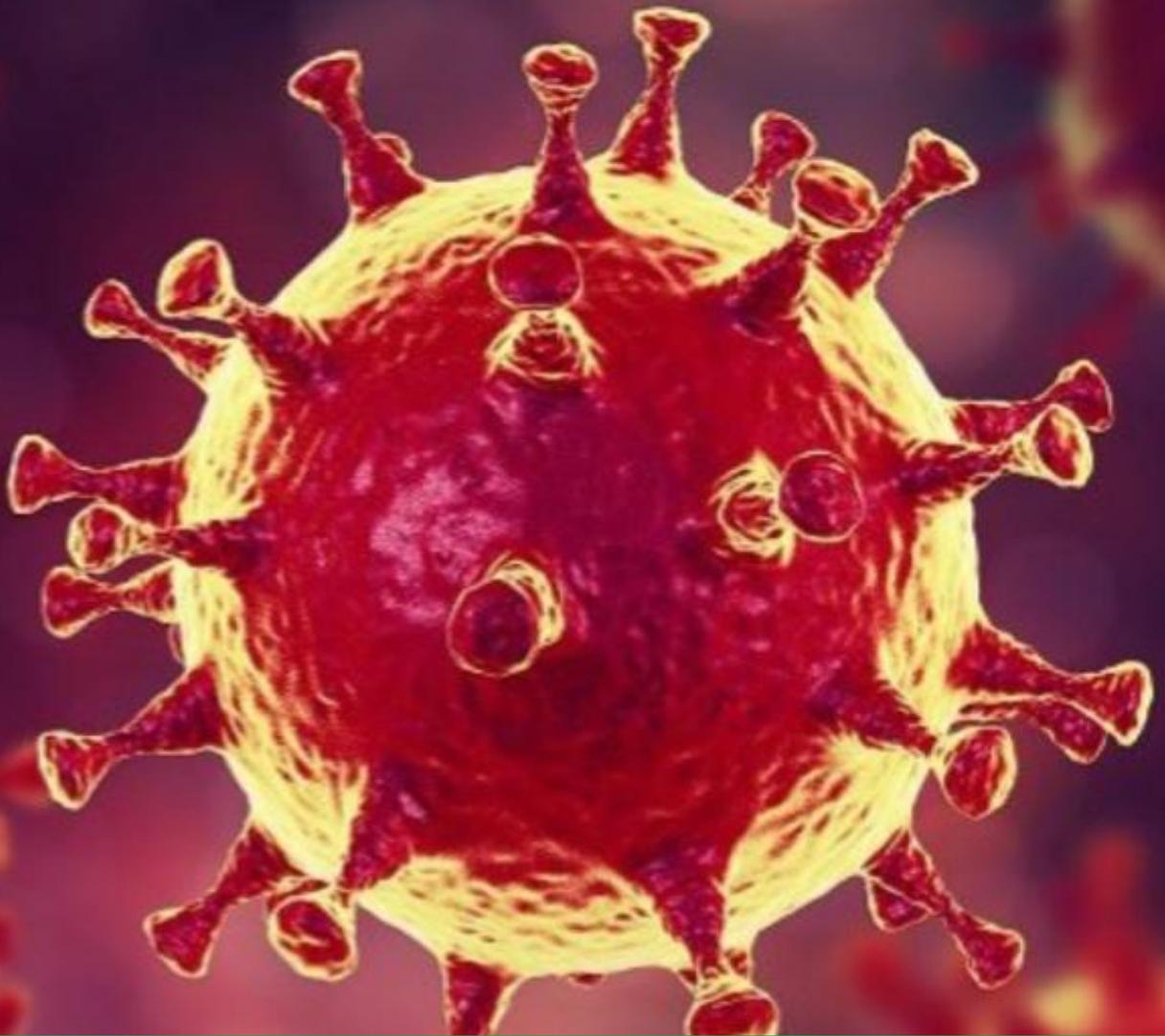




Interim Clinical Guidance for Management of Patients with Coronavirus Disease 2019 (COVID-19)



April 2020

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Abbreviations and Acronyms

AIIR	Airborne Infection Isolation Room
ARDS	Acute Respiratory Distress Syndrome
ARI	Acute Respiratory Infection
ART	Antiretroviral therapy
COVID-19	Coronavirus Disease-19
DHO	District Health Office
EMS	Emergency Medical Service
FBC	Full Blood Count
Hb	Haemoglobin
HCW	Healthcare Worker
HF	Health Facility
HIV	Human Immunodeficiency Syndrome
ICU	Intensive Care Unit
IPC	Infection Prevention and Control
MERS CoV	Middle East Respiratory Syndrome Coronavirus
MMD	Multi-month Dispensing
MoH	Ministry of Health
PCR	Polymerase Chain Reaction
PEEP	Positive End-Expiratory Pressure
PLHIV	Persons living with HIV
PPE	Personal Protective Equipment
RDT	Rapid Diagnostic Test
RoC	Recipients of Care
RT-PCR	Real Time Polymerase Chain Reaction
SBP	Systolic Blood Pressure
SARI	Severe Acute Respiratory Infection
SARS-CoV	Severe Acute Respiratory Syndrome Coronavirus
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus-2
VTM	Viral Transport Medium
WHO	World Health Organization
ZNPHI	Zambia National Public Health Institute

Foreword

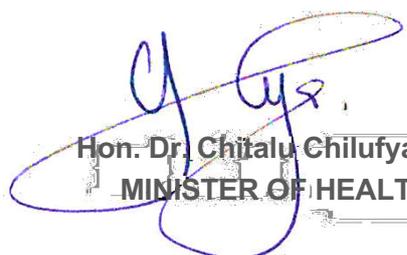


On January 30, 2020, the International Health Regulations Emergency Committee of the World Health Organization (WHO) declared the Severe Acute Respiratory Syndrome due to novel coronavirus (SARS CoV-2) outbreak a “Public Health Emergency of International concern” (PHEIC) and the global risk level was raised to “very high” on February 28, 2020. Zambia, through its vision to be a prosperous country where all Zambians have access to quality health services (Vision 2030) and the aim of reducing morbidity, mortality, disability and socioeconomic disruptions due to outbreaks and other health emergencies (NHSP 2017-2021) stands ready to face the SARS CoV-2 outbreak.

Coronavirus Disease 2019 (COVID-19) is pneumonia caused by a novel (new) Coronavirus with a high propensity to transmit from person-to-person. Community spread has been reported in countries such as the United States raising the possibility of asymptomatic transmission. Therefore, this in itself calls for heightened vigilance. Whilst no cure is available yet, optimized supportive care has been shown to increase the changes of those who are critically ill and will prevent the spread of the infection in our communities.

Therefore, this document is an interim guideline for the management of SARS-CoV-2 infected persons of all ages. It is intended for use by Healthcare Providers taking care of adult and paediatric patients when novel coronavirus infection is suspected. It is not meant to replace clinical judgment or specialist consultation but rather to strengthen clinical management of these patients and provide up-to-date guidance which can change any time as new evidence emerges.

This interim guidance should be shared with as many front-line workers as possible. I also urge Healthcare Workers to adhere to the principles outlined in this document. Lastly, I am positive that the information in this document will allay the fears, apprehension and misinformation that has characterized this outbreak, and that this document will make our sector even more prepared to face the outbreak.


Hon. Dr. Chitalu Chilufya, MP
MINISTER OF HEALTH

Acknowledgements



The Ministry of Health is committed to provide quality and effective Healthcare service to those who fall ill as clearly outlined through its legacy goals. The development of this interim guidance on the management of patients infected with the Novel Coronavirus (SARS-CoV-2) demonstrates the Ministry's resolve to have optimal clinical care for all diseases.

I am very thankful to the team of experts without whose effort this document could never have been developed. These include but not limited to the following institutions:

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Chapter 1: Overview of COVID-19 Infection

Background

There is an outbreak of respiratory disease caused by a novel (new) coronavirus that was first detected in China and which has now been detected in over 100 locations internationally. This virus has been named “SARS-CoV-2” and the disease it causes has been named “Coronavirus Disease 2019” (abbreviated “COVID-19”).

Coronaviruses are a large family of viruses that are common in people and many different species of animals, including camels, cattle, cats, and bats. Rarely, animal coronaviruses can infect people and then spread between people such as with MERS-CoV, SARS-CoV, and now with this SARS-CoV-2. All three of these viruses have their origins in bats. Sequences from this current outbreak suggest a likely single, recent emergence of this virus from an animal reservoir. It is worth noting that SARS-CoV-2 represents the causative agent of a potentially fatal disease that is of great global public health concern.

Since its discovery, COVID-19 is rapidly evolving and much is being discovered about the disease. The lack of clinical trial data has made the treatment of infected persons challenging. Much of what is known today is likely to change as the disease evolves.

Transmission of the SARS-CoV-2

1. Animal-to-person transmission: this is based on the initial large number of the infected individuals that were exposed to the wet animal market in Wuhan City, China
2. Person-to-person transmission: when infection spreads between individuals who had no exposure to animals. Person-to-person transmission is thought to occur primarily via respiratory droplets from infected persons during coughing or sneezing or by direct contact with surfaces contaminated with respiratory droplets from infected persons
3. Community transmission: is when infections are occurring among individuals who have without knowledge of how or where they were exposed

Clinical Presentation

There are a limited number of reports that describe the clinical presentation of patients with confirmed COVID-19, and most are limited to hospitalized patients with pneumonia. The reported incubation period has a wide range of 4-21 days, although it is believed that the vast majority of infections occur within 14 days of exposure.^{1,2} Frequently reported signs and symptoms among hospitalized patients include fever (43–98%), cough (46%–82%), myalgia or fatigue (11–44%), and shortness of breath (31%) at COVID-19 illness onset.^{3,5} Sore throat has also been reported in some patients early in the clinical course. Less commonly reported symptoms may include sputum production, headache, hemoptysis, and diarrhea. Some patients have experienced gastrointestinal symptoms such as diarrhea and nausea prior to developing fever and lower respiratory tract signs and symptoms. The fever course among patients with COVID-19 is not fully understood; it may be prolonged and intermittent. Truly asymptomatic infection is felt to be very rare, and does not appear to be a major driver of transmission;⁶ the majority of persons who were asymptomatic on date of identification went on to develop disease. Virus can initially be detected 1-2 days before symptom onset.⁶

Clinical Course

Clinical presentation among reported cases of COVID-19 varies in severity from asymptomatic infection or mild illness to severe or fatal illness. Some reports suggest the potential for clinical deterioration during the second week of illness.³ In one report, among patients with confirmed COVID-19 and pneumonia, just over half of patients developed dyspnea with a median of 8 days after illness onset (range: 5–13 days). Severe disease, which occurs in about 15-20% of patients includes severe pneumonia, acute respiratory distress syndrome (ARDS), sepsis and septic shock.³⁻⁵ Other reported complications include acute cardiac injury, arrhythmia, shock, and acute kidney injury. Overall mortality from COVID-19 ranges from 1-3%. Among hospitalized patients with pneumonia, the case fatality proportion has been reported as 4–15%.³⁻⁵

Older patients and those with chronic medical conditions (including diabetes, hypertension, and cardiovascular disease) are at higher risk for severe illness and death.^{1,3,4} Pregnant women do not appear to be at higher risk of severe disease.⁶ Although there is limited data in children, infection in children appear to be generally mild, although severe disease has been reported in 2.5% (mortality was 0.2%).⁶ The reason for this paradox is not known. Mother-to-child is also a possible route of Coronavirus transmission as evidenced by a newborn baby testing positive for SARS-CoV-2 in a London hospital just minutes after it was born and also a Chinese baby in Wuhan, who tested positive 30 hours after being born.^{7,8}

The clinical course of COVID-19 in people living with HIV (PLHIV) is not known. However, in other countries experiencing COVID-19 outbreaks, persons with immunocompromising medical conditions like diabetes or cancer appear to have higher occurrence of severe disease and mortality. It is possible PLHIV will experience more severe manifestations of COVID-19, but more evidence is needed.

Laboratory and Radiographic Findings

The most common laboratory abnormalities reported among hospitalized patients with pneumonia on admission included lymphopenia (63%), elevated alanine aminotransferase and aspartate aminotransferase levels (37%), leukopenia (9–25%), and leukocytosis (24–30%).³⁻⁵ Most patients had normal serum levels of procalcitonin on admission. Chest radiography is abnormal in ~60% of patients.² Chest CT images have shown bilateral involvement in most patients. Multiple areas of consolidation and ground-glass opacities are typical findings reported to date.^{3-5,9-12}

Limited data are available about the detection of SARS-CoV-2 in clinical specimens. SARS-CoV-2 RNA has been detected from upper and lower respiratory tract specimens, bronchoalveolar lavage fluid, blood and stool specimens. It is not known whether or not an infectious virus is present in extrapulmonary specimens. Unlike MERS-CoV or SARS-CoV infection, where the RNA could be detected for weeks, the duration of SARS-CoV-2 RNA detection is not known.¹²⁻²¹ A report from China indicates virus persists in upper respiratory tract specimens for 7-12 days in moderate cases and two weeks in severe cases.⁶ Viable SARS-CoV has been isolated from respiratory, blood, urine, and stool specimens but only from respiratory tract specimens for MERS-CoV.²¹⁻²³

Clinical Management of COVID-19

COVID-19 transmission can be prevented through appropriate application of transmission-based precautions (*see Appendix 2*). Healthcare personnel should care for patients in an isolation room.

Standard precautions, contact precautions, and droplet precautions (with eye protection) should be used when caring for patients with COVID-19. The addition of airborne precautions is warranted during aerosol-generating procedures, such as tracheal intubation, noninvasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation, and bronchoscopy. Special attention and efforts to protect or reduce the transmission of COVID-19 should be applied populations likely to experience severe disease, including the elderly and persons with pre-existing medical conditions.

Patients with a mild clinical presentation may not initially require hospitalization. However, clinical signs and symptoms may worsen in the second week of illness, so all COVID-19 patients regardless of disposition should be monitored closely for the duration of their illness. Patients with severe infections, or those at risk for developing severe infections should be hospitalized. Possible risk factors for progressing to severe illness may include, but are not limited to, older age, and underlying chronic medical conditions such as lung disease, cancer, heart failure, cerebrovascular disease, renal disease, liver disease, diabetes, and immunocompromising conditions (there is limited available information on COVID-19 in PLHIV).

No specific treatments for COVID-19 are currently available. Clinical management includes prompt implementation of recommended infection prevention and control measures to prevent onward transmission, and supportive management of complications, including antipyretics, oxygen supplementation, antibiotics (for suspected secondary infections), intravenous fluids, and advanced organ support if indicated.

Investigational Therapeutics

There are currently no antiviral drugs licensed by the U.S. Food and Drug Administration (FDA) to treat patients with COVID-19. Some in-vitro or in-vivo studies suggest potential therapeutic activity of compounds against related coronaviruses, but there are no available data from observational studies or randomized controlled trials in humans to support recommending any investigational therapeutics for patients with confirmed or suspected COVID-19 at this time.

Remdesivir, an investigational broad-spectrum antiviral drug, was reported to have in-vitro activity against SARS-CoV-2.²⁴ Similarly, Chloroquine phosphate has been shown to have antiviral properties against SARS-CoV-2.^{24,25} A randomized placebo-controlled clinical trial of Remdesivir for treatment of hospitalized patients with COVID-19 has been implemented in China.

A randomized open label trial of combination Lopinavir-ritonavir treatment has also been conducted in hospitalized patients with pneumonia and COVID-19 in China, but no results are available to date. Clinical trials of other potential therapeutics for COVID-19 are being planned. It is clear however, that more clinical research is urgently needed. More information on specific clinical trials underway for treatment of patients with COVID-19 can be found at the WHO website:

Global research on coronavirus disease (COVID-19)

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov/>

Chapter 2: Triage

Most patients with COVID-19 will have mild illness consisting of upper respiratory tract infection symptoms. However, even mild infections may be infectious to others, so it is important for Healthcare Providers to recognize potential COVID-19 at first contact with the healthcare system. Early recognition of suspected COVID-19 infection allows for timely initiation of Infection Prevention and Control (IPC) measures and to guide clinical triage of patients. Early identification of those with severe manifestations of COVID-19 allows for immediate implementation of optimized supportive care treatments and safe, rapid admission (or referral) to the intensive care unit when indicated.

Triage of Patients with Suspected COVID-19

The purpose of triage is to:

- 1) Identify and test patients who meet clinical testing criteria for COVID-19 (*see Box 1*)
- 2) Immediately implement IPC measures, including correct use of personal protective equipment (PPE) by Healthcare Providers (*refer to Appendix 3*). For PPE recommendations for inpatient and outpatient settings, *refer to Appendices 4 and 5*
 - a) For the purpose of triage, appropriate Personal Protective Equipment (PPE) are gloves and face mask
 - b) For specimen collection, healthcare workers MUST wear gloves, N95, face shield/goggles and apron. This is also true for aerosol producing procedure like mechanical ventilation. Rational use of PPE is important
- 3) Assess their disease severity (*see Table 1*)
- 4) Determine the appropriate patient disposition depending on disease severity
- 5) Institute treatments for complications COVID-19, where indicated
- 6) Immediately notify public health officials

Clinical Screening for COVID-19

Screening for COVID-19 testing should follow the Zambia National Public Health Institute (ZNPHI) guidelines. Because COVID-19 is a rapidly evolving situation, these may change over time. Healthcare Providers should remain aware of screening criteria set forth by ZNPHI. At the time of this guidance, the clinical screening criteria for COVID-19 in Zambia is:

Box 1: COVID-19 Clinical Screening Criteria*

- 1) Any person with signs or symptoms of a fever or respiratory infection and an epidemiologic risk factor for COVID-19. Epidemiologic risk factors include:
 - a) Travel in the past 14 days from a country or territory experiencing local transmission of COVID-19. (Up-to-date information about countries experiencing local transmission are available through the WHO at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/>)
 - b) Close contact[†] in the past 14 days with a person with confirmed COVID-19 infection
- 2) Severe acute respiratory infection (SARI)[‡] with no alternative aetiology (no epidemiological risk factor needed)

*The clinical screening criteria are deliberately broader than the WHO case definition for suspected case (*Appendix 6*) in order to identify mild cases that are still infectious

[†]Close contact is defined as: a) providing direct care without proper PPE for COVID-19 patients; b) Staying in the same close environment of a COVID-19 patient [including workplace, classroom, household, and gatherings]; c) Traveling together in close proximity [1 meter] with a COVID-19 patient in any kind of conveyance

[‡]SARI is defined as fever and a respiratory symptom requiring hospitalization

Severe disease is defined as severe pneumonia, sepsis and septic shock, and ARDS. For those with mild illness, hospitalization may not be required unless there is concern for rapid deterioration such as the elderly, those with underlying medical conditions like diabetes, cardiovascular disease, chronic lung disease, or immunocompromising conditions. If hospitalization is not medically necessary, home care is preferable if the individual's situation allows. All patients discharged home should be monitored by the District Rapid Response Team (RRT) and patients should be instructed to alert the RRT should they develop worsening of symptoms. The District Health Office (DHO) should be notified when discharging a patient with suspect COVID-19 to ensure they can follow them in the community, as well as convey important prevention messages (e.g., social distancing measures). Home Care is covered in Chapter 5.

Figure 1: Flow Diagram for Triaging Patients with Acute Respiratory Infection for COVID-19

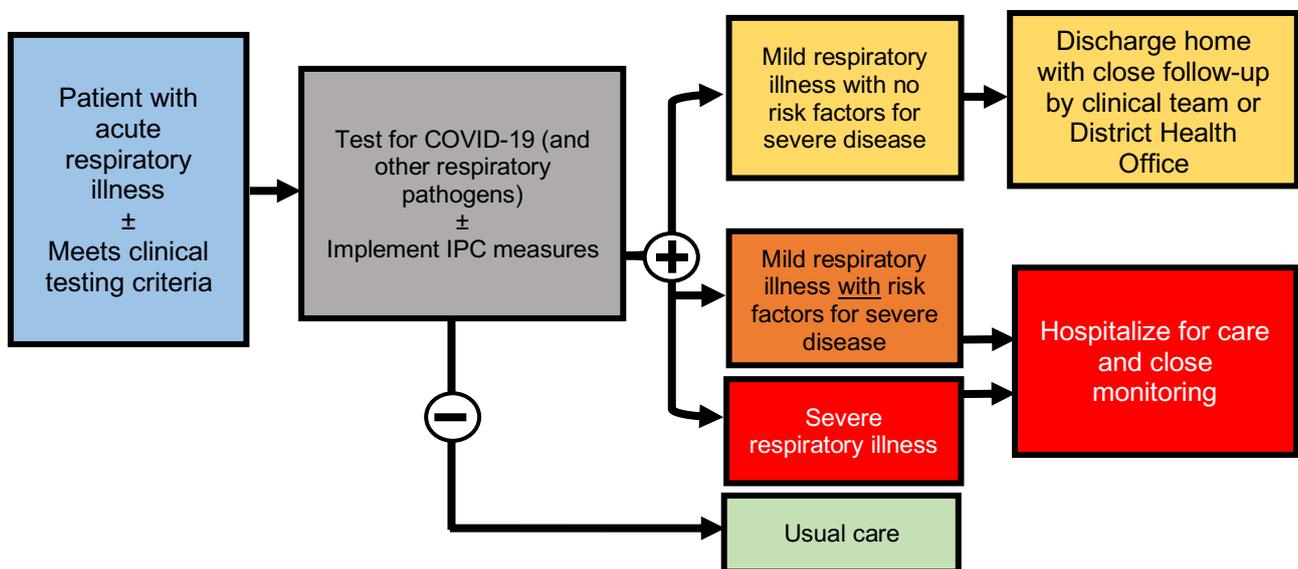


Table 1: Symptoms and Signs of Mild and Severe Acute Respiratory Infection (ARI)

Mild Respiratory Infection		Severe Respiratory Infection	
Symptoms	Signs	Symptoms	Signs
<p>Symptoms Are Non-Specific:</p> <ul style="list-style-type: none"> • Fever and cough within 10 days • Sore throat, nasal congestion or rhinorrhoea • Headache, muscle pain or malaise • Diarrhoea or vomiting • Elderly or immunosuppressed patients may present with atypical symptoms and may not have fever 	<p>Patient with uncomplicated disease are without signs of:</p> <ul style="list-style-type: none"> • dehydration • shortness of breath • Sepsis (e.g. tachycardia, tachypnea, elevated WBC count) 	<p>General symptoms:</p> <ul style="list-style-type: none"> • Decreased activity, dizziness, decreased urine output • Persistent high fever and other symptoms beyond 3 days without signs of resolution <p>Respiratory:</p> <ul style="list-style-type: none"> • Increasing breathing difficulties, cyanosis, bloody or coloured sputum, chest pain, noisy breathing <p>CNS:</p> <ul style="list-style-type: none"> • Confusion, lethargy, coma, weakness, seizures <p>*Children may also present with poor feeding, excessive diarrhoea and vomiting</p>	<p>Respiratory distress:</p> <ul style="list-style-type: none"> • fast breathing, shortness of breath, accessory muscle use, cyanosis, grunting, severe chest indrawing, wheezing, stridor <p>Cardiovascular/circulatory instability:</p> <ul style="list-style-type: none"> • delayed capillary refill, weak pulse, cool extremities, reduced urine output, low blood pressure <p>Neurological instability:</p> <ul style="list-style-type: none"> • alteration of mental status, seizures, irritability, confusion, lethargy <p>Severe dehydration:</p> <ul style="list-style-type: none"> • sunken eyes, very low skin pinch, unable to drink, lethargy

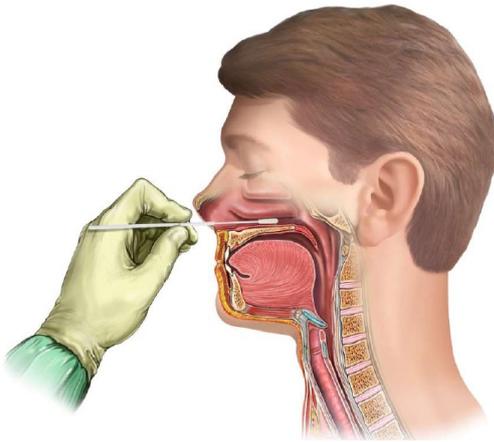
Testing for COVID-19

COVID-19 is diagnosed when SARS-CoV-2 is detected by PCR on respiratory tract specimens. Upper (nasopharyngeal swab) and lower (expectorated sputum, tracheal aspirate, bronchioalveolar lavage) respiratory tract specimens are suitable for testing. Lower respiratory tract samples may have a higher sensitivity. Do not induce sputum to collect a lower respiratory tract specimen for COVID-19. Although virus has been isolated from other sites such as serum and stool, testing for these specimen is not available at this time.

Figure 2: How to Collect Nasopharyngeal and Oropharyngeal Specimens

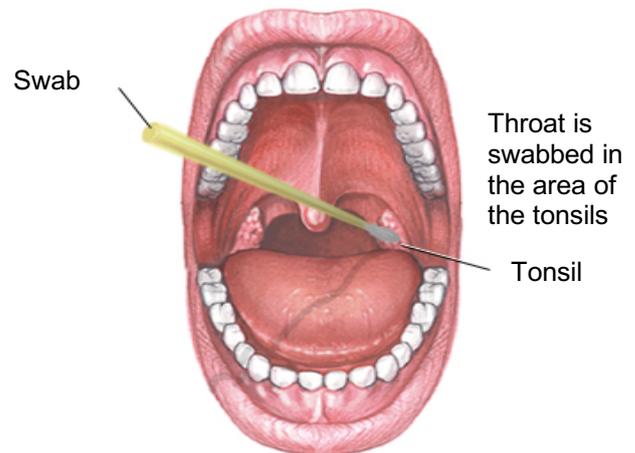
Nasopharyngeal (NP) swabs

- 1) Have patient blow nose prior to collection
- 2) Insert NP swab in level/flat position into back of nasopharynx until resistance is felt
- 3) Rotate for 10-15 seconds



Oropharyngeal swab

- 1) Swab both tonsils and back of throat
- 2) Avoid touching tongue and teeth



Use sterile dacron or rayon swabs. Do not use cotton swabs or wood shafts as can interfere with RT-PCR assays

For a detailed step by step sample collection, refer to Appendix 1

Notifying Public Health

The DHO and ZNPHI should be notified of suspect COVID-19 patients as soon as possible. This is important to facilitate rapid testing, as well as to initiate public health measure that can prevent onward transmission. When a suspect or confirmed COVID-19 case is detected, immediately notify the facility in-charge. The in-charge should contact the DHO and ZNPHI. ZNPHI can be reached by calling the following numbers:

- **ZNPHI COVID-19 Hotline (Primary): +260974493553**
- **Back-up line: +260964638726 or +260953898941**

Chapter 3: General Principles of Care for Patients with COVID-19

While there are no specific treatments for COVID-19, patients should receive evidence-based supportive therapies to prevent and treat complications related to COVID-19. While an exhaustive review of these treatments is beyond the scope of this guidance, below are some general principles that Healthcare Providers should follow when caring for patients with COVID-19.

General Principles of Infection Prevention and Control Measures for COVID-19

- 1) Apply contact droplet precautions (in addition to standard precautions) (*see Appendix 2*)
 - a) PPE should be donned before entering the patient care area
 - b) Hand hygiene should be performed before donning and after doffing PPE
 - c) A video of how to wear appropriate PPE for COVID-19 is available at: https://www.dropbox.com/s/ym9g5c0hr16gul/DonningDoffing_COVID19_PPE_480p_04Mar2020.mov?dl=0
 - d) Add airborne precautions if there is an emergent need for intubation or cardiopulmonary resuscitation at triage
- 2) Provide the suspect patient a medical mask for source control
- 3) Instruct the patient to practice respiratory hygiene and hand hygiene and to avoid movements within the facility
- 4) Locate suspect COVID-19 patients into a separate waiting area (i.e. cohort patients), and separate patients by ≥ 1 meter
- 5) Use dedicated patient equipment when possible, (such as stethoscopes) or wash and disinfect between patients
- 6) Frequent clean areas where suspect patients are waiting, with particular focus on frequently touched surfaces

Pre-Hospital Care: Health Centres and Ambulances

- 1) Apply IPC interventions at all times (e.g. putting a medical/surgical mask on the patient immediately at the first contact)
- 2) Provide available emergency transportation; call for help (ZNPFI COVID-19 Hotline: +260974493553 or Back-up line: +260964638726 or +260953898941)
- 3) Refer to local emergency medical service (EMS) protocols
- 4) Arrange for safe transfer to hospital with isolation and Intensive Care Unit (ICU) capacity (**COVID-designated centres**)

Safe Transfer of Patients in Health Facilities

This applies for transfer of patients from one point to another

- 1) Ensure IPC measures are always applied
- 2) Ensure appropriate diagnostics and emergency treatments have been given and patient is stable and ready for transport
- 3) Ensure all monitors and ongoing treatments are secured and can be maintained during transport
- 4) Ensure appropriate documentation and handover of care to next responsible clinicians

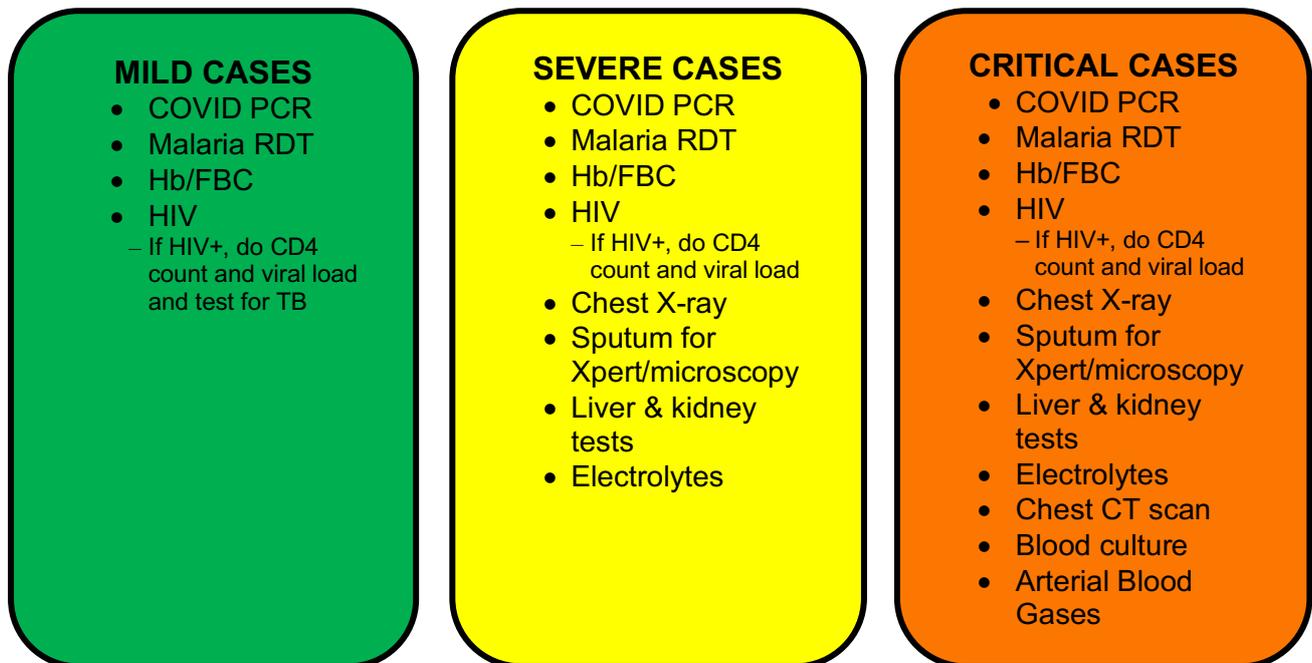
- 5) Ensure the responsible Healthcare Worker is prepared

Hospital Ward Care

Always attend to COVID-19 suspected cases in designated isolation room/area

- 1) Apply IPC interventions at all times
- 2) Refer to local ward and ICU admission criteria
- 3) Arrange for safe admission to ward or ICU
- 4) Treat patient's symptoms. Use antipyretics for fever, lozenges for sore throat, antihistamines for congestion, etc.
- 5) Conduct a thorough work-up (see Figure 3)
- 6) Provide available emergency care, call for help (**Call ID, Critical Care Teams**)
- 7) For patients with hypoxemia, initiate oxygen therapy at 5 L/min and titrate flow rates to reach target SpO₂ ≥90% in non-pregnant adults and SpO₂ ≥92-95 % in pregnant patients.

Figure 3: Recommended Clinical Work-up for Suspected COVID-19 Cases



Emergency Care for Decompensating Patients

Based on clinical condition and available resources:

- 1) Give supplemental oxygen therapy immediately to patients with signs of respiratory distress or shock.
- 2) Insert peripheral IV and start fluid therapy (if hypotension, sepsis, shock or clinical dehydration in setting of GI symptoms, nausea, diarrhoea)
- 3) Give appropriate antimicrobial therapies and/or intravenous fluids before transfer
- 4) Obtain appropriate laboratory testing including Hb/FBC, electrolytes, chest X-ray

Intensive Care Unit (ICU) Admission Criteria

Ensure ICUs care for critically ill patients with the following characteristics:

- 1) Impending or ongoing acute, life-threatening organ dysfunction

- 2) Need intensive and continuous monitoring
- 3) Need intensive therapies that cannot be delivered on the general ward (i.e., ventilation)

Care on the ICU Ward

- 1) Consider advanced ventilatory support in patients not responding to increasing oxygen therapy. Signs of acute hypoxemic respiratory failure: include patient in severe respiratory distress, hypoxemia ($\text{SpO}_2 < 90\%$) despite escalating oxygen therapy, and $\text{SpO}_2/\text{FiO}_2 < 300$ while on at least 10 L/min oxygen therapy
- 2) Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions
- 3) Administer appropriate empiric antimicrobials within one hour of identification of sepsis, even though the patient may have COVID-19. Empiric antibiotic treatment should be based on the suspected infected source (e.g., lung, urine, blood), local epidemiology and susceptibility data, and treatment guidelines.
- 4) Use conservative fluid management in patients with SARI when there is no evidence of shock. Patients with SARI 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. The FEAST trial revealed that fluid boluses significantly increased 48-hour mortality in critically ill children with impaired perfusion in resource-limited settings in Africa.²⁶
- 5) Do not routinely give systemic corticosteroids for COVID-19, unless indicated for another reason (e.g., adrenal insufficiency, COPD exacerbation). (A systematic review of observational studies of corticosteroids administered to patients with SARS reported no survival benefit and possible harms [avascular necrosis, psychosis, diabetes, and delayed viral clearance]).²⁷⁻²⁹

Handling Deceased Patients

- 1) Apply IPC interventions at all times while coming into contact with the deceased or surfaces or materials that may be contaminated by secretions from the deceased
- 2) Because respiratory droplets produced when an infected person coughs or sneezes, this route of transmission is not a concern when handling human remains or performing postmortem procedures
- 3) Postmortem activities should be conducted with a focus on avoiding aerosol generating procedures

Discharging Patients who have Recovered from COVID-19

- 1) Patients should be afebrile for three days, have improvement in respiratory symptoms and radiographic findings
- 2) Because the duration of viral shedding is still not well defined, patients should be instructed to practice social distancing (avoiding public gatherings, remaining home from work, staying >1 meter away from others in public) for at least two weeks since the onset of symptoms
- 3) Rigorous hand hygiene and cough etiquette should be practiced

See Chapter 5 on Home Care for additional guidance

Important Preventive Messaging for COVID-19 Patients and their Families

At every stage of care, emphasize preventive measures patients and family can take to protect themselves from COVID-19. These include:

- a) Wash hands often with soap and water for at least 20 seconds. Use an alcohol-based hand sanitizer if soap and water are not readily available
- b) Avoid touching eyes, nose, and mouth with unwashed hands
- c) Cover cough or sneeze with a tissue, then throw it away
- d) Clean and disinfect frequently touched objects and surfaces
- e) Avoid close contact with people who are sick (>1 meter distance)
- f) Stay home if feeling sick

Chapter 4: Management of Complicated Clinical Syndromes Associated with COVID-19

The clinical syndromes associated with COVID-19 are as follows;

1. Severe Acute Respiratory Infection (SARI) or pneumonia
2. Acute Respiratory Distress syndrome (ARDS)
3. Sepsis and septic shock

Management of Acute Respiratory Infection (ARI) Non-Severe Pneumonia

Adolescent or adult:

- with fever or suspected respiratory infection

Child:

- non-severe pneumonia with
 - Cough or difficulty breathing + fast breathing
 - Fast breathing (in beats per minute) is:
 - <2 months, ≥ 60
 - 2–11 months, ≥ 50
 - 1–5 years, ≥ 40

Treatment

- Give oral antibiotics:
 - **In Children:** Amoxicillin or Co-trimoxazole
 - **Adults:** Amoxicillin

Severe Pneumonia

Adolescent or adult:

- Fever or suspected respiratory infection, plus one of
- Respiratory rate >30 breaths/min
- Severe respiratory distress, or
- SpO₂ $<90\%$ on room air

Child:

- Cough or difficulty in breathing, plus at least one of the following:
 - Central cyanosis or SpO₂ $<90\%$
 - Severe respiratory distress (e.g. grunting, very severe chest indrawing);

Signs of pneumonia with a general danger sign:

- Inability to breastfeed or drink
- Lethargy or unconsciousness, or convulsions

Other signs of pneumonia may be present:

- Chest indrawing
- Fast breathing (in breaths/min):
- <2 months, ≥ 60
- 2–11 months, ≥ 50
- 1–5 years, ≥ 40.2

*The diagnosis is clinical; chest imaging can exclude complications.

Diagnostics Tests

As for complicated cases listed above

Management

Early supportive therapy and monitoring

Supplemental Oxygen

Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxemia, or shock.

Remarks: Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target $\text{SpO}_2 \geq 90\%$ in non-pregnant adults and $\text{SpO}_2 \geq 92\text{--}95\%$ in pregnant patients.

Indication of Oxygen therapy in adults

- In the hospital setting, give oxygen **immediately** to patients (adults and children) with SARI who have signs of severe illness:
 - severe respiratory distress
 - sepsis with hypoperfusion or shock
 - alteration of mental status or
 - hypoxemia
- **$\text{SpO}_2 < 90\%$** (if patient is haemodynamically normal)
- $\text{SpO}_2 < 94\%$ (if patient with any emergency signs of airway, breathing or circulation)
- $\text{SpO}_2 < 92\text{--}95\%$ (if pregnant woman)

Children with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions) should receive oxygen therapy during resuscitation to target $\text{SpO}_2 \geq 94\%$; otherwise, the target SpO_2 is $\geq 90\%$. All areas where patients with SARI are cared for should be equipped with pulse oximeters, functioning oxygen systems and disposable, single-use, oxygen-delivering interfaces (nasal cannula, simple face mask, and mask with reservoir bag). Use contact precautions when handling contaminated oxygen interfaces of patients with COVID-19 infection.

Indication of Oxygen therapy when Pulse Oximetry is not available in children

- Central cyanosis
- Nasal flaring
- Inability to drink or feed (when due to respiratory distress)
- Grunting with every breath
- Depressed mental state (i.e. drowsy, lethargic)
 - and in certain conditions (severe lower chest indrawing, RR \geq 70 bpm, head nodding)

DO NOT DELAY OXYGEN ADMINISTRATION

In children under 5 years, use a nasal canular

Age of child	Maximal Oxygen flow rates
Neonates	0.5–1.0 L/min by nasal cannula
Infants	1–2 L/min by nasal cannula
Pre-school aged	1–4 L/min by nasal cannula
School-aged	1–6 L/min by nasal cannula
If severe hypoxemia persists despite maximal flow rates: <ul style="list-style-type: none"> • start CPAP (if available) • start secondary source of oxygen with face mask with reservoir bag • insert nasopharyngeal catheter (passed uvula into the pharynx) and give oxygen at flow rates: neonates 0.5 L/min; infants 1 L/min 	

Acute hypoxemic Respiratory failure

Patients not responding to increasing oxygen therapy are developing acute hypoxemic respiratory failure:

- 1) Signs of severe respiratory distress
- 2) Hypoxemia ($SpO_2 < 90\%$) despite escalating oxygen therapy
- 3) $SpO_2/FiO_2 < 300$ while on at least 10 L/min oxygen therapy
- 4) Cardiogenic pulmonary oedema not primary cause

Treatment

- Intubate and manage in ICU. See below for further details.

Fluid management

Use conservative fluid management in patients with SARI when there is no evidence of shock.

Patients with SARI 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. The FEAST trial revealed that fluid boluses significantly increased 48-hour mortality in critically ill children with impaired perfusion in resource-limited settings in Africa.³⁰

Empiric antimicrobials

Give empiric antimicrobials to treat all likely pathogens causing SARI. Give antimicrobials within one hour of initial patient assessment for patients with sepsis.

Although the patient may be suspected to have COVID-19, administer appropriate empiric antimicrobials within ONE hour of identification of sepsis. Empiric antibiotic treatment should be based on the clinical diagnosis (community-acquired pneumonia, health care-associated pneumonia [if infection was acquired in healthcare setting], or sepsis), local epidemiology and susceptibility data, and treatment guidelines.

Broad spectrum antibiotics

- Community Acquired Pneumonia (CAP): β -lactam (Amoxicillin, Co-amoxiclav) PLUS Macrolide (Clarithromycin or Azithromycin)
- Penicillin allergy: Doxycycline OR Respiratory quinolone (Levofloxacin OR Moxifloxacin) OR third generation cephalosporin
- Hospital Acquired Pneumonia (HAP): consider MDR organisms including Pseudomonas

Anti-pseudomonal coverage:

Pseudomonas infection can be treated with a combination of

- An antipseudomonal β -lactam (e.g. Penicillin or Cephalosporin) **and** an aminoglycoside or
- Carbapenems (e.g. Meropenem or Imipenem **not** Ertapenem) **with** antipseudomonal Fluoroquinolone (e.g. Levofloxacin (high dose) or Ciprofloxacin) may be used **in conjunction with** an aminoglycoside (e.g. Tobramycin, Amikacin, Gentamicin)

In people living with HIV (PLHIV) and immunosuppressed:

- Consider PCP treatment with High dose Sulfamethoxazole/Trimethoprim

In pregnant women:

- Use of macrolides, cephalosporins and penicillins are safe
- Do not use fluoroquinolones or Doxycycline

In children

Combination therapy:

- Ampicillin or Penicillin G for fully immunized child if local epidemiology documents **lack** of substantial high-level penicillin-resistance for invasive *S. pneumoniae*. *or*
 - Third generation cephalosporin (e.g. Cefotaxime or Ceftriaxone) for non-fully immunized child, known high-level, penicillin-resistance for invasive *S. pneumoniae* or life-threatening infection
 - And antibiotic against atypical pneumonia (i.e. macrolide)
 - If community-acquired *S. aureus* suspected:
 - add Vancomycin or Clindamycin based on local susceptibility data
- * Fluoroquinolones and Doxycycline are not used to treat CAP in children

When to stop antimicrobial treatment

Considerations include:

- signs of clinical improvement (i.e. once shock resolved)
- signs of infection resolution (i.e. Procalcitonin)
- 5–10 days of duration of treatment is adequate for most serious infections associated with sepsis

Longer treatment courses may be appropriate in patients with slow clinical response, undrainable foci and certain infections (i.e. *S. aureus* bacteraemia).

Steroids

Do not routinely give systemic corticosteroids for treatment of viral pneumonia or ARDS outside of clinical trials unless they are indicated for another reason.²⁶⁻²⁹

A systematic review of observational studies of corticosteroids administered to patients with SARS reported no survival benefit and possible harms (avascular necrosis, psychosis, diabetes, and delayed viral clearance).³¹ **DO NOT USE STEROIDS IN COVID-19 SARI**

Closely monitor patients with SARI for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis, and apply supportive care interventions immediately.

Signs of clinical deterioration in SARI

- SpO₂ ≤ 90
- SBP ≤ 100 mmHg
- Urine output < 0.5 mL/kg/hr

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

Understand the patient's co-morbid condition(s) to tailor the management of critical illness and appreciate the prognosis.

Communicate early with patient and family:

During intensive care management of SARI, determine which chronic therapies should be continued and which therapies should be stopped temporarily. Communicate proactively with patients and families and provide support and prognostic information. Understand the patient's values and preferences regarding life-sustaining interventions.

Experimental Drugs

There are several experimental drugs under going trials in several countries. Before you commence any patient with SARI on any experimental drugs, consult Infectious Disease specialists for guidance through the **7040 Toll free-line**.

**DO NOT USE EXPERIMENTAL DRUGS WITHOUT CONSULTING
INFECTIOUS DISEASE SPECIALISTS**

Management of hypoxemic respiratory failure and ARDS

Principles of ARDS management

1. Recognize ARDS early
2. Initiate ventilatory support without delay
3. Treat underlying cause
4. Monitor-record-interpret-respond
5. Deliver quality of care

Recognize ARDS early

Acute Respiratory Distress Syndrome	
Timing	new or worsening respiratory symptoms within one week of known clinical insult.
Imaging	bilateral opacities- not fully explained by effusions, lobar or lung collapse, or nodules.
Origin of oedema	respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiograph) to exclude hydrostatic oedema if no risk factor present
Oxygenation	
Mild	$200 \text{ mmHg} < \text{PaO}_2/\text{FiO}_2 \leq 300 \text{ mmHg}$ (with PEEP or CPAP $\geq 5 \text{ cmH}_2\text{O}$)
Moderate	$100 \text{ mmHg} < \text{PaO}_2/\text{FiO}_2 \leq 200 \text{ mmHg}$ with PEEP $\geq 5 \text{ cmH}_2\text{O}$
Severe	$\text{PaO}_2/\text{FiO}_2 \leq 100 \text{ mmHg}$ with PEEP $\geq 5 \text{ cmH}_2\text{O}$

Recognize severe hypoxemic respiratory failure when a patient with respiratory distress is failing standard oxygen therapy.

Patients may continue to have increased work of breathing or hypoxemia even when oxygen is delivered via a face mask with reservoir bag (flow rates of 10-15 L/min, which is typically the minimum flow required to maintain bag inflation; FiO_2 0.60-0.95). Hypoxemic respiratory failure in ARDS commonly results from intrapulmonary ventilation-perfusion mismatch or shunt and usually requires mechanical ventilation.

Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions.

Patients with ARDS, especially young children or those who are obese or pregnant, may desaturate quickly during intubation. Pre-oxygenate with 100% FiO_2 for 5 minutes, via a face mask with reservoir bag, bag-valve mask, HFNO, or NIV. Rapid sequence intubation is appropriate after an airway assessment that identifies no signs of difficult intubation.

The following recommendations in this section pertain to mechanically ventilated patients with ARDS. These focus on adults; consensus-based recommendations for children are available.

Implement mechanical ventilation using lower tidal volumes (4–8 mL/kg predicted body weight, PBW) and lower inspiratory pressures (plateau pressure <30 cm H₂O).

This is a strong recommendation from a clinical guideline for patients with ARDS, and is suggested for patients with sepsis-induced respiratory failure who do not meet ARDS criteria. The initial tidal volume is 6 mL/kg PBW; tidal volume up to 8mL/kg PBW is allowed if undesirable side effects occur (e.g. dyssynchrony, pH <7.15). Hypercapnia is permitted if meeting the pH goal of 7.30. Ventilator protocols are available. The use of deep sedation may be required to control respiratory drive and achieve tidal volume targets. Although high driving pressure (plateau pressure–PEEP) may more accurately predict increased mortality in ARDS compared to high tidal volume or plateau pressure, RCTs of ventilation strategies that target driving pressure are not currently available.

In patients with severe ARDS, prone ventilation for >12 hours per day is recommended.

Application of prone ventilation is strongly recommended for adult and paediatric patients with severe ARDS but requires sufficient human resources and expertise to be performed safely.

Use a conservative fluid management strategy for ARDS patients without tissue hypoperfusion.

This is a strong guideline recommendation; the main effect is to shorten the duration of ventilation.

- In patients with moderate or severe ARDS, higher PEEP instead of lower PEEP is suggested
- In patients with moderate-severe ARDS ($\text{PaO}_2/\text{FiO}_2 < 150$), neuromuscular blockade by continuous infusion should not be routinely used
- In settings with access to expertise in extracorporeal life support (ECLS), consider referral of patients with refractory hypoxemia despite lung protective ventilation

TIPS ON VENTILATOR SETTINGS IN ARDS

- Low tidal volume of 6mL/kg ideal body weight
- Titrate tidal volume with SpO₂
- Target low plateau airway pressure of < 30 cm H₂O
- Moderate high PEEP levels to recruit airways
- Consider neuromuscular blockade
- Nurse in prone position

NOTE: Consult Critical care Specialists on Ventilator Settings if in doubt

Management of Septic Shock

Principles of management of Septic Shock

1. Recognize sepsis and septic shock early
2. Give appropriate antimicrobials within 1 hour
3. Give a targeted resuscitation during the first 6 hours
4. Monitor-record-interpret-respond
5. Deliver quality care

DEFINITION:

SEPSIS: Acute severe life-threatening organ dysfunction caused by dysregulated host response to infection.

SEPTIC SHOCK: Sepsis with hypotension unresponsive to fluids and requiring vasopressors to maintain Mean Arterial Pressure (MAP) ≥ 65 mmHg and Lactate ≥ 2 mmol/L in the absence of hypovolaemia

Recognize patients with sepsis and septic shock:

- Patients with sepsis have suspected or documented infection and acute, life-threatening organ dysfunction
- A subset of these patients may have septic shock and show clinical signs of circulatory failure and hypoperfusion
- Patients with sepsis and septic shock need treatment and resuscitation immediately!

Step 1: Get Intravenous access

Step 2: Get bloods for investigations

Step 3: Give empiric antibiotics without delay preferably within the first 1 hour

Step 4: Start IV fluids

Treatment

In resuscitation from septic shock in adults, give at least 30 mL/kg of isotonic crystalloid in adults in the first 3 hours

- Give initial fluid challenge of 20–30 mL/kg over 30–60 minutes (or faster)
- Perform sequential evaluations to assess clinical response
- If shock persists, continue to give additional fluid challenges (i.e. 250–500 mL) over 30 minutes as long as there is a clinical response

If MAP <65

Start vasopressors after initial fluid bolus:

- But can be given early, during ongoing resuscitation when shock is severe and diastolic pressure is low
- Do not delay administration

Management of Septic Shock in Children

Recognize septic shock in children with any hypotension (systolic blood pressure [SBP] <5th centile or >2 SD below normal for age) or 2-3 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 seconds) or
- warm vasodilation with bounding pulses
- tachypnea
- mottled skin or petechial or purpuric rash
- increased lactate
- oliguria
- hyperthermia or hypothermia

In the absence of a lactate measurement, use MAP and clinical signs of perfusion to define shock. Standard care includes early recognition and the following treatments within 1 hour of recognition: antimicrobial therapy and fluid loading and vasopressors for hypotension. The use of central venous and arterial catheters should be based on resource availability and individual patient needs. Detailed guidelines are available for the management of septic shock in adults and children.

In resuscitation from septic shock in children in, give 20 mL/kg as a rapid bolus and up to 40-60 mL/kg in the first 1 hour.

Special consideration for children

- severe acute malnutrition
- severe malaria with profound anaemia (i.e. Hb < 5)
- diarrhoea and severe dehydration
- severe dengue shock syndrome

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

Fluid resuscitation may lead to volume overload, including respiratory failure. If there is no response to fluid loading and signs of volume overload appear (for example, jugular venous distension, crackles on lung auscultation, pulmonary oedema on imaging, or hepatomegaly in children), then reduce or discontinue fluid administration. This step is particularly important where mechanical ventilation is not available. Alternate fluid regimens are suggested when caring for children in resource-limited settings. Administer vasopressors when shock persists during or after fluid resuscitation. The initial blood pressure target is MAP \geq 65 mmHg in adults and age-appropriate targets in children.

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. Vasopressors can also be administered through intraosseous needles.

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

Vasopressors (i.e. Norepinephrine, Epinephrine, Vasopressin, and Dopamine) are most safely given through a central venous catheter at a strictly controlled rate, but it is also possible to safely administer them via peripheral vein and intraosseous needle. Monitor blood pressure frequently and titrate the vasopressor to the minimum dose necessary to maintain perfusion and prevent side effects. Norepinephrine is considered first-line in adult patients; Epinephrine or Vasopressin can be added to achieve the MAP target. Because of the risk of tachyarrhythmia, reserve dopamine for selected patients with low risk of tachyarrhythmia or those with bradycardia. In children with cold shock (more common), Epinephrine is considered first-line, while norepinephrine is used in patients with warm shock (less common).

WHEN TO STOP VASOPRESSORS

- Titrate vasopressors to desired effect
- Target MAP range $\geq 65\text{--}70$ mmHg
 - consider higher MAP (i.e. ≥ 80 mmHg) in patients with chronic hypertension

Check markers of perfusion:

- **Mental status, urine output, normalization of lactate* and skin examination.**
- Titrate down vasopressors if blood pressure in above target range

Blood Transfusion in Septic shock

- Give packed red blood cells (PRBCs) transfusion when there is severe anaemia:
 - $\text{Hb} \leq 70\text{g/L}$ (7.0 g/dL) in absence of extenuating circumstances such as myocardial infarction, severe hypoxemia, or acute haemorrhage
 - Targeting higher thresholds ($\geq 90\text{--}100$ g/L) does not lead to better outcomes in patients with sepsis

Management of shock in Pregnant women

- Ensure adequate hydration, use IV fluids as necessary:
 - Close attention to fluid balance to prevent fluid overload and pulmonary oedema.
 - Oncotic pressure decreases throughout pregnancy and in the postpartum period.
 - Vasopressors – use cautiously with appropriate available monitoring:
 - May decrease uterine perfusion
 - Administer with IV fluids – uteroplacental flow will not be adequate with vasopressors alone
- *Must monitor foetus when administering.**

Special considerations for pregnant patients

- Supportive therapies should take into account the physiologic adaptations of pregnancy
- The use of investigational therapeutic agents outside of a research study should be guided by individual risk-benefit analysis based on potential benefit for mother and safety to foetus, with consultation from an obstetric specialist and ethics committee
- Emergency delivery and pregnancy termination decisions are challenging and based on many factors: gestational age, maternal condition, and foetal stability

Table 2: Prevention of complications Related to Hospitalization

Anticipated Outcome	Interventions
Reduce days of invasive mechanical ventilation	<ul style="list-style-type: none"> • Use weaning protocols that include daily assessment for readiness to breathe spontaneously • Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions
Reduce incidence of ventilator-associated pneumonia	<ul style="list-style-type: none"> • Oral intubation is preferable to nasal intubation in adolescents and adults • Keep patient in semi-recumbent position (head of bed elevation 30-45°) • Use a closed suctioning system; periodically drain and discard condensate in tubing • Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged but not routinely • Change heat moisture exchanger when it malfunctions, when soiled, or every 5–7 days
Reduce incidence of venous thromboembolism	<ul style="list-style-type: none"> • Use pharmacological prophylaxis (low molecular-weight heparin [preferred if available] or heparin 5000 units subcutaneously twice daily) in adolescents and adults without contraindications. For those with contraindications, use mechanical prophylaxis (intermittent pneumatic compression devices)
Reduce incidence of catheter-related bloodstream infection	<ul style="list-style-type: none"> • 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
Reduce incidence of pressure ulcer	<ul style="list-style-type: none"> • Turn patient every two hours
Reduce incidence of stress ulcers and gastrointestinal bleeding	<ul style="list-style-type: none"> • Give early enteral nutrition (within 24–48 hours of admission) • 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 replacement therapy, liver disease, multiple comorbidities, and higher organ failure score
Reduce incidence of ICU-related weakness	<ul style="list-style-type: none"> • Actively mobilize the patient early in the course of illness when safe to do so

Chapter 5: Home Care of Patients with COVID-19

All suspected COVID-19 patients should be triaged at first point of care with healthcare system and emergency treatment started based on disease severity. Those with mild disease, hospitalization MAY NOT be required unless there is concern for rapid deterioration. If hospitalization is not medically necessary, home care is preferable if the individual's situation allows.

There are four types of patients who will not require admission to a healthcare facility:

1. Mild disease without risk factors for deterioration (e.g. diabetes, hypertension, chronic lung diseases, kidney diseases, advanced HIV, etc.)
2. Returning travellers from countries with epidemic outbreak who are asymptomatic
3. Symptomatic patients no longer requiring hospitalization (discharged patients)
4. If there is limited capacity in healthcare services

Requirements for Home Care for Mild Disease

- Stable enough to receive care at home
 - Designated caregivers are available
- There is a separate bedroom or other space where the patient can recover without sharing immediate space with others
- The patient and other household members have access to appropriate, PPE

Steps in committing Patient to Home Care

1. Ideally, assessment by HCW from district health office on suitability appropriateness of home care
2. Establish communication link with Healthcare provider/public health personnel. All patients discharged home should be monitored by the District Rapid Response Team (RRT) and patients should be instructed to alert the RRT should they develop worsening of symptoms. The district health office (DHO) should be notified when discharging a patient with suspect COVID-19 to ensure they can follow them in the community, as well as convey important prevention messages (e.g., social distancing measures).
3. Educate household members on care for infected family members

Recommendations for Home Care

Before committing a person to home, the HCW should ensure that the following conditions are met and followed:

1. Patient should be placed in a well-ventilated single room (i.e. open window and door)
2. Limit the movement of the patient to shared spaces i.e. kitchen, bathroom
3. Family members should maintain a safe distance of at least 1m apart from the patient
4. Limit the number of care givers to the patient (identify 1 person to care for the patient)
5. Perform hand hygiene at all times. Use soap and water and avoid use of same towels
6. The patient should wear the medical mask at all times which should be properly discarded
7. The caregiver should wear a tightly fitted medical mask covering both nostrils and mouth while caring for the patient. Masks should not be reused. Masks should be discarded if they become wet
8. Avoid direct contact with body fluids particularly oral and respiratory secretions and stool
9. Use disposable gloves when caring for infected persons. Do not reuse gloves

10. Use dedicated linen and utensils for the patient and maybe re-used after proper disinfection and washing
11. Clean and disinfect frequently touched surfaces throughout the patients care space. Use regular household soap and then disinfect with household sodium hypochlorite 0.5%
12. Clean and disinfect bedroom and bathroom at least once daily
13. Use gloves, and protective clothing e.g. aprons when attending to the infected patient at all times
14. Waste generated when caring for the patient should be placed in a separate bin and covered with a lid
15. HCW home assessment should select appropriate PPEs

Management of contacts

A contact is an individual who has been providing direct care for an infected patient including caregivers at home and Healthcare Workers. They include;

- Healthcare-associated exposure, visiting patients or staying in the same close environment of a COVID-19 patient
- Working together in close proximity or sharing the same classroom
- Travelling together with a COVID-19 patient in any form of transportation
- Living together in the same house as a COVID-19 patient within the 14-21-day period after onset of symptoms in the case under consideration

Contacts should be monitored for development of symptoms. Establish a communication link with Healthcare Provider or public health for the duration of observation period. If a contact becomes symptomatic, he/she should be tested for COVID-19.

All contacts should be given advance instructions on when and where to seek care when they become ill including the mode of transportation and where to enter the designated facility.

Management of a Contact who falls ill

1. Contact person should inform the designated Healthcare Provider when they fall ill
2. Notify the receiving health facility that the symptomatic contact will be coming to their facility.
3. During transportation, the contact should wear the medical mask at all times
4. Avoid public transport, if possible, use ambulance or designated district transportation.
5. Other persons including HCWs should maintain a distance of at least 1 meter from the contact
6. Disinfect any surfaces soiled with respiratory secretions and other body fluids during transportation with diluted bleach at 0.5%

All contacts should be advised to monitor their health including temperature for 14-21 days from the last day of possible contact

Over-the-Counter Medicines (in Mild Cases)

- Antipyretics – Paracetamol 500mg q6-8h and/or Ibuprofen 400mg q8h
 - Avoid Aspirin in children less than 12yrs
- Sore throat – Lozenges
- Cough – Cough suppressants, mucolytics, and expectorants alone or in combination
- Nasal congestion – Antihistamines and/or decongestants

***For severe cases, refer to Guide on hospital treatment**

Chapter 6: Special Clinical Considerations for PLHIV during a COVID-19 Outbreak

Although the clinical course of COVID-19 among PLHIV is unknown at this time, it is essential for HIV service providers to adhere to National and WHO guidelines for COVID-19. The measures below can help ensure high quality care for Recipients of Care (RoC) as more information becomes available:

1. Ensure RoC are provided with 6 months' Multi-month Dispensing (6MMD) (if eligible by MoH Zambia Consolidated Guidelines) – where 6MMD is not feasible (e.g. due to low stock levels) provide a minimum of 3MMD
2. Stagger ART Clinic appointments (time/hour blocks) to reduce congestion
3. Where feasible, RoC can have their ART delivered to them at home or they can send a well buddy to collect on their behalf
4. Ensure all RoC are given the Health Facility's (HF) phone number (ART Clinic phone number should be clearly displayed) so that RoC can easily contact the HF e.g. to plan for collection/delivery of medication
5. All RoC and HCWs who develop respiratory symptoms or flu-like symptoms (fever $\geq 38^{\circ}\text{C}$ + cough) should follow the MoH guidance for seeking care
6. If a RoC or Healthcare Provider with suspected, probable or confirmed COVID-19 infection has to come to the HF, he/she should call ahead to notify the ART In-charge, so that they are aware and able to immediately separate the patient from other patients and immediately place a face mask on them
7. Triage any RoC or HCWs who are unwell (flu-like/ respiratory symptoms) to be seen first and provide them with a face mask immediately upon arrival
8. Adhere to MoH guidelines for prevention of COVID-19, including:
 - a. All HCWs who are unwell/ill with respiratory symptoms or flu-like symptoms should take sick leave and stay home
 - b. All HCWs who are unwell/ill with respiratory symptoms or flu-like symptoms and at work should be sent home
 - c. HCWs and RoC should practice frequent hand hygiene, including
 - i. before and after patient care,
 - ii. when coming into contact with secretions,
 - iii. before eating and after using the toilet

To facilitate this, HFs must ensure access to clean water and soap for hand washing (at least 20 seconds) or provide adequate supply of $\geq 60\%$ alcohol-based sanitizer (NOTE: sanitizer can be made by HF staff once provided with necessary ingredients)
9. Healthcare Providers should use the necessary PPE for all staff e.g. gloves and face masks. If a RoC is suspected of having COVID-19, a gown and goggles should be used in addition to gloves and medical face mask (where feasible). Face mask and gloves are most important PPEs
10. Maintain infection prevention standards in the HIV clinics by sanitizing all surfaces e.g. with hypochlorite per MoH guidelines

Inform MoH, relevant authorities and CDC Zambia in case of any suspected COVID-19 case in ART patients. Documenting the clinical course of COVID-19 in PLWHIV is important to inform optimal care.

Appendices

Appendix 1: Step by Step Guide for Sample Collection

1. **Assemble materials** for respiratory specimen collection



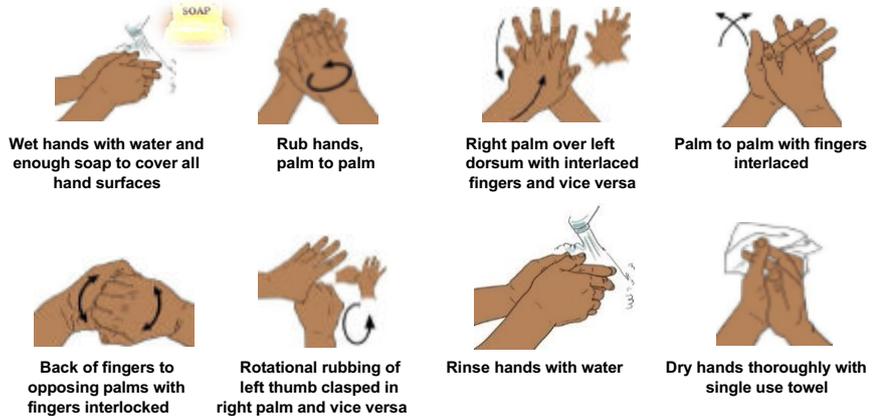
2. **Label sample containers** with suspected case/deceased person's name, **EPID ID number**, hospital number, date of sample collection and time. (Contact State Epidemiologist for Epid ID no)

3. **Fill the Case Investigation form.**

4. **Don PPE.** Allow buddy (trained observer) to mirror you for proper donning

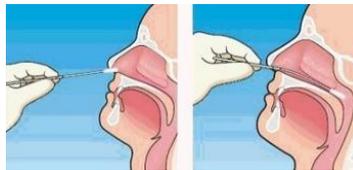


5. **Perform hand hygiene**



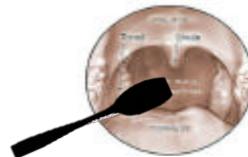
6. **Nasopharynx/nasopharyngeal sample collection:**

Two swabs should be collected. Swab each nostril for 10 – 15 secs. Place both swabs into a single Viral Transport Medium (VTM). Wrap VTM with parafilm



7. **Oropharyngeal sample collection:**

Use tongue depressor to hold down the tongue. Swab each tonsil for 10 – 15 secs. Place swab into a single VTM. Wrap the lid of VTM tube with parafilm



8. Sputum collection:

For suspect/ill persons coughing, ask the person to take a deep breath and cough to produce sputum sample into the leak-proof screw cap sputum collection cup or sterile-dry collection bottle.

9. For severely ill persons, bronchoalveolar lavage or tracheal aspirate may be considered (to be collected by respiratory physicians or trained personnel only).

11. Packaging of sample

Place the VTM tubes into a Falcon tube. Place the Falcon tube into a Ziploc bag



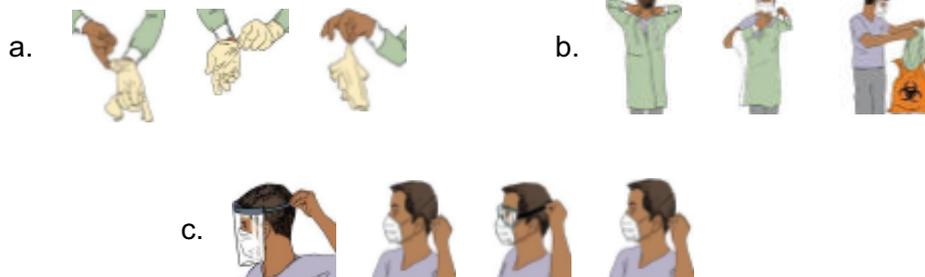
12. Packaging of container:

Place Ziploc bag into Geostyle container

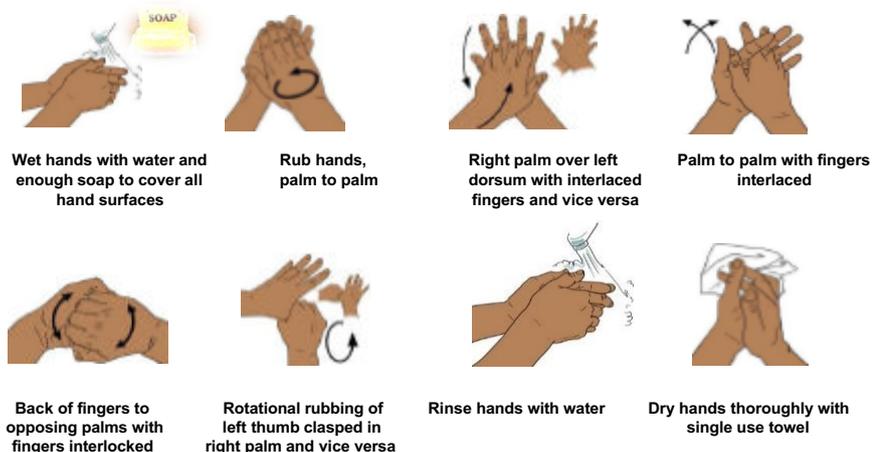


13. Discard sample collection materials in a properly labelled biohazard bin. Decontaminate work surfaces with freshly prepared 0.5% hypochlorite solution

14. Doff PPE



15. Perform hand hygiene



Appendix 2: Infection Prevention and Control (IPC) measures in the healthcare setting

How to implement infection prevention and control measures for patients with suspected or confirmed COVID-19 infection	
At triage	<p>Give suspect patient a medical mask and direct patient to separate area, an isolation room if available. Keep at least 1meter distance between suspected patients and other patients.</p> <p>Instruct all patients to cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others. Perform hand hygiene after contact with respiratory secretions</p>
Apply droplet precautions	<p>Droplet precautions prevent large droplet transmission of respiratory viruses. Use a medical mask if working within 1-2 meters of the patient. Place patients in single rooms, or group together those with the same etiological diagnosis. If an etiological diagnosis is not possible, group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation.</p> <p>When providing care in close contact with a patient with respiratory symptoms (e.g. coughing or sneezing), use eye protection (face-mask or goggles), because sprays of secretions may occur. Limit patient movement within the institution and ensure that patients wear medical masks when outside their rooms</p>
Apply contact precautions	<p>Droplet and contact precautions prevent direct or indirect transmission from contact with contaminated surfaces or equipment (i.e. contact with contaminated oxygen tubing/interfaces). Use PPE (medical mask, eye protection, gloves and gown) when entering room and remove PPE when leaving. If possible, use either disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers).</p> <p>If equipment needs to be shared among patients, clean and disinfect between each patient use.</p> <p>Ensure that Healthcare Workers refrain from touching their eyes, nose, and mouth with potentially contaminated gloved or ungloved hands.</p> <p>Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles and light switches).</p> <p>Ensure adequate room ventilation.</p> <p>Avoid movement of patients or transport. Perform hand hygiene</p>
Apply airborne precautions when performing an aerosol generating procedure	<p>Ensure that Healthcare Workers performing aerosol-generating procedures (i.e. open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation) use PPE, including gloves, long-sleeved gowns, eye protection, and fit-tested particulate respirators (N95 or equivalent, or higher level of protection). (The scheduled fit test should not be confused with user seal check before each use.)</p> <p>Whenever possible, use adequately ventilated single rooms when performing aerosol-generating procedures, meaning negative pressure rooms with minimum of 12 air changes per hour or at least 160 litres/second/patient in facilities with natural ventilation.</p> <p>Avoid the presence of unnecessary individuals in the room.</p> <p>Care for the patient in the same type of room after mechanical ventilation commences</p>

Appendix 3: Personal Protective Equipment (PPE) and Use

PPE	Characteristics and how to use
<p>Eye protection (goggles or face shield)</p> 	<ul style="list-style-type: none"> ○ Face shield or goggles can be used ○ Should adequately protect the Healthcare Workers conjunctival mucous membranes from splashes ○ Goggles should be preferably used for high risk situations ○ Normal reading glasses are not acceptable as PPE for eye protection so a face shield with anti-fog should be worn over the glasses or goggles big enough to cover the glasses ○ Goggles must fit comfortably and securely; each person should have his/her own goggles/face shield with personal names on them ○ Condensation of the goggles can be a major problem: it impairs the user's vision and is dangerous but can be minimized by anti-fog spray
<p>Mouth and nose protection (surgical face mask)</p> 	<ul style="list-style-type: none"> ○ Healthcare Workers must cover the mouth and nose to avoid body fluid splashes and droplet spread ○ Medical-surgical mask should be fluid-resistant with structured design that does not collapse against the mouth
<p>Respiratory protection (N95, FFP3)</p> 	<ul style="list-style-type: none"> ○ The respirator protects from the inhalation of droplets and particles ○ Given that the fitting of different types of respirator will vary for each user, the respirator will require a fitting test in order to find the best match of PPE to user ○ A respirator should always be used when performing aerosol-generating procedures in a COVID-19 patient
<p>Gloves</p> 	<ul style="list-style-type: none"> ○ Correctly sized latex or nitrile examination gloves should be used to protect hands against both direct and indirect contact ○ A new pair of gloves should be used for each patient. Remember that for invasive procedures you need sterile gloves ○ DO NOT touch eyes, nose or mouth areas with gloved hands
<p>Body protection (gowns)</p> 	<ul style="list-style-type: none"> ○ Long-sleeved water-resistant gowns should be used. This PPE does not need to be sterile, unless used in a sterile environment (e.g. operating room) ○ If water-resistant gowns are not available, single-use plastic aprons can be used on top of the non-water-resistant gowns to prevent body contamination

PPE	Characteristics and how to use
<p>Apron</p> 	<ul style="list-style-type: none"> ○ When the risk of splashes from patient's vomiting, diarrhea or bleeding is high, aprons should be worn over the gown or coverall because fluid-proof aprons provide extra protection of the front part of the body and is easier to replace than a soiled gown or coverall ○ Disposable aprons should be used
<p>Protective body wear (Coverall)</p>  <p style="font-size: small; text-align: center;">DuPont™ Tychem® QC* DuPont™ Tychem® SL*</p>	<ul style="list-style-type: none"> ○ Disposable gown or coverall made of fabric that is tested for resistance to penetration by blood or body fluids or blood borne pathogens should be worn over scrubs. This should only be used when there is a risk that the environment is highly contaminated and there will be very close contact with the patient
<p>Footwear</p> 	<ul style="list-style-type: none"> ○ Rubber or gum boots are preferred over closed shoes because they are fluid-proof, easier to clean and disinfect ○ They provide optimal protection from splashes/wetness and protect from sharp injuries ○ If not available, then wear closed shoes with disposable impermeable shoe covers ○ Boots should also be cleaned to remove gross contamination and then disinfected prior to re-use
<p>Head cover</p> 	<ul style="list-style-type: none"> ○ The purpose of head covers is to protect the skin and hair from virus contamination with subsequent unrecognized transmission to the mucosa of the eyes, nose or mouth
<p>Heavy-duty rubber gloves</p> 	<ul style="list-style-type: none"> ○ Cleaners, laundry workers and Healthcare Workers when handling infectious waste (i.e. solid waste or any secretion or excretion of with visible blood) should wear heavy duty rubber gloves over nitrile gloves ○ Movement of human remains or performing environmental cleaning activities also requires the use of heavy-duty rubber gloves
<ul style="list-style-type: none"> ● Before exiting isolation area, carefully remove PPE and dispose in waste containers in a designated doffing area ● Do not recycle any single-use PPE ● Remove PPE under supervision of a trained buddy ● Avoid any contact with soiled items and areas of the face or skin ● Place reusable equipment in bin for decontamination 	

Appendix 4: PPE recommendations in the care and management of suspected or confirmed cases of COVID-19: Inpatient Setting

Inpatient settings			
Area	Target personnel	Activity	Type of PPE or IPC precaution
Patient room	Healthcare Workers	Providing direct care to COVID-19 patients	<ul style="list-style-type: none"> • Medical mask Gown • Gloves • Eye protection (goggles or face shield)
		Aerosol-generating procedures performed on COVID-19 patients	<ul style="list-style-type: none"> • Respirator N95 or FFP2 standard, or equivalent • Gown
		COVID-19 patients	<ul style="list-style-type: none"> • Gloves • Eye protection Apron
	Cleaners	Entering the room of COVID-19 patients	<ul style="list-style-type: none"> • Medical mask Gown • Heavy duty gloves • Eye protection (if risk of splash from organic material or chemicals) • Boots or closed work shoes
	Visitors	Entering the room of a COVID-19 patient	<ul style="list-style-type: none"> • Medical mask Gown • Gloves
	All staff, including Healthcare Workers	Any activity that does not involve contact with COVID-19 patients	<ul style="list-style-type: none"> • No PPE required
Other areas of patient transit (e.g. wards, corridors)	All staff, including healthcare Workers	Any activity that does not involve contact with COVID-19 patients	<ul style="list-style-type: none"> • No PPE required
Triage	Healthcare Workers	Preliminary screening not involving direct contact	<ul style="list-style-type: none"> • Maintain spatial distance of at least 1m • No PPE required
	Patients with respiratory symptoms	Any	<ul style="list-style-type: none"> • Maintain spatial distance of at least 1m • Provide medical mask if tolerated by patient
	Patients without respiratory symptoms	Any	<ul style="list-style-type: none"> • No PPE required
Laboratory	Lab technician	Manipulation of respiratory samples	<ul style="list-style-type: none"> • Medical mask Gown • Gloves • Eye protection (if risk of splash)
Administrative areas	All staff, including Healthcare Workers	Administrative tasks that do not involve contact with COVID-19 patients	<ul style="list-style-type: none"> • No PPE required

Appendix 5: PPE recommendations in the care and management of suspected or confirmed cases of COVID-19: Outpatient Setting

Outpatient setting			
Area	Target personnel	Activity	Type of PPE or IPC precaution
Consultation room	Healthcare Workers	Physical examination of patient with respiratory symptoms	<ul style="list-style-type: none"> Medical mask Gown Gloves Eye protection
	Healthcare Workers	Physical examination of patients without respiratory symptoms	<ul style="list-style-type: none"> PPE according to standard precautions and risk assessment
	Patients with respiratory symptoms	Any	<ul style="list-style-type: none"> Provide medical mask if tolerated
	Patients without respiratory symptoms	Any	<ul style="list-style-type: none"> No PPE required
	Cleaners	After and between consultations with patients with respiratory symptoms	<ul style="list-style-type: none"> Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals) Boots or closed work shoes
Waiting room	Patients with respiratory symptoms	Any	<ul style="list-style-type: none"> Provide medical mask if tolerated. Immediately move the patient to an isolation room or separate area away from others; if this is not feasible, ensure spatial distance of at least 1m from other patients
	Patients without respiratory symptoms	Any	<ul style="list-style-type: none"> No PPE required
Administrative areas	All staff, including Healthcare Workers	Administrative tasks	<ul style="list-style-type: none"> No PPE required
Triage	Healthcare Workers	Preliminary screening not involving direct contact	<ul style="list-style-type: none"> Maintain spatial distance of at least 1 meter No PPE required
	Patients with respiratory symptoms.	Any	<ul style="list-style-type: none"> Maintain spatial distance of at least 1 meter Provide medical mask if tolerated
	Patients without respiratory symptoms	Any	<ul style="list-style-type: none"> No PPE required

Appendix 6: WHO Surveillance Case Definitions for COVID-19

Suspect case

- a) A patient with acute respiratory illness (**fever and at least one sign/symptom** of respiratory disease (e.g., cough, shortness of breath), **AND** with no other aetiology that fully explains the clinical presentation **AND** a history of **travel to or residence in a country/area** or territory reporting **local transmission** of COVID-19 disease during the last 14 days prior to symptom onset
OR
- b) A patient with any acute **respiratory illness AND** having been in **contact** with a confirmed or probable COVID-19 case (see definition of contact) in the last 14 days prior to onset of symptoms;
OR
- c) A patient with **severe acute respiratory infection** (fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness of breath) **AND** requiring hospitalization **AND** with **no other aetiology that fully explains the clinical presentation.**

Probable case

A suspect case for whom testing for COVID-19 is inconclusive.

Confirmed case

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

Definition of Close Contact

A contact is a person that is involved in any of the following:

- Providing direct care without proper personal protective equipment (PPE) for COVID-19 patients
- Staying in the same close environment of a COVID-19 patient (including workplace, classroom, household, and gatherings)
- Traveling together in close proximity (1 meters) with a COVID-19 patient in any kind of conveyance within a 14-day period after the onset of symptoms in the case under consideration

Case definitions may be updated as more information about COVID-19 becomes available. Please refer to the WHO website for most up-to-date information:

[https://www.who.int/publications-detail/global-surveillance-for-human-infection-with-novel-coronavirus-\(2019-ncov\)](https://www.who.int/publications-detail/global-surveillance-for-human-infection-with-novel-coronavirus-(2019-ncov))

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