



# COVID-19 CLINICAL CARE MANAGEMENT GUIDELINE FOR SOUTH SUDAN



## Table of Contents

Acronyms .....	3
1. Clinical management of Confirmed COVID-19 patients.....	5
1.1. Background .....	5
1.2. COVID-19 Case definitions.....	6
1.3. Early recognition: Screening and Triaging.....	7
1.4. Clinical management of confirmed COVID-19 patients.....	7
1.5. Asymptomatic COVID-19 cases .....	11
1.5.2. <i>Management of asymptomatic infection</i> .....	12
1.6. Mild/ Moderate COVID-19 illness.....	13
1.6.2. <i>Management for Mild/ Moderate illnesses</i> .....	13
1.7. Severe COVID-19 illness.....	15
1.7.2. <i>Management for severe illnesses</i> .....	15
1.8. Critical COVID-19 illness .....	19
1.8.2. <i>Management for Critical illnesses</i> .....	20
1.9. Prevention of COVID-19 complications .....	24
2. Management of COVID-19 in Special populations.....	28
3. Discharge criteria for patients with COVID-19 .....	30
Annexes .....	34
A. Annex A: algorithm for triage of COVID-19 cases at health facilities.....	34
B. Annex B: What to do during Home Based Isolation.....	36
C. Annex C: Components of Mental Health and Psychosocial Support (MHPSS) ..	40



Figure 1 Oxygen dose and delivery devices.....	16
Figure 2 Prone positioning .....	25
Table 1 Clinical presentation of COVID-19 patients.....	7
Table 2 Summary of care modalities for different illness presentation.....	11
Table 3 Prevention intervention of anticipated complications .....	26
Table 4 Discharge criteria and follow-up recommendations for recovered COVID-19 patients.....	31

### **Acronyms**

ARDS	Acute respiratory distress syndrome
CVD	Cardiovascular Disease
DM	Diabetes Mellitus
ETAT	Emergency Triage Assessment and Treatment
HIV	Human Immunodeficiency Virus
ICU	Intensive Care Unit
IPC	Infection prevention & control
PLHIV	People Living With HIV
RRT	Rapid Response Team
SAR-CoV-2	Novel Severe Acute Respiratory Syndrome Coronavirus 2
SBP	Systolic blood pressure
SD	Standard deviation
SIRS	Systemic inflammatory response syndrome
URTI	Upper Respiratory Tract Infection
WHO	World Health Organization

### **Glossary**

**SpO2** Oxygen saturation measured by Pulse Oximetry (Normal value: 94%-99%)

**OSI** Oxygenation Index using SpO2

**FiO2** (Fraction of inspired Oxygen): The percentage or concentration of oxygen that a person inhale (the fraction of inspired oxygen)



**CPAP** (Continuous Positive Airway Pressure): Positive airway pressure ventilator, which applies mild air pressure on a continuous basis.

**PEEP** Positive end-expiratory pressure: The pressure in the lungs (Alveolar pressure) above atmospheric pressure (the pressure outside of the body) that exists at the end of expiration.

**PaO<sub>2</sub>** (partial pressure of oxygen): Is a measurement of oxygen pressure in arterial blood.

**NIV** (Non-invasive ventilation): Refers to the administration of ventilatory support without using an invasive artificial airway (endotracheal tube or tracheostomy tube).

**COVID-19 Facility** A temporary or permanent structure within a health facility dedicated to the care of severe COVID-19 suspected and confirmed patients.

**COVID-19 Ward** A room or ward of 10 or more beds, within a regular health facility dedicated for admission and management of severe and critical COVID-19 patients

**Temporary Isolation area** A separate room or area where suspected COVID-19 patients are safely kept while waiting for the Rapid Response Team to refer them to a COVID-19 facility.

**Infectious Disease Unit (IDU)** Facility that deals with community and hospital acquired infectious diseases that need extra precaution for staff and community protection.

**Intensive Care Unit (ICU)** Also called Critical Care Unit (CCU) or Intensive Treatment Unit (ITU) is a hospital ward or department that provide intensive treatment and constant monitoring for people with severe or life-threatening illnesses and injuries and staffed with specially trained healthcare professionals and contain sophisticated monitoring equipment

**Supportive management/care** Care given to improve the quality of life of patients with serious or life-threatening disease.

**Palliative care** Specialized medical care providing patients living with serious illnesses with relief from symptoms, stress and end of life support regardless of the diagnosis



## 1. Clinical management of Confirmed COVID-19 patients

The aim of clinical case management is to reduce morbidity and mortality amongst infected patients and break the chain of transmission to uninfected persons. Clinical management is guided by management principles of respiratory illnesses. This guide is not meant to replace clinical judgement or consultation with a specialist but rather to provide guidance on how to provide optimized supportive care for these patients and provide up-to-date treatment modalities. Considering the rapidity of evolving knowledge, clinical management is very dynamic and as such updates will be provided as more evidence unfolds.

On case to case basis, this document should be used in complementarity with WHO manuals on Emergency Triage Assessment and Treatment (ETAT), Hospital Care for Children, Clinical adolescent and Guidelines for the management of common illnesses with limited resources.

### 1.1. Background

Coronavirus disease 2019 is a severe acute respiratory illness caused by the novel Severe Acute Respiratory Syndrome Coronavirus 2 (SAR-CoV-2) which was first identified in Wuhan, china, in December 2019. SARS-CoV-2 is said to be from the beta-coronavirus family. Studies have shown that most people who become infected with the virus, about 80% appear to have uncomplicated or mild illness, while 15% of cases will develop severe illness requiring oxygen therapy and approximately 5% will require intensive care unit treatment. In severe and most critical cases, COVID-19 can be complicated by severe pneumonia, acute respiratory distress syndrome (ARDS), sepsis, septic shock and multiorgan failure. Patients with comorbidity such as diabetes mellitus, hypertension, CVD and the elderly have been known to be at higher risk of mortality.

In special population such as pregnant and breastfeeding women, there is paucity of data on clinical presentation and perinatal outcomes after COVID-19 infection during pregnancy or breastfeeding. However, there has been no known difference between clinical presentation of pregnant and non-pregnant women with COVID-19. In children presenting with COVID-19, they present mainly with cough and fever, and their symptoms are usually less severe when compared to adults.



## 1.2. COVID-19 Case definitions

This is based on a combination of clinical, laboratory and epidemiological findings.

### Suspected Case

A case is said to be a suspected case if any of the below definitions are met:

#### Suspected case

<p>A. Patient with acute respiratory illness (<b>fever and at least one sign/symptom of respiratory disease, e.g., cough, shortness of breath</b>), <b>AND</b> a history of travel to or residence in a location reporting community transmission of COVID-19 disease during the 14 days prior to symptom onset;</p>	<p><b>OR</b></p>	<p>B. Patient with <b>any acute respiratory illness AND having been in contact with a confirmed or probable COVID-19 case</b> (see definition of contact) in the last 14 days prior to symptom onset;</p>	<p><b>OR</b></p>	<p>C. <b>A patient with severe acute respiratory illness (fever and at least one sign/symptom of respiratory disease, e.g., cough, shortness of breath; AND requiring hospitalization) AND in the absence of an alternative diagnosis that fully explains the clinical presentation.</b></p>
--	------------------	---	------------------	--

### Probable case

A case is said to be probable if any of the below definitions are met:

#### Probable case

<p>A. Suspect case for whom testing for the COVID-19 virus is inconclusive.</p>	<p><b>OR</b></p>	<p>B. Suspect case for whom testing could not be performed for any reason.</p>
---	------------------	--

### A Confirmed COVID-19 case



**A person with laboratory confirmation of SARS-CoV-2 infection, irrespective of clinical signs and symptoms.**

## Contact

A person with any one of the following exposures during **2 days before** and **the 14 days after the onset of symptoms** of a probable or confirmed case:

1. Face-to-face contact within 1 meter and for more than 15 minutes;
2. Direct physical contact with a probable or confirmed case;
3. Direct care for a patient with probable or confirmed COVID-19 disease without using proper personal protective equipment.

### 1.3. Early recognition: Screening and Triaging

In order to initiate appropriate infection prevention & control (IPC) measures, early identification through timely screening and triaging of suspected patients is crucial (*See Annex A: algorithm for triage of COVID-19 cases at health facilities*). Identifying patients with severe illness, such as severe pneumonia allows for supportive care treatments, rapid referral and admission to designated hospital ward or intensive care unit according to national protocols.

Before triaging commences, all healthcare workers in direct contact with suspected patients must ensure proper use of appropriate PPE.

During screening and triaging, elderly patients and those with comorbidities, such as cardiovascular disease and diabetes mellitus, and who are at higher risk of severe disease and mortality will need to be prioritized quickly for care.

### 1.4. Clinical management of confirmed COVID-19 patients

The management of COVID-19 cases is informed by clinical presentation as categorized into asymptomatic, mild/moderate, severe and critical cases (*see tables 1 & 2*)

*Table 1 COVID-19 Disease severity*

<b>Asymptomatic</b>		<ul style="list-style-type: none"><li>• <b>No symptoms</b></li></ul>
<b>Mild disease</b>		<ul style="list-style-type: none"><li>• Symptomatic patients meeting the case definition for COVID-19 without evidence of viral pneumonia or hypoxia.</li></ul>
<b>Moderate disease</b>	<b>Pneumonia</b>	<ul style="list-style-type: none"><li>• <b>Adolescent or adult</b> with clinical signs of pneumonia (fever, cough, dyspnoea, fast breathing) but no signs of severe pneumonia, including SpO<sub>2</sub> ≥ 90% on room air.</li><li>• <b>Child</b> with clinical signs of non-severe pneumonia (cough or difficulty breathing + fast breathing and/or chest indrawing) and no signs of severe pneumonia.</li></ul>

[Moderate COVID-19 illness](#)



		<ul style="list-style-type: none"> <li>• Fast breathing (in breaths/min): <ul style="list-style-type: none"> <li>• &lt; 2 months: <math>\geq 60</math>;</li> <li>• 2–11 months: <math>\geq 50</math>;</li> <li>• 1–5 years: <math>\geq 40</math></li> </ul> </li> <li>• While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications.</li> </ul>
<p><b>Severe disease</b></p> <p><a href="#"><u>Severe COVID-19 illness</u></a></p>	<p><b>Severe pneumonia</b></p>	<ul style="list-style-type: none"> <li>• <b>Adolescent or adult</b> with clinical signs of pneumonia (fever, cough, dyspnoea, fast breathing) plus one of the following: <ul style="list-style-type: none"> <li>• Respiratory rate <math>&gt; 30</math> breaths/min;</li> <li>• Severe respiratory distress; or</li> <li>• SpO<sub>2</sub> <math>&lt; 90\%</math> on room air.</li> </ul> </li> <li>• <b>Child</b> with clinical signs of pneumonia (cough or difficulty in breathing) + at least one of the following: <ul style="list-style-type: none"> <li>• Central cyanosis or SpO<sub>2</sub> <math>&lt; 90\%</math>; severe respiratory distress (e.g. fast breathing, grunting, very severe chest indrawing); general danger sign: inability to breastfeed or drink, lethargy or unconsciousness, or convulsions (55,56).</li> <li>• Fast breathing (in breaths/min): <math>&lt; 2</math> months: <math>\geq 60</math>; 2–11 months: <math>\geq 50</math>; 1–5 years: <math>\geq 40</math> (55).</li> </ul> </li> <li>• While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications.</li> </ul>
<p><b>Critical disease</b></p> <p><a href="#"><u>Critical COVID-19 illness</u></a></p>	<p><b>Acute respiratory distress syndrome (ARDS)</b></p>	<ul style="list-style-type: none"> <li>• Onset: within 1 week of a known clinical insult (i.e. pneumonia) or new or worsening respiratory symptoms.</li> <li>• Chest imaging: (radiograph, CT scan, or lung ultrasound): bilateral opacities, not fully explained by volume overload, lobar or lung collapse, or nodules.</li> <li>• Origin of pulmonary infiltrates: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of infiltrates/oedema if no risk factor present.</li> <li>• Oxygenation impairment in <b>adults</b>:</li> </ul>



- Mild ARDS:  $200 \text{ mmHg} < \text{PaO}_2/\text{FiO}_2 \leq 300 \text{ mmHg}$  (with PEEP or CPAP  $\geq 5 \text{ cmH}_2\text{O}$ ).
- Moderate ARDS:  $100 \text{ mmHg} < \text{PaO}_2/\text{FiO}_2 \leq 200 \text{ mmHg}$  (with PEEP  $\geq 5 \text{ cmH}_2\text{O}$ ).
- Severe ARDS:  $\text{PaO}_2/\text{FiO}_2 \leq 100 \text{ mmHg}$  (with PEEP  $\geq 5 \text{ cmH}_2\text{O}$ ).
- Oxygenation impairment in **children**: If  $\text{PaO}_2$  not available, wean  $\text{FiO}_2$  to maintain  $\text{SpO}_2 \leq 97\%$  to calculate OSI or  $\text{SpO}_2/\text{FiO}_2$  ratio:
  - Bilevel (NIV or CPAP)  $\geq 5 \text{ cmH}_2\text{O}$  via full face mask:  $\text{PaO}_2/\text{FiO}_2 \leq 300 \text{ mmHg}$  or  $\text{SpO}_2/\text{FiO}_2 \leq 264$ .
  - Mild ARDS (invasively ventilated):  $4 \leq \text{OI} < 8$  or  $5 \leq \text{OSI} < 7.5$ .
  - Moderate ARDS (invasively ventilated):  $8 \leq \text{OI} < 16$  or  $7.5 \leq \text{OSI} < 12.3$ .
  - Severe ARDS (invasively ventilated):  $\text{OI} \geq 16$  or  $\text{OSI} \geq 12.3$ .

### Sepsis (3,4)

- **Adults**: acute life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection. Signs of organ dysfunction include altered mental status, difficult or fast breathing, low oxygen saturation, reduced urine output, fast heart rate, weak pulse, cold extremities or low blood pressure, skin mottling, laboratory evidence of coagulopathy, thrombocytopenia, acidosis, high lactate, or hyperbilirubinemia.
- **Children**: suspected or proven infection and  $\geq 2$  age-based systemic inflammatory response syndrome (SIRS) criteria of which one must be abnormal temperature or white blood cell count.

### Septic shock (3,4)

- **Adults**: persistent hypotension despite volume resuscitation, requiring vasopressors to maintain  $\text{MAP} \geq 65 \text{ mmHg}$  and serum lactate level  $> 2 \text{ mmol/L}$ .
- **Children**: any hypotension (SBP  $< 5$ th centile or  $> 2 \text{ SD}$  below normal for age) or two or three of the following: altered mental status; bradycardia or tachycardia (HR  $< 90 \text{ bpm}$  or  $> 160 \text{ bpm}$  in infants and heart rate  $< 70 \text{ bpm}$  or  $> 150 \text{ bpm}$  in children); prolonged capillary refill ( $> 2 \text{ sec}$ ) or weak pulse; fast breathing; mottled or cool skin

or petechial or purpuric rash; high lactate;  
reduced urine output; hyperthermia or  
hypothermia

Other complications described in COVID-19 patients include acute, life-threatening conditions such as: acute pulmonary embolism, acute coronary syndrome, acute stroke and delirium. Clinical suspicion for these complications should be heightened when caring for COVID-19 patients, and appropriate diagnostic and treatment protocols available.



*Table 2 Summary of care modalities for different illness presentation*

	<b>Asymptomatic/ Mild/ Moderate illness</b>	<b>Severe illness</b>	<b>Critical illness</b>
Clinical Presentation	<b>No symptoms</b> , Fever, Fatigue, cough ± Sputum, Anorexia, uncomplicated URTI (viral)	Severe Pneumonia, ARDS	Severe Pneumonia, ARDS, Sepsis, Septic shock
<b>Treatment modalities</b>			
Homecare	Yes <sup>†</sup>	No	No
Intensive Care Unit	No	Yes	Yes
Oxygen therapy	No	Yes	Yes
Anti-microbials	No <sup>‡</sup>	Yes	Yes
Fluid therapy	No	Yes <sup>*</sup>	Yes
Mechanical ventilators	No	No <sup>**</sup>	Yes

<sup>†</sup>In South Sudan, mild/moderate illnesses will initially be managed in designated hospitals if there are only few/ sporadic cases. If the number of cases increases beyond the capacity of the designated hospitals, then isolation facilities and homes will be identified for mild cases outside the designated hospitals.

<sup>‡</sup>For moderately ill patients, antibiotics should not be prescribed unless there is clinical suspicion of a bacterial infection.

<sup>\*</sup>Fluid therapy in severely ill should be done with great caution.

<sup>\*\*</sup>Severely ill patients may not require mechanical ventilator. However, the attending Physician will decide based on clinical picture at hand and availability of resources.

## 1.5. Asymptomatic COVID-19 cases

A vast majority of COVID-19 cases will present to the facility without symptoms (Asymptomatic). At the point of contact between patient and attending clinician, baseline clinical assessment should be carried out, evaluate patient for comorbidities, and develop and agree on a follow-up plan for clinical monitoring. Older adults and people of any age with serious underlying medical conditions are at higher risk for developing more severe illness from COVID-19 and will need to be prioritized for care.



## 1.5.2. Management of asymptomatic infection

All asymptomatic and mild/ moderate (clinically stable) patients will be managed at home (Home-Based Isolation). A caregiver<sup>1</sup> within the patient's household will be identified, oriented on IPC measures and counselled about signs and symptoms of deteriorating illness.

**Home-Based isolation** means strictly staying at home or in an identified accommodation, away from family members or the general public, for the period of at least 14 days. During Home-Based Isolation, patient is expected to avoid close contact with others (face-to-face contact closer than 2 meters or 5 feet).

Home-Based Isolation is aimed at reducing further spread of infection to non-infected members of the society and to protect loved one from being infected. (See [Annex B: What to do during Home Based Isolation](#))

### Eligibility for Home Based isolation

- Laboratory confirmed Asymptomatic COVID-19 cases
- Confirmed COVID-19 cases with mild illness (cough, Sore throat, Headache or flu-like symptoms, reduce/ loss of sense of smell)
- Confirmed COVID-19 cases with moderate illness (Fever, Cough, Sore Throat, Difficulty breathing on exercise (even on walking up the stairs), feeling tired (but still able to move around your home comfortably, and you can shower and self-care)

*\*Important Notice:* Persons eligible for Home Based Isolation but with any of the following conditions and or elderly should report these conditions to case management team via 6666 or to the attending health worker for additional advices:

- age more than 60 years
- Smoker
- Diabetes
- Hypertension
- Immune deficiency including HIV
- Chronic kidney disease
- Chronic Respiratory disease
- Chronic Liver Disease
- Malnutrition
- Ongoing treatment of any type of Cancer

---

<sup>1</sup> Caregiver should not be someone who is at higher risk for severe illness from COVID-19



## 1.6. Mild/ Moderate COVID-19 illness

Patients presenting to the clinic with mild/ moderate illness are to be evaluated for comorbidities such as Hypertension, DM, Asthma, CVD, TB, Immunosuppression etc. Most mild/ moderate cases may present with uncomplicated upper respiratory tract infection (viral), non-specific symptoms (fever, headache, sore throat, nasal congestion, muscle pain or malaise) while others may be asymptomatic. In children, COVID-19 presentation is usually mild and may present with fever, cough or difficulty in breathing with fast breathing and no sign of progression to severe pneumonia.

Patients who are moderately ill may present with pneumonia:

- **Adolescent or adult** with clinical signs of pneumonia (fever, cough, dyspnoea, fast breathing) but no signs of severe pneumonia, including SpO<sub>2</sub> ≥ 90% on room air.
- **Child** with clinical signs of non-severe pneumonia (cough or difficulty breathing + fast breathing and/or chest indrawing) and no signs of severe pneumonia.  
Fast breathing (in breaths/min): < 2 months: ≥ 60; 2–11 months: ≥ 50; 1–5 years: ≥ 40

While the diagnosis can be made on clinical grounds; chest imaging (radiograph, CT scan, ultrasound) may assist in diagnosis and identify or exclude pulmonary complications

### 1.6.2. Management for Mild/ Moderate illnesses

Patients presenting with mild/ moderate illnesses will need supportive therapy and monitoring and *may* not require hospitalization. In such patients, they are best managed symptomatically by providing antipyretics for fever, cough medicine for cough, sore throat, liberal fluid intake and rest. Vital signs are monitored closely.

For moderately severe patients with clinical suspicion of a bacterial pneumonia [refer to management of severe illnesses pg.17](#)

However, if there are concerns for possible/ rapid deterioration in patients, hospitalization may be recommended. Otherwise, for this category of patients with mild/ moderate illnesses, home based care is recommended, and home care kit will be provided to patient. As they are being managed at home, patients and identified caregiver will be counselled about signs and symptoms of complicated disease.

If patients develop any of these symptoms of complicated disease, they should seek immediate care through national referral systems by calling the Rapid Response Team (RRT) via 6666.





In South Sudan, mild/moderate illnesses will initially be managed in designated hospitals if there are only few/ sporadic cases. If the number of cases increases beyond the capacity of the designated hospitals, then isolation facilities and homes will be identified for mild cases outside the designated hospitals.

### **IPC measures for Home care management (Guide for home care givers)**

- Confirmed cases must be given a medical mask to wear at all times.
- Instruct all patients to cover nose and mouth during coughing or sneezing with tissue or flexed elbow and perform hand hygiene after contact with respiratory secretions.
- Maintain 1-2m distance from patients at all time.
- Use facial masks or appropriate PPE when providing care in close contact with a patient (suspected/ confirmed case).
- Hand hygiene and use of PPE when in indirect and direct contact with patients' blood, body fluids, secretions including respiratory secretions) and non-intact skin.
- Maintain standard precautions such as prevention of needle-stick or sharps injury; safe waste management; cleaning and disinfection of equipment; and cleaning of the environment.
- Remove PPE when leaving the room of patient and practice hand hygiene after removal of PPE.
- When providing care for patients, where possible use disposable or dedicated equipment.
- Refrain from touching your eyes, nose and mouth with potentially contaminated gloves or unclean/ unwashed hands
- All patients cared for at home should be instructed to manage themselves appropriately as per local public health protocols for home isolation and return to designated COVID-19 hospital if they develop any worsening of illness.



### Nutritional Support

- Ensure adequate intake of fluids; at least two liters of water per day or more if there is fever<sup>2</sup>
- Limit intake of refined carbohydrates such as sugar, sweets, cake, soft drinks and sugar sweetened beverages.
- Limit intake of foods containing trans-fats and saturated fats e.g. fat and skin from meat, hydrogenated vegetable oils, fried foods, cookies, and pastries

## 1.7. Severe COVID-19 illness

Patients who are severely ill may present with severe pneumonia, acute respiratory distress syndrome (ARDS).

**Adult/Adolescents** presenting with severe pneumonia: they may present with fever or suspected respiratory infection, **plus** one of:

1. Respiratory rate > 30 breaths/minute;
2. Severe respiratory distress;
3. SpO<sub>2</sub> ≤ 90% on room air

**Children** presenting with severe pneumonia: Will usually present with cough or difficulty in breathing, **plus** at least one of:

1. Central cyanosis or SpO<sub>2</sub> < 90%;
2. Severe respiratory distress (e.g. grunting, very severe chest indrawing);
3. Signs of pneumonia with a general danger sign: Inability to breastfeed or drink, lethargy or unconsciousness, or convulsions
4. Other signs of pneumonia may be present: fast breathing (in breaths/min):
  - a. < 2 months: ≥ 60 breaths/min
  - b. 2–11 months: ≥ 50 breaths/min
  - c. 1–5 years: ≥ 40 breaths/min

### 1.7.2. Management for severe illnesses

The aim is to provide early optimized supportive care and monitoring.

#### Oxygen therapy and monitoring

For clients presenting with respiratory distress, hypoxaemia or shock, providing supplemental oxygen therapy immediately is the hallmark of care for severe illnesses. For **Adults/Adolescents** presenting with emergency signs such as obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions should receive airway management and oxygen therapy during

---

<sup>2</sup> Fever increases the need for more calories



resuscitation to reach a target of > 90% SpO<sub>2</sub> in non-pregnant adults and ≥ 92–95% in pregnant patients.

- Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target SpO<sub>2</sub> ≥ 93% during resuscitation;
- For patients in critical condition and face mask with reservoir bag is available, provide oxygen therapy at 10–15 L/min.

*Figure 1 Oxygen dose and delivery devices*



**O<sub>2</sub> dose 1–5 L/min**  
**Nasal cannula**



**O<sub>2</sub> dose 6–10 L/min**  
**Simple face mask**



**O<sub>2</sub> dose 10–15 L/min**  
**Face mask with reservoir bag**

For **children** presenting with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions) should receive airway management and oxygen therapy during resuscitation to reach a target of SpO<sub>2</sub> ≥ 94%. Use of nasal prongs or nasal cannula is preferred in young children, as it may be better tolerated (*see figure 1*)



It is highly recommended that facilities where severely ill patients are care for should be equipped with pulse oximeters, functioning oxygen systems and disposable, single-use, oxygen-delivering interfaces (nasal cannula, nasal prongs, simple face mask and mask with reservoir bag).

Perform Haematology and biochemistry laboratory testing, and ECG where available at admission and as clinically indicated to monitor for complications, such as acute liver injury, acute kidney injury, acute cardiac injury or shock.

\*All patient must be closely monitored for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis and respond immediately with supportive care interventions.

\*Remember application of timely, effective and safe supportive therapies is the cornerstone of therapy for patients that develop severe manifestations of COVID-19.

### Fluid management

Cautious and conservative fluid management in severely ill patients is recommended and **must** be under direct guidance of an experienced physician.

\*Patients should be treated cautiously with intravenous fluids, because aggressive fluid resuscitation may worsen oxygenation, especially in settings where there is limited availability of mechanical ventilation

### Anti-microbials

**Antimicrobial has no effect on SARS CoV-2.**

Empiric antibiotic treatment should be based on the clinical diagnosis (community acquired pneumonia, health care-associated pneumonia [if infection was acquired in health care setting] or sepsis), local epidemiology and susceptibility data, and treatment guidelines. In such a case, give appropriate, empiric antimicrobials as soon as possible (within 1 hour of initial assessment if possible) following laboratory confirmation of causative organisms from respiratory and/ or blood samples.

However, the use of antibiotics therapy or prophylaxis in moderate COVID-19 illness is **NOT** recommended unless there is clinical suspicion of a bacterial infection.

If Community Acquired Pneumonia (CAP) is suspected, give:

- Tablet amoxicillin 1g po 3x/day (5days) and Metronidazole combination, if no improvement after 72 hours consider doxycycline 100mg po 2x/day (10 days).
- Duration of empiric antibiotic treatment should be as short as possible; generally, 5-7 days.
- Monitor daily for clinical improvement and de-escalation of antimicrobial therapy.
- Widespread use of antibiotics is discouraged, as their use may lead to higher bacterial resistance rates.
- Empiric therapy should be de-escalated on the basis of microbiology results and clinical judgment

### Anti-viral

There are **no** known effective antivirals for coronavirus infections and multiple clinical trials are ongoing to evaluate the activities of various antivirals in COVID-19.

### Bronchodilator

If bronchodilator treatment is required, provide metered dose inhalers and spacers instead of nebulizers to prevent aerosolization of the virus.



### Nutritional Support

- Consider medical nutrition therapy for all patients staying in the ICU, mainly for more than 48 hrs.
- Oral diet shall be preferred over Enteral Nutrition or Parenteral Nutrition in critically ill patients who are able to eat, and if not possible, initiate early enteral nutrition within 48 hours.
- In case of contraindications to oral and Enteral Nutrition, Parenteral Nutrition should be initiated within three to seven days
- \*Gastric access should be used as the standard approach to initiate Enteral Nutrition using nasogastric tube feeding
- Hypocaloric nutrition (not exceeding 70% of Estimated Energy) should be administered in the early phase of acute illness and increased from day 3 to day 7 to 80-100% based on stability and tolerance of the patient.
- Micronutrients (i.e. trace elements and vitamins) should be provided daily with Parenteral Nutrition and should be included for better recovery.
- In non-intubated patients not reaching the energy target with an oral diet, oral nutritional supplements should be considered first and then Enteral Nutrition.

### Energy

- Critically ill adult patients should receive feedings at rates of 25 to 30 kcal/kg.
- The amount of glucose (PN) or carbohydrates (EN) administered to ICU patients should not exceed 5 mg/kg/min.
- For intravenous lipids the upper recommendation is 1 g/kg body weight/day with a tolerance up to 1.5 g/kg/day.

### Protein

- For the unstressed adult patient with adequate organ function requiring nutrition support, 1.3 g/kg/day to 1.5g/kg/day may be adequate.
- Requirements may rise with metabolic demands to levels of about 2 g/kg/day.



## 1.8. Critical COVID-19 illness

Patients with critical illness may present with hypoxemic respiratory failure, ARDS, sepsis, Septic shock.

Hypoxemic respiratory failure can be recognized when a patient with respiratory distress is failing to respond to standard oxygen therapy as described above (see section [Management for severe illnesses for oxygen therapy and monitoring](#))

Acute Respiratory Distress Syndrome (ARDS) may present with the following:

- Chest imaging (radiograph): bilateral opacities not fully explained by volume overload, lobar or lung collapse, or nodules.
- Origin of pulmonary infiltrates: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of infiltrates/oedema if no risk factor present.
- Oxygenation impairment in **adults**:
  - Mild ARDS:  $200 \text{ mmHg} < \text{PaO}_2/\text{FiO}_2^3 \leq 300 \text{ mmHg}$  (with PEEP or CPAP  $\geq 5 \text{ cmH}_2\text{O}$ ).
  - Moderate ARDS:  $100 \text{ mmHg} < \text{PaO}_2/\text{FiO}_2 \leq 200 \text{ mmHg}$  (with PEEP  $\geq 5 \text{ cmH}_2\text{O}$ )<sup>4</sup>.
  - Severe ARDS:  $\text{PaO}_2/\text{FiO}_2 \leq 100 \text{ mmHg}$  (with PEEP  $\geq 5 \text{ cmH}_2\text{O}$ ).
- Oxygenation impairment in **children**: If PaO<sub>2</sub> not available, wean FiO<sub>2</sub> to maintain SpO<sub>2</sub>  $\leq 97\%$  to calculate OSI<sup>5</sup> or SpO<sub>2</sub>/FiO<sub>2</sub> ratio:
  - Bilevel (NIV or CPAP)  $\geq 5 \text{ cmH}_2\text{O}$  via full face mask:  $\text{PaO}_2/\text{FiO}_2 \leq 300 \text{ mmHg}$  or  $\text{SpO}_2/\text{FiO}_2 \leq 264$ .
  - Mild ARDS (invasively ventilated):  $4 \leq \text{OI} < 8$  or  $5 \leq \text{OSI} < 7.5$ .
  - Moderate ARDS (invasively ventilated):  $8 \leq \text{OI} < 16$  or  $7.5 \leq \text{OSI} < 12.3$ .
  - Severe ARDS (invasively ventilated):  $\text{OI} \geq 16$  or  $\text{OSI} \geq 12.3$ .

Sepsis (Adults): life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection.

Signs of organ dysfunction include:

- Altered mental status

<sup>3</sup> If altitude is higher than 1000 m, then the correction factor should be calculated as follows:  $\text{PaO}_2/\text{FiO}_2 \times \text{barometric pressure}/760$ .

<sup>4</sup> When PaO<sub>2</sub> is not available,  $\text{SpO}_2/\text{FiO}_2 \leq 315$  suggests ARDS (including in non-ventilated patients).

<sup>5</sup> Oxygenation Index (OI) is an invasive measurement of the severity of hypoxaemic respiratory failure and may be used to predict outcomes in paediatric patients. It is calculated as follows: percentage of fraction of inhaled oxygen multiplied by the mean airway pressure (in mmHg), divided by the partial pressure of arterial oxygen (in mmHg). Oxygen saturation index (OSI) is a non-invasive measurement and has been shown to be a reliable surrogate marker of OI in children and adults with respiratory failure. OSI replaces PaO<sub>2</sub> with oxygen saturation as measured by pulse oximetry (SpO<sub>2</sub>) in the OI equation



- Difficult or fast breathing
- Low oxygen saturation
- Reduced urine output
- Fast heart rate
- Weak pulse
- Cold extremities or low blood pressure
- Skin mottling
- Laboratory evidence of coagulopathy, thrombocytopenia, acidosis, high lactate or hyperbilirubinemia.

Sepsis (Children): suspected or proven infection and  $\geq 2$  aged based systemic inflammatory response syndrome (SIRS) criteria<sup>6</sup>, of which one must be abnormal temperature or white blood cell count.

Septic Shock (Adults): persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP  $\geq 65$  mmHg and serum lactate level  $> 2$  mmol/L

Septic Shock (Children): any hypotension (SBP  $< 5$ th centile or  $> 2$  SD below normal for age) or two or three of the following:

- Altered mental state
- Tachycardia or bradycardia (HR  $< 90$  bpm or  $> 160$  bpm in infants and HR  $< 70$  bpm or  $> 150$  bpm in children)
- Prolonged capillary refill ( $> 2$  sec) or feeble pulse
- Tachypnoea
- Mottled or cool skin or petechial or purpuric rash
- Increased lactate
- Oliguria;
- Hyperthermia or hypothermia

### 1.8.2. Management for Critical illnesses

Critically ill patients should be managed in an **Intensive Care Unit (ICU)**.

#### Oxygen therapy & Mechanical ventilator management

In a critically ill patient who is failing standard oxygen therapy as stated in severe case management, perform endotracheal intubation (*this should be done by an experienced physician*).

---

<sup>6</sup> SIRS criteria: abnormal temperature ( $> 38.5$  °C or  $< 36$  °C); tachycardia for age or bradycardia for age if  $< 1$  year; tachypnoea for age or need for mechanical ventilation; abnormal white blood cell count for age or  $> 10\%$  bands.



- For patients with hypoxemic respiratory failure commence high-flow nasal oxygen (HFNO) or Non-invasive ventilation (NIV) at 10-15L/min. *If hypercapnia is suspected in a patient (exacerbation of obstructive lung disease, cardiogenic pulmonary oedema, hemodynamic instability, multi-organ failure, or abnormal mental status) do not place on HFNO or NIV.*
- If clinical status worsens, pre oxygenate with 100% FiO<sub>2</sub> for 5 minutes, via a face mask with reservoir bag or HFNO or NIV.
- A trained and experienced physician (or provider) should provide mechanical ventilation (endotracheal intubation) while maintaining strict IPC measures. *Note: Detailed recommendations on mechanical ventilation strategies are beyond the scope of the guideline.*
- Provide mechanical ventilation using lower tidal volumes (4–8 mL/kg predicted body weight, PBW) and lower inspiratory pressures (plateau pressure < 30 cmH<sub>2</sub>O).
- Apply prone ventilation >12hours/ day for patients with deteriorating ARDS.
- Conservative fluid management is recommended for ARDS patients without tissue hypoperfusion to reduce the duration of ventilation.
- In patients with moderate or severe ARDS, give higher Positive End Expiratory Pressure (PEEP) instead of lower PEEP is suggested
- Neuromuscular blockade by continuous infusion in patients with moderate-severe ARDS (PaO<sub>2</sub>/FiO<sub>2</sub> <150), is not recommended.
- Offer Extracorporeal Life Support (ECLS) only in expert centres with adequate case volume to maintain expertise while maintaining strict IPC measures
- Avoid disconnecting the patient from the ventilator, to prevent loss of PEEP and resulting in atelectasis
- If disconnection is required, use in-line catheters for airway suctioning and clamp endotracheal tube (e.g. transfer to a transport ventilator)
- Patient should be monitored closely for clinical improvement or deterioration.
- Monitor for blood routine, CRP, PCT, E/U/Cr, LFT, Bilirubin, Urine volume, analysis, and culture, coagulation function, blood gas analysis (arterial and venous) and chest imaging.



- For children, where mechanical ventilation is not available, use bubble nasal CPAP for children with severe hypoxemia.

### Management of septic shock

For facilities where lactate measurement cannot be carried out, use blood pressure (Mean Arterial Pressure (MAP)) and clinical signs of perfusion to define shock.

Following early recognition (within 1 hour) of septic shock, commence antimicrobial therapy, fluid management and administer vasopressors for hypotension.

Fluid therapy:

- For **adults** administer 250–500 mL crystalloid fluid (0.9% Normal Saline or Ringer’s Lactate) as rapid bolus in first 15–30 minutes and reassess for signs of fluid overload after each bolus.
- **For children, give 10–20 mL/kg crystalloid fluid as a bolus in the first 30–60 minutes and reassess for signs of fluid overload after each bolus.**
- Assess the need for additional fluid boluses (250–500 mL in adults or 10–20 mL/kg in children) based on clinical response and improvement of perfusion targets.
- In adults, if shock persists during or after fluid resuscitation, administer vasopressors through a central venous catheter at a strictly controlled rate.  
*Note: It can also be given via peripheral vein and intraosseous needle.*

**Perfusion targets include:**

- **MAP (> 65 mmHg or age-appropriate targets in children),**
- **Urine output (> 0.5 mL/kg/hr in adults, 1 mL/kg/hr in children), and**
- **improvement of skin mottling and extremity perfusion, capillary refill, heart rate, level of consciousness, and lactate.**

In **children** administer vasopressors (low dose epinephrine) if there are:

- Signs of shock such as altered mental state;
- Tachycardia or bradycardia (HR < 90 bpm or > 160 bpm in infants and HR <70 bpm or > 150 bpm in children);
- Prolonged capillary refill (> 2 seconds) or feeble pulses
- Tachypnoea
- Mottled or cool skin or petechial or purpuric rash
- Increased lactate
- Oliguria persists after two repeat boluses
- Age-appropriate blood pressure targets are not achieved
- Signs of fluid overload are apparent

If central venous catheters are not available, vasopressors can be given through a peripheral IV, but use a large vein and closely monitor for signs of extravasation and local tissue necrosis.

If extravasation occurs, stop infusion.

If signs of poor perfusion and cardiac dysfunction persist despite achieving MAP target with fluids and vasopressors, consider an inotrope such as dobutamine.



\*Remember to monitor blood pressure regularly

\*Do not use hypotonic crystalloids, starches or gelatins for resuscitation.

\*Vasopressors that can be used with guidance include norepinephrine, epinephrine, vasopressin, and dopamine.

\*Be vigilant as fluid resuscitation may lead to volume overload, including respiratory failure. *This should be done by or under direct guidance of an experience physician/ consultant*

### Corticosteroids:

**Do not routinely give systemic corticosteroids for treatment of viral pneumonia outside of clinical trials.**

### **IPC measure for healthcare workers managing severely and critically ill COVID-19 patients**

- Use facial masks or appropriate PPE when consulting or providing care in close contact with a patient (suspected/ confirmed case)
- Hand hygiene and use of PPE when in indirect and direct contact with patients' blood, body fluids, secretions including respiratory secretions) and non-intact skin.
- Maintain standard precautions such as prevention of needle-stick or sharps injury; safe waste management; cleaning and disinfection of equipment; and cleaning of the environment.
- Remove PPE when leaving the clinic and practice hand hygiene after removal of PPE.
- When providing care for patients, where possible use disposable or dedicated equipment.
- If equipment needs to be shared/ re-used among patients, clean and disinfect (thoroughly) (with what?) between each patient use
- Refrain from touching your eyes, nose and mouth with potentially contaminated gloves or unclean/ unwashed hands

### **Hospital monitoring of admitted Patient**

- For general patients, monitor and record vital signs regularly: Temperature, Respiratory rate, SpO<sub>2</sub>, Pulse, Blood Pressure
- For severe and critical case, in addition to vital signs, monitor and record fluid input and urine output. Consider placing Urine catheter for patients with altered consciousness.

## 1.9. Prevention of COVID-19 complications

The below-listed interventions are recommended to prevent complications associated with severe to critical illnesses.

### Use of Anticoagulants for Severe and Critical cases

Coagulopathy (venous and arterial) is common in hospitalized patients with severe COVID-19.

#### **Management:**

- Patients who are receiving anticoagulant or antiplatelet therapies for underlying conditions should continue their medications if they receive a diagnosis of COVID-19.
- For non-hospitalized asymptomatic, mild and moderate cases, anticoagulants and antiplatelet therapy should **NOT** be initiated for venous thromboembolism (VTE) prophylaxis or arterial thrombosis.
- Hospitalized patients, severe and critical cases, with COVID-19 and who are highly susceptible to thromboembolic disease should receive Venous Thromboembolism (VTE) prophylaxis or therapeutic doses of anticoagulant therapy per the National standard of care for other hospitalized adults unless contraindicated (e.g., a patient has active hemorrhage or severe thrombocytopenia).
- Hospitalized patients with COVID-19 should **not routinely be discharged** on VTE prophylaxis.
- Low molecular weight heparin (such as Enoxaparin) or unfractionated heparin are preferred in hospitalized, critically ill patients because of their shorter half-lives, ability to be administered intravenously or subcutaneously, and fewer drug-drug interactions compared with oral anticoagulants.
- Give Nadroparin 0.3ml (2850 UI) once daily subcutaneously.
  - For obese patients (BMI >30): increase the dose to 0.4ml.
  - For patients on high flow O<sub>2</sub> by nasal canula (HFNC) or Non-Invasive Ventilation (NIV): consider administering the same dose, twice daily. If the patient has an acute kidney injury with renal clearance <30ml/min, use Calciparine: 0.2mlx2/day and 0.3ml x2/ day for obese patients.
  - Other low molecular weight heparin can be used if Nadroparin is not available.

### Prone positioning in non-intubated COVID-19 patients

In adult, patient positioning like high supported sitting, may help to optimize oxygenation, ease respiratory distress and reduce energy expenditure and subsequently reduce mortality. Repositioning include lying fully prone (bed flat), Lying



on the left (bed flat), sitting up (30 to 60 degree) by adjusting head on the bed and Lying on the right side (bed flat) See figure 2

Prone position should be use for conscious (awake: Able to communicate and cooperate for the procedure, rotate to front and adjust position independently), spontaneously breathing patients (non-intubated) may also improve oxygenation and the ventilation/perfusion ratio.

## Contra-indication

### *Absolute Contra-indication*

- Advanced respiratory distress / moribund patient
- Immediate need for intubation
- Hemodynamic instability (SBP < 90 mmHg) or arrhythmia
- Agitation or altered mental status
- Unstable spine/thoracic injury/recent abdominal surgery.

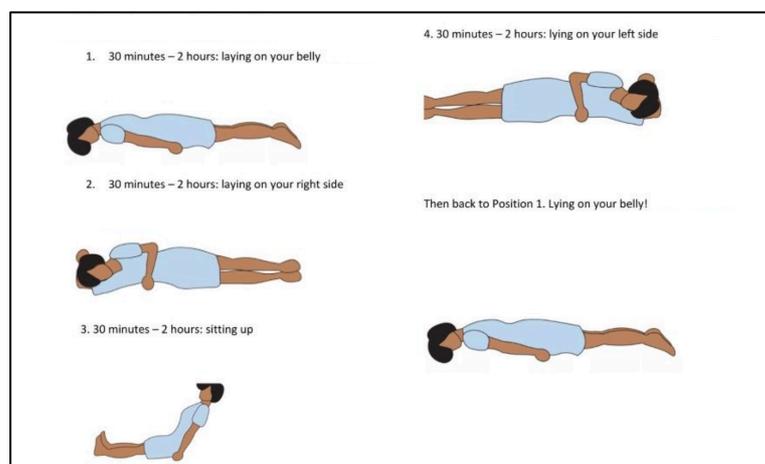
### *Relative contra-indication*

- Facial injury
- Neurological issues (e.g. frequent seizures)
- Morbid obesity
- Pregnancy (2nd, 3rd trimesters)
- Pressure sores/ulcers

### Monitoring of patient on prone position

- Change position every 30 minutes-2 hours (aiming to achieve the maximum prone time tolerated by patient)
- Intermittent visual monitoring, if possible, move patient near nursing station and monitor continuously the SpO2 aiming for 92-94% and no increased respiratory distress
- In between cycles of repositioning, the patient should be sitting at 30-60° upright

### Figure 2 Prone positioning<sup>7</sup>



<sup>7</sup> <https://emergencymedicinescases.com/faq-items/covid-19-update-april-12th-2020/>

*Table 3 Prevention intervention of anticipated complications*

<b>Anticipated Outcome</b>	<b>Interventions</b>
Reduce days of invasive mechanical ventilation	<ul style="list-style-type: none"> <li>• Use weaning protocols that include daily assessment for readiness to breathe spontaneously</li> <li>• Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions</li> <li>• Early mobilization</li> <li>• Implementation of the above as a bundle of care (may also reduce delirium); such as the <b>A</b>wakening and <b>B</b>reathing <b>C</b>oordination, <b>D</b>elirium assessment/management, and <b>E</b>arly mobility (ABCDE)</li> </ul>
Reduce incidence of ventilator associated pneumonia	<ul style="list-style-type: none"> <li>• Oral intubation is preferable to nasal intubation in adolescents and adults</li> <li>• Keep patient in semi-recumbent position (head of bed elevation 30-45°)</li> <li>• Use a closed suctioning system; periodically drain and discard condensate in tubing</li> <li>• Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged but not routinely</li> <li>• Change heat moisture exchanger when it malfunctions, when soiled, or every 5–7 days</li> </ul>
Reduce incidence of catheter related bloodstream infection	<ul style="list-style-type: none"> <li>• Use a checklist with completion verified by a real-time observer as reminder of each step needed for sterile insertion and as a daily reminder to remove catheter if no longer needed</li> </ul>
Reduce incidence of pressure ulcers	<ul style="list-style-type: none"> <li>• Turn patient every two hours</li> </ul>
Reduce incidence of stress ulcers and gastrointestinal bleeding	<ul style="list-style-type: none"> <li>• Give early enteral nutrition (within 24–48 hours of admission)</li> <li>• Administer histamine-2 receptor blockers or proton-pump inhibitors in patients with risk factors for GI bleeding. Risk factors for gastrointestinal bleeding include mechanical ventilation for ≥48 hours, coagulopathy, renal</li> </ul>



	replacement therapy, liver disease, multiple comorbidities, and higher organ failure score
Reduce the development of antimicrobial resistance	<ul style="list-style-type: none"> <li>Utilize de-escalation protocols as soon as patient is clinically stable and there is no evidence of bacterial infection</li> </ul>
Reduce the development of adverse drug effects	<ul style="list-style-type: none"> <li>Expose patient to empiric antimicrobial therapy for the shortest time possible, to prevent nephrotoxicity, cardiac and other side-effects from unnecessary antimicrobial use</li> </ul>
Promote appropriate antimicrobial prescribing and use during the COVID-19 pandemic	<ul style="list-style-type: none"> <li>Do not prescribe antibiotics to suspected or confirmed COVID-19 patients with low suspicion of a bacterial infection, to avoid more short-term side-effects of antibiotics in patients and negative long-term consequences of increased antimicrobial resistance.</li> </ul>

### **Mental Health and Psychosocial Support for COVID-19 patients**

Psychosocial support includes all actions and processes that enable a patient, their households or communities to cope with stress in their own environment, develop resilience, and reach their full potential. Psychosocial support enables people to experience love, feel protected, build meaningful relationships, and have a sense of self-worth and belonging. Individuals affected by COVID-19 may experience fear of falling ill, dying, losing source of livelihoods, isolation, social exclusion, being placed in quarantine. For such patients, they may benefit from psychosocial support.

**Providing Psychological support:** Staff should introduce self and the facility. Be sensitive to culture, ethnicity, gender, sexuality, and maintain a safe distance (2 metres). Be empathetic. Build a therapeutic relationship. Briefly highlight the services provided by the treatment centre (isolation of suspected cases and contacts, treatment of confirmed cases). Explain in clear terms the need for isolation and the use of PPE. Assess and respond to emotional reactions. Recognize cognitive coping strategies e.g. denial, blame, intellectualization. Explore what the news means to the patient. Offer realistic hope/optimism. Establish measures to reduce the negative impact of social isolation in quarantine e.g. communication with family and friends to reduce loneliness and psychological Isolation. Institute measures that promote autonomy (e.g. choice in daily activities). Offer complete assessment at admission. If there are mental health needs, request for a mental health assessment and care. (See [Annex C: Components of Mental Health and Psychosocial Support \(MHPSS\).](#))



## 2. Management of COVID-19 in Special populations

### **Pregnant and breastfeeding women with COVID-19**

- Presently, there is paucity of data on clinical presentation and perinatal outcomes after COVID-19 infection during pregnancy.
- There is no evidence that pregnancy increases the risk of severe illness or that pregnant women present with different sign and symptoms.
- There is no evidence yet of mother-to-child transmission reported.
- Just like the general population, pregnant women with history of contact should be monitored closely.
- Suspected, probable or confirmed case should be provided with appropriate services: Isolation, obstetric, maternal, foetal and neonatal care
- Pregnant women presenting as mild/ moderate, severe and critical cases should be managed as generically described above. A multidisciplinary approach must be adopted with consultations from obstetricians, paediatricians and intensive care experts.
- IPC measures also apply to pregnant and breastfeeding women.
- For pregnant women who are recovering from COVID-19 infection, psychosocial support and counselling should be provided.
- Assessment of patient's co-morbid condition(s) must be conducted, and management tailored accordingly.

### **Infant & Mother with COVID-19**

- No vertical transmission has been reported (During pregnancy, birth and breastfeeding)
- Infants whose mothers are suspected or confirmed COVID-19 patients should be breastfed according to the infant feeding guidelines while maintain necessary precautions for IPC. (Wear mask, hand hygiene before and after contact with infant, disinfect surfaces the mother may have come in contact with.
- If the mother presents with severe illness, or other complications prevent her from direct breastfeeding, she should be encouraged to express milk. (must maintain IPC measures)
- Breastmilk substitutes, feeding bottles and teats, pacifiers or dummies is not recommended.
- Encourage mother-baby-pair to remain together regardless of if mother or child is a suspect, probable or confirmed COVID-19 infection

### **Elderly patients with COVID-19**

- Comorbidities and old age have been reported as risk factors for mortality with people with COVID-19.



- Elder people are at higher risk of severe illness and death if infected.
- Manage such patients with a multidisciplinary approach especially in the decision-making process to address multiorgan involvement and clinical deterioration.
- Also involve caregivers and family members in the decision-making throughout the management of the patient.

### **People Living with HIV (PLHIV)**

- There are no data or specific information on the risk of COVID-19 in PLHIV.
- There is a *suggested* risk amongst PLHIV who are **not** on ART (yet to start) and those **not adhering** to ART (started but non-adherent to ART)



### 3. Discharge criteria for patients with COVID-19

The decision to discharge a patient should be made on clinical judgement and underpinned by laboratory results.

A patient should be discharge when the following criteria are met:

#### **For Persons Who have NOT had COVID-19 Symptoms but Tested Positive:**

Options include both:

##### **1). Time-based strategy**

- At least 10 days have passed since the date of their first positive COVID-19 diagnostic test assuming they have not subsequently developed symptoms since their positive test. If they develop symptoms, then the symptom-based or test-based strategy should be used.

##### **2). Test-based strategy**

- Negative result of an authorized COVID-19 molecular assay for detection of SARS-CoV-2 RNA from one<sup>8</sup> oropharyngeal specimen collected.

#### **Persons with COVID-19 who have symptoms should remain in Transmission-Based Precautions until either:**

##### **1). Symptom-based strategy**

- At least 3 days (72 hours) have passed *since recovery* defined as resolution of fever without the use of fever-reducing medications **and** improvement in respiratory symptoms (e.g., cough, shortness of breath); **and**,
- At least 10 days have passed *since symptoms first appeared*.

##### **2). Test-based strategy**

- Resolution of fever **without** the use of fever-reducing medications **and**
- Improvement in respiratory symptoms (e.g., cough, shortness of breath), **and**
- Negative result of an authorized COVID-19 molecular assay for detection of SARS-CoV-2 RNA from one oropharyngeal specimen collected.

#### **Recommendations for patient follow-up:**

Discharged patients should be followed up as indicated in the table (*see table 4*)

---

<sup>8</sup> South Sudan is adopting 1 RT-PCR negative result for discharge due to challenges in test supplies, laboratory capacity and access to testing resulting in long delays and backlogs



*Table 4 Discharge criteria and follow-up recommendations for recovered COVID-19 patients*

	<b>Asymptomatic</b>	<b>Mild/ Moderate illness</b>	<b>Severe illness</b>	<b>Critical illness</b>
<b>Hospitalization</b>	No	No <sup>†</sup>	Yes	Yes
<b>Time Based Strategy</b>	<ul style="list-style-type: none"> <li>At least 10 days have passed since the date of patient's first positive COVID-19 diagnostic test assuming they have not subsequently developed symptoms since their positive test.</li> <li>If patient develops symptoms, the symptom-based or test-based strategy should be used. <i>(see below)</i></li> </ul>	Not preferred*	Not preferred*	Not preferred*
<b>Clinical Criteria (Symptom-based)</b>	<b>If symptoms develop:</b> <ul style="list-style-type: none"> <li>At least 10 days have passed since symptoms first appeared; and</li> <li>At least 3 days (72 hours) have passed since recovery defined as resolution of fever without the use of fever-reducing</li> </ul>	<ul style="list-style-type: none"> <li>At least 10 days have passed since symptoms first appeared; and,</li> <li>At least 3 days (72 hours) have passed since recovery defined as resolution of fever without the use of fever-reducing medications and imp</li> </ul>	Refer patient with ≥ 4 consecutive days with mild symptoms with no risk of deterioration to home-based Isolation And Refer to clinical (Symptom-based) and Laboratory criteria (Test-based)	Refer patient with ≥ 4 consecutive days with mild symptoms with no risk of deterioration to home-based Isolation And Refer to clinical (Symptom-based) and Laboratory criteria (Test-based)



	medications and improvement in respiratory symptoms (e.g., cough, shortness of breath)	improvement in respiratory symptoms (e.g., cough, shortness of breath).		
<b>Laboratory criteria (Test-based)</b>	<ul style="list-style-type: none"> <li>One negative RT-PCR detection of SARS-CoV-2 in Oropharyngeal swab**</li> </ul>	<ul style="list-style-type: none"> <li>Clinical resolution of fever without the use of antipyretics and</li> <li>Clinical improvements in respiratory symptoms such as cough, shortness of breath and in addition to;</li> <li>One negative RT-PCR detection of SARS-CoV-2 in Oropharyngeal swab</li> </ul>	<ul style="list-style-type: none"> <li>Clinical resolution of fever without the use of antipyretics and</li> <li>Clinical improvements in respiratory symptoms such as cough, shortness of breath and in addition to;</li> <li>One negative RT-PCR detection of SARS-CoV-2 in Oropharyngeal swab</li> </ul>	<ul style="list-style-type: none"> <li>Clinical resolution of fever without the use of antipyretics and</li> <li>Clinical improvements in respiratory symptoms such as cough, shortness of breath and in addition to;</li> <li>One negative RT-PCR detection of SARS-CoV-2 in Oropharyngeal swab</li> </ul>
<b>Follow-up (case management team)</b>	<ul style="list-style-type: none"> <li>After discharge, follow-up patient weekly for 2 weeks, then monthly for 3 months.</li> </ul>	<ul style="list-style-type: none"> <li>After discharge, follow-up patient weekly for 2 weeks, then monthly for 3 months.</li> </ul>	<ul style="list-style-type: none"> <li>After discharge, follow-up patient weekly for 4 weeks, then monthly for 3 months.</li> </ul>	<ul style="list-style-type: none"> <li>After discharge, follow-up patient weekly for 4 weeks, then monthly for 3 months.</li> </ul>

† In South Sudan, mild/moderate illnesses will initially be managed in designated hospitals if there are only few/ sporadic cases. If the number of cases increases beyond the capacity of the designated hospitals, then isolation facilities (and homes) will be identified for mild cases outside the designated hospitals.



\*Note: Severely and critically ill patients will traditionally be hospital-admitted and as such will have longer periods of SARS-CoV-2 RNA detection and prolonged viral shedding when compared to mild/ moderately ill patients. Hence, Laboratory criteria (test-based) is the preferred criteria for discharge. Where laboratory testing is unavailable, attending facilities should use clinical discharge criteria on a case by case basis in consultation with the National/ state case management team.



## Annexes

### A. Annex A: algorithm for triage of COVID-19 cases at health facilities

#### Annex 1a: Triage of patients at health facilities with suspected COVID-19 infection (no or limited community transmission)

**Hand hygiene** all patients perform hand hygiene at entrance (handwashing or use a sanitizer)

**Identify** signs and symptoms of respiratory infection:

- Fever ( $>38^{\circ}\text{C}$ ) \* **-And-**
- At least 1 sign or symptom of respiratory disease (e.g., cough or shortness of breath)

NO



Refer to access routine health services and care



YES

Place medical mask on patient (if available) or give patient tissue paper, or advice patient to use handkerchief or scarf and remind him/her of cough etiquette

**Identify Travel and Direct Exposure History:**

- Has the patient traveled / resided in a country with confirmed COVID-19 cases during the 14 days prior to symptom onset? **-or -**
- Has the patient had **contact\*\*** with an individual with confirmed / probable COVID-19 during the 14 days prior to symptom onset?

NO



Refer to access routine health services and care



YES

**Separate from the rest of the patients:**

- Place the patient in a single-person room with the door closed or in another designated area
- Ensure Health Care Workers (HCWs) caring for the patient adhere to Standard Contact and Droplet precautions
- Only essential HCWs with designated roles should enter the room and wear appropriate Personal Protective Equipment (PPE)

**Notify**

- Notify the Health Facility Infection Control Programme/team and other appropriate staff
- Notify Rapid Response Team on phone No **6666** for transfer of patient to appropriate center. Also notify surveillance officer

**Annex 1b: Triage of patients with suspected COVID-19 infection (widespread community transmission)**

**Hand hygiene** all patients perform hand hygiene at entrance (handwashing or use a sanitizer)

**Identify** signs and symptoms of respiratory infection:

- Fever ( $>38^{\circ}\text{C}$ ) \* **-And-**
- At least 1 sign or symptom of respiratory disease (e.g., cough or shortness of breath)

NO



Refer to access routine health services and care



YES

Place medical mask on patient (if available) or give patient tissue paper, or use hankerchief and remind him/her of cough etiquette



YES

**Separate from the rest of the patients:**

- Place the patient in a single-person room with the door closed or in another designated area
- Ensure Health Care Workers (HCWs) caring for the patient adhere to Standard Contact and Droplet precautions
- Only essential HCWs with designated roles should enter the room and wear appropriate Personal Protective Equipment (PPE)

**Notify**

- Notify the Health Facility Infection Control Programme/team and other appropriate staff
- Notify Rapid Response Team on phone No: 6666 for transfer of patient to appropriate center. Also notify surveillance officer

\*Elderly people may not develop fever, but new onset of cough or worsening respiratory symptoms

## **B. Annex B: What to do during Home Based Isolation**

### **COVID-19 Patient in Home based Isolation**

- Avoid physical contact (e.g. hugs, hands shaking, etc.) with family members even if wearing a Mask.
- Avoid as much as possible shared spaces and stay in a single, well-ventilated room.
- Make sure the room has good air flow. Open the window and turn on a fan (if possible) to increase air circulation. Improving ventilation helps remove respiratory droplets from the air.
- Use a separate bathroom away from others (if possible).
- Do not entertain visitors while in home-based isolation.
- Do not go to public spaces (Markets, Churches, Mosques, public transport) even if wearing a cloth face covering.
- Patients must wear cloth face covering at all times. The cloth face covering helps prevent a patient from spreading the virus to others (household members). *Cloth face coverings should not be placed on young children under age 2, anyone who has trouble breathing, or is not able to remove the covering without help*
- The mask should be changed daily and especially when it becomes soiled or wet.
- When the face mask is taken off, it should be removed by touching only the elastic bands or strings; front and inside parts should be never touched.
- Hands should be washed/cleaned immediately (and thoroughly) after removing the face mask.
- When not wearing a face mask, nose and mouth should be covered with paper tissue when sneezing or coughing.
- Paper tissues should be disposed immediately after use, and hands should be washed right away using the correct procedure.
- Wash hands frequently with Soap and water or alcohol-based hand-rubbing solution and dry them with disposable towels. *If disposable towels are not available, dedicated towels should be used and kept separately from the towels used by the rest of the household; towels should be changed and washed regularly as per instructions above.*
- Use dedicated eating utensils and cutlery and should be carefully cleaned after every use
- Do not share dishes, cups/glasses, silverware, towels, bedding, or electronics (like a cell phone) with uninfected household members.
- Drink lots of fluid, have lots of rest and eat (or be fed) in your separate room.

- Asymptomatic patients are advised to clean their rooms and wash their laundry themselves.

**Tips to Stay mentally fit:**

- Remember you are isolated to protect others including your loved one from getting infected
- Stay positive and focus on how you have coped with other difficult situations in the past and reassure yourself
- Keep in touch with family members and friend via telephone, emails or social media
- Exercise regularly in your room
- Ensure that you drink at least 8 glasses of water every day to keep hydrated
- Eat all your meals in a timely manner
- Ensure you take adequate rest
- If possible, have materials to keep your mind occupied such as books, movies etc. but do not share items with other family members
- Avoid drinking alcohol as it might increase your health problem

**Discontinue home isolation (patient)**

- Patients can leave home isolation if they meet the discharge criteria (see *discharge criteria section*) or if symptoms worsen (referral to COVID-19 designated hospital)
- Note: The decision to stop home isolation should be made in consultation with clinical case management team and State/ National health departments.

**Home care giver of COVID-19 patient**

- Minimize as much as possible the frequency of entering the room where the patient is isolated
- The caregiver helps the patient follow their doctor's instructions for care and medicine.
- Identify and use a separate bedroom and bathroom for patients and away from others. Access to shared areas should be limited as much as possible.
- Make sure patient's room has good air flow. Open the window and turn on the fan to increase air circulation. Improving ventilation helps remove respiratory droplets from the air.
- No visitors should be admitted to the house until the patient has recovered completely.
- If a household has more than one suspected or confirmed COVID-19 patient, all patients can be isolated in the same room (if large enough).
- In the event that the available rooms are fewer than the number of COVID-19 confirmed cases in the house, some of the cases should be isolated in a designated isolation facility as recommended by national authority.

- Make sure the patient drinks lot of fluids and rests.
- Maintain social distancing of 1-2 meters at all times when attending to the patient.
- Before entering the patient's room, the caregiver should ask the patient to put on a cloth face covering.
- The caregiver MUST wear a cloth face covering when entering the patient's room. *Note: During the COVID-19 pandemic, medical grade facemasks are reserved for healthcare workers and some first responders. You may need to make a cloth face covering using a scarf or any other approved materials*
- The face mask should be changed daily and especially when it becomes soiled or wet.
- When the face mask is taken off, it should be removed by touching only the elastic bands or strings; front and inside parts should be never touched.
- Hands should be washed immediately (and thoroughly) after removing the face mask.
- Ensure patient eats or is fed in their room
- Any dishes, cups/glasses, or silverware used by the patient should be handled with gloves and washed using soap and hot water at all times.
- After taking off gloves or handling used utensils/ items, wash hands thoroughly.
- Do not share dishes, cups/glasses, silverware, towels, bedding, or electronics (like a cell phone) with patient and other household members.
- Clean and disinfect "high-touch" surfaces and items every day: This includes tables, doorknobs, light switches, handles, desks, toilets, faucets, sinks, and electronics.
- Clean the area or item with soap and water if it is dirty. Then, use a household disinfectant.
- To clean electronics, follow the manufacturer's instructions for all cleaning and disinfection products. If those directions are not available, use alcohol-based wipes or spray containing at least 70% alcohol.
- If they feel up to it, the patient can clean their own space.
- If sharing a bathroom: The patient should clean and then disinfect after each use with 0.1% sodium hypochlorite. If this is not possible, wear a mask and wait as long as possible after the sick person has used the bathroom before coming in to clean and use the bathroom.
- Wash hands often with soap and water for at least 20 seconds. Ensure all household members do the same, especially after being near the patient and caregiver.
- If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands and rub them together until they feel dry.
- Avoid touching your eyes, nose, and mouth with unwashed hands.

- Do not shake dirty laundry.
- Dirty laundry from a patient can be washed with other people's items.
- Dry cloths under the sun.
- After laundry, remove gloves and wash hands immediately.
- Iron cloths when dry.
- Clean and disinfect clothes hangers/ ropes and wash hands afterwards.
- Dedicate a lined trash can for the patient in his/her room.

### **Keep an eye for warning signs**

- If the patient deteriorates (has emergency warning signs), call the Rapid Response Team (RRT) via 6666 immediately and they will tell you what to do.
- Emergency warning signs include:
  - Difficulty breathing or shortness of breath
  - Persistent pain or pressure in the chest
  - New confusion or inability to wake up

### **Discontinue home isolation (Caregiver)**

- While providing care to patient, monitor your health for COVID-19 symptoms such as fever, cough, and shortness of breath, loss of sense of smell and taste but other symptoms may be present as well.
- Caretakers should quarantine for 14 days after the patient has recovered and self-monitor for COVID-19-like symptoms (e.g. fever, cough).
- If you suspect you may have been infected, call the Rapid Response Team (RRT) via 6666, tell them your symptoms and they will tell you what to do.
- Patients with COVID-19 who have stayed home (home isolated) can leave home if they meet the discharge criteria (*see discharge criteria section*) or if symptoms worsen (referral to COVID-19 designated hospital).
- Note: The decision to stop home isolation should be made in consultation with clinical case management team and State/ National health departments.

### **Case Management clinical Team**

- Patient *and* care giver will be routinely monitored (remotely- via phone) every 48 hours for 14 days.
- During remote monitoring sessions, clinical case management team will apply the clinical case monitoring checklist.
- Routinely collected information from the checklist will be regularly reviewed for worsening symptoms by the case management team.
- Patients with worsening symptoms will be notified by the case management team through the RRT, who will then escalate the patient to additional care such as referral to a designated COVID-19 facility, remote assessment, prescription

of new medication (as informed by symptoms), request for additional laboratory tests or the dispatch of RRT for immediate review.

- 2 weeks after confirmation of positive COVID-19 test result, the RRT will be dispatched for a 2<sup>nd</sup> sample collection from patient.
- If second test result is negative, a third sample will be collected after >24hrs apart.
- If third test result is negative, discharge patient from COVID-19 care and discontinue home isolation.
- In the event that the second test result is positive, patient will be advised to continue home isolation for an additional 14 days, then repeat RT-PCR test.
- In the event that a repeat test cannot be carried out, the case management clinical team should then decide when to discontinue the Home-based Isolation.

### **C. Annex C: Components of Mental Health and Psychosocial Support (MHPSS).**

#### **a) Psychological First AID (PFA)**

This is a humane, supportive and practical help offered to those suffering serious crisis/ distressing events. PFA strives to provide and share accurate information that can help in dispelling myths and provides messages about healthy behaviour and better knowledge on people's understanding of the COVID-19 disease. PFA is provided to all persons diagnosed with COVID-19 by applying the main principles of Look, Listen, and Link.

#### **b) Health Education:**

Assess the knowledge of patient. Speak frankly, but compassionately. Avoid euphemisms and medical terms. Allow silence and tears. Avoid the urge to talk to avoid your own discomfort. Proceed at the patient's pace. Have the patient tell you his or her understanding of what you have said. Encourage questions. Encourage and validate emotions.

#### **c) Emotional support:**

Use of detailed and extensive psychoeducation; cognitive restructuring; active listening; seek for clarification; reflect on thematic issues discussed during the health talk and counselling session. Summarize discussions and provide feedback during session.

#### **d) Spiritual support:**

Provide Spiritual Support on request by the patient. Link patient with a well-informed spiritual leader.

Interaction should be supervised by the counsellor at the treatment center.

**e) Psychiatric support:**

For all patients who manifest psychiatric symptoms, a trained Psychiatrist should evaluate and offer treatment options appropriate for the patient. The mhGAP-HIG approach is recommended. Treatment modalities are: Supportive Psychotherapy and Cognitive Restructuring. Use of medications only when necessary (to be prescribed by a trained healthcare worker). Conduct regular review and mental state monitoring.

**Evaluation at discharge and post discharge:** Assess the patient's psychosocial stability through clinical interview and formal assessment tools. Assess social needs and available resources. Assess occupational needs and available resources.

**Post Discharge:** Evaluate worry about stigma and coping Skills. Discourage maladaptive coping skills e.g. social withdrawal, misuse of alcohol and psychoactive substances. Help patient and relatives plan social and occupational reintegration (involve the social workers). Discuss the plan for home visit (if applicable) and future contact. The Oslo Social Support Scale should be administered to assess for social support at home. (See reference). Explore for symptoms of post-trauma and treat if present.

**Support to survivors:** A survivor network (where possible) should be established in conjunction with the treatment centres. Engage peer educators (if available) to facilitate group counselling. Provide testimony with the aim of inspiring others. Share coping skills.

[Top of the Document](#)