Management Protocol for COVID-19 Patients MoHP Protocol for COVID19 November 2020

Chapter · November 2020

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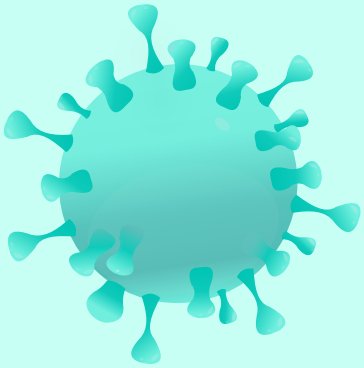
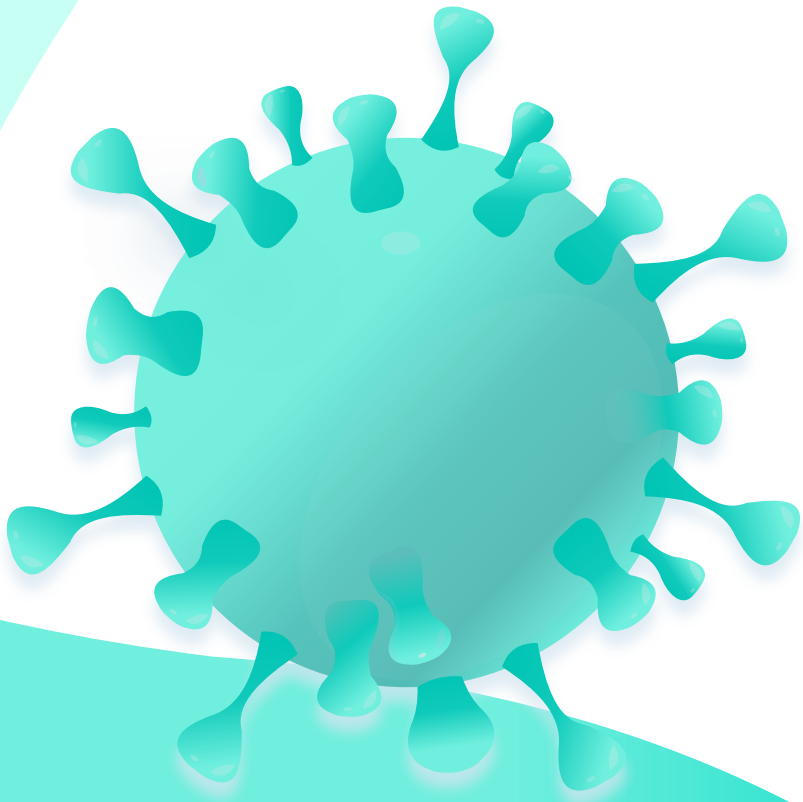
Management Protocol for COVID-19 Patients

Ministry of Health and Population, Egypt
Management protocol for COVID-19
Patients
Version 1.4 / November 2020





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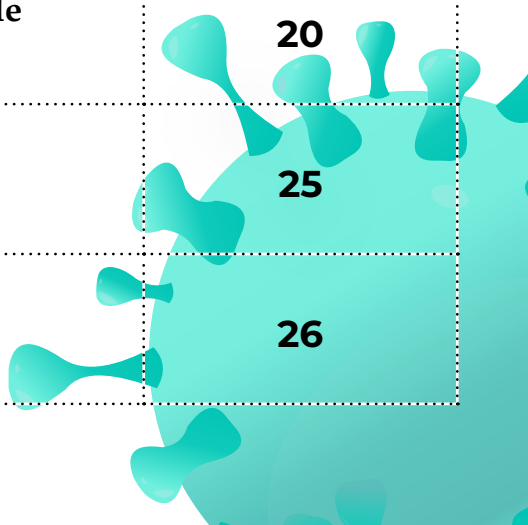


1st Step: Triage
Case definition + severity assessment

Suspect Case Definition

A) Clinical **AND** epidemiological criteria: **OR:** **B**

-Acute onset of fever and cough **OR**
-≥ 3 of the followings: fever, cough, sore throat, coryza, general weakness/fatigue, headache, myalgia, dyspnea, anorexia/nausea/ vomiting, diarrhea, altered mental status

And 1 of the followings within 14 days of symptom onset:

- Residing or working in an area with high risk of transmission*
- Working in a healthcare setting
- Residing or travel to an area with community transmission

Patient with severe acute respiratory illness (SARI: acute respiratory infection with history of fever or measured fever ≥ 38°C and a cough; onset within last 10 days; requires hospitalization)

*Closed residential settings, humanitarian settings such as camp and camp-like settings for displaced persons.

NB: Minimal role for the epidemiological criteria during the period of community spread

Probable Case

A patient who meets clinical criteria AND is a contact of a probable or confirmed case, or epidemiologically linked to a cluster with at least one confirmed case.
OR
Suspect case with chest imaging showing findings suggestive of COVID-19 disease*
OR
Recent onset of loss of smell or taste in the absence of any other identified cause
OR
Unexplained death in an adult with respiratory distress who was a contact of a probable or confirmed case or epidemiologically linked to a cluster with at least 1 confirmed case

*Hazy opacities with peripheral and lower lung distribution on chest radiography; multiple bilateral ground glass opacities with peripheral and lower lung distribution on chest CT; or thickened pleural lines, B lines, or consolidative patterns on lung ultrasound.

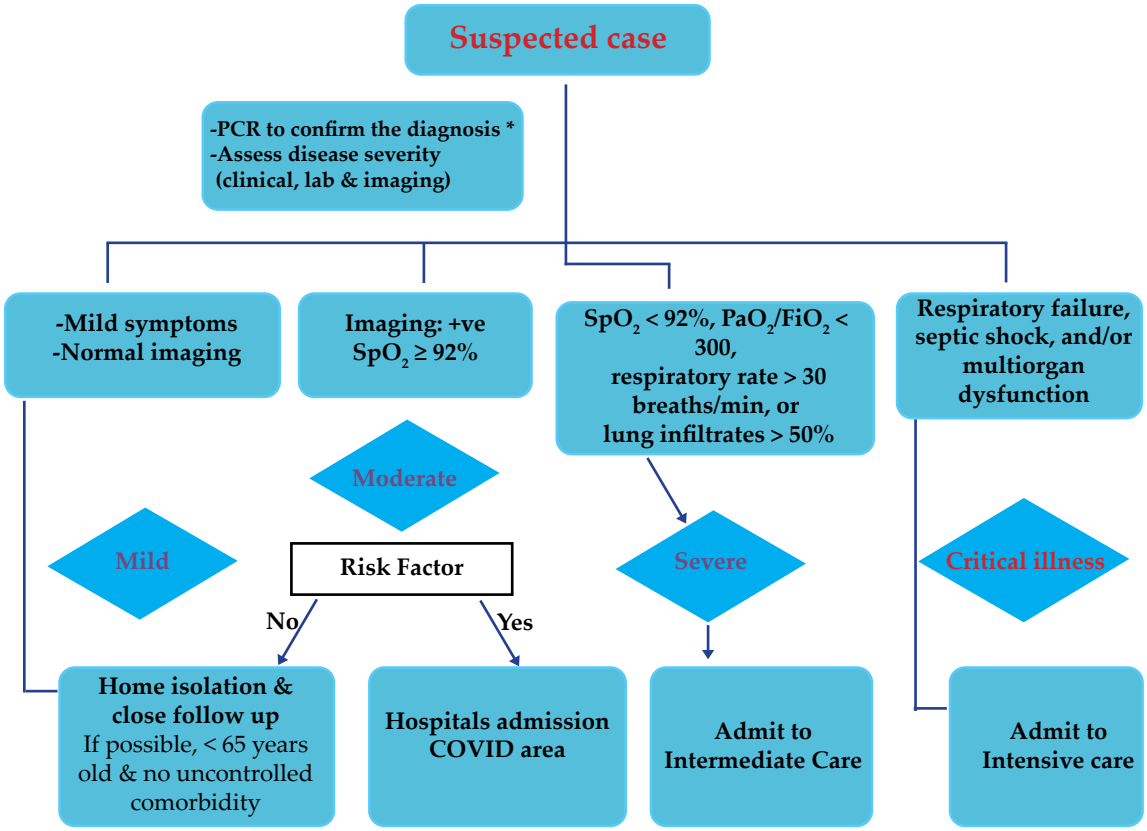
Confirmed Case

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

*Molecular testing(PCR) with deep nasal swab is the current test of choice for the diagnosis of acute COVID-19 infection

During seasonal flu period, clinical differentiation between influenza and COVID 19 is difficult. Swab for influenza A &B may help in early differentiation.

Severity assessment



In severe and critically ill patients, if-ve 1st PCR, repeat within 48 hours, negative case is considered after 2 –ve consecutive RT-PCR results from respiratory samples tested at least 1 day apart.
NB: Unstable patient who don't meet the suspected criteria should receive 1st aid therapy in non-COVID area before referral to general hospital.+ Risk factors include, old age > 60 years, uncontrolled comorbidity as hypertension, DM, ……. or Social un applicable to home isolation.

All persons with suspected, probable or confirmed COVID-19 should be immediately isolated to contain the virus transmission.

2nd Step: Management

All patients with symptomatic COVID-19 and risk factors for severe disease should be closely monitored. The clinical course may rapidly progress in some patients.
Antibiotics are not recommended to prevent bacterial infection in mild patients. Administer empiric antibiotics if bacterial pneumonia/sepsis strongly suspected; re-evaluate daily.
In non-hospitalized patients, do not initiate therapeutic anticoagulants or antiplatelet unless other indications exist.
No harmful effect for administration of vitamin C or D or Zinc or Lactoferrin within the required daily dose.

Check Every Patient For Risk Factors
. Age 65 years
. SpO2 < 92%
. Heart Rate ≥110
. Respiratory Rate ≥ 25 /min.
. Neutrophil / lymphocyte ratio on CBC ≥ 3.1
. Uncontrolled Comorbidities
. On Immunosuppressive or chemotherapy drug
. Pregnancy
. Active Malignancy
. Obesity (BM>40)

Time is an important issue in management of COVID-19. Before day 12(stage of viral load), Antiviral drug is essential. After day 12, the role of antiviral declines with augmentation for the role of anti-inflammatory, immune-modulators and Supportive drugs (stage of hyper-immune state).

Potential antiviral drugs under evaluation for the treatment of COVID-19 include:
- **Hydroxy Chloroquine** 400mg/ 12 hours 1st day followed by 200 mg/12 hours for 6 days,
- **Ivermectin** 6 mg (36 mg on day 0 -3-6),
- **Favipiravir** 1600 twice daily first day then 600 mg twice daily,
- **Remdesivir** 200 mg IV on day 1, followed by 100 mg IV daily for high risk population for 5 days that could be extended to 10 days if the response is unsatisfactory or
- **Lopinavir/Ritonavir** 200/ 50 mg 2 tablets PO BID
- **Monoclonal antibodies**: early testing in blocking SARS-CoV-2.
- **Convalescent plasma**: for impending severely ill after counseling the scientific committee

Mild illness

Home isolation and **symptomatic treatment** (eg, antipyretics for fever, adequate nutrition, appropriate rehydration).
Educate the patients on signs/symptoms of complications that, if developed, should prompt pursuit of urgent care.
There are insufficient data to recommend either with or against any antiviral or immune-based therapy in patients with COVID-19 who have mild illness.

IS IT A FLU OR COVID-19?		
SYMPTOM	FLU	COVID-19
FEVER	✓	✓
FATIGUE	✓	✓
COUGH	✓	✓
SORE THROAT	✓	✓
HEADACHES	✓	✓
RUNNY NOSE	✓	✓
SHORTNESS OF BREATH	✓	✓
BODY ACHES	✓	✓
DIARRHEA AND/OR VOMITING	✓	✓
ONSET	1-4 days after infection	About 5 days after infection but can range from 2-14 days
LOSS OF TASTE AND/OR SMELL		✓
RED, SWOLLEN EYES		✓
SKIN RASHES		✓

All patients with symptomatic COVID-19 and risk factors for severe disease should be closely monitored. In some patients, the clinical course may rapidly progress.

Mild Case

Symptomatic case with lymphopenia or leucopenia with no radiological signs for pneumonia

Check for

1. Age 65
2. Temperature > 38
3. $SaO_2 \leq 92\%$
4. Heart Rate ≥ 110
5. Respiratory Rate ≥ 25 /min.
6. Neutrophil / lymphocyte ratio on CBC ≥ 3.1
7. Uncontrolled Comorbidities
8. Immunosuppressive Drug
9. Pregnancy
10. Active Malignancy
11. On Chemotherapy
12. Obesity (BMI>40)

All No → **AND** → **Age < 65**

- Strict Home Isolation (Symptomatic Treatment)
- Follow and use personal protective guide equipment
- If any deterioration occurs, back to hospital

NB: Paracetamol is the preferred antipyretic

Any YES → **OR** → **Age ≥ 65**

If more than 3 symptoms admit

Treatment

- Hydroxychloroquine (400 mg twice in first day then 200 mg twice for 6 days)

OR Ivermectin 6 mg (36 mg on day 0 -3-6)
OR Favipiravir 1600 TWICE daily first day then 600 mg twice daily

+

- Zinc 50mg daily
- Acelylcysteine 200 mg t.d.s.
- lactoferrin one sachet twice daily
- Vitamin C 1 gm daily

Moderate Case

Patient has pneumonia manifestations on radiology associated with symptoms &/Or leucopenia or lymphopenia.

Anti-virals	Immune-modulators Anti-inflammatory	Anti-coagulation
Hydroxychloroquine + Ivermectin or	Steroids (if patient has severe dyspnea) RR>24 or CT scan showing rapid deterioration Dexamethasone 6 mg or its oral equivalent	Prophylactic anticoagulation if D-Dimer between 500 -1000 Therapeutic anti-coagulation if D-dimer > 1000
Lopinavir/Ritonavir or		
Remdesivir for high risk population with SaO2 < 92		

Severe cases

RR > 30, SaO2 < 92 at room air, PaO_2/FiO_2 ratio < 300, Chest radiology showing more than 50% lesion or progressive lesion within 24 to 48 hrs.

Admit to Intermediate Care

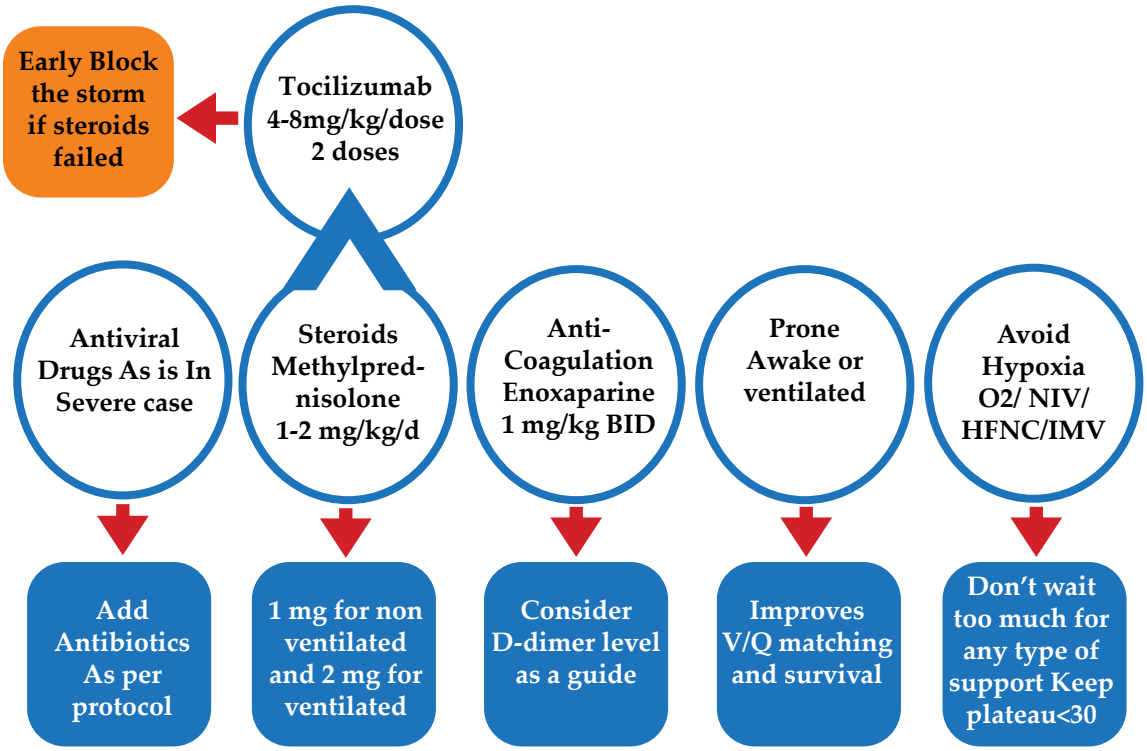
Anti-virals	Anti-coagulant Prophylactic	Anti-inflammatory	Convalescent plasma
Remdesivir or Lopinavir/ Ritonavir	anticoagulation if D-Dimer between 500 -1000 Therapeutic anti-coagulation if D-dimer > 1000 Or if severe hypoxia	Steroids (Dexamethasone 6 mg or methyl prednisolone (1 mg / kg /24 hours) Tocilizumab 4-8 mg/kg/day for 2 doses 12 to 24 hours apart after failure of steroid therapy to improve the case for 24 hours	Before day 12 (under clinical trial) (after scientific committee approval)

Critically ill patients

RR > 30, Sa02 < 92 at room air, PaO2/FiO2 ratio < 300, Chest radiology showing more than 50% lesion or progressive lesion within 24 to 48 hrs. Critically ill if SaO2 <92, or RR>30, or PaO2/FiO2 ratio < 200 despite Oxygen Therapy.

Admit to Intensive care

Anti-virals	Anti-coagulant	Anti-inflammatory
Remdesivir or Lopinavir/ Ritonavir	Therapeutic anti-coagulation	Steroids (Methyl prednisolone 2mg /kg or its equivalent) Tocilizumab 4-8 mg/kg/day for 2 doses 12 to 24 hours apart after failure of steroid therapy to improve the case for 24 hours



High flow nasal oxygen is an important modality in the early management of critically ill patients.

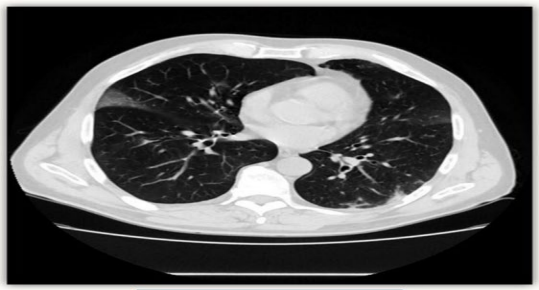
Non Invasive Ventilation or High Flow Nasal Cannula

(HFNC):
Conscious patients with minimal secretions.
Hypoxia SpO2 < 90% on oxygen. Or PaCO2 >40 mmHg provided pH 7.3 and above.
NIV trial shall be short with ABG 30 minutes apart.
Any deterioration in blood gases from baseline or oxygen saturation or consciousness level shift to IMV.
CPAP gradually increased from 5-10 cmH2O.
Pressure support from 10-15 cm H2O.
HFNC can be alternative to NIV.

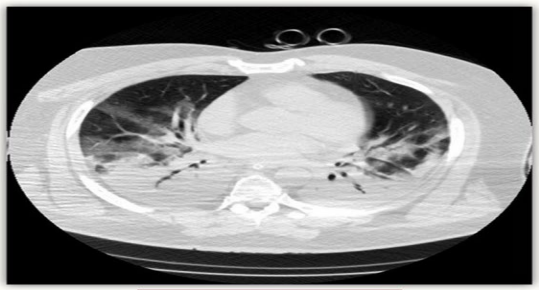
Invasive Mechanical Ventilation:

Use PPE specially goggles during intubation and avoid bagging.
Indications:
Failed NIV or not available or not practical.
PaO2 < 60 mmhg despite oxygen supplementation.
Progressive Hypercapnia.
Respiratory acidosis (PH < 7.30).
Progressive or refractory septic shock.
Disturbed consciousness level (GCS ≤ 8) or deterioration in consciousness level from baseline

COVID-19 PNEUMONIA (type L & type H)

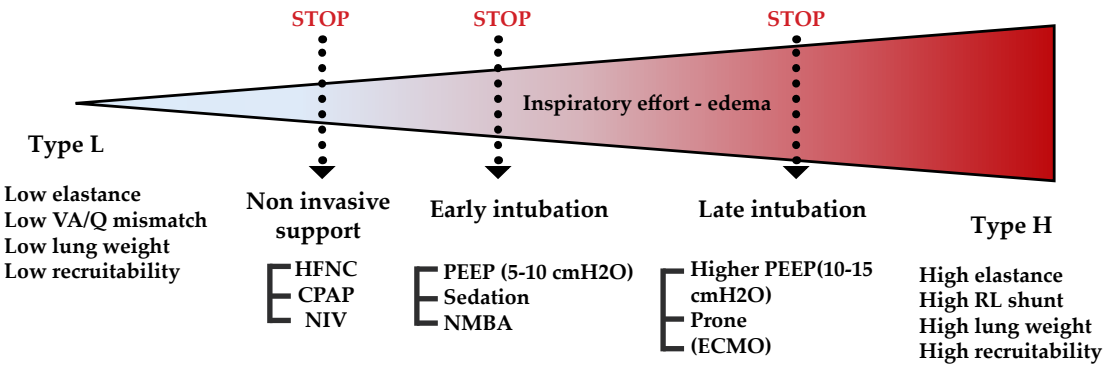


Type L



Type H

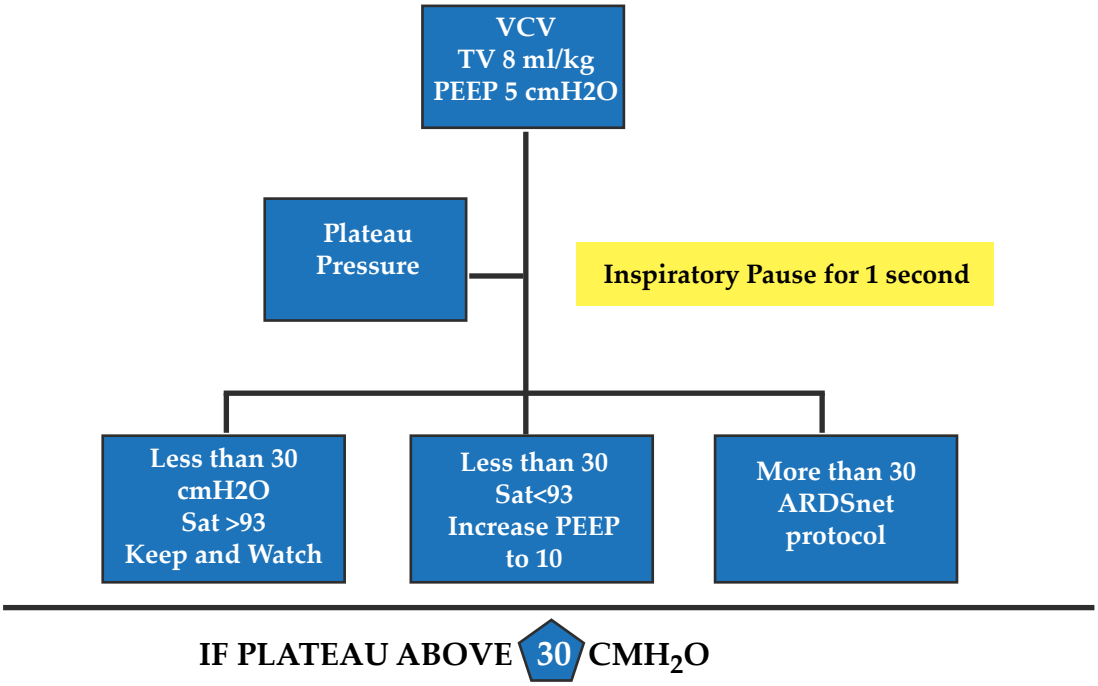
Lung Damage Progression
(Virus + P-SILI)



Type L and Type H patients are best identified by CT scan and are affected by different Pathophysiological mechanisms. If CT not available, definition could be used as surrogates: Respiratory system elastance and recruitability.

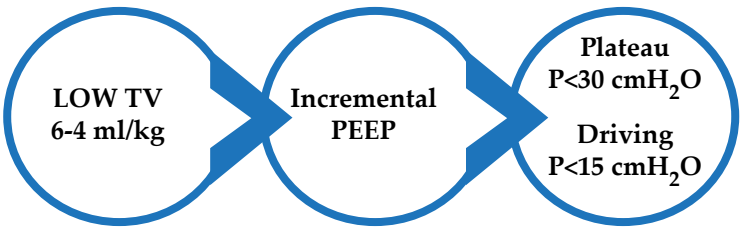
Understanding the correct pathophysiology is crucial to establishing the basis for appropriate treatment.

Step 1: Initiation of Invasive Mechanical Ventilation



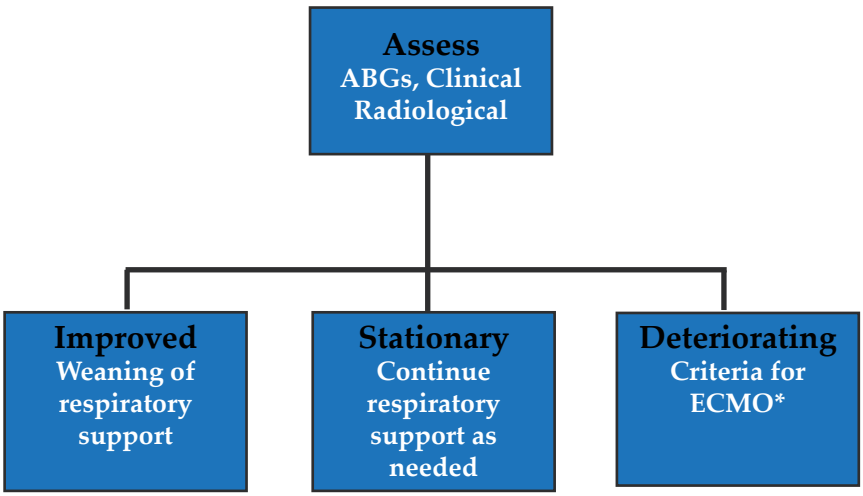
Step 2: Shift to ARDSNet protocol if needed

- ARDSNet protocol:



Start with tidal volume of 6 ml/Kg to keep plateau pressure on volume controlled ventilation (VCV) below 30 cmH2O, decrease to 4 ml/kg if the plateau remain higher than 30 allow permissive hypercapnia so long the pH is above 7.3 compensate by increasing respiratory rate up to 30 breath/ minute. Consider heavy sedation and paralysis. If pressures are high or any evidence of barotrauma shift to pressure controlled ventilation and be cautious about low tidal volume alarms for fear of unnoticed endotracheal tube obstruction. Consider ECMO early if eligible. Increase PEEP gradually if the patient remains hypoxic according to FIO2 level to keep driving pressure < 15cmH2O. NEVER FORGET PRONE POSITION.

Step 3: Assessment of respiratory support outcome



*Criteria for VV ECMO: Age below 55, mechanical ventilation duration less than 7 days, no comorbidities, preserved conscious level, PaO2/FiO2 <100 despite prone RESPscore >0.
Expert opinion is needed and depends on availability.

Gastrointestinal Manifestations of COVID-19

- Gastrointestinal (GI) symptoms are seen in patients with COVID-19. The prevalence could be as high as 50%, but most studies show ranges from 16% to 33%

- Some patients with COVID-19 have presented with isolated GI symptoms that may precede the development of respiratory symptoms

- It is important to note that medications used for COVID-19 may be associated with GI symptoms as well.

- Approximately 50% of patients with coronavirus disease 2019 (COVID-19) have detectable viral RNA in the stool

- Loss of appetite or anorexia is the most commonly reported symptom.

- Diarrhea was the second most common symptom.

- Other digestive manifestations include nausea or vomiting and abdominal pain.

- Dysgeusia has also been reported, often in conjunction with anosmia.

- Currently, management of GI symptoms in patients with COVID-19 is mainly supportive.

- Treatment should be individualized according to the patient's symptoms, underlying comorbidities and COVID-19–associated complications.

- Oral or intravenous hydration

- The antidiarrheal agent loperamide can be used in an initial dose of 4 mg and with a maximum daily dose of 16 mg in patients without fever, bloody stools, or risk factors for C. difficile infection

- Antiemetic drugs can often help relieve symptoms.

Anticoagulation in COVID-19 Patients the patient clinically indicated for hospitalization

Yes

No

Is he/she critically ill

No

Prophylactic dose

Higher than standard dose 0.5 mg/kg/m

Consider also therapeutic anticoagulation for patients with high clinical susceptibility of VTE and those with Severe hypoxia not explained by the chest CT findings

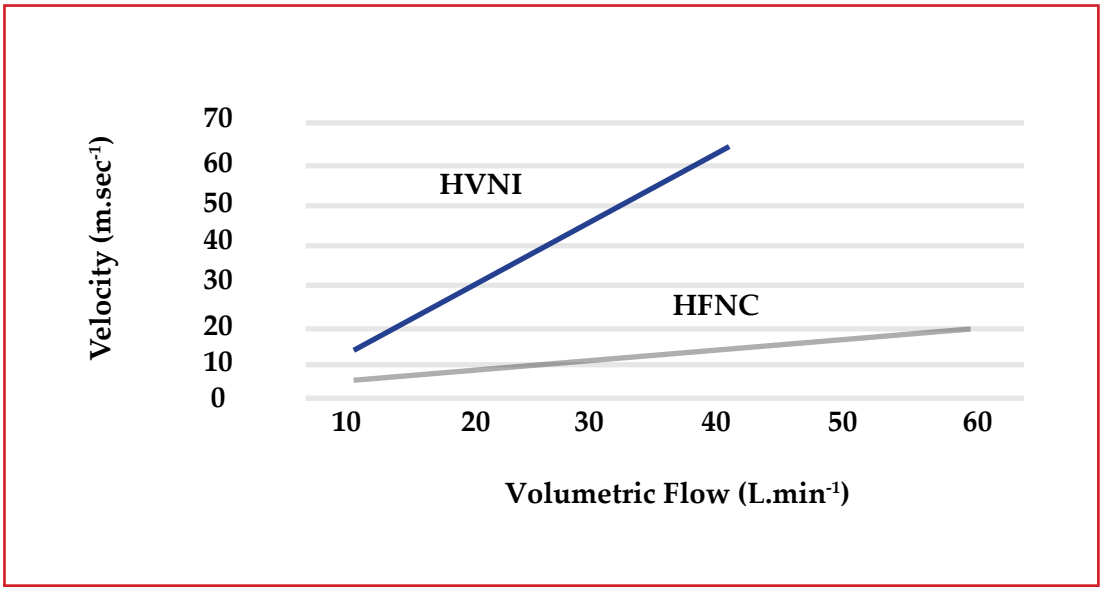
Yes

Therapeutic dose

The preferred agents are LMWH and Fondaparinux unless contraindicated In renal patients, heparin is the preferred agent. If the dose of LMWH exceeds 150 twice daily use heparin instead.

High Velocity Nasal Insufflation (Hi-VNI)

- **Hi-VNI is a first-line therapy for COVID-19 patients who are struggling to breathe.**
- **Hi-VNI Technology and WOB reduction: The fact that small-bore cannulas reduce the time required to fully purge the upper airway dead space3 is significant because as the respiratory rate of a patient in respiratory distress increases, the time between breaths decreases. By quickly clearing the upper airway dead space of end-expiratory gas rich in CO2, Hi-VNI Technology helps patients breathe directly from a fresh gas reservoir and thereby reduces their WOB.**



Post- acute COVID syndrome (long COVID)

Definition & incidence:

In the absence of agreed definition, it may be defined as "patients not recovering for several weeks or months following the start of symptoms that were suggestive of COVID, whether patients were tested or not." It may extend beyond 3 weeks from the onset of first symptoms up to 3 months, sometimes occurring after a relatively mild acute illness. If symptoms are extending beyond 3 months, it is termed Chronic COVID.

In short, "Despite their illness being 'over,' they are having a lot of trouble returning to normal life." It occurs in around 10% of patients.

Patients can be divided into those who may have serious sequelae (such as thromboembolic complications) and those with a non-specific clinical picture, often dominated by fatigue and breathlessness. One last group of covid-19 patients whose acute illness required intensive care management.

Management:

Specialist referral may be indicated based on clinical finding, for example:

Respiratory: if suspected pulmonary embolism, severe pneumonia.
Cardiology: if suspected myocardial infarction, pericarditis, myocarditis or new heart failure.
Neurology: if suspected neurovascular or acute neurological event.
Pulmonary rehabilitation may be indicated if patient has persistent breathlessness.

Medical management:

Symptomatic: treating fever by paracetamol & NSAIDs

Management of co-morbidities including diabetes, hypertension, kidney diseases & ischemic heart diseases

Listening and empathy

Consider antibiotics for secondary infection

Treat specific complication as indicated

Self-management:

Daily pulse oximetry.
Attention to general health like:
Good diet
Good sleep hygiene
Quitting smoking
Limiting alcohol
limiting caffeine
Rest and relaxation.
Self-pacing and gradual increase exercise.
Set achievable targets.

Prevention and Control of Transmission of COVID-19 inside Health Care Facilities

General Recommendations for Prevention and Control of Transmission of COVID-19 inside Health Care Facilities

1-Daily screening of health care workers and patients before entering the health care facility (HCF) based on clinical signs (fever, respiratory symptoms…….).

2- Any health care worker appears/reports to be diseased should be segregated until proper examination/management.

3- All health care workers are required to wear surgical masks during work hours (during existence in HCFs).

4- Minimal number of health care workers should be present at the same time in patient's units to keep social distancing

5- Restrict unneeded movements between departments.

6- Suspected or confirmed cases should take a separate route from other patients beginning from the facility entrance (Triage area), and all facility sections should follow the same separation.

7- Suspected or confirmed cases should be isolated in a well- ventilated isolation room.

8- Standard precaution should be applied :

- **Hand hygiene**
- **Cough etiquette.**
- **Personal protective equipment.**
- **Clean and disinfected Environmental surfaces.**
- **Sterile instrument and devices**
- **Sharp safety.**
- **Isolation transmitted precaution.**
- **Safe injection practices.**

Recommendations According To The Type Of Procedure

1) Non Aerosol Generating Procedures (AGPs)

• Standard precautions.

• Isolation precautions taken to prevent the spread of infection by spray and contact.

• The need to adhere to washing hands before donning personal protective equipment and immediately upon doffing.

• The necessity to adhere to donning personal protective equipment as follows:

1- Surgical mask.

2- Protect your eyes by wearing goggles or face shield.

3- Long-sleeve medical gowns (gown) clean, non-sterile or sterile, according to type of technique.

4- Clean or sterile gloves depending on type of technique.

5- Health care worker are not required to wear protective boots and protective suits during routine care of cases.

6- Extended use of surgical masks, gowns, eye protectors, and face shields can be applied while caring for COVID-19 patients in the event of a shortage of personal 2 protective equipment for the length of the work shift (preferably not more than six hours).

7- Always remember not to touch the eyes, mouth or nose with contaminated hands or used gloves (wash your hands or rub using alcohol when touch any environmental surface).

8- Always clean and disinfect surfaces .

2) Procedures that include (AGPs):

- **Tracheal intubation .**
- **Non-invasive ventilation e.g. BiPAP, CPAP.**
- **Tracheotomy.**
- **Cardiopulmonary resuscitation.**
- **Manual ventilation before intubation or bronchoscopy.**
- **Sputum induction by using nebulizer hypertonic saline.**

The health care workers must adhere to the following:

- **Standard precautions.**
- **Perform procedures inside a well-ventilated room.**
- **Follow the isolation precautions taken to prevent the spread of infection through air and contact.**
- **The need to adhere to washing hands before donning personal protective equipment and immediately upon doffing them.**

Donning personal protective equipment as follows:

- A high-performance respiratory masks such as N95 or FFP2 or equivalent, with the need to conduct a tightness test to ensure that there is no leakage.

- Protect your eyes by wearing goggles or face shield.

- Long-sleeve medical gowns (gown) clean, non-sterile or sterile according to the procedure.

- Clean or sterile gloves depending on type of technique.

- The extended use of a mask, medical gown, eye goggles, or face shield (Extended use) can be applied while caring for patients with COVID-19 in the event of a lack of personal protective equipment and for the length of the work shift (preferably no more than six hours).

- Care must be taken not to touch the eyes, mouth or nose with contaminated bare hands or using gloves (wash your hands or rub using alcohol when touch any environmental surface).

- Always clean and disinfect surfaces regularly.

ANTIBIOTICS IN COVID-19

Indications:

- Rapid development of consolidation pattern.
- Development of lobar consolidation.
- Leukocytosis with absolute neutrophilia.
- Reappearance of fever after afebrile days.
- Increased CRP with improved other markers as ferritin.
- Procalcitonin is highly specific.

Low-risk inpatients:

- Combination therapy:
β-lactam (eg, ceftriaxone, or cefotaxime) plus either a macrolide (eg, azithromycin or clarithromycin) or doxycycline.

- Monotherapy:
Respiratory fluoroquinolone (eg, levofloxacin or moxifloxacin)

High-risk inpatients:

- β-lactam plus a macrolide or fluoroquinolone is recommended.

NAME	AFFILIATION
Hossam Hosny Masoud	Professor of Chest Diseases. Head of Pulmonary Hypertension Unit, Faculty of Medicine, Cairo University
Gehan Elassal	Professor of Chest Diseases, faculty of Medicine , Ain Shams University
Dr. Mohamed Hassany	Fellow of Infectious Diseases and Endemic Hepatogastroentrology , National Hepatology and Tropical Medicine Research Institute
Dr. Ahmed Shawky	Professor of Chest Diseases, faculty of Medicine , Tanta University
Dr. Mohamed Abdel Hakim	Professor of Chest Diseases, faculty of Medicine , Cairo University
Dr. Samy Zaky	Professor of Hepatogastroentrology and Infectious Diseases, faculty of Medicine , Al Azhar University
Dr. Amin Abdel Baki	Consultant and Head of Hepatology , Gastroentrology and Infectious Diseases Department. National Hepatology and Tropical Medicine Research Institute
Dr. Akram Abdelbary	Professor of Critical care Medicine , Cairo University Chairman elect of ELSO SWAAC chapter
Dr. Ahmed Said	Lecturer of Critical care Medicine , faculty of Medicine, Cairo University
Dr. Khaled Taema	Assistant Professor of Critical care Medicine , faculty of Medicine, Cairo University
Dr. Noha Asem	Minister"s Counselor for Research and Health Development Chairman of Research Ethics Committee MOHP, Lecturer of Public Health , Cairo University

NAME	AFFILIATION
Dr. Ehab Kamal	Minister of Health Assistant for Continuous Medical Education General Director of Fever hospitals Directorate
Dr. Wagdy Amin	Director General for Chest Diseases , MOHP
Dr. Ehab Attia	General Director of IPC Department , MOHP
Dr. Hamdy Ibrahim	Infectious Diseases Consultant , National Hepatology and Tropical Medicine Research Institute
Dr. Alaa Eid	Head of Preventive Medical Sector MOHP

Ministry of Health and Population
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