

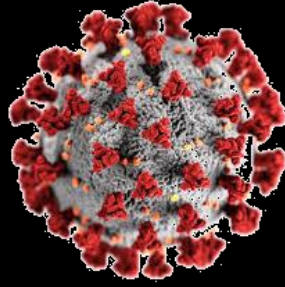
# Clinical Aspects in Management of COVID-19

**Professor Zaw Lynn Aung**

Professor/Head

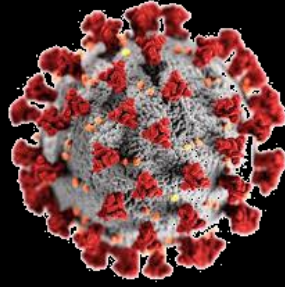
Department of Medicine

University of Medicine (1) Yangon

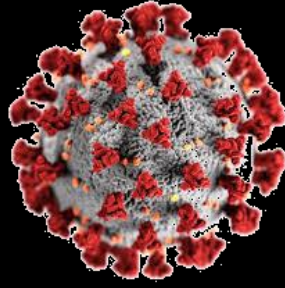


# Outline

- Definitions
- Management Guidelines
- Updated discharge criteria
- Writing death certificate of COVID-19 positive patient and
- Measures to reduce mortality during COVID-19 era



# Definitions



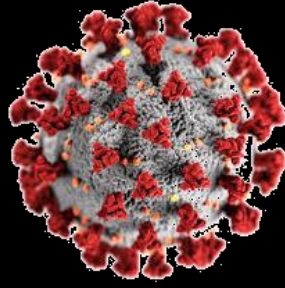
## Suspect COVID-19 Case

A. A person who meets the clinical **AND** epidemiological criteria:

### Clinical criteria

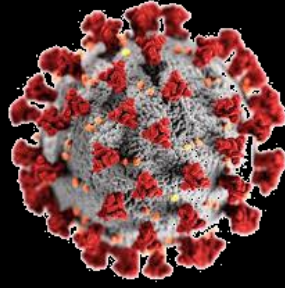
- Acute onset of fever *AND* cough; *OR*
- Acute onset of *ANY THREE OR MORE* of the following signs or symptoms: fever, cough, general weakness/fatigue, headache, myalgia, sore throat, coryza, dyspnoea, anorexia/nausea/vomiting, diarrhoea, altered mental status

**AND**



## Epidemiological criteria

- Residing or working in an area with high risk of transmission of virus: closed residential settings, humanitarian settings such as camp and camp-like settings for displaced persons; anytime within the 14 days prior to symptom onset; *OR*
- Residing or travel to an area with community transmission anytime within the 14 days prior to symptom onset; *OR*
- Working in any health care setting, including within health facilities or within the community; anytime within the 14 days prior to symptom onset.



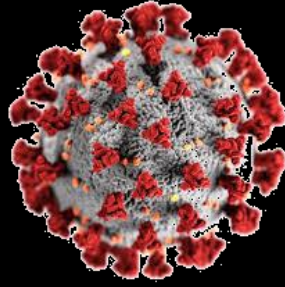
B. A patient with severe acute respiratory illness (SARI: acute respiratory infection with history of fever or measured fever of  $\geq 38\text{ C}^\circ$ ; and cough; with onset within the last 10 days; and requires hospitalization)

Severe Pneumonia (Suspected) (If any of following signs/symptoms is present)

- Respiratory rate  $> 30$  breaths/min
- Severe respiratory distress
- $\text{SpO}_2 \leq 93\%$  on room air
- Systolic Blood Pressure  $\leq 100$  mmHg
- Altered mental status (GCS  $< 15$ )



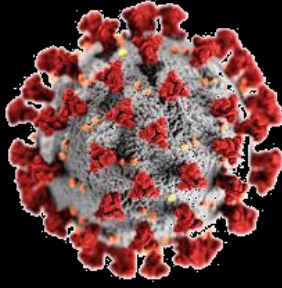




## Probable COVID-19 Case

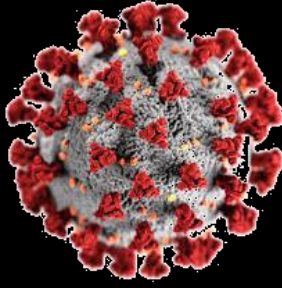
- A. A patient who meets clinical criteria above *AND* is a contact of a probable or confirmed case, or epidemiologically linked to a cluster with at least one confirmed case.
- B. A suspect case with chest imaging showing findings suggestive of COVID-19 disease. Typical chest imaging findings suggestive of COVID-19 include the following:
- chest radiography:*** hazy opacities, often rounded in morphology, with peripheral and lower lung distribution

***chest CT:*** multiple bilateral ground glass opacities, often rounded in morphology, with peripheral and lower lung distribution • lung ultrasound: thickened pleural lines, B lines (multifocal, discrete, or confluent), consolidative patterns with or without air bronchograms.



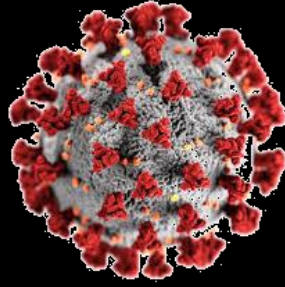
- C. A person with recent onset of anosmia (loss of smell) or ageusia (loss of taste) in the absence of any other identified cause
- D. Death, not otherwise explained, in an adult with respiratory distress preceding death AND was a contact of a probable or confirmed case or epidemiologically linked to a cluster with at least one confirmed case.





# Confirmed Case

- A person with laboratory of COVID-19 infection, irrespective of clinical signs and symptoms

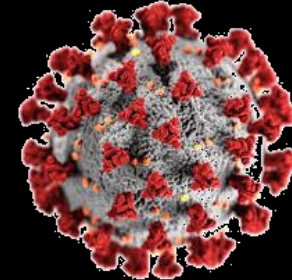


# Contact

- One of the following exposures during the two days before and the 14 days after the onset of the symptoms of a probable or confirmed case
- Face to face contact within one meter for more than 15 mins
- Direct physical contact
- Direct care without PPE

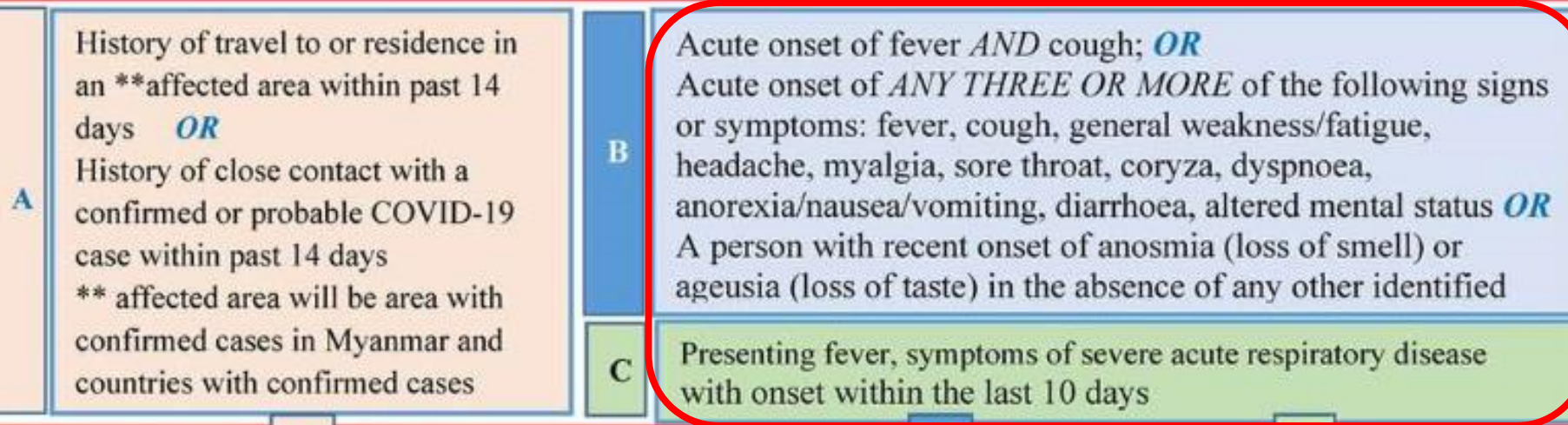


## Management Protocol for Covid-19 Acute Respiratory Disease (*Version 09*) (updated as of 25 Aug 2020)



### Attendance of patients in hospital, OPD and community clinics

↓ At triage area

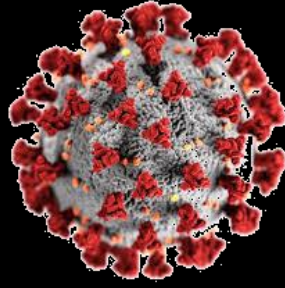


- A**
- Report to respective State and Regional or District or Township Health Department
  - Facility quarantine for 21 days
  - Follow CEU guidelines for specimen collection

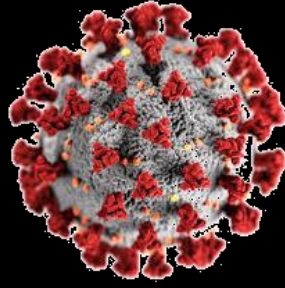
- B**
- Isolate the patient in a separate room (e.g., Fever room)
  - Take strict IPC measures depending on severity
  - Take complete and detail history and physical examination
  - Inform immediately to DoMS [09 449621202], CEU [067 3420268], State and Regional or District or Township Health Department
  - Inform Regional/ Facility Level Clinical Management Committee

**C**

Person Under Investigation (PUI) for suspected pneumonia



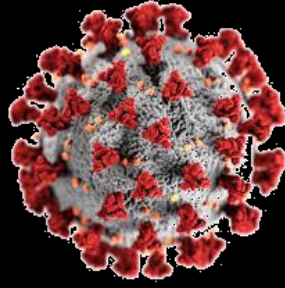
# Management Guidelines



## Treatment of mild COVID-19

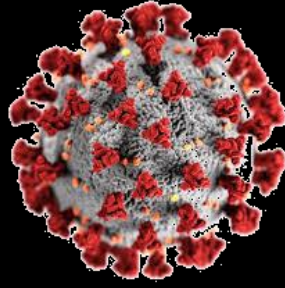
- Isolate the patients in hospitals to contain virus transmission
- Symptomatic treatment such as antipyretics (paracetamol) for fever and pain
- Adequate nutrition
- Appropriate nutrition
- Counsel about signs and symptoms of complications that should prompt urgent care
- Antibiotic therapy/prophylaxis is not recommended





## **Treatment of moderate COVID-19: Pneumonia treatment**

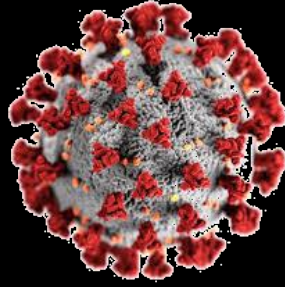
- Isolate the patients in hospitals to contain virus transmission
- Antibiotics if there is clinical suspicion of bacterial infection
- Monitor the patients for signs and symptoms of disease progression



## Treatment of severe COVID-19: Severe Pneumonia treatment

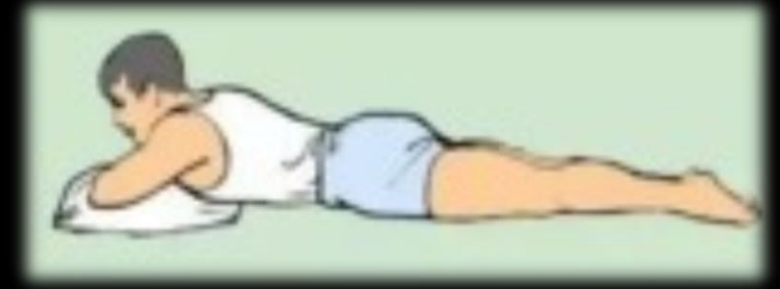
- Immediate administration of supplemental oxygen therapy
- Monitor for signs of clinical deterioration, such as rapidly progressive respiratory failure and shock





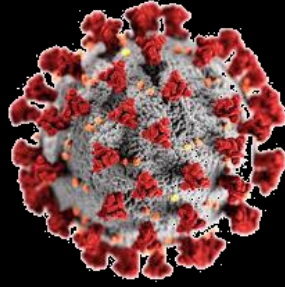
# Oxygen Therapy

## Prone Positioning



## Dexamethasone

# Sources of O<sub>2</sub>



O<sub>2</sub> cylinders



Manifolds

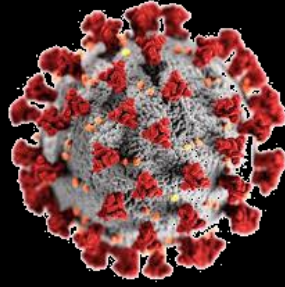




# Liquid O<sub>2</sub>



11/6/2020



# O<sub>2</sub> concentrators

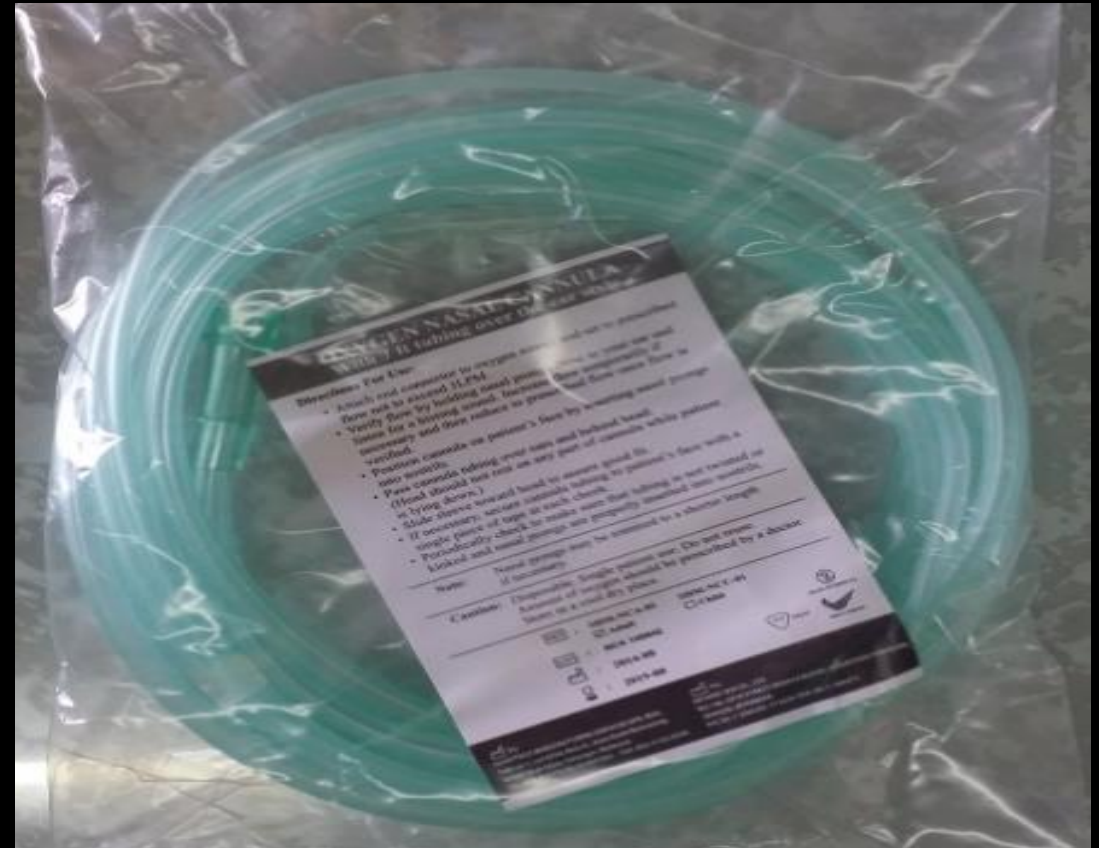
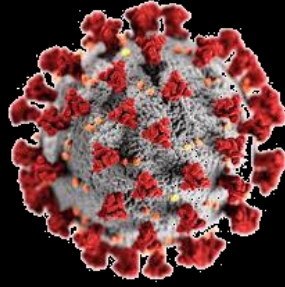


Prof ZLA

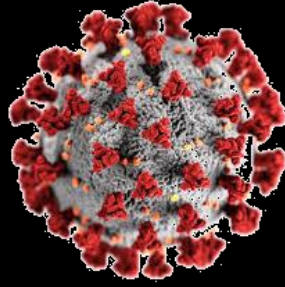
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# Nasal cannula



Standard nasal cannula delivers an inspiratory oxygen fraction ( $FiO_2$ ) of 24-44% at supply flows ranging from 1-6 L/min.

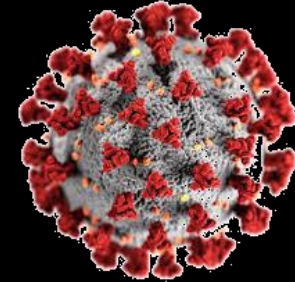


# Simple oxygen mask

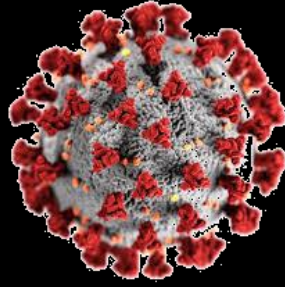


5-10 L/min (<5L will not flush CO<sub>2</sub> from mask) – 40-60% FiO<sub>2</sub> depending on pattern of breathing.

# O<sub>2</sub> mask with reservoir bag



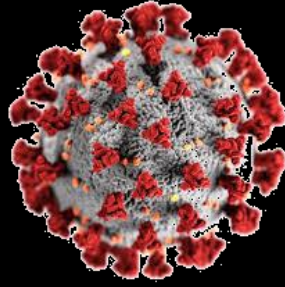
8-12 L/min  
50-70% of FiO<sub>2</sub>  
Delivers 60% O<sub>2</sub>



# Estimating FiO<sub>2</sub>

O <sub>2</sub> Flow rate	FiO <sub>2</sub>	O <sub>2</sub> Flow rate	FiO <sub>2</sub>	O <sub>2</sub> Flow rate	FiO <sub>2</sub>
<u>Nasal cannula</u>		<u>Oxygen mask</u>		<u>Mask with reservoir</u>	
1	0.24	5-6	0.4	6	0.6
2	0.28	6-7	0.5	7	0.7
3	0.32	7-8	0.6	8	0.8
4	0.36			9	0.80+
5	0.4			10	0.80+
6	0.44				





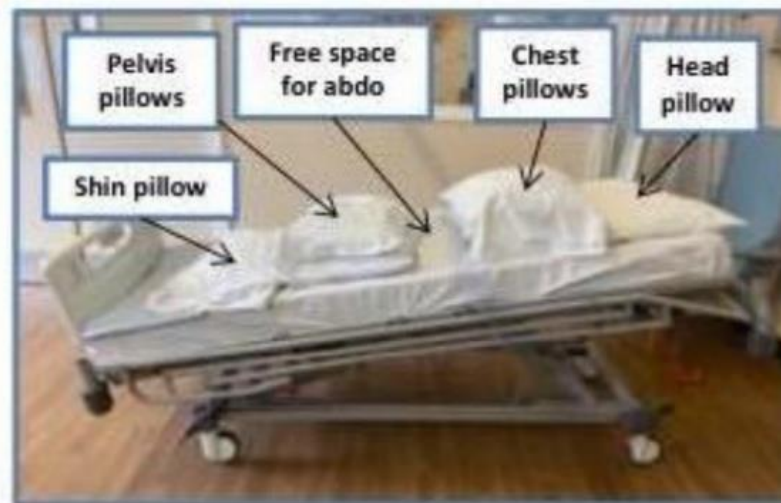
# Awake prone position

- <https://youtu.be/f-AkBQ9CvGA>

## Placement for patient positioning

- 1 soft pillow for the **head**
- 2 substantial pillows for under the **chest**
- 2 substantial pillows for under the **pelvis**
- 1 pillow for under the **shins**

NB: The abdomen should hang free and not be compressed. This is even more important in obese patients.

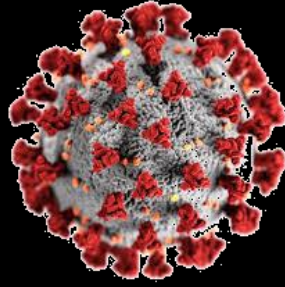


## Bed position

Steep head up (at least **30 degrees**).



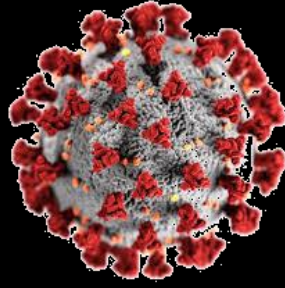




# Awake prone position

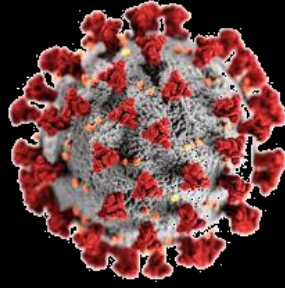
## Preconditions

- All patients with suspected or proven COVID **AND**
- Requiring O<sub>2</sub> therapy to maintain SpO<sub>2</sub> >93% and/or RR >30/min and/or SpO<sub>2</sub> <95% on room air **AND**
- Patient is awake, alert, willing and able to self position prone **AND**
- Haemodynamically stable (Systolic BP >90 mmHg)



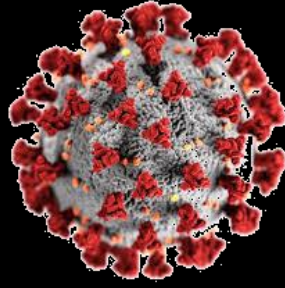
## Contraindications

- Not alert at time of initiation of APP therapy
- Patient refusal to try APP
- Low BP (SBP < 90 mmHg)
- Patient unable to lie prone (e.g., Trauma with spine injuries, patient with spine deformities, super obese patients, 2<sup>nd</sup> /3<sup>rd</sup> trimester of pregnancy, This list is not exhaustive.)



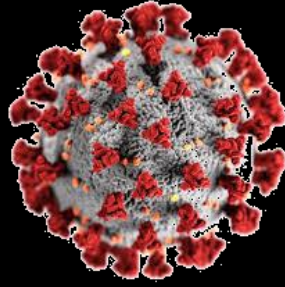
## Care in the prone position

- Observations every 15 minutes for first hour
- If continuously monitored, remove monitoring before APP and replace monitoring when in APP. ECG leads should be placed on the back.
- Check patient for ease of breathing.
- Remain in APP for as long as tolerated – ideally for **upto 16 hours per day**
- **Alternative between 4 hours with 1 hour rest breaks.**
- Use breaks for eating, drinking, using the toilet and relieving pressure areas.



## Documentation in APP

- Title: APP initiated – Location
- Record:
  1. Time of initiation of APP
  2. Observations before initiation of APP ( $O_2$  delivery,  $SpO_2$ , RR, HR, BP)
  3. Observations after 15 and 30 minutes of the initiation of APP



# How to wean O<sub>2</sub> therapy in APP

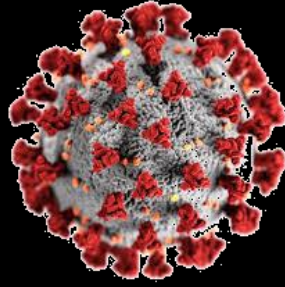
Improvement in SpO<sub>2</sub> may take many hours in the APP

If SpO<sub>2</sub> > 95% for 2 hours, reduce O<sub>2</sub> therapy by 10% or step down to the next venturi or O<sub>2</sub> delivery device.

Continue to reduce O<sub>2</sub> support in steps every 2 hours, aiming for SpO<sub>2</sub> >95%.

Discontinue APP once SpO<sub>2</sub> >93% on room air.





# Dexamethasone results

## PUBLICATIONS

The preliminary results of the dexamethasone comparison have been published on [medRxiv](#).

17 JULY 2020

Preliminary report published in *The New England Journal of Medicine*.

2 SEPTEMBER 2020

Meta-analysis including the RECOVERY trial published in [JAMA](#).

## PRESS RELEASES

16 June 2020

**Statement from the Chief Investigators: low-cost dexamethasone reduces death by up to one third in hospitalised patients with severe respiratory complications of COVID-19**

**Comunicado dos Pesquisadores Principais do estudo “Avaliação randomizada de terapias para a COVID-19” (RECOVERY) sobre dexametasona, 16 de junho de 2020**

**Comunicado de prensa de la Universidad de Oxford: Dexametasona reduce la mortalidad hasta un tercio en pacientes hospitalizados con complicaciones severas por COVID-19**

## Dexamethasone: Life-saving drug

Patients on ventilators: one life saved for every eight treated



Patients on oxygen: one life saved for every 25 treated



Treatment: Up to ten days

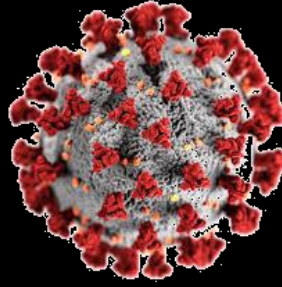


Cost: £5.40 per day

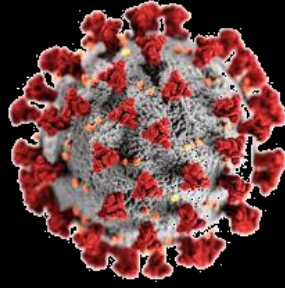
Source: The Recovery Trial



## RECOVERY Trial



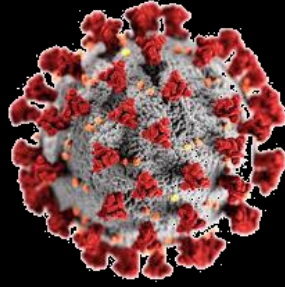
- Moderate dose of dexamethasone (6 mg daily for 10 days) reduced mortality in hospitalized patients with COVID-19 and respiratory failure who required therapy with supplemental O<sub>2</sub> or mechanical ventilation.



# Anticoagulants

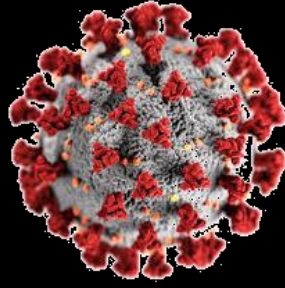
- Thromboembolic phenomenon
- Consider anticoagulants
- D-Dimers (dynamic changes)
- Low molecular weight heparins

# Specific treatments under clinical evaluation



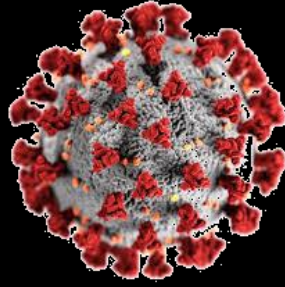
- Remdesivir
- Favipiravir
- Convalescent plasma therapy
- Interferons
- IL-6 inhibitors - Tocilizumab
- Ivermectin





# Discharge criteria



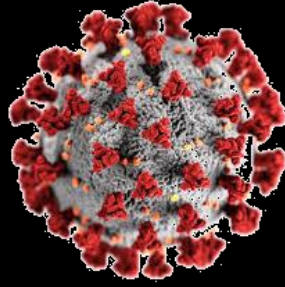


## Discharge Criteria for COVID-19 confirmed patients (as of 10-10-2020) (Version-6)

### I. For symptomatic COVID-19 confirmed patients:

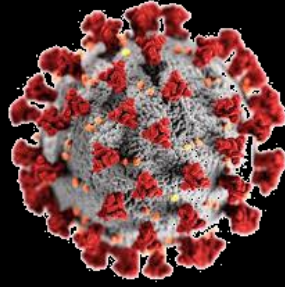
#### (a) Patients with mild or moderate illness who are not severely immunocompromised

- 10 days after onset of symptoms, plus at least 1 additional day without symptoms (including without fever with no antipyretics and without respiratory symptoms and other COVID-19 symptoms) provided that history of onset of symptoms is reliable
- If the history of onset of symptoms is not reliable, at least 11 days is recommended to stay in hospital.



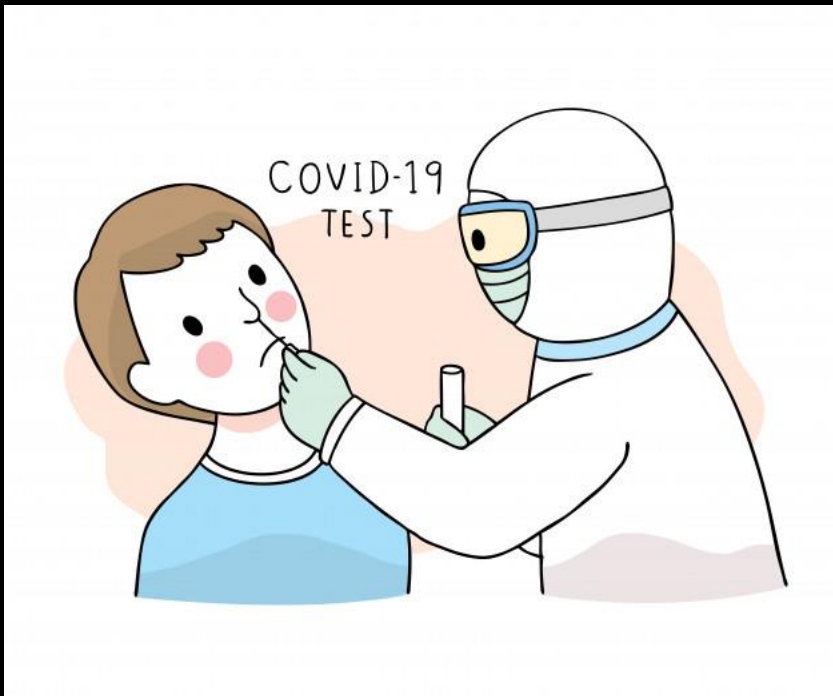
**(b) Patients with severe to critical illness or who are severely immunocompromised**

- 10 days after onset of symptoms, plus at least 4 additional days without symptoms (including without fever with no antipyretics and without respiratory symptoms and other COVID-19 symptoms)
- At least **20 days** is recommended to stay in hospital.



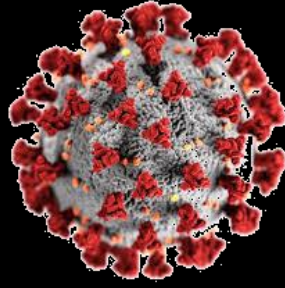
## II. For asymptomatic COVID-19 confirmed patients:

- **10 days** after taking swab with positive test for SARS-CoV-2

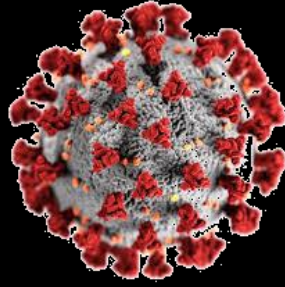


**POSITIVE**





# Writing death certificate of COVID-19 positive patient



# High Death Rate? (Internationally)

- Co-Morbidities
- Elderly
- Arrived late to hospital (Concerns)
- Access to health care settings (Private sectors)
- Under care? (PPE, limitation for Frequent monitoring, limitation to do extensive investigations etc.)
- Disease severity?
- Death certificate guidelines



## Frame A: Medical data: Part 1 and 2

<b>1</b> Report disease or condition directly leading to death on line a  Report chain of events in due to order (if applicable)  State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a	Acute respiratory distress syndrome	2 days
		b	Due to: Pneumonia	10 days
		c	Due to: Suspected COVID-19	12 days
<div>Underlying cause of death</div>			Due to:	
<b>2</b> Other significant conditions contributing to death (time intervals can be included in brackets after the condition)			Coronary artery disease [5 years], Type 2 diabetes [14 Years], Chronic obstructive pulmonary disease [8 years]	

### Manner of death:

<input checked="" type="checkbox"/> Disease	<input type="checkbox"/> Assault	<input type="checkbox"/> Could not be determined
<input type="checkbox"/> Accident	<input type="checkbox"/> Legal intervention	<input type="checkbox"/> Pending investigation
<input type="checkbox"/> Intentional self harm	<input type="checkbox"/> War	<input type="checkbox"/> Unknown

Note: This is a typical course with a certificate that is filled in correctly. COVID-19 cases may have comorbidity. **The comorbidity is recorded in Part 2.**

## Frame A: Medical data: Part 1 and 2

<b>1</b> Report disease or condition directly leading to death on line a  Report chain of events in due to order (if applicable)  State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a	Acute respiratory distress syndrome	2 days
		b	Due to: Pneumonia	10 days
		c	Due to: COVID-19	10 days
		d	Due to:	
<b>2</b> Other significant conditions contributing to death (time intervals can be included in brackets after the condition)			<b>Cerebral palsy [10 Years]</b>	

Underlying cause of death

### Manner of death:

<input checked="" type="checkbox"/> Disease	<input type="checkbox"/> Assault	<input type="checkbox"/> Could not be determined
<input type="checkbox"/> Accident	<input type="checkbox"/> Legal intervention	<input type="checkbox"/> Pending investigation
<input type="checkbox"/> Intentional self harm	<input type="checkbox"/> War	<input type="checkbox"/> Unknown

Note: This is a typical course with a certificate that has been filled in correctly. COVID-19 cases may have comorbidity. **The comorbidity is recorded in Part 2.**

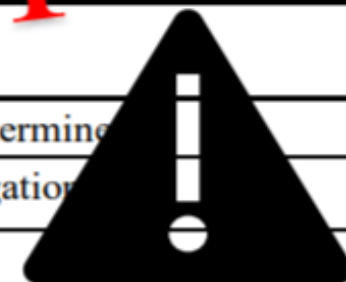
## Frame A: Medical data: Part 1 and 2

<b>1</b> Report disease or condition directly leading to death on line a  Report chain of events in due to order (if applicable)  State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a	Hypovolaemic shock	1 day
		b	Due to: Aortic dissection	1 day
		c	Due to: Motor vehicle accident	2 days
		d	Due to:	
<b>2</b> Other significant conditions contributing to death (time intervals can be included in brackets after the condition)		COVID-19	Underlying cause of death	

### Manner of death:

<input type="checkbox"/> Disease	<input type="checkbox"/> Assault	<input type="checkbox"/> Could not be determined
<input checked="" type="checkbox"/> Accident	<input type="checkbox"/> Legal intervention	<input type="checkbox"/> Pending investigation
<input type="checkbox"/> Intentional self harm	<input type="checkbox"/> War	<input type="checkbox"/> Unknown

**NOT COVID-19 DEATH**



Note: Persons with COVID-19 may die of other diseases or accidents, such cases are not deaths due to COVID-19 and should not be certified as such. In case you think that COVID-19 aggravated the consequences of the accident, you may report COVID-19 in Part 2. Please remember to indicate the manner of death and record in part 1 the exact kind of an incident or other external cause.



## Frame A: Medical data: Part 1 and 2

<b>1</b> Report disease or condition directly leading to death on line a  Report chain of events in due to order (if applicable)  State the underlying cause on the lowest used line			Cause of death	Time interval from onset to death
		a	Heart failure	1 day
		b	Due to: Myocardial infarction	5 days
		c	Due to:	
		d	Due to:	

Underlying cause of death

**2** Other significant conditions contributing to death (time intervals can be included in brackets after the condition)

COVID-19

### Manner of death:

☒ Disease

☐ Assault

☐ Could not be determined

☐ Accident

☐ Legal intervention

☐ Pending investigation

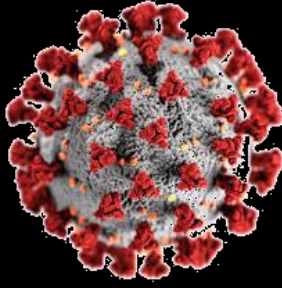
☐ Intentional self harm

☐ War

☐ Unknown

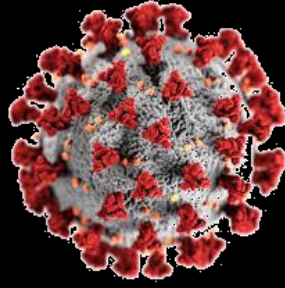


**Note:** Persons with COVID-19 may die due to other conditions such as myocardial infarction. Such cases are not deaths due to COVID-19 and should not be certified as such.



# How to reduce mortality in COVID-19 Era

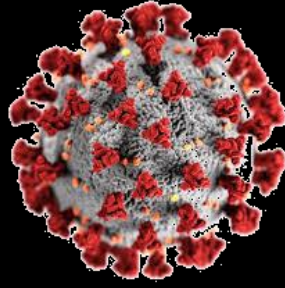




# 1. Allow Attendances

Reasons?

Rules and regulations



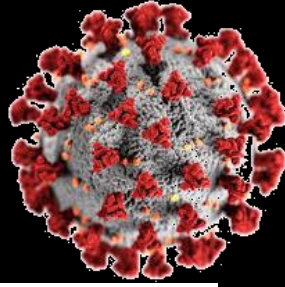
## 2. Use of Information Technology

EMR

Zoom round

CCTV

Intercom



# Covid-19 Medical Center



Email

NYGH@cemr.center



Password

....

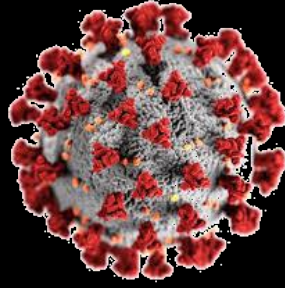


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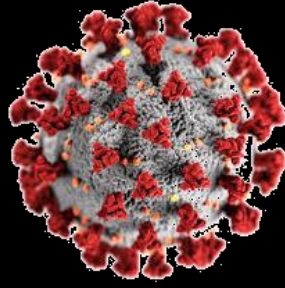


# 3. Volunteer Recruitment (inside the wards)

HCP

Educated persons

Teams



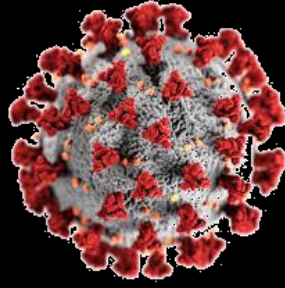
# 4. Basic scalable affordable and equitable treatment (Prof Martin Landray)

Oxygen

Proning (Awake Proning Position)

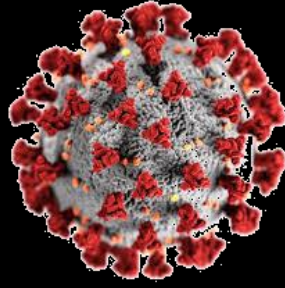
Dexamethasone





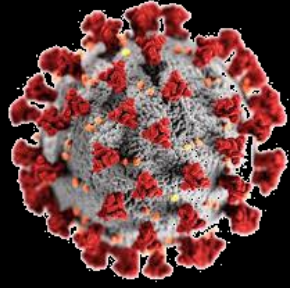
# 5. Risk Stratifications and placement of patients to be concentrated

Useful EMR

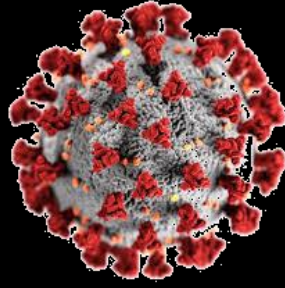


# 6. Innovations management

Learnt from SARI training from WHO and US group



# 7. Regular evaluation by medical audit

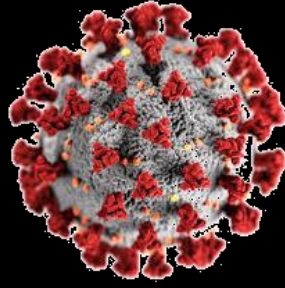


# 8. Make better healthcare accessibility-

Tele-consultations (Private sectors) (Law enforcement)

Drugs delivery

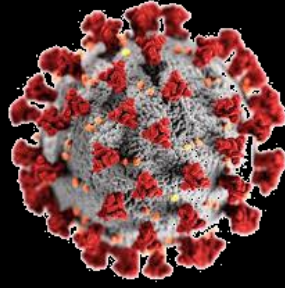
Special situations (Eg. Haemodialysis, Surgery and O&G)



# 9. Optimize HR (Doctor-Nurse-Patient Ratio) and JOB specifications (SOPs)

Duty shift modification

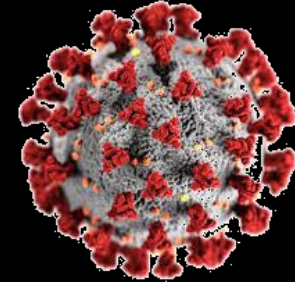
Need long term plan



# 10. Prevention strategies

Social Distancing, Mask wearing, Hand washing, Avoid grouping





Thank  
you!!