jiangsu Province, age, lymphocyte count, oxygen supplementation and aggressive pulmonary radiographic infil-

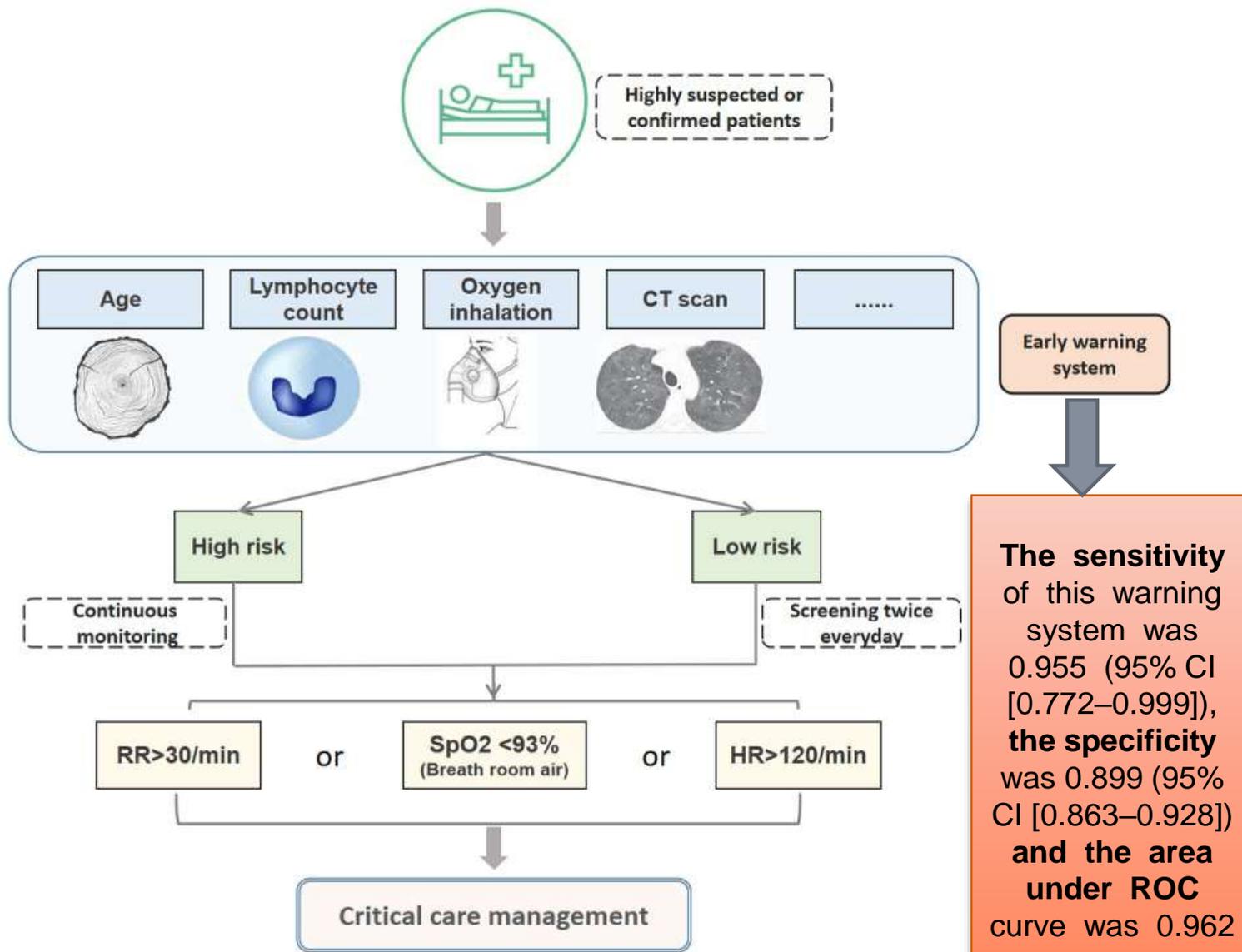


Fig. 1 Early warning system and screening procedures for NCP patients

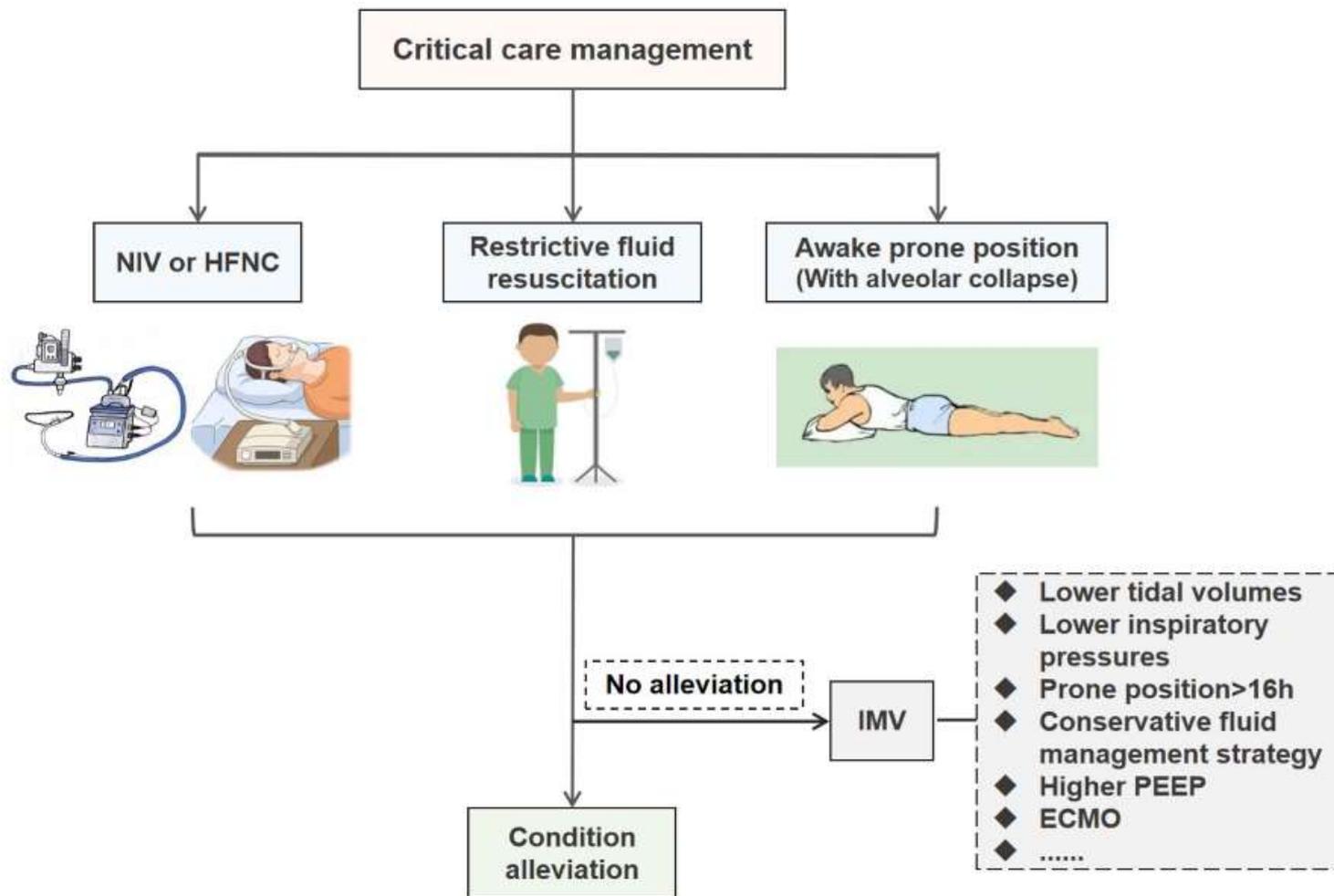


Fig. 2 Early intervention for patients with critical condition

From an oxygenation perspective:

oxygen by nasal prongs up to a maximum of 6L/minute

• If fail



non-rebreather mask with filter at flow rates of up to 20 LPM

• If fail



HFNO > 6L/min therapy and/or non-invasive ventilation (NIV – including BiPAP and/or CPAP) can be commenced

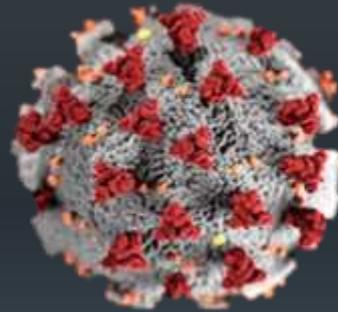
Critical care management of adults with community-acquired severe respiratory viral infection

[Yaseen M. Arabi](#) , [Robert Fowler](#) & [Frederick G. Hayden](#)

Intensive Care Medicine **46**, 315–328(2020) | [Cite this article](#)

Optimized supportive care remains the mainstay of therapy.

Immumodulation



Anti-inflammatory

Antiviral

Antiviral therapy

- At present, there are no antiviral therapies of proven efficacy for other severe respiratory viral infection (RVIs)
- lopinavir/ritonavir and interferon-alpha 2b in hospitalized 2019-nCoV patients (ChiCTR2000029308) are currently in progress.

Arabi, Y.M., Fowler, R. & Hayden, F.G. Critical care management of adults with community-acquired severe respiratory viral infection. *Intensive Care Med* **46**, 315–328 (2020). <https://doi.org/10.1007/s00134-020-05943-5>

Corticosteroids

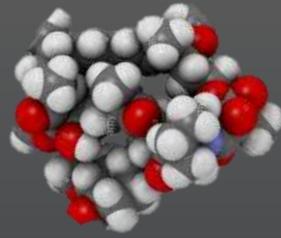
In a study of patients hospitalized with RVI ($n = 50$), corticosteroid therapy was not associated with significant differences in peak viral load, duration of RSV shedding, nasal cytokines, or lymphocyte subsets, ***although antibody responses to RSV were slightly blunted***

Arabi, Y.M., Fowler, R. & Hayden, F.G. Critical care management of adults with community-acquired severe respiratory viral infection. *Intensive Care Med* **46**, 315–328 (2020). <https://doi.org/10.1007/s00134-020-05943-5>

Cyclooxygenase-2 inhibitors

- Cyclooxygenase-2 may modulate excessive pro-inflammatory responses in severe RVI
- results from a RCT ($n = 120$) showed that the combination of celecoxib-oseltamivir compared to oseltamivir alone reduced mortality and cytokine levels, although not viral titers, in hospitalized influenza A(H3N2) patients without increased adverse effects

Sirolimus

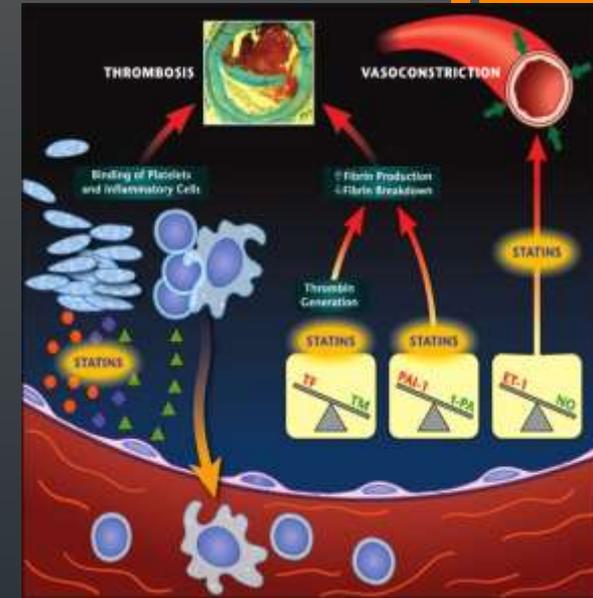


- Sirolimus can modulate inflammatory responses through its immunosuppressive properties
- In a small RCT ($n = 28$), treatment with sirolimus compared to no sirolimus in patients with influenza A(H1N1) pneumonia receiving invasive mechanical ventilation (in addition to oseltamivir and corticosteroids) resulted in **improvement** in hypoxia, multiple organ dysfunction and virus clearance, and in shorter duration of mechanical ventilation
- Further study of sirolimus without systemic corticosteroids is planned among patients hospitalized with influenza (NCT03901001).

Arabi, Y.M., Fowler, R. & Hayden, F.G. Critical care management of adults with community-acquired severe respiratory viral infection. *Intensive Care Med* **46**, 315–328 (2020). <https://doi.org/10.1007/s00134-020-05943-5>

Statins

- Because of the anti-inflammatory effects, it has been proposed as adjunctive therapy in Covid19 (NCT02056340)
- A secondary analysis of data from RCTs suggested that patients with ARDS may be classified into hyper-inflammatory and hypo-inflammatory subphenotypes, and treatment with simvastatin compared to placebo was associated with **improved** survival in the hyper-inflammatory



Arabi, Y.M., Fowler, R. & Hayden, F.G. Critical care management of adults with community-acquired severe respiratory viral infection. *Intensive Care Med* **46**, 315–328 (2020). <https://doi.org/10.1007/s00134-020-05943-5>

Vitamin C

CITRIS-ALI trial demonstrated that 96-h infusion of vitamin C compared with placebo in a relatively small number ($n = 167$) of patients with sepsis and ARDS did not improve the primary outcome of organ dysfunction scores or alter markers of inflammation and vascular injury. However, mortality, which was one of the forty-six pre-specified secondary endpoints, was significantly lower with vitamin C

Arabi, Y.M., Fowler, R. & Hayden, F.G. Critical care management of adults with community-acquired severe respiratory viral infection. *Intensive Care Med* **46**, 315–328 (2020).
<https://doi.org/10.1007/s00134-020-05943-5>



Hydroxychloroquine

[Int J Antimicrob Agents](#). 2020 Mar 20:105949. doi: 10.1016/j.ijantimicag.2020.105949. [Epub ahead of print]

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

[Gautret P](#)¹, [Lagier JC](#)², [Parola P](#)¹, [Hoang VT](#)³, [Meddeb L](#)⁴, [Mailhe M](#)⁴, [Doudier B](#)⁴, [Courjon J](#)⁵, [Giordanengo V](#)⁶, [Vieira VE](#)⁴, [Dupont HT](#)², [Honoré S](#)⁷, [Colson P](#)², [Chabrière E](#)², [La Scola B](#)², [Rolain JM](#)², [Brouqui P](#)², [Raoult D](#)⁸.

⊕ Author information

Abstract

BACKGROUND: Chloroquine and hydroxychloroquine have been found to be efficient on SARS-CoV-2, and reported to be efficient in Chinese COV-19 patients. We evaluate the role of hydroxychloroquine on respiratory viral loads.

PATIENTS AND METHODS: French Confirmed COVID-19 patients were included in a single arm protocol from early March to March 16th, to receive 600mg of hydroxychloroquine daily and their viral load in nasopharyngeal swabs was tested daily in a hospital setting. Depending on their clinical presentation, azithromycin was added to the treatment. Untreated patients from another center and cases refusing the protocol were included as negative controls. Presence and absence of virus at Day6-post inclusion was considered the end point.

RESULTS: Six patients were asymptomatic, 22 had upper respiratory tract infection symptoms and eight had lower respiratory tract infection symptoms. Twenty cases were treated in this study and showed a significant reduction of the viral carriage at D6-post inclusion compared to controls, and much lower average carrying duration than reported of untreated patients in the literature. Azithromycin added to hydroxychloroquine was significantly more efficient for virus elimination.

CONCLUSION: Despite its small sample size our survey shows that hydroxychloroquine treatment is significantly associated with viral load reduction/disappearance in COVID-19 patients and its effect is reinforced by azithromycin.

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KEYWORDS: 2019-nCoV; COVID-19; SARS-CoV-2; azithomycin; clinical trial; hydroxychloroquine

Surviving Sepsis Campaign: guidelines on the management of critically ill adults with Coronavirus Disease 2019 (COVID-19)

[Waleed Alhazzani](#), [Morten Hylander Møller](#), [...] [Andrew Rhodes](#) 

Intensive Care Medicine (2020) | [Cite this article](#)

Recommendation for the acute resuscitation of adults with COVID-19

using conservative over a liberal fluid strategy

using crystalloids over colloids.
buffered/balanced crystalloids over unbalanced crystalloids

using norepinephrine as the first-line vasoactive agent, over other agents.

titrating vasoactive agents to target a MAP of 60–65 mmHg, rather than higher MAP targets.

Surviving Sepsis Campaign: guidelines on the management of critically ill adults with Coronavirus Disease 2019 (COVID-19)

[Waleed Alhazzani](#), [Morten Hylander Møller](#), [...] [Andrew Rhodes](#) 

Intensive Care Medicine (2020) | [Cite this article](#)

Recommendation for the acute resuscitation of adults with COVID-19

COVID-19 and refractory shock, we suggest using low-dose corticosteroid therapy (“shock-reversal”), over no corticosteroid therapy.

starting supplemental oxygen if the peripheral oxygen saturation (SpO₂) is < 90%. SpO₂ be maintained no higher than 96%.

close monitoring for worsening of respiratory status, and early intubation in a controlled setting if worsening occurs

using low tidal volume (V_t) ventilation (V_t 4–8 mL/kg over higher tidal volumes (V_t > 8 mL/kg) to minimize VILI



There is currently no FDA-approved treatment for COVID-19, although a number of drugs are under investigation.

HOW TO HELP PROTECT YOURSELF AGAINST VIRUSES?

There are certain ways to reduce the risk of spreading infections as follows:

DON'TS



AVOID TOUCHING YOUR EYES, NOSE, AND MOUTH WITH UNWASHED HANDS



AVOID CLOSE CONTACT WITH SICK PEOPLE



AVOID EATING UNCOOKED OR RAW MEATS



AVOID TRAVEL



DON'T BE IN CROWDED PLACES



THANK

YOU

