



National Guidelines for Clinical Management and Treatment of COVID-19

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Objectives

The objectives of this document are:

- To provide guidance on clinical management of the COVID-19 infection
- To provide a protocol on the practical steps to deal with COVID-19 cases
- To detail the measures necessary to protect hospital staff, patients and visitors
- This guideline is **not intended to override the clinical decisions** that will be made by clinicians providing individualized patient care.
- **This guideline will be updated as more information becomes available.**

Introduction to Coronaviruses (CoV)

- Corona virus is a large family of viruses that cause illness in humans and animals
- In people, CoV can cause illness ranging in severity from the common cold to SARS.
- SARS COV2 is one of seven types of known human coronaviruses. SARS COV2 like the MERS and SARS coronaviruses, likely evolved from a virus previously found in animals
- The estimated incubation period is unknown and currently considered to be up to 14 days

Case Definition:

Suspected COVID-19 case is defined as:

1. Please refer to the local health authority websites for updated information on local case definition.

MOHAP, DoH, SEHA and DHA

Confirmed COVID-19 is defined as:

A person with confirmed positive COVID-19 test by a reference laboratory.



Clinical Findings and Complications

Stages of illness: There seem to be different stages of illness that patients may move through.

1. Replicative stage – Viral replication occurs over a period of several days. An innate immune response occurs, but this response fails to contain the virus. Relatively mild symptoms may occur due to direct viral cytopathic effect and innate immune responses.
2. Adaptive immunity stage – An adaptive immune response eventually kicks into gear. This leads to falling titres of virus. However, it may also increase levels of inflammatory cytokines and lead to tissue damage – causing clinical deterioration.
 - This progression may explain the clinical phenomenon wherein patients are relatively OK for several days, but then suddenly deteriorate when they enter the adaptive immunity stage
 - This has potentially important clinical implications: Initial clinical symptoms aren't necessarily predictive of future deterioration.

Clinical Symptoms: Signs and symptoms include:

- Fever
- Cough
- Myalgia or fatigue
- Shortness of breath
- Sore throat
- Runny nose
- Diarrhoea and nausea
- Muscle ache
- Headache
- Pneumonia and ARDS.
- Renal failure, pericarditis and Disseminated Intravascular Coagulation

Complications:

- Severe Pneumonia
- Acute Respiratory Failure and ARDS
- Acute Renal failure
- Disseminated intravascular coagulation
- Sepsis or septic shock

High risk group

- Age above 60 years old
- Smoker
- Cardiovascular disease
- Diabetes
- Hypertension
- Immune deficiency



- Pre-existing pulmonary disease
- Other chronic disease such as chronic kidney disease, Chronic Respiratory disease, Sickle cell...etc.

Baseline Investigations

Chemistry and Haematology:

1. Complete blood count and differential
2. Serum Electrolytes
3. Serum Glucose
4. Urea and Creatinine
5. Liver Function test including Liver enzymes
6. CRP
7. procalcitonin
8. G6PD (if treatment with chloroquine is being considered)
9. LDH
10. Coagulation profile

Microbiology:

COVID19 PCR on following samples

1. Deep respiratory samples (sputum or deep tracheal aspirate) if lower respiratory tract infection
2. Nasopharyngeal Aspirate/Swab and oropharyngeal swab (should use non-cotton flocked swab) if upper respiratory tract infection

Staff should be trained on Sample collection.

3. For intubated patients, obtain deep tracheal aspirate or broncho-alveolar lavage for:
 - a) Quantitative culture
 - b) SARS-CoV2 PCR
 - c) Atypical PCR panel (Mycoplasma, chlamydia, legionella)
 - d) Respiratory viral panel
 - e) Other investigations to consider if the aetiology of the severe pneumonia is not identified:
 - i. Legionella urinary antigen
 - ii. Mycoplasma titres
 - iii. Tuberculosis culture and PCR
 - iv. Bronchoscopy and biopsy
 - v. Opportunistic pathogens in immunocompromised patients

All specimens should be regarded as potentially infectious, and HCWs who collect, or transport clinical specimens should adhere rigorously to standard precautions to minimize the possibility of exposure to pathogens.



Radiology

1. CXR
2. High Resolution Chest CT scan

Other tests

If and when clinically indicated.

Requesting COVID19 PCR test:

Fill notification form and patient under investigation (PUI) form
Governmental Facilities:
Send the samples to their dedicated virology laboratory.
Private Facilities:
Fill appropriate documents e.g. "Infectious Disease Reference Laboratory Request Form" <u>or</u> "Miscellaneous Request Form" accompanied by copy of Emirate ID <u>or</u> passport copy
Send samples after informing the reference laboratory in their district
Abu Dhabi: Sheikh Khalifa Medical City
Dubai: Latifa Hospital
Northern Emirates: Al Qassimi Hospital, Sharjah

Transport of Respiratory Secretions Samples

Transport of the respiratory secretions sample to the reference laboratory of your district, using double packing system at 2-8°C temperature.

Trained personnel following safe handling practices should transport specimen

Medical Care for Patients with COVID-19 infection

- **At this stage, all confirmed cases should be admitted, as per UAE Health Authorities recommendation**
- **All suspected or confirmed cases should have the Patient under Investigation(PUI) Form Filled(Appendix II) and submitted to concerned Public Health Authority**
- Admit all patients with COVID19 infection to single rooms with Negative Pressure Ventilation whenever possible.
- Implement standard, contact and airborne precautions whenever coming in contact with positive cases.
- Follow recommended active management plan for patients with moderate to severe illness.



Dealing with Patients attending Primary Health Care (PHC) or Accident and Emergency (AE)

Clinical Scenario	Decision
<p>No symptoms No close contact with positive cases/s Not meeting case definition</p>	<ul style="list-style-type: none"> • COVID19 testing is not indicated • Reassure and discharge
<p>No symptoms H/O close contact with positive cases/s (*see definition of close contact below)</p>	<ul style="list-style-type: none"> • COVID19 testing is indicated • Collect sample for testing • Fill required forms • Discharge and advise home isolation for 14 days • Call back to admit if test is positive • Follow PH/PMD instructions
<p>Symptoms present H/O close contact with positive cases/s</p>	<ul style="list-style-type: none"> • COVID19 testing is indicated • Respiratory Panel test is indicated • Baseline work up and chest X ray are indicated • Admit preferably to a Negative Pressure room according to level of care • If there is evidence of an alternate diagnosis and the patient is stable; reassure, manage accordingly • If first COVID19 test is Positive, follow Positive cases management pathway • If first COVID19 test is Negative, repeat the test in 24-48 hours • If second COVID19 test is Positive, follow Positive cases management pathway • If second COVID19 test is Negative and the patient is stable, discharge and follow PH/PMD instructions.
<p>Meeting case definition and stable (no fever, mild symptoms only)</p>	<ul style="list-style-type: none"> • COVID19 testing is indicated • Respiratory Panel test is indicated • Collect sample for testing • Fill required forms • Baseline work up and chest X ray are indicated • If first sample is Negative: Discharge and advise home isolation for 14 days • If first sample is pending: discharge and follow up with PH/PMD • Call back to admit if test is positive



Clinical Scenario	Decision
Meeting case definition with fever and symptoms	<ul style="list-style-type: none"> • COVID19 testing is indicated • Respiratory Panel test is indicated • Collect sample for testing • Fill required forms • Baseline work up and chest X ray are indicated • If there is evidence of an alternate diagnosis; reassure, manage accordingly and discharge if appropriate • If first sample for COVID19 and Respiratory panel are NEGATIVE, and the patient is not stable; admit to appropriate level of care , preferably in Negative Pressure Room • Repeat second COVID19 test in 24-48 hours • If second COVID19 test is Positive, follow Positive cases management pathway • If second COVID19 test is Negative and there is an alternative diagnosis; manage accordingly • If second COVID19 test is Negative and the patient has improved clinically; discharge and follow PH/PMD instructions • If second COVID19 test is Negative and the patient is not improving with no alternative diagnosis, manage as SARI and repeat samples (preferably lower Respiratory Tract Samples)
Meeting case definition with fever and moderate to severe symptoms	<ul style="list-style-type: none"> • Work up as above • Admit to appropriate level of care, preferably in Negative Pressure Room • Follow Positive cases management pathway



Definition of Contact Persons

A contact of a COVID-19 case is a person not currently presenting symptoms, who has, or may have been in, contact with a COVID-19 case.

Close Contact (High Risk Exposure) Definition:

- A person living in the same household as a COVID-19 case
- A person having had direct physical contact with a COVID-19 case (e.g. shaking hands)
- A person having unprotected direct contact with infectious secretions of a COVID-19 case (e.g. being coughed on, touching used paper tissues with a bare hand)
- A person having had face-to-face contact with a COVID-19 case within 2 meters and > 15 minutes
- A person who was in a closed environment (e.g. classroom, meeting room, hospital waiting room, etc.) with a COVID-19 case for 15 minutes or more and at a distance of less than 2 meters
- A healthcare worker (HCW) or other person providing direct care for a COVID-19 case, or laboratory workers handling specimens from a COVID-19 case without recommended PPE or with a possible breach of PPE
- A contact in an aircraft sitting within two seats (in any direction) of the COVID-19 case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated (if severity of symptoms or movement of the case indicate more extensive exposure, passengers seated in the entire section or all passengers on the aircraft may be considered close contacts)

Clinical Management and Treatment for confirmed COVID 19 cases

- Healthcare personnel should care for patients in an Airborne Infection Isolation Room (AIIR) preferably.
- Apply Standard Precautions, Contact Precautions, and Airborne Precautions with eye protection should always be used when caring for the patient
- Clinical management includes prompt implementation of recommended infection prevention and control measures and supportive management of complications, including advanced organ support if indicated.
- No specific treatment for COVID19 infection is currently approved
 - Give supplemental oxygen therapy, as needed.
 - Use conservative fluid management, if possible.
 - Give empiric antimicrobials as indicated.
 - DO NOT routinely give systemic corticosteroids for treatment of viral pneumonia or ARDS.
 - Closely monitor patients for signs of clinical deterioration.
 - Address co-morbid condition(s).



- Consultation of an Infectious Diseases Consultant is highly recommended.

Possible Therapeutics options:

- There are currently no antiviral drugs licensed to treat patients with COVID19 infection.
- Decision to initiate/stop/modify antiviral medication should always be made after consultation with Infectious Disease Physician.
- If the patient is admitted to a private hospital and Active treatment is indicated, please contact the Public Health and Infectious Diseases Specialists in concerned Emirate/Health Authority

Lab Monitoring

- Baseline tests should be done prior to treatment initiation for all patients.
- Repeat every 72 hours while on treatment.
- Repeat more frequently in critically ill patients.

Recommended monitoring parameters for Drug Therapy management

- CBC, Renal Profile and extended electrolytes (Na⁺, K⁺, Mg⁺⁺, Ca⁺⁺, Phosphate), Uric Acid, Hepatic Profile, Serum Amylase, Serum Lipase, Coagulation profile,
- **G6PD test baseline**
- Blood glucose in patients with **Chloroquine or hydroxychloroquine**, frequent **blood glucose monitoring** is required in **diabetic patients** as **risk of hypoglycaemia is high** ((may require **adjusting Insulin** or other diabetic medications dosing)

ECG Monitoring

Perform **Baseline ECG** on **every patient** and may repeat every 24 to 48 hours for patients suspected to have QT prolongation, or high risk for QT prolongation i.e.

- Elderly patients
- Patients with any of electrolytes imbalance (Hypokalaemia, Hypomagnesemia, Hypophosphatemia, Hypocalcaemia etc.)
- History of cardiac arrhythmia
- On concurrent QTc prolonging drugs (Fluoroquinolones, Macrolides, Azoles, Ivabradine, Anti-emetics, Anti-depressant, Antipsychotics, Antiarrhythmic etc) (**Avoid these and any other QT prolonging drugs in patient on COVID-19 treatment**)



- Resource for QT prolonging drugs and related topics below websites
- www.qtdrugs.org
- <https://crediblemeds.org/ndfa-list/> (QTFactors.org)

Treatment options:

- The following table provides various treatment options for consideration.
- Suggested treatment duration is 7 days for mild cases and 7-10 days for moderate to severe pneumonia
- Any drug-induced side effect to be managed accordingly
- **Rule out pregnancy before starting Favipiravir. It is absolutely contraindicated in pregnancy. Favipiravir is distributed in Sperms. Male patients must avoid unprotected intercourse for 4 weeks after stopping favipiravir.**

Table 1: Proposed Therapeutic Regimens for Adults

- Get Informed consent from patient for treatment of COVID19, If patient can't provide consent then his family member /guardian
- *Chloroquine dose is according to Chloroquine Phosphate salt NOT on Chloroquine Base
- For patients having renal or hepatic impairment, consult individual drug monograph for additional monitoring or dose adjustment.
- **If patient is symptomatic Baseline Monitoring parameters and early initiation of treatment is highly advisable**

Clinical Presentation	Suggested Medications
Contact	Not recommended
Asymptomatic	<p>Not recommended.</p> <p>However, if radiological evidence of Pneumonia then consider treatment with:</p> <p>Lopinavir-Ritonavir (200/ 50 mg) 2 tablets PO BID ^[7,8]</p> <p>+ Chloroquine phosphate* 250 mg PO BID (alternatively, Hydroxychloroquine 200 mg PO BID) ^[10,14,15]</p> <p>May add Favipiravir if disease progresses to severe pneumonia /clinical condition worsen to critical illness.</p>



<p>Mild URTI only</p> <p>(Suggested treatment duration 7-10 days)</p>	<p>1) Only symptomatic treatment in otherwise healthy patient. Avoid use of NSAIDs.</p> <p>2) Chose one of the following regimen for high risk patients (as defined below)</p> <ul style="list-style-type: none"> i. Age above 60 ii. Cardiovascular disease or hypertension iii. Diabetics iv. Pre-existing lung disease v. Immunocompromised / cancer patients <p>Lopinavir - Ritonavir ^[7,8,13] (200/ 50 mg) 2 tablets PO BID</p> <p>+ Chloroquine Phosphate* 250 mg PO BID (alternatively, Hydroxychloroquine 200 mg PO BID) ^[10,14,15]</p> <p style="text-align: center;">OR</p> <p>Favipiravir 1600 mg PO BID on day 1, followed by 600 mg PO TID from day 2 ^[8,13],</p> <p>+ Chloroquine Phosphate*^[6,7,8,12] 500 mg PO BID (alternatively, Hydroxychloroquine 200 mg PO BID) ^[10,14,15]</p>
<p>Pneumonia</p> <p>(Suggested treatment duration 7-14 days)</p>	<p>Lopinavir-Ritonavir (200/ 50 mg) 2 tablets PO BID ^[7]</p> <p>+ Chloroquine phosphate* ^[6,7,8] 250 mg PO BID (alternatively, Hydroxychloroquine 400 mg bid on day 1, followed by 200 mg bid from day 2) ^[10,14,15]</p> <p style="text-align: center;">OR</p> <p>Favipiravir 1600 mg PO BID on day 1, followed by 600 mg PO TID from day 2 ^[8,13],</p> <p>+ Chloroquine Phosphate* 500 mg PO BID ^[6,7,8,12] (alternatively, Hydroxychloroquine 400 mg bid on day 1, followed by 200 mg bid from day 2) ^[10,14,15]</p> <p style="text-align: center;">OR</p> <p>Remdesivir 200 mg IV on day 1, followed by 100 mg IV daily ^[8,15]</p> <p>+ Chloroquine Phosphate* 500 mg PO BID (alternatively, Hydroxychloroquine 400 mg bid on day 1, followed by 200 mg bid from day 2) ^[10,14,15]</p> <p>(Remdesivir is investigational drug for compassionate use. It may require approval from regulator, Hospital Ethics committee for specific patient case , Informed consent from patient explaining to patient its investigational drug ,risks vs benefits need to be explained)</p>
<p>Severe Pneumonia / critically ill patients</p>	<p>Lopinavir-Ritonavir (200/ 50 mg) 2 tablets PO BID ^[7,8,13]</p> <p>+ Chloroquine Phosphate* 250 mg PO BID (alternatively, Hydroxychloroquine 400 mg bid on day 1, followed by 200 mg PO BID from day 2 ^[10,14,15])</p>



<p>(Suggested treatment duration 10-14 days)</p>	<p>+ Favipiravir 1600 mg PO BID on day 1, followed by 600 mg PO TID from day 2 [8,13],</p> <p>± Pegylated Interferon 180 microgram once weekly for 2-3 weeks or Beta-interferon 1b 0.25 mg S.C on alternative days for total of 7 doses [8]</p> <p>(Addition of Interferon to be discussed between Intensivist & ID</p> <p style="text-align: center;">OR</p> <p>Remdesivir 200 mg IV on day 1, followed by 100 mg IV daily [8,15]</p> <p>+ Chloroquine Phosphate* 500 mg PO (Alternatively, Hydroxychloroquine 200 mg PO BID [10,14,15])</p> <p>(Remdesivir is investigational drug for compassionate use. It may require approval from regulator, Hospital Ethics committee for specific patient case , Informed consent from patient explaining to patient its investigational drug ,risks vs benefits need to be explained)</p> <p>For ICU patients consider empirical antibiotics if bacterial co-infection is suspected</p> <p>General guidance on empirical use of Antibiotics in ICU Patients.</p> <p>For ICU patients consider empirical antibiotics if bacterial co-infection is suspected</p> <ul style="list-style-type: none"> • Piperacillin-Tazobactam + Amikacin ± Teicoplanin or Linezolid if risk of MRSA • Meropenem +Amikacin± Teicoplanin or Linezolid if risk of MRSA
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Medication Safety Information

- **Rule of out Pregnancy in women of childbearing age before starting Favipiravir. It is absolutely contraindicated in pregnancy. Favipiravir is distributed in Sperms. Male patients must avoid unprotected intercourse for 4 weeks after stopping Favipiravir.**
- Check for any potential drug interaction if patient is on any other medication or being started while on COVID-19 treatment
- Avoid concurrent use of Macrolides, and other QT prolonging drugs in patient with chloroquine therapy.
- Blood glucose in patients with **Chloroquine**, frequent **blood glucose monitoring** is required in **diabetic patients** as **risk of hypoglycaemia is high**, (may require **adjusting Insulin** or other diabetic medications dosing)
- Keep monitoring patient clinically for any early sign of potential drug adverse effect and take prompt action to assess the patient regimen and manage accordingly
- Strict monitoring of Labs



- When administering **Favipiravir** to **lactating women**, instruct to stop lactating. (The major metabolite of Favipiravir, a hydroxylated form, was found to be distributed in breast milk.)
- **Ribavirin** might be considered as possible treatment option, but in view of serious toxicity and safety profile; use will be limited to certain patients after ID consultation only. **Ribavirin** is **contra-indicated** in **pregnancy**. Male patient who received ribavirin and their female partner is already pregnant or potentially can be pregnant in such scenario they should avoid unprotected intercourse for 6 months after stopping Ribavirin due to risk of teratogenicity
- **For pregnant and paediatrics confirmed cases please refer to concerned speciality and infectious disease speciality**

Pediatric Patients

- For Paediatric patients' case by case basis after consultation with ID Physician and concerned speciality
- Consideration of antiviral therapy in combination with Chloroquine should be based on patient condition, safety profile and preference of the patient and treating team.
- Get Informed consent from patient for treatment of COVID19, If patient can't provide consent then his family member /guardian
- * Chloroquine dose is according to Chloroquine Phosphate salt NOT on Chloroquine Base

Drug	General dosing (Dosing regimen for COVID19 for chloroquine phosphate Unknown)
Chloroquine Phosphate* ^[6,10] Dose based on Chloroquine Phosphate salt NOT on Chloroquine Base	Treatment, acute attack, uncomplicated: Infants, Children, and Adolescents <u>Maintenance of Malaria treatment without loading dose:</u> Chloroquine Phosphate* 8.3 mg per kg daily (Do Not exceed 250 mg per day) if used in combination with <u>Lopinavir-ritonavir</u> based on general drug interaction mechanism and management ^[9]
Lopinavir/ Ritonavir ^[11]	Weight-directed dosing (Children and Adolescents): <15 kg: Lopinavir 12 mg/3 mg /kg/dose twice daily 15 to 40 kg: Lopinavir 10 mg/2.5 mg/kg/dose twice daily >40 kg: Lopinavir 400 mg/100 mg twice daily



Discharge Criteria

Discharge Criteria for Suspected Cases, when first COVID19 PCR is negative:

Discharge with the following Instructions:

- Self-Isolate at home for total of 14 days from arrival date to Dubai or contact with a confirmed positive case
- If you are a Government or Private company Employee, you will be given a sick leave for a total duration of 14 days
- If you are a tourist or a visitor to the country, we appreciate your co-operation in strict self-isolation in your place of residence
- Practice hand hygiene routinely specially after coughing, sneezing by washing hands for at least 20 seconds using soap and water or hand sanitizers
- Avoid crowded places and put on face mask if leaving home is unavoidable
- If you develop any active complaints (fever, body aches, headache, cough, throat pain or shortness of breath) during home isolation period, please contact one of the following numbers for advice:
 - **8001717: The Operation Center, Department Of Health**
 - **80011111: Ministry Of Health And Prevention**
 - **800342: Dubai Health Authority**
- If you are advised to report to nearest Hospital ER or PHC, please wash your hands thoroughly before leaving home and put on a face mask.
- Please do not hesitate in contacting health authorities if you have any other queries related to COVID19 regarding yourself or other family members

If you think that the situation is serious, please contact the Ambulance Service and they will attend you immediately whenever needed

Discharge Criteria for COVID19 confirmed cases

- if COVID19 PCR test from nasopharyngeal sample or lower respiratory sample is positive, repeat samples every 72 hours
- Once a sample becomes negative, collect every 24-48 hours
- Patient can be discharged once they have 3 negative consecutive samples 24-48 hrs apart with no fevers and no symptoms
- Medication if started to be continued for total of 10 days if no Pneumonia.
- If Pneumonia, medication to be continued for a total of 14 days
- Discharged patients to be seen in the clinic in the hospital after 2 weeks, unless patient develops respiratory symptoms to attend earlier.
- If asymptomatic at 2 weeks, no more follow up
- All patients after discharge should be quarantined at home for 14 days and instructions and handout to be given to the patient and documented in medical records



Viral clearance criteria

Three consecutive NEGATIVE samples collected 24-48 hours apart are needed before declaring the patient as non-infectious and discontinuing isolation.

Discontinuation of COVID 19 specific isolation precautions

Isolation precautions specific to COVID 19 can be discontinued if:

- Patient is afebrile and
- Patient is free of respiratory symptoms and
- has three consecutive Negative tests for COVID 19 that are 24-48 hours apart
- ✓ Always follow standard precautions.
- ✓ Consider isolation precautions for other possible diagnoses as suggested clinically or by laboratory results.

Infection Control Measures for Suspected or Confirmed COVID19 Cases In Healthcare Facilities

Early Recognition

Enhance early recognition of suspected cases by:

- Visual triage at the entry point of the healthcare facility, for early identification of all patients with acute respiratory illness (ARI).
- Visual triage station should be placed at the entry point of the AE and any entry point
- Attended by a trained nurse or nurse assistant. Staff should be trained on appropriate questions to ask as well as actions based on findings and updated case definition
- Post visual alert signage to enhance self-reporting by symptomatic patients.
- Provide enough supply of surgical masks & hand hygiene sanitizers in the AE room.
- All identified acute respiratory infection (ARI) patients should be offered to
- Wear a surgical mask, if they can tolerate it, and should be asked to perform hand hygiene.
- All contacts of suspected patients should also be offered to wear a surgical mask and should be asked to perform hand hygiene.
- Do not allow suspected COVID19 into common areas with other patients.
- Place suspected COVID19 in a dedicated waiting area with at least 3 feet and preferably 6 feet distance between them.
- Screen all patients walking into the ED for symptoms of acute respiratory illness (ARI) using the COVID-19 visual triage form below.
- Perform Infection Control Risk Assessment in triage.



Infection Control Practices In Healthcare Facilities:

Training

- All healthcare workers entering these rooms should be trained on proper use of PPE and fit tested in order to use N95.
- Ensure that patients and visitors receive education about the precautions being used; the duration of precautions; the prevention of transmission of infection to others; and use of appropriate PPE.
- Ensure that front line staff as well as other staff at risks i.e. radiology, respiratory therapist; cleaning staff receive training on COVID19 preventative strategies.

The mode of transmission of COVID 19 remains unknown.

General recommendations:

Implement Standard Precautions for all patients at all times focusing on

- Hand hygiene: adherence to WHO steps and moments
- Ensure availability and Proper use of PPE.
- Follow Respiratory Hygiene Practices:
 - Offer a medical mask for suspected cases of COVID 19 for those who can tolerate it.
 - Educate patient and relatives about cough and sneeze etiquette ie. Cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others.
 - Avoid touching your eyes, mouth or nose.
 - Post visual aid for cough etiquette, hand hygiene and symptoms to report early.
- Risk assessment is critical for all activities, i.e. assess each health care activity and determine the personal protective equipment (PPE) that is needed for adequate protection.

Practice droplet and contact Precaution when dealing with Suspected Cases

For suspected cases:

Patients to be placed in a single room with its own toilet.

Practice airborne (if available), droplet and contact precautions for suspected cases:

- Wear a surgical mask, eye protection i.e. goggles or a face shield, gloves and impermeable gown.
- Practice additional precautions for aerosol-generating procedures (wear fit tested N95 mask) as (bronchoscopy, suction, nebulization, sputum induction, intubation and extubation, BiPAP CPR, and autopsy)



Practice Airborne, droplet and contact Precaution when dealing with Confirmed Cases

For confirmed cases:

- Place patient in Airborne infection isolation room.
- If a negative pressure room is needed but not available, arrange to transfer the patient to a hospital AIIR capability.
- If not possible, place patient in a single room with its toilet and place air disinfectant in the room.

Personal Protective Equipment (PPE) for confirmed cases of COVID 19

PPE should be available where and when it is indicated in the correct size and sufficient quantity

- Ensure all staff wear a fit-tested N95 mask, eye protection i.e. goggles or a face shield, gloves and impermeable gown
- All health care provider wear and remove the PPE safely
- If there is concern and/or breach of PPE during patient care, leave the patient care area when safe to do so and properly remove and change the PPE and report it to your direct line manager and infection control Practitioner/unit

Patient Care Equipment

- When possible use disposable devices or equipment.
- If disposables devices and equipment not an option, dedicate devices or equipment to a single patient
- If dedicated devices or equipment is not available, clean and disinfect the shared equipment before using it for other patients with approved disinfectant maintaining product contact time
- Approved disinfectant for COVID 19: quaternary ammonium compounds, sodium hypochlorite and 70% alcohol wipes

Patient Transport in the hospital

- Avoid the movement and transport of patients out of the isolation room or area unless medically necessary.
- The use of designated portable X-ray, ultrasound, echocardiogram and other important diagnostic machines is recommended when possible.
- If transport is unavoidable, the following should be observed:
 - Patients should wear a surgical mask during movement to contain secretions.
 - Use routes of transport that minimize exposures of staff, other patients, and visitors.



- Notify the receiving area of the patient's diagnosis and necessary precautions before the patient's arrival.
- Ensure that healthcare workers (HCWs) who are transporting patients wear appropriate PPE if they will participate in direct patient care and perform hand hygiene afterward.
- Area used by the patient to be cleaned appropriately

Patient Transport to another facility:

- Inform the other facility about referring a suspected/confirmed case
- Call ambulance and inform about the case being suspected/confirmed COVID 19, which will be transferred in designated ambulance
- If hospital ambulance used ensure that ambulance will be cleaned and disinfected based on hospital guide
- If ambulance personnel will come in contact with the patient, they should wear appropriate PPE.

Additional Measures

Dedicate HCWs and limit the number of persons present in the room to the absolute minimum required for the patient's care and support

- Limit visitors entering the room to the minimum necessary.
- Keep log sheet of all persons coming in contact with the suspected/confirmed COVID 19 patients

Environmental cleaning in isolation rooms/areas

- Ensure that environmental cleaning and disinfection procedures are followed consistently and correctly
- Increase frequency of cleaning by housekeeping in patient care areas especially high touch surfaces (door handle, call bell, patient side rails ...etc.)
- Isolation areas should have their own cleaning supplies that are separate from clean patient care areas and are kept in or near isolation area
- Responsible housekeeping staff should be trained and educated with regard to cleaning method and technique, donning and doffing of PPE, spill management, dealing with occupational exposure ...etc.)



- Cleaners/housekeeping should wear appropriate PPE when cleaning an isolation room or area
- All waste from the isolation area is considered contaminated and should be disposed of following your facilities methods for contaminated waste use Virkon or sodium hypochlorite for regular cleaning while patient is in the isolation room.
- After patient is discharged, use terminal cleaning with fumigation with accelerated hydrogen peroxide 6% or use UVC, time and cycles adjusted per room size and shape.

Linen and laundry management, food service utensils and waste management, related to COVID19 case

Refer to the facility guideline/ protocol for waste management, to be dealt with as infectious material

Managing bodies in the Mortuary

- Although no post-mortem transmission of COVID 19 has been documented, deceased bodies theoretically may pose a risk when handled by untrained personnel.
- Body washing of COVID 19 cases can be safely performed in public washing facilities provided that the washers have been trained on relevant infection control precautions including appropriate use of PPEs.

Surveillance

- Develop a database containing information for all suspected/confirmed case who were/are assessed at your facility.
- Develop a database containing information for all healthcare workers and visitors that were in contact /caring for the confirmed cases of COVID 19

Surge capacity

- Develop an emergency response plans to provide surge capacity, the plan should include human resources; staffed beds, ICU and non-ICU beds; critical equipment, supplies and other resources, including extra quantities of personal protective equipment, ventilators, ECMO machines, etc...).



Occupational Health for Healthcare workers

Healthcare workers caring for COVID-19 patients in hospitals should be registered and monitored.

Based on the high risk of healthcare-associated transmission, and in line with existing recommendations from other institutions, the following specific measures are proposed for healthcare workers:

Unprotected contact (high-risk exposure)

- Active monitoring for 14 days
- Suspension from work for 14 days after last exposure
- Testing (Nasopharyngeal swabs) for COVID-19 is required (preferably 24hr or more after the exposure)

Are considered CLEAR if:

- They are asymptomatic for at least 48 hrs.

AND

- The observation period is over (14 days post exposure)

AND

- Had at least one negative COVID-19 PCR.

- If at any time signs and symptoms occur, they will be considered suspected case and follow the same process

Protected contact wearing recommended PPE:

- Testing healthcare workers for COVID-19 is not recommended.
- self-monitoring and self-isolation if respiratory symptoms are experienced
- no suspension from work and can continue their duties



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