مركز أبوظبي للصحة العامة
ABU DHABI PUBLIC HEALTH CENTRE

دائـــــرة الـــصـــحـــة
DEPARTMENT OF HEALTH

Circular No (80) **تعميم رقم**

Date: 16/08/2020

التاريخ: 2020/08/16

To: **All Healthcare Facilities**

السادة/ جميع المنشآت الصحية المحترمين

Subject: **Comprehensive COVID-19 Guideline for Healthcare Professionals in Abu Dhabi.**

الموضوع: دليل العاملين الصحيين الشامل لمرض فيروس كورنا المستجد (كوفيد-19) – إمارة أبوظبي

Greetings,

تحية طيبة وبعد ،،،

We would like to extend you our greetings wishing you all the best and success.

بدايةً، يسرنا أن نتقدم لكم بخالص التحية والتقدير متمنين لكم دوام التوفيق والسداد.

According to studies and experiences inside and outside the country, information about the emerging coronavirus virus COVID-19 is continuously changing, therefore there is an ongoing need to update work manuals to guide health workers about the procedures used to deal with positive cases and their contacts in terms of diagnosis, laboratory tests, infection control methods, Treatment, and isolation procedures.

بحسب الدراسات والتجارب داخل وخارج الدولة، تعتبر المعلومات حول مرض فيروس كورونا المستجد كوفيد-19 متجددة ومتغيرة بصورة مستمرة وبالتالي هناك حاجة مستمرة لتحديث دلائل العمل لتوجيه العاملين الصحيين حول الإجراءات المتبعة للتعامل مع الحالات الإيجابية ومخالطينها من حيث التشخيص، والفحوصات المخبرية، وطرق مكافحة العدوى، والعلاج، واجراءات العزل.

Therefore, Abu Dhabi Public Health Center (ADPHC) collected all the updated procedures in the comprehensive guide for health professionals in Abu Dhabi as in the Attachment (1)

لذا قام مركز أبوظبي للصحة العامة بجمع كل الإجراءات المحدثة في الدليل الشامل للعامليين الصحيين بإمارة أبوظبي، كما في المرفق (1)

The purpose of this guideline is to provide updated guidance to Healthcare Professionals involved with COVID-19 response and management.
This guideline is effective upon date of issuing.

يهدف الدليل إلى تقديم إرشادات محدثة للعاملين الصحيين المشاركين في استجابة وإدارة مرض كوفيد-19.

على أن يكون العمل بهذ الدليل ساري بتاريخ إصداره.

This guideline is subject to review and further updates by ADPHC/DoH based on up-to-date scientific evidence-based recommendations on COVID-19 pandemic.

يخضع هذا الدليل للمراجعة والتحديثات الإضافية من قبل مركز أبوظبي للصحة العامة بناءً على أحدث التوصيات العلمية القائمة على الأدلة بشأن جائحة كوفيد-19

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آملين من الجميع الالتزام بما ورد أعلاه، لما فيه مصلحة العمل.

We hope that all will adhere to the above, for the best interest of work.

شاكرين لكم حسن تعاونكم معنا ،،،

Thanking you for your kind cooperation,,,

"هذا التعميم للإجراءات التنظيمية وغير مخصص كمحتوى للنشر الإعلامي".

"This circular is designed for regulatory procedures and should not be used as content for media publication"

المرفقات:

1. دليل العاملين الصحيين الشامل لمرض فيروس كورنا المستجد (كوفيد-19) – إمارة أبوظبي

Appendices:

1. Comprehensive COVID-19 Guideline for Healthcare Professionals in Abu Dhabi

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وكيل دائرة الصحة بالإنابة

ABU DHABI PUBLIC HEALTH CENTRE | مركز أبوظبي للصحة العامة

دائرة الصحة DEPARTMENT OF HEALTH

COVID-19 Guideline for Healthcare Professionals

Abu Dhabi

Contents

1. PURPOSE

The purpose of this document is to provide updated guidance to Healthcare Professionals involved with COVID-19 response and management. This guideline is subject to review and further updates by ADPHC/DoH based on up-to-date scientific evidence-based recommendations on COVID-19 pandemic.

2. CASE DEFINITIONS

2.1. Clinical criteria

Any person with at least one of the following symptoms *

- Cough
- Fever
- Shortness of breath
- Sudden onset of anosmia, ageusia or dysgeusia

* *Additional less specific symptoms may include headache, chills, muscle pain, fatigue, vomiting and/or diarrhoea*

2.2. Diagnostic imaging criteria

Radiological evidence showing lesions compatible with COVID-19

2.3. Laboratory criteria

Detection of SARS-CoV-2 nucleic acid in a clinical specimen

2.4. Epidemiological criteria

At least one of the following two epidemiological links:

- Close contact with a confirmed COVID-19 case in the 14 days prior to onset of symptoms.

Having been a resident or a staff member, in the 14 days prior to onset of symptoms, in a residential institution for vulnerable people where ongoing COVID-19 transmission has been confirmed (including health care workers).

2.5. Case classification

2.5.1. Suspected case:

Any person meeting the clinical criteria

2.5.2. Probable case:

- Any person meeting the clinical criteria with an epidemiological link OR
- A suspect case for whom testing result for the COVID-19 is reported as “Inconclusive” by the laboratory

2.5.3. Confirmed case:

Any person meeting the clinical and laboratory criteria

Note: Clinicians should be alert to the possibility of atypical presentations in patients who are immunocompromised.

3. LABORATORY DIAGNOSIS

3.1. Specimen collection and shipment

All staff who will be handling the SARS-CoV-2 samples should be trained for appropriate collection, specimen storage, packaging and transportation. When collecting the specimen, avoid contamination. It is advised to have sufficient quantity of sampling in case of repeating the test or preform further characterization. Follow the appropriate precautions for safety during collection and processing of samples

3.2. Samples for Suspected COVID-19 Cases

3.2.1. Upper respiratory tract sample:

Nasopharyngeal swab (with or without oropharyngeal swab) in viral transport medium in a single tube.

For initial diagnostic testing for SARS-CoV-2, we recommend collecting and testing an upper respiratory specimen. Nasopharyngeal specimen is the preferred choice for swab-based SARS-CoV-2 testing.

3.2.2. Lower respiratory tract sample:

The lower respiratory tract samples are preferred if patient have signs or symptoms of lower respiratory tract infection. If lower tract specimens are not possible or clinically indicated, upper respiratory samples should be collected.
Samples include:

- **3.2.2.1. Bronchoalveolar lavage, tracheal aspirate, pleural fluid, lung biopsy**: Due to the increased technical skill and equipment needs, collection of specimens other than sputum from the lower respiratory tract may be limited to patients presenting with more severe disease, including people admitted to the hospital and/or fatal cases.
- **3.2.2.2. Sputum**: Educate the patient about the difference between sputum and oral secretions (saliva). Have the patient rinse the mouth with water and then expectorate deep cough sputum directly into a sterile, leak-proof, screw-cap collection cup or sterile dry container.

3.2.3. Repeat testing should be performed if initial testing is negative and there is a high index of suspicion.

3.2.4. Negative RT-PCR results must be interpreted in correlation with clinical findings, history, and other diagnostic procedures.

3.2.5. Positive RT-PCR for COVID-19 indicate infection with SARS-CoV-2. However, it does not rule out co-infection with other viruses

3.3. Samples for Positive COVID-19 Cases

For all Positive cases of COVID-19 we require the following tests:

3.3.1. COVID-19 PCR should be repeated within 24 hours of receiving the positive result

3.3.2. If the second sample is negative, then repeat the test after 24 hours receiving the result

3.3.3. If the second test is positive repeat the test after 5- 7days

3.3.4. Blood Typing for all confirmed cases

3.3.5. It is mandatory to collect the following samples to be sent to SKMC lab with clear labelling that it is for positive COVID-19 case:

- ❖ Blood in EDTA tubes
- ❖ Urine
- ❖ Stool

3.4. Storage and Shipment of samples

3.4.1. Store samples at 2-8°C and ship on ice pack to the lab. Samples can be stored at 2-8°C for ≤48 hours, if longer storage is needed, samples should be stored at -70 °C. If sample is frozen at -70°C, ship on dry ice.

3.4.2. All specimens must be appropriately packaged

3.4.3. Samples should be package and transport in accordance with Category B transportation regulations and the WHO guidance on regulations for the transport of infectious substances 2019-2020.

4. SUMMARY OF SEROLOGIC TEST RECOMMENDATIONS FOR SARS-CoV-2

4.1. General Comments

Real time PCR RT-PCR is the gold standard test for the diagnosis of COVID-19 Infection.

I. There has been no established advantage of assays using IgG, IgM and IgG, or total antibody.

II. Serologic assays for SARS-CoV-2 now have Emergency Use Authorization (EUA) and by (FDA), which has independently reviewed their performance. The use of FDA-EUA kits is dependent on verification of its performance characteristics locally as per international standards.

III. Kit marked with CE Mark (European Conformity) are acceptable as long as there is evidence that the kit/analyser have been verified through independent conformity assessment body.

IV. Manufacturer should conform to ISO accreditation standards.

V. It is important to minimize false positive test results by choosing an assay with high specificity & sensitivity (>99.5 % is recommended) and by testing populations and individuals with an increased likelihood previous exposure to SARS-CoV-2.

VI. Strategies to enhance testing performance include orthogonal testing algorithm (i.e. employing two independent tests in sequence when the first test yields a positive result) can be used when the expected positive predictive value of a single test is low.

VII. The use of POCT kits is not recommended; current available kits do not have the desired specificity and sensitivity.

4.2. The Use of antibody Serological Testing

4.2.1. Clinical Patient Care

- Support clinical diagnosis in late disease presentation with negative PCR(9-14 days)
- Support establishing the diagnosis of multisystem inflammatory syndrome in children or cases presenting late in the course of illness
- Selection of Convalescent plasma- CP donors for CP therapy

4.2.2. Limitations of Serological Testing

It is highly emphasized to educate the community regarding the current limitations of serological testing. In addition, immunologic correlates with immunity are not well defined (level of antibody required for immunity, duration of protection, kinetics of the antibody response, ability to protect form reinfection and the correlation between binding antibody titers and neutralization abilities.

- Serological testing should not be used for the diagnosis of acute infection
- Serological testing should not be used to issue immunity passports until the presence, durability, and duration of immunity is established.
- Cross reactivity with other coronaviruses may lead to false positive results

4.2.3. Interpretations

- **Negative Result**: Sample does not contain detectable SARS- COV-2 IgG (or IgG/IgM as applicable) antibodies
- **Negative result does not rule out SARS-COV-2 infection; correlate with epidemiologic risk factors clinical and laboratory findings**
- **Positive Result:** suggest a recent or prior infection with SARS-COV-2; correlate with epidemiologic risk factors and other clinical and laboratory findings
- **Positive Result: false positive results may be due to prior infection with other human coronavirus.**

4.2.4. Quality Assurance Requirements

- **Reagents and consumables:**

- Each new formulation of examination kits with changes in reagents or procedure, or a new lot number or shipment shall be verified for performance before use in examination
- Consumables that can affect to the quality of examinations shall be verified for performance before use in examination.

5. INFECTION PREVENTION AND CONTROL

5.1. Early recognition and source control

Screen and triage everyone entering the healthcare facility for signs and symptoms of COVID-19

- Ask them if they have been advised to self-quarantine because of exposure to someone with SARS-CoV-2 infection
- Post visual alerts (e.g., signs, posters) at the entrance and in strategic places (e.g. waiting areas, elevators, cafeterias) to provide instructions (in appropriate languages) about wearing a cloth face covering or facemask for source control and how and when to perform hand hygiene.
- Arrange seating in waiting rooms so patients can sit at least 2 meter/6 feet apart.
- Provide supplies for respiratory hygiene and cough etiquette, including alcohol-based hand sanitizer with 60-95% alcohol, tissues, and no-touch receptacles for disposal, at healthcare facility entrances, waiting rooms and other patient areas.
- Limit and monitor points of entry to the facility.
- Use only EPA (Environment Protect Agency) approved disinfectants for low-risk reusable medical equipment and environmental surfaces with focus on commonly touched surfaces.
- Ensure staff are implementing standard precautions at all times with all patients in terms of the use of recommended PPE; safe waste management; cleaning and disinfection of equipment; cleaning of the environment, laundry management, etc.
- Limit visitors to the facility to those essential for the patients' physical or emotional well-being and care (e.g. care partner, parent).
- HCWs should always wear a surgical mask while they are in the healthcare facility, including in breakrooms or other spaces where they might encounter co-workers**.**
- When applicable or needed and as a measure to limit HCP exposure and conserve PPE, facilities could consider designating entire units within the facility, with dedicated HCP, to care for patients with suspected or confirmed SARS-CoV-2 infection. Dedicated means that HCP are assigned to care only for these patients during their shift.

Note: **Respirators with an exhalation valve are not recommended for source control, as they allow unfiltered exhaled breath to escape.**

5.2. When caring for patients with suspected/confirmed COVID-19

- Suspected COVID-19 patients should be placed in an area separate from other patients (: examination room with the door closed). If not possible, group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation of at least 2 meters.
- Suspected & confirmed COVID-19 patients must wear a surgical mask in corridors or waiting areas all the time, if they can tolerate it.
- Use PPE (N95 mask, eye protection, gloves and gown) before entering a room where a suspected or confirmed COVID-19 patient is.
- If possible, use either disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers).
- If equipment needs to be shared among patients, clean and disinfect between each patient use.
- Ensure that health care workers refrain from touching their eyes, nose, and mouth with potentially contaminated gloved or un-gloved hands.
- Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles and light switches).
- Limit transport and movement of the patient outside of the room to medically essential purposes.
    - Whenever possible, perform procedures/tests in the patient's room.
    - Consider providing portable X-ray equipment in patient cohort areas to reduce the need for patient transport.
- Perform hand hygiene before and after contact with the patient or his/her environment.

5.3. When performing an aerosol-generating procedure in patients with COVID-19

- Ensure that healthcare workers performing aerosol-generating procedures (i.e. open suctioning of respiratory tract, high flow nasal oxygen, non-invasive ventilation, 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.)
- A negative pressure rooms is required, when performing aerosol-generating procedures, with minimum of 12 air changes per hour or at least 160 litres/second/patient in facilities with natural ventilation or HEPA filters.
- Avoid the presence of unnecessary individuals in the room.
- Perform procedures on COVID-19 cases at the end of the daily schedule whenever possible

5.4. Healthcare Facilities - information, instructions and training

Healthcare Facilities should provide information, instructions and training on occupational health and safety, including:

- Provision of adequate training for HCWs including refresher training on infection control measures and PPE donning & doffing.
- Ensuring an adequate patient-to-staff ratio.
- Ensure that all those involved in collection and transportation of specimens should be trained on safe handling practices and spill decontamination procedures.
- Ensure that laboratories in health care facilities adhere to appropriate biosafety practices and transport requirements, according to the type of organism being handled.
- Monitoring HCWs compliance with standard precautions and providing mechanisms for improvement as needed.
- Cleaners and other subcontractors should be included in the above-mentioned training/education.

6. CONTACT TRACING

6.1. Defining contacts

- A contact is defined as anyone with the following exposures to a COVID-19 case, from 2 days before to 14 days after the case's onset of illness:
  - ✓ Being within 2 metre of a COVID-19 case for >15 minutes.
  - ✓ Direct physical contact with a COVID-19 case.
  - ✓ Providing direct care for patients with COVID-19 disease without using proper personal protective equipment (PPE).
  - ✓ Living in the same household as a COVID-19 patient.

6.2. Testing of close contacts

- Due to wide spread of the disease it is not recommended to test all close contacts (unless they develop symptoms)
- All close contacts advised to stay home 14 days after last exposure even if they have been tested and their result is negative, and they should self-monitor for any respiratory symptoms.
- Close contacts of positive COVID-19 cases who are at higher risk of developing respiratory complications as well as HCWs with unprotected exposure, should be tested for COVID-19.
- Contacts who develop any related symptoms during the 14 days quarantine should be tested for COVID-19.
- All contacts should be tested for COVID-19 on day 14 of home quarantine.
- Community contacts will be identified and followed by the Communicable Diseases Department Staff.

7. MANAGEMENT OF HEALTHCARE WORKERS EXPOSED TO COVID-19

7.1. Health Care Worker Definition

Defined as all staff in the health care facility involved in the provision of care for a COVID19 infected patients, including those who have been present in the same area as the patient, as well as those who may not have provided direct care to the patient, but who have had contact with the patient's body fluids, potentially contaminated items or environmental surfaces. This includes health care professionals, allied health workers, auxiliary health workers (e.g. cleaning and laundry personnel, X-ray physicians and technicians, clerks, phlebotomists, respiratory therapist, nutritionists, social workers, physical therapists, lab personnel, cleaners, admission/reception clerks, patient transporters, catering staff etc.).

- Healthcare facilities should maintain a record of all staff providing care for confirmed COVID-19 cases.
- Due to the incubation period of COVID-19 virus and the continuous risk of exposure, these healthcare workers should be actively followed up and monitored daily for symptoms.

7.2. Contact Tracing within the Healthcare Facility

Healthcare facilities should identify and trace all health care workers who had risk of exposure with confirmed COVID-19 patients according to risk classification low and high.

- Determination of the time period that the confirmed COVID-19 patient or HCW could be infectious for proper contact tracing:
- For confirmed COVID-19 HCWs or patients who developed symptoms, consider the exposure window to be 2 days before symptom onset
- For confirmed COVID-19 HCWs or patients who never developed symptoms they should be considered potentially infectious beginning 2 days after their exposure, If the date of exposure cannot be determined , use a starting point of 2 days prior to the positive test result
- Epidemiologic Risk Classification for Healthcare Workers Following Exposure to Patients with COVID-19 or their Secretions/Excretions in a Healthcare Setting, and their Associated Monitoring and Work Restriction Recommendations

7.3. Screening HCWs for COVID-19

7.3.1. Routine screening is not recommended.

7.3.2. All staff with symptoms compatible with COVID-19 should be tested and should stop working and self-isolate while symptomatic.

7.3.3. Healthcare facilities should actively follow up on symptoms among HCWs providing care to COVID-19 patients and should maintain a record for them.

7.3.4. Exposure follow-up should be done for HCWs as per the below table:

Exposure	Use of PPE	Recommended action
HCP who had prolonged contact with COVID-19 patient (exposure occurred during aerosol generating procedure)	HCP not wearing proper PPE	• Exclude HCP from work for 14 days from last exposure • Advise HCP to monitor for fever or other symptoms consistent with COVID-19 • Any HCP who develop fever or symptoms consistent with COVID-19 should inform their HCF to arrange for medical evaluation and testing
HCP exposed to COVID-19 patient	HCP not wearing recommended PPE for the type of contact they had with patient	• No work restrictions • HCP should wear mask at all times for source control at work • HCP should monitor themselves for onset of symptoms consistent with COVID-19 and undergo active screening for fever & other symptoms at the beginning of each working shift. • HCP should immediately self-isolate and inform their HCF to arrange medical evaluation and testing when symptomatic.
HCPs with community exposure to COVID-19		HCP should discuss the exposure with infection control and occupational health department at their HCF
HCPs arriving back from home country or after travel		HCP and HCF must follow local guidelines with regards to home quarantine after arrival and should consider presence or absence of symptoms before resuming work duties.

7.4. Return to Work of Healthcare Workers Infected with COVID-19

Healthcare workers who have tested positive for COVID-19 should stop working and they should be able to return to work as soon as possible once they are symptoms free and have two consecutive negative PCR.

8. REPORTING

- Reporting of the infectious diseases is mandated by UAE federal law, considering COVID-19 is an immediate notifiable disease.
- Department of Health (DoH) have the right to implement sanctions against HCFs that are not compliant with reporting as per the federal law.

- Healthcare facilities where COVID-19 samples were collected, should notify ONLY confirmed positive COVID-19 PCR results to ADPHC using the Infectious Diseases Notification System (IDN) immediately after receiving the result from the lab by selecting Coronavirus (COVID-19) from the IDN list through Website Link:
  https://bpmweb.haad.ae/UserManagement/Login.aspx

9. CASE MANAGEMENT SETTING

9.1. Risk Matrix

The table below illustrates a summarized case management setting for COVID-19 based on risk category and disease severity.

Risk Category	Asymptomatic Positive COVID-19 test	Mild	Moderate	Severe	Critical
Patient with Risk Factors	Hospital admission/ Institution with medical care or home* isolation based on clinical Judgment	Hospital admission/ Institution with medical care or home* isolation based on clinical Judgment	Admit to assigned hospital	Admit to assigned hospital	Admit to assigned hospital
Patient with NO Risk Factors	Home / Institution * Isolation with medical care	Home/ Institution* with medical care	Hospital admission	Hospital admission	Admit to assigned hospital

** If the home is inappropriate for patient home isolation*

9.2. High risk category

- People aged 60 years and older
- People staying in a nursing home or long-term care facility
- Patients with chronic conditions:
  - Lung disease e.g. Asthma and/or COPD
  - Uncontrolled Diabetes, Renal Failure or Liver Disease
  - Cardiac disease
  - Patients who are immunocompromised, caused by certain diseases or conditions, including cancer, smoking, bone marrow or organ transplantation, immune deficiencies, poorly controlled HIV or AIDS, and prolonged use of corticosteroids and other immune weakening medications.
- Severe obesity (body mass index [BMI] >40) at any age.

- Pregnant women and postpartum condition should be monitored since they are known to be at risk of severe viral illness, however, to date, data on COVID-19 has not shown increased risk
- Underlying Psychiatric illness
- Underlying cardiac conduction defects

10.PATIENT TRANSPORT

10.1. 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 exposure of staff, other patients and visitors.
  - Use dedicated elevator if possible and ensure proper cleaning and disinfection after patient movement.
  - 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 afterwards.
  - The area used by the patient/wheelchair to be cleaned appropriately after the patient’s transfer.

10.2. 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
- Use routes of transport that minimize exposures of staff, other patients, and visitors.
- 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/wheelchair to be cleaned appropriately after patient’s transfer
- Use dedicated elevator if possible and ensure proper cleaning and disinfection after patient movement.

11. CLINICAL MANAGEMENT AND TREATMENT FOR CONFIRMED COVID-19 CASES

Treat all positive cases of COVID-19 regardless of clinical presentation

- Clinical management includes prompt implementation of recommended infection prevention and control measures and supportive management of complications, including advanced organ support if indicated.
- There is no specific approved treatment for COVID-19 infection to date. However, FDA has issued emergency use authorization for Chloroquine and Hydroxychloroquine. FDA has also published recommendations for investigational COVID-19 Convalescent Plasma use.
- See table below Give supplemental oxygen therapy, as needed.
    - Use conservative fluid management, if possible.
    - Give supplemental oxygen therapy, as needed.
    - 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).

11.1. Laboratory and Radiological Monitoring

- Baseline tests should be done prior to treatment initiation for all patients.
- Repeat PCR test after 5-7 days of therapy initiation.
- Repeat blood tests every 72 hours and imaging every week; earlier, if clinically indicated, while on treatment.
- Repeat more frequently in critically ill patients, if indicated.

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 as baseline • Blood glucose in patients with **Chloroquine or Hhydroxychloroquine**, frequent **blood glucose monitoring** is required in **diabetic patients** as risk of hypoglycaemia is high (may require **adjusting Insulin** or other diabetic medications dosing)

11.2. ECG Monitoring

- Perform Baseline ECG on patients 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, Hypomagnesaemia, Hypophosphatemia, Hypocalcaemia etc.)
- History of cardiac arrhythmia
- On concurrent QTc prolonging drugs (Fluoroquinolones, Macrolides, Azoles, Ivabradine, antiemetics, Anti-depressants, Antipsychotics, Antiarrhythmics etc (**Avoid these and any other QT prolonging drugs in patient on COVID-19 treatment**)

If a COVID-19 patient needs antibiotics to cover for atypical micro-organisms in case of concurrent community acquired bacterial pneumonia, then **Doxycycline** should be the preferred choice in view the relative safety of Doxycycline on QT prolongation; can be used with Chloroquine/Hydroxychloroquine
Doxycycline can be as an alternative to Macrolides & Fluroquinolones if indicated in patients with QT issues

11.3. Prognostic Factors & Markers for Severe COVID-19 Disease

Table:1 Prognostic Factors & Markers for Severe COVID-19 Disease

Epidemiological- Category 1	Vital signs- Category 2	Labs-Category 3
Age > 55	Respiratory rate>24 breaths/min	D-dimer>1000 ng/mL
Pre-existing pulmonary disease	Heart rate > 125 beats/min	CPK>twice upper limit of normal
Chronic kidney disease	SpO2 <90% on ambient air	CRO>100
Diabetes with A1c>7.6%		LDH>245 U/L
History of hypertension		Elevated troponin
History of Cardiovascular disease		Admission absolute lymphocyte count<0.8
Use of biologics		Ferritin >300 ug/L
History of transplant or other immunosuppression		
All patients with HIV (regardless of CD4 count)		

11.4. Treatment Options

- The various treatment options including regimens are provided in table 1 for consideration
- Any drug-induced side effect to be managed accordingly
- **Rule out pregnancy before starting Favipiravir, Ribavirin etc**
- **Favipiravir, Ribavirin are absolutely contraindicated in pregnancy**
- Get Informed consent from patient for treatment of COVID-19; if the patient cannot provide consent then a family member/guardian should.

Check details in Medication safety information section regarding Favipiravir, Ribavirin before prescribing any of these drug for women in child bearing age and male patients whose female partner is already pregnant or can be pregnant during & 7 days after the end of treatment with Favipiravir, and during or up to 6 months after the end of treatment with Ribavirin.

Baseline Monitoring parameters and early initiation of treatment is highly advisable

11.5. Proposed Therapeutic Regimens for Adults

Clinical Presentation	Suggested Medications
Clinical Presentation	**Dosing & frequency mentioned is for normal Renal & Hepatic Functions** For Moderate to severe Hepatic Impairment & or severe Renal impairment, Drug interaction etc. (Consult individual drug monograph for additional monitoring or dose adjustment)
Contact	No Post exposure Prophylaxis is indicated for the time being
Probable case of COVID-19 URTI without pneumonia	**Please follow the confirmed case management**
Probable case of COVID-19 Pneumonia (see Probable case definition above)	**Please follow the confirmed case management**
Confirmed COVID19 Asymptomatic	**No treatment**, **High risk:** Age above 60 years old, Cardiovascular disease, hypertension, Diabetics, Pre-existing lung disease, or Immunocompromised / cancer patients, (Obesity (BMI>40) or, if height not available, weight >100kg) **If high risk:** **Chloroquine Phosphate** 500 mg PO BID X 2 doses then 250 mg PO BID (total 5days)

Clinical Presentation	Suggested Medications
	OR **Hydroxychloroquine** 400mg PO BID X 2 doses then 200mg PO BID (total 5days) **If radiological evidence of pneumonia**, follow pneumonia recommendation
Confirmed COVID19 URTI without Pneumonia For 5 Days	**Hydroxychloroquine** 400mg PO BID then 200 mg PO BID (total 5 days) **OR** **Chloroquine Phosphate** 500 mg PO BID X 2 doses then 250 mg PO BID (total 5 days) **OR** **Favipiravir** 1600 mg PO BID X 2 doses then 600 mg PO BID (total 5 days) **OR** **Lopinavir-Ritonavir** (200/ 50 mg) 2 tablets PO BID [7] (Total 5 days) Addition of **Camostat** 200 mg PO TID X 5 days optional on case by case basis as per treating physician choice (if available)
Confirmed COVID19 Pneumonia For 7 days [Interferon therapy can be a possible add-on option on case by case basis in patient with moderate disease]	**Favipiravir** 1600 mg PO BID X 2 doses then 600 mg PO BID (total 7 days) **+ Hydroxychloroquine** 400mg PO BID X 2 doses then 200mg PO BID (total 5 to 7 days) **± Camostat** 200 mg PO TID for 5 to 7 days (if available and optional) **OR** **Favipiravir** 1600 mg PO BID X 2 doses then 600 mg po BID from day2 (total 7 days) **+ Chloroquine Phosphate** 500 mg PO BID X 2 doses then 250 mg PO BID (total 5 to 7 days) **± Camostat** 200 mg PO TID for 5 to 7 days (if available and optional) **OR** **Lopinavir-Ritonavir** (200/ 50 mg) 2 tablets PO BID (total 7 days) [7] **+ Hydroxychloroquine** 400 mg po BID X 2 doses, then 200 mg PO BID (total 5 to 7 days) (alternatively, **Chloroquine** 500 mg PO BID X 2 doses, then 250 mg PO BID) (5 to 7 days) **± Camostat** 200 mg PO TID (5 to 7 days) (if available and optional) **OR** **Remdesivir** 200 mg IV on day 1, followed by 100 mg IV daily
Confirmed COVID19 Severe Pneumonia /Critically ILL patients For 10 days	**Favipiravir** 1600 mg PO BID X 2 doses then 600 mg PO BID **+ Camostat** 200 mg PO TID **±** nebulized **Interferon Alpha** or **Interferon Beta** (for 5 days) through Nebulizer creating fine mist (ultrasonic nebuliser) e.g. Aerogen Nebulizer (**Do NOT use** Pegasys or any other pegylated interferon for Nebulization) **OR** **Lopinavir-Ritonavir** (200/ 50 mg) 2 tablets PO BID **+ Ribavirin*** 400 m PO BID for 7 days **PLUS Interferon** [40]. through Nebulizer creating fine mist e.g. Aerogen Nebulizer (**Do NOT use** Pegasys or any other pegylated interferon for nebulization) **Interferon Formulations & dosing for nebulization**: No specific dosing established for COVID-19 through nebulization for both formulations, dosing frequency,

Clinical Presentation	Suggested Medications
	duration mentioned below are based on suggestion of National committee Physician members in view of their limited experience Depending upon Availability: **Interferon Alpha 2b 5 million units** /ampoule (Bioferon) dilute 2 ampoules with 4 ml of normal saline, use BID X 5 days via ultrasonic nebulization **Interferon beta 1b (Betaferon)** Interferon beta 1b 8 million units (250 microgram) **Subcutaneous** on alternative days for 3 doses or use through Nebulization 8 million units (250 microgram)/vial, mix reconstituted solution of 1 vial of Betaferon with 2 ml of normal saline BID X 5 days *= **Contra-Indications for Ribavirin** Hypersensitivity, Pregnancy, males whose wives are pregnant, concomitant use with Didanosine, autoimmune hepatitis, fatal hepatic failure, pancreatitis, hemoglobinopathy (thalassaemia major, sickle cell anaemia), CrCL< 50 ml/minute (for pregnancy & teratogenic risk check medication safety information section) **OR** **Remdesivir** 200 mg IV on day 1, followed by 100 mg IV daily [8,15 41] For ICU patients consider empirical antibiotics if bacterial co-infection is suspected according to individual hospital protocol/guideline **Anticoagulation (see details below) Steroids (see details below) Tocilizumab to be considered in case of cytokine storm (see details below) Convalescent plasma to be considered as experimental therapy**

11.6. Pregnant Patients

- Rule out pregnancy before starting treatment whenever applicable
- In pregnant Patients management of COVID-19 Case by case basis with ID Consultation and obstetrician.
- Nebulized Interferon alpha 2b, Interferon Beta 1b can be a possible options in addition to Kaletra (Lopinavir-Ritonavir), Chloroquine, Hydroxychloroquine in pregnant women for details of specific formulations dosing, method, duration, check treatment section for severe pneumonia/critically ill adult patients

11.7. Neonate Patients

- Current evidence is consistent with low rates of peripartum transmission and is inconclusive about in
- Utero transmission from mothers with COVID-19 to their new-borns.

  Neonates born to the mothers who are suspected or confirmed COVID-19 infection between 14 days before delivery and 28 days after delivery can be divided to two main groups:

1. Healthy asymptomatic neonate born at or near term who does not require neonatal intensive care.
2. Symptomatic or high-risk neonates requiring neonatal intensive care

- For positive high-risk symptomatic neonate:
  - Continue close monitoring and supportive care management.
  - Repeat the sample every 48 - 72 hours intervals until the result turns negative
  - Plan for Discharge to a COVID–19 negative caregivers once negative for two consecutive samples.
- COVID-19 positive mother with rooming in baby can breastfeed the baby as long as proper infection control recommendation has been followed such as;
  - Proper breast and hand hygiene
  - Wearing face mask during breastfeeding
- COVID-19 positive mother with baby admitted in NNU shall be encourage to express breast milk using dedicated breast pump

For more details please refer to the National Guidelines for Clinical Management and Treatment of COVID-19

file:///C:/Users/user/AppData/Local/Microsoft/Windows/INetCache/IE/193K834Q/National_Guidelines_of_COVID_19_1st_June_2020.pdf

12. HOME/INSTITUTE ISOLATION

12.1. Prerequisites for home isolation

- The setting is accepted for home isolation as per the check list (i.e. availability of a single well-ventilated room).
- Patient has taken an informed decision, signed undertaking form and fully aware of the legal consequences of non-compliance.
- The public health officials and treating HCP must assess whether the patient and his family are able to adhere to the precautions recommended for home care (e.g. hand hygiene, cleaning, and movement restrictions around or from home) and can address safety concerns.

12.2. Actions to be taken during Isolation

- Instruct individuals under quarantine that they should not leave their home or facility quarantine or contact with others unless for medical reasons.
- Disinfect all exposed surfaces and tools that are touched daily with chlorine based disinfectants approved by the authorities, by trained people who are wearing gloves, surgical masks, and medical gowns during cleaning.
- Use gloves and mask during cleaning and disinfection if home isolation.

- When washing clothes of quarantined individuals, personal protective equipment (gloves, surgical masks and medical gowns) is used, using warm water and detergent for as long as possible and then drying them using the clothes dryer Or by exposure to solar radiation.
- Ensure that the quarantine room is well ventilated with good air flow.
- Safe disposal of medical waste.
- The supervisor of the quarantine should be informed in the event of fever or appearance of respiratory symptoms in individuals under the quarantine or employees, to ensure performance of proper medical evaluation and completion of necessary procedures.

12.3. Eligibility Criteria

12.3.1. Home isolation

The following groups are eligible for home isolation:

- Adults above the age of 18 years,
- Asymptomatic or mildly symptomatic and having no risk factors
- He/she/caretaker is a responsible, educated person who is committed to implement home isolation and treatment whenever necessary.
- Home conditions permit isolation in a single room with good ventilation and a separate toilet.

12.3.2. Institutional isolation with medical care

- Adults above the age of 18 years,
- Asymptomatic or mildly symptomatic and having no risk factors
- He/she has a family member(s) who suffer from chronic conditions and considered at higher risk of complications due to infection or,
- He/she has inappropriate/unacceptable setting for home isolation or living in labour camp or shared houses or,
- He/she has returned from travel as per directions from authorities.

12.4. Exclusion criteria:

- Children below 18 years and adults above 60 years after clinical assessment.
- Patients with severe or critical illness e.g. Unstable patients with pneumonia
- Pregnant and post-partum women after clinical assessment
- Patients with underlying Psychiatric illness
- Elderly patients with multiple underlying medical comorbidities
- Patients with underlying cardiac conduction defects

13. DISCHARGE/ DISCONTINUING ISOLATION

13.1. Discharge of patients - For moderately, severely, and critically symptomatic hospitalized COVID-19 positive patients

- Patient can be discharged once they have:
  - Two consecutive respiratory specimens' negative PCR tests for COVID 19 that are at least ≥ 24 hours apart AND
  - Patient is afebrile for more than 3 days without the use of fever-reducing medications AND
  - Patient has improved/minimal respiratory symptoms AND
  - Pulmonary imaging (CXR/ HRCT) shows significant improvement

- All patients after discharge should be at home quarantine for 7 days from discharge date and to have a sick leave documented in medical record
- Discharged patients to be followed 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

13.2. Discharge of patients - Mildly symptomatic hospitalized COVID-19 positive patients

- Resolution of fever without the use of fever-reducing medications and improvement in respiratory symptoms (e.g., cough, shortness of breath) AND
- At least two consecutive respiratory specimens' negative PCR tests for COVID-19 collected ≥24 hour's apart (total of two negative specimens).
- **No need for 14 days home quarantine after discharge or two negative results in case of home isolation.**

13.3. Transferring patients from hospital to home or community care isolation

- The discharge from hospital of mild cases – if clinically appropriate – may be considered if they are placed into home isolation or into Institution with medical care.
- COVID-19 patients may be discharged from hospital and moved to home or community care (or other types of non-hospital care and isolation) based on the following clinical criteria:
  - no fever for > 3 days
  - improved respiratory symptoms
  - pulmonary imaging showing obvious absorption of inflammation
  - no hospital care needed
  - other pathology
  - clinician assessment

13.4. Criteria of Institution/Camp Discharge

- Patient can be discharged once they have:
  - Completed 14 days isolation AND
  - Resolution of fever without the use of fever-reducing medications and improvement in respiratory symptom AND
  - At least ONE respiratory specimen negative test for COVID-19.
- **No need for 14 days home quarantine after discharge from institution isolation**

13.5. Home isolation ending

- Resolution of fever without the use of fever-reducing medications and improvement in respiratory symptoms (e.g., cough, shortness of breath) AND
- Monitored by repeating PCR after 5- 7 days as long as the result is positive, and when the result becomes negative, it should be confirmed by another test after 24 hours At least two consecutive respiratory specimens collected ≥24 hours apart (total of two negative specimens).
- **No need for 14 days quarantine after ending isolation.**

14.HUMAN-ANIMAL INTERFACE AND COVID-19

As at the time of writing, field investigations into the source and mode(s) of zoonotic transmission of the newly emerged SARS-CoV-2 remain ongoing. However, given a substantial portion of the first set of COVID-19 cases in December 2019 were linked to the
Wuhan Seafood market where live animals including wildlife were also sold, spill over and zoonotic transmission might be involved. Additionally, as it has been reported that some of these earlier cases were not linked to this Seafood market or human cases of COVID-19, it cannot be ruled out that possible zoonotic transmission might have occurred outside the market. Presently, it is thought that SARS-CoV-2 transmission might be similar to that of other recently emerged coronaviruses (MERS-CoV and SARS-CoV).

15. MANAGING OF DECEASED 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.

15.1. Preparing and packing the body for transfer from a patient room to mortuary

- The health worker attending to the dead body should follow standard precaution such as perform hand hygiene, ensure proper use of PPE (water resistant apron, goggles, N95 mask, gloves).
- All tubes, drains, and catheters on the dead body should be removed. Any puncture holes or wounds (resulting from removal of catheter, drains, tubes, or otherwise) should be contained with dressing.
- Keep both the movement and handling of the body to a minimum.
- There is no need to disinfect the body before transfer to the mortuary area.

- Place patient in leak-proof plastic body bag (Cadaver bags) and those handling the body at this point should use PPE (N95 mask, clean gloves, and isolation gown).
- If the family of the patient wishes to view the body at the time of removal from the isolation room or area, they may be allowed to do so with the application of **Standard Precautions including the surgical mask and should wash hands thoroughly with soap and water after the viewing**.
- **Give the family clear instructions not to touch, kiss or hug the body. Adults >60 years and immunosuppressed persons should not directly interact with the body.**
- Mortuary staff should be informed of the infectious status of the deceased, risk of infection and appropriate precautions required before transferring the patient to the mortuary and should be well trained on standard precautions and infection control measures.
- Limit the number of Mortuary staff handling Covid-19 dead body to limit the exposure ¬ No special transport equipment or vehicle is required. The trolley carrying the body must be disinfected after transmission with approved disinfectant (with 1% Hypochlorite solution, quarterly ammonium chloride ...etc).
- Dead bodies should be stored in cold chambers maintained at approximately 4°C.
- The mortuary must be kept clean. Environmental surfaces, instruments and transport trolleys should be properly disinfected.

15.2. Preparing and transferring the body from mortuary to graveyard

- The body is prepared for burial in the mortuary department of the healthcare facility as it is forbidden to transport it to the home and it is only allowed to move it to public washing places with trained and competent people with appropriate equipment to deal with the dead bodies of infectious diseases.
- Limit the number of people washing the body.
- All personnel performing the body wash should be competent and should wear appropriate PPE (gloves, mask, gown, and face shield) and should thoroughly wash their hands with soap and water when finished.
- Instruct the family to avoid large gathering at the burial ground; it should be limited to close family contacts.
- The belongings of the deceased person do not need to be burned or otherwise disposed of. However, they should be handled with gloves and cleaned with a detergent followed by disinfection with a solution of at least 70% ethanol or 0.1% (1000 ppm) bleach. Clothing and other fabric belonging to the deceased should be machine washed with warm water at 60–90°C (140–194°F) and laundry detergent.
- After removing the body, the mortuary fridge, door, handles and floor should be cleaned with approved disinfectant such as 1% Hypochlorite solution.
- The vehicle, after the transfer of the body must be decontaminated.

15.3. Death Occurred Outside the Healthcare Facility/Home

The body should be moved to the hospital for death confirmation and preparation for burial.

- Any person preparing the body for transport must adhere to the basic rules for preventing infection transmission, including hand hygiene rules before and after handling the body, and use of appropriate personal protective equipment, as needed to interact with the body, including gowns and gloves.
- If there is a risk of a spray from the body's secretions or fluids:
  - Protect the faces, including using face shields or goggles and masks
  - Ensure that containing any liquid leaked by the body nozzles.
  - Minimize body movement and handling.
  - Cover the body with thick / impermeable cloth and transport the body as soon as possible to the hospital to confirm death.
  - No need to sterilize the body before transporting it.
  - It is not necessary to use body bags, although they can be used for other reasons, such as leakage and excessive body secretions.
  - There is no need to use special equipment or vehicles to transport the body, but a commitment must be made to disinfect the transportation vehicle after completing the transfer procedures.

15.4. Collection of Post-mortem Upper Respiratory Tract Swab Specimens

Since collection of nasopharyngeal and oropharyngeal swab specimens from deceased persons will not induce coughing or sneezing, a negative pressure room or HEPA filter unit are not required.

The following PPE should be worn:

- Clean gloves.
- Wear heavy-duty gloves over the gloves, if there is a risk of cuts, or other injuries that break the skin.
- Clean, long-sleeved fluid-resistant or impermeable isolation gown
- Face shield or goggles and face mask.

15.5. Autopsy Procedures

Standard Precautions, Contact Precautions, and Airborne Precautions with eye protection (e.g., goggles or a face shield) should be followed during autopsy. ▪

- Aerosol Generating Procedures (AGPs) such as use of an oscillating bone saw should be avoided for confirmed or suspected cases of COVID-19. Consider using hand shears as an alternative cutting tool. If an oscillating saw is used, attach a vacuum shroud to contain aerosols.
- Allow only one person to cut at a given time.
- Limit the number of personnel working in the autopsy room at any given time to the minimum number needed to conduct the autopsy safely.

- Use caution when handling needles or other sharps and dispose of contaminated sharps in puncture-proof sharps containers.
- A logbook including names, dates, and activities of all workers participating in the post-mortem and cleaning of the autopsy room should be kept assisting in future follow up, if necessary.

15.6. Engineering Control Recommendations

- Autopsies on dead body of known or suspected COVID-19 patient should be conducted in Airborne Infection Isolation Rooms (AIIRs).
- If an AIIR is not available, use a portable HEPA filter unit.
- Local airflow control (i.e. laminar flow systems) can be used to direct aerosols away from personnel. If use of an AIIR or HEPA filter unit is not possible, the procedure should be performed in the most protective environment possible.

15.7. PPE Recommendations

The following PPE should be worn during autopsy procedures:

- Double surgical gloves interposed with a layer of cut-proof synthetic mesh gloves
- Fluid-resistant or impermeable gown, waterproof apron
- Goggles or face shield
- Certified fit tested N95. Otherwise, Powered Air-Purifying Respirator (PAPR) with HEPA filter is used to provide respiratory protection during autopsy procedures.
- Surgical scrubs, shoe covers, and surgical cap.

- Remove PPE carefully to avoid contaminating yourself and before leaving the autopsy room or adjacent anteroom.
- Reusable PPE (e.g., PAPRs) must be cleaned and disinfected according to the manufacturer's recommendations.
- Immediately after doffing PPE, wash hands with soap and water for 40 seconds or use alcohol-based hand sanitizer, if hands are not visibly dirty, for 20 seconds. Ensure that hand hygiene facilities are readily available at the point of use (e.g., at or adjacent to the PPE doffing area).

16. REFERENCES

1. MOH updated Clinical Guidelines 01/06/2020
2. WHO Considerations in the investigation of cases and clusters of COVID-19
3. CDC interim guidance for collecting and handling clinical specimens: https://www.cdc.gov/coronavirus/2019-nCoV/lab/index.html
4. Public health recommendation for community related exposure : https://www.cdc.gov/coronavirus/2019-ncov/php/public-health-recommendations.html
5. List of ADPHC and DOH circulars and references

17. APPENDICES