

# **Coronavirus Disease 19**

## **(COVID-19)**

### **Guidelines**

**March 2020**  
**V1.2**

**As only limited epidemiological data on COVID-19 infection is currently available, health care workers (HCWs) are advised to follow guidelines and tools designed for MERS-CoV case investigations. The COVID-19 guidelines will be updated as more information becomes available.**

## VERSIONS UPDATE

**Version 1.0** was written and published on January 10<sup>th</sup> 2020.

### **Version 1.2**

- Updated the case definition
- Updated household and community contacts management
- Added (Transportation of suspected or confirmed cases)
- Added (duration of isolation of suspected and confirmed cases)
- Added (General outlines of management)
- Added (Quarantine and Homestay Guide for Corona Virus Disease)
- Added (Managing Bodies of Deceased Covid-19 Patients)
- Updated the reporting form and the visual triage checklist form.

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## 1. INTRODUCTION

Coronaviruses (CoV) are a large family of RNA viruses that cause illnesses ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). The new strain of coronavirus identified in December 2019 in Wuhan city, Hubei province of China, has been named by the International Committee on Taxonomy of Viruses (ICTV) as Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2). The ICTV have determined that SARS-CoV-2 is the same species as SARS-CoV but a different strain. The World Health Organization (WHO) has named the disease associated with SARS-CoV-2 infections as Corona "COVID-19". Since the emergence of the 2019 novel coronavirus (2019- nCoV) infection in Wuhan, China, in December 2019, it has rapidly spread across China and more than 162 other countries. According to the WHO, as at March 18, 2020, there have been 191,127 confirmed cases of COVID worldwide. Most of the cases involved in the first cluster in December 2019 were linked to the large Wuhan Seafood Market. (The daily status report of confirmed case is available in this link: <http://covid19.cdc.gov.sa/>).

The original source(s) of SARS-CoV-2 transmission remain unidentified. However, available genetic and epidemiological data suggests that SARS-CoV-2 is a zoonotic pathogen with possible spillover directly from wildlife or via intermediate animal hosts or their products. Sustained human to human transmission has been confirmed in China where numerous healthcare workers have been infected in clinical settings with overt clinical illness and fatalities. Most cases have been associated with fever and respiratory symptoms (coughing and shortness of breath), while other cases are mild or subclinical cases. However, there is not much information about SARS-CoV-2 to draw definitive conclusions about transmission mode, clinical presentation or the extent to which it has spread. Investigations are currently in progress.

## 2. OBJECTIVES

Based on the best available scientific evidence, the objectives of this document are to:

- Provide guidance on COVID-19 surveillance in healthcare and community settings.
- Enhance rapid detection of confirmed cases/clusters of COVID-19
- Determine clinical and epidemiological characteristics of the COVID-19 infection.
- Provide guidance on infection prevention and control (IPC) practices to be implemented when managing suspected and confirmed COVID-19 cases.
- Standardize the clinical management of COVID-19 patients.
- Provide guidance for rational use of resources including laboratory testing.
- Serve as a quality control/audit tool for COVID-19 surveillance and prevention program.

### 3. SURVEILLANCE CASE DEFINITIONS

❖ Suspected COVID-19 case is defined as:

Clinical presentation	Epidemiological link
1-Patient with acute respiratory illness (sudden onset of at least one of the following: fever or recent history of fever, cough or shortness of breath) AND in the 14 days prior to symptom onset	Had a history of travel abroad <b>or</b> Travel to an identified high-risk area in the kingdom <sup>1</sup> <b>or</b> A close physical contact prior to symptom onset with a confirmed COVID-19 case* <b>or</b> Working in or attended a healthcare facility where patients with confirmed COVID-19 are admitted.
2-Adult patient with severe acute respiratory illness (ICU admission, ARDS <sup>2</sup> or CURB-65 score <sup>3</sup> ≥ 3 points) AND all the following conditions fulfilled <ul style="list-style-type: none"> <li>- Testing for influenza and MERS-CoV are negative.</li> <li>- Clinical assessment indicating that the patient is not improving and has no clear underlying causes</li> </ul>	Not required

<sup>1</sup> As determined and announced by the Ministry of Interior or Ministry of Health.

<sup>2</sup> ARDS: Acute respiratory distress syndrome (based on clinical or radiological evidence)

<sup>3</sup> CURB-65 = Confusion, Urea nitrogen, Respiratory rate, Blood pressure, 65 years of age and older.

**CURB-65 severity score** : Score 1 point for each of following features that are present:

Confusion (mental test score ≤8 new disorientation in person, place or time)

BUN > 20 mg/dL

Respiratory rate ≥30 breaths/min

Blood pressure (systolic <90 mm Hg, or diastolic ≤60 mm Hg)

Age ≥65 years

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

❖ **Confirmed COVID-19 case is defined as:**

A confirmed case is defined as a suspected case with laboratory confirmation of COVID-19 infection.

\* **“Close Contact” is defined as:**

1. Health care associated exposure, including providing direct care for COVID-19 patients, working with HCWs infected with COVID-19, visiting patients or staying in the same close environment of a COVID-19 patient.
2. Working together in close proximity or sharing the same classroom environment a with COVID-19 patient.
3. Traveling together with COVID-19 patient in any kind of transportation.
4. Living in the same household as a COVID-19 patient.

## 4 INFECTION PREVENTION AND CONTROL (IPC)

The principles of infection prevention and control strategies associated with health care with suspected COVID-19 are:

1. Early recognition and source control.
2. Application of Standard Precautions for all patients.
3. Implementation of empiric additional precautions (droplet and contact and whenever applicable airborne precautions) for suspected cases.
4. Management of exposure to COVID-19 in healthcare facilities
5. Administrative controls.
6. Environmental and engineering controls.

### 4.1 Early recognition and source control.

- Encourage HCWs to have a high level of clinical suspicion.
- Activation of respiratory triage (see Appendix 4).
- Post signage reminding symptomatic patients to alert HCWs.
- Promotion of respiratory hygiene is an important preventative measure.
- Suspected COVID-19 patients should be placed in an area separate from other patients, and additional Infection Prevention and Control IPC (droplet and contact) precautions promptly implemented

### 4.2 Application of Standard Precautions for all patients

#### ❖ Standard Precautions include:

- Correct and consistent use of available PPE and appropriate hand hygiene.
- Perform hand hygiene after contact with respiratory secretions.
- PPE effectiveness depends on adequate and regular supplies.
- Adequate staff training and specifically appropriate human behavior.
- Ensure that environmental cleaning and disinfection procedures are followed consistently and correctly. Thorough cleaning of environmental surfaces with water and detergent and applying commonly used hospital level disinfectants (such as sodium hypochlorite) is an effective and sufficient procedure.
- Manage laundry, food service utensils and medical waste in accordance with safe routine procedures.
- prevention of needle-stick or sharps injury

#### ❖ Ensure the following respiratory hygiene measures:

- Offer a medical mask for suspected COVID-19 infection for those who can tolerate it.
- Cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others.

### **4.3 Implementation of empiric additional precautions.**

#### **4.3.1 Contact and Droplet precautions for suspected COVID-19:**

In addition to Standard Precautions, all individuals, including family members, visitors and HCWs should apply Contact and Droplet precautions. Standard precautions should always be applied at all times.

- Place patients in adequately ventilated single rooms.
- When single rooms are not available, cohort patients suspected of COVID-19 infection together (Place patient beds at least 1m apart, when possible, cohort HCWs to exclusively care for cases to reduce the risk of spreading transmission due to inadvertent infection control breaches).
- Use a medical mask with an eye/facial protection (i.e. goggles or a face shield).
- Use gloves and a clean, non-sterile, long-sleeved fluid resistant gown.
- Remove your PPE after caring for a patient in a proper way then dispose it, after that hand hygiene must be performed. New set of PPEs' is needed, when care is given to a different patient.
- Use either single use disposable equipment 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 (e.g. ethyl alcohol 70%).
- Refrain from touching eyes, nose or mouth with potentially contaminated hands.
- Avoid the movement and transport of patients out of the room or area unless medically necessary.
- Use designated portable X-ray equipment and/or other important diagnostic equipment.
- If transport is required, use pre-determined transport routes to minimize exposures to staff, other patients and visitors and apply medical mask to patient.
- Ensure that HCWs who are transporting patients wear appropriate PPE as described in this section and perform hand hygiene.
- Notify the receiving area of necessary precautions as soon as possible before the patient's arrival.
- Routinely clean and disinfect patient-contact surfaces.
- Limit the number of HCWs, family members and visitors in contact with a patient with suspected COVID-19 infection.
- Maintain a record of all persons entering the patient's room including all staff and visitors.

#### 4.3.2 Airborne precautions for aerosol-generating procedures for suspected COVID-19:

Some aerosol generating procedures have been associated with increased risk of transmission of coronaviruses (SARS-CoV and MERS-CoV) such as nasopharyngeal swabbing, tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation and bronchoscopy. HCWs performing aerosol-generating procedures should note the following:

- Use a fit tested particulate respirator (certified N95).
- Always perform the seal-check when putting on a disposable particulate respirator (certified N95).
- HCW that all available types of (N95) are not fit to him should be avoided from aerosol-generating procedures or use PAPR(Powered Air-Purifying Respirator).
- Facial hair (beard) prevents proper respirator fit; either avoid aerosol-generating procedures or use PAPR.
- Use eye protection (i.e. goggles or a face shield).
- Clean, non-sterile, long-sleeved gown and gloves are used, if gowns are not fluid resistant, use a waterproof apron for procedures with expected high fluid volumes that might penetrate the gown.
- Perform procedures in negative pressure rooms with at least 12 air changes per hour (ACH) and controlled direction of air flow when using mechanical ventilation.
- Limit the number of persons present in the room to the absolute minimum required for the patient's care and support.

#### 4.4 Management of exposure to COVID-19 in healthcare facilities

##### 4.4.1 Healthcare workers exposed to a COVID-19 case:

- Healthcare facilities should identify and trace all health care workers who had protected (proper use of PPE) or unprotected (without wearing PPE or PPE used improperly) exposure to patients with suspected or confirmed COVID-19.
- The decision to permit a healthcare worker to resume his/her duties after an exposure to COVID-19 should be individualized. Infection control team will be ultimately responsible for taking that decision.
- The following are general guidelines, but management will depend on the infection control team risk assessment:

#### 4.4.1.1 Asymptomatic healthcare workers WITH protected exposure OR unprotected low-risk exposure (more than 1.5 meters of the patient):

- Testing healthcare workers for **COVID-19** is not recommended.
  - Healthcare workers can continue their duties.
  - Healthcare workers shall be assessed daily for 14 days post exposure for the development of symptoms.
  - Healthcare workers should delay travel until cleared by infection control team.
  - **Asymptomatic healthcare workers WITH protected exposure OR unprotected low-risk exposure are considered CLEAR if they:**
    - Remain asymptomatic
- AND**
- The observation period is over (14 days post exposure).

**Please note**, health care worker should be defined as all staff in the health care facility involved in the provision of care for a COVID-19 infected patient, 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.).

#### 4.4.1.2 Healthcare workers who had unprotected high-risk exposure (within 1.5 meters of the patient) or have suggestive symptoms regardless of exposure type:

- Healthcare workers shall stop performing their duties immediately.
  - Testing (Nasopharyngeal swabs) for **COVID-19** is required (preferably 24hr or more after the exposure)
  - Healthcare workers shall not resume their duties until cleared by infection control team.
  - Healthcare workers should delay travel until cleared by infection control team.
  - Healthcare workers who test initially positive for **COVID-19** (regardless of the exposure type); healthcare workers who develop **COVID-19** suggestive symptoms (regardless of the exposure type) and healthcare workers who had unprotected high-risk 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 **two negative** RT-PCR for **COVID-19**.

#### 4.4.2 Patients exposed to a COVID-19 case:

- Patients can be exposed to **COVID-19** patients prior to diagnosis or due to the failure of implementing recommended isolation precautions.
- The following are general guidelines, but management will depend on the infection control team risk assessment:
- Patients sharing the same room (any setting e.g. Ward with shared beds, open ICU, open emergency unit...etc) with a confirmed case of **COVID-19** for at least 30 minutes:
  - Testing (Nasopharyngeal swabs or deep respiratory sample if intubated) for **COVID-19** is required (preferably 24hr or more after the exposure).
  - Patients should be followed daily for symptoms for 14 days after exposure.
  - If negative on initial testing, exposed patients should be retested with RT-PCR if they develop symptoms suggestive of **COVID-19** within the follow up period.
  - Patients discharged during the follow up period must be reported to public health department to continue monitoring for symptoms.

#### 4.5 Transportation of Suspected and Confirmed Covid-19 Patients

Patients, suspected or confirmed, will have to be moved safely between their homes to a health care facility as well as from health care facilities to dedicated COVID-19 management facilities. Acknowledging the challenges vehicular transportation of such patients pose including vehicle contamination and infection transmission, safe transfer is possible if the following recommendations are followed:

##### 4.5.1 Precautions during Patient assessment

- Where possible, ambulance staff should carry out initial assessment keeping a distance of at least 1.8m from the patient.
- For additional staff protection, the number of ambulance staff in the patient section of the ambulance should be restricted to the minimum required.
- It is best to limit contact with patient contact until a patient should be asked to wear facemask (if possible) is placed on him/her, this facemask reduces the ability of the patient to contaminate the immediate working environment of the ambulance staff.
- Oxygen delivery with a non-rebreather face mask may be used to provide oxygen support during transport. If needed, positive-pressure ventilation should be performed using a resuscitation bag-valve mask, preferably one equipped to provide HEPA or equivalent filtration of expired air.

- Family members and other contacts of patients should not ride in the ambulance if possible. If necessary, they should be asked to wear appropriate PPE
- In patients with nasal cannula in place, the facemask should be fixed over the cannula. It is also possible to use an oxygen mask when indicated.
- Additional recommendations for aerosol-generating procedures can be found in section 4.3.2 (Airborne precautions for aerosol-generating procedures for suspected COVID-19)

#### 4.5.2 Recommendations on Personal Protective Equipment (PPE) use.

- Ambulance staff providing care for or accompanying suspected or confirmed COVID-19 patients in the patient section of the ambulance should adhere to standard and transmission-based precautions including required PPE.
- In situations where personnel driving ambulances used to transport patients are involved in moving patients onto stretchers or other forms of direct care, it is recommended that they strictly use recommended PPE. They should appropriately doff and dispose their PPE and perform hand hygiene after completing patient care and prior to re-entering the isolated driver's section. This will prevent contamination of the cubicle.
- In situations where the ambulance/vehicle lacks an isolated driver's section, it is recommended that the driver use a respiratory/face mask during transport. However, he should remove his face shield or goggles, gown and gloves and perform hand hygiene.
- Ambulance staff should avoid touching their faces while working.
- Upon arrival at the health care facility, and following patient hand over ambulance staff should doff and discard PPE and perform hand hygiene. They should discard used PPE following standard MOH procedures.

#### 4.5.3 Recommendations for Ambulance Staff During Transportation

The following recommendations apply to ambulance staff involved in the transport or transfer of a patient with an exposure history and signs and symptoms suggestive of SARS COV2 infection to a healthcare facility for advanced management while transporting the patient:

- Ambulance staff should notify the receiving healthcare facility that the patient has an exposure history and signs and symptoms suggestive of COVID-19 so that appropriate infection control precautions may be taken prior to patient arrival.
- To the extent possible, staff should ensure patients are isolated from non-patients. This includes not allowing family members and other contacts to accompany suspected and confirmed SARS COV2 infected patients in the ambulance. However, if they accompany the patient, they must wear a facemask.

- Ambulances with isolated driver and patient sections providing independent ventilation to each area is preferred. To assure driver isolation from the patient section, keep connecting doors and windows closed before bringing the patient into the ambulance.
- During the journey, ensure that ventilation in both sections are in the non-recirculated mode in order to optimize changes thereby reducing the presence of potentially infectious particles in the ambulance. Ambulances with rear exhaust fans can use it to remove air from the vehicle at the back. The use of It is preferable to use an ambulance fitted a HEPA filter coupled ventilator when transporting patients on mechanical ventilators.
- To use the ventilation in ambulances lacking a physically isolated driver section, open the outside air vents in the driver section should be opened and the rear exhaust ventilation fans turned on to the highest setting. This generates a negative pressure gradient in the patient area.
- The ambulance staff should complete the handing over process at the destination health care facility following standard procedures.

#### 4.5.4 Recommendations relating to Patients care Documentation

- Only after the ambulance staff have completed patient hand over, PPE doffing and hand hygiene should they proceed to patient care documentation.
- The documentation should include a listing of all the HCWs that provided care for the patient (direct or indirect) and the level of contact.

#### 4.5.5 Recommendations regarding Cleaning Ambulances after Transporting a Patient with Suspected or Confirmed COVID-19

- Once the patient has been handed over at the designated receiving health care facility, the ambulance should be aerated with several cycles of air changes by leaving its rear doors open. This will get rid of possibly infected particles.
- Prior to cleaning the ambulance, staff should don disposable gowns and gloves. Eye/face protection PPE (goggles, face shields or facemasks) are recommended if the cleaning procedure will generate splashes or sprays.
- Environmental cleaning and disinfection should be carried out following procedures consistently and correctly. This includes assuring adequate ventilation when chemicals are used by keeping doors open.
- Routine cleaning and disinfection procedures (e.g., using cleaners and water to pre-clean surfaces prior to applying approved disinfectant to frequently touched surfaces or objects for appropriate contact times as indicated on the product's label) are appropriate for SARS-CoV-2 in healthcare settings, including those patient-care areas in which aerosol-generating procedures are performed.

- Following approved procedures, the ambulance must be cleaned and disinfected ensuring that all contaminated surfaces including stretcher, rails, control panels, floors, walls and work surfaces are thoroughly cleansed approved disinfectant and in according to manufacturer's instructions.
- Clean and disinfect reusable patient-care equipment before use on another patient, according to manufacturer's instructions.
- Ambulance staff should keep to approved procedures for the containment and disposal of used PPE and regulated medical waste as well as laundering used linen. Avoid shaking the linen.

#### **4.5.6 Recommendations to Ambulance Staff Post Care of a Suspected or Confirmed COVID-19 Patient: Follow-up/Reporting Procedures**

- Ambulance staff should carry out follow-up/reporting measures required of them post care of a patient with suspected or confirmed SARS-CoV-2 infection. Their supervisors should implement regulations requiring monitoring, excluding from work, etc. as pertains to HCWs having potential exposure to SARS-CoV-2 infected patients.
- Ambulance staff are required to promptly inform their supervisor of exposures to a patient with suspected or confirmed SARS-CoV-2 infection who can ensure that appropriate action is taken.
- Ambulance staff are required to report any unprotected exposure to patient with suspected or confirmed SARS-CoV-2 infection (e.g. not donning recommended PPE, compromised or inappropriate PPE, etc.) to their supervisor or infection control for appropriate evaluation and action.
- Ambulance staff are required to monitor and report any fever or respiratory symptoms (e.g., cough, shortness of breath, sore throat). Upon developing symptoms, they should isolate themselves and inform their supervisor or infection control for appropriate evaluation and action.

#### **4.6 Administrative controls**

- Establishment of sustainable IPC infrastructures and activities.
- HCWs training; patients' care givers education.
- Policies on early recognition of acute respiratory infection potentially due to COVID-19.
- Access to prompt laboratory testing for identification of the etiologic agent.
- Prevention of overcrowding especially in the emergency department.
- Provision of dedicated waiting areas with clear signage of "Respiratory Waiting Area" for symptomatic patients and appropriate placement of hospitalized patients promoting an adequate patient-to-staff ratio.
- Provision and use of regular supplies.
- IPC policies and procedures for all facets of healthcare provisions with emphasis on surveillance of acute respiratory infection potentially due to COVID-19 among HCWs and the importance of seeking medical care.

- Monitoring of HCW compliance with standard precautions, along with mechanisms for improvement as needed.
- Designating of centers that all confirmed cases of COVID-19 should be transferred and isolated in (Exceptions must be by Regional Command and Control Centers).

#### **4.7 Environmental and engineering controls**

- Basic health-care facility infrastructures.
- Ensuring adequate environmental ventilation.
- Adequate environmental cleaning in all areas within the health-care facility.
- Terminal room cleaning at the time of discharge or transfer of patients.
- Physical separation of at least 1- 1.5-meter distance should be maintained between each suspect patient and others.

#### **4.8 Collection and handling of laboratory specimens from patients with suspected COVID-19**

- All specimens collected for laboratory investigations should be regarded as potentially infectious.
- HCWs who collect or transport clinical specimens should adhere rigorously to Standard Precautions to minimize the possibility of exposure to pathogens.
- Ensure that HCWs who collect specimens use appropriate PPE (eye protection, medical mask, long-sleeved gown, gloves).
- The respiratory specimen should be collected under aerosol generating procedure, personnel should wear a particulate certified N95 respirator.
- Ensure that all personnel who transport specimens are trained in safe handling practices and spill decontamination procedures.
- Place specimens for transport in leak-proof specimen bags (secondary container) that have a separate sealable pocket for the specimen (i.e. a plastic biohazard specimen bag), with the patient's name label on the specimen container (primary container), and a clearly written laboratory request form.
- Ensure that health-care facility laboratories adhere to appropriate biosafety practices and transport requirements according to the type of organism being handled.
- Deliver all specimens by hand whenever possible.
- DO NOT use pneumatic-tube systems to transport specimens.
- HESN Printed lab requisitions must be sent with samples and national lab reception report and result values must be updated on HESN on their corresponding time.

#### **4.9 Environmental Cleaning and Disinfection After Suspected/Confirmed to Have COVID-19 patients Have Been in the Facility:**

- In-patient rooms housing COVID-19 patients should be cleaned and disinfected at least daily and at the time of patient transfer or discharge
- More frequent cleaning and disinfection may be indicated for high-touch surfaces and following aerosol producing procedures (e.g. tables, hard-backed chairs, doorknobs, light switches, remotes, handles, desks, toilets, sinks)
- Cleaning staff should wear disposable gloves, surgical mask and isolation gowns for all tasks in the cleaning process, including handling of waste.
- Cleaning and disinfection of the environmental surfaces should be with approved MOH disinfectant e.g. Hydrogen peroxide, quaternary ammonium chloride 4<sup>th</sup> generation that should be used on precleared, hard, non-porous surfaces in accordance with manufacturer's instructions for environmental surface disinfection.
- After patient transfer, terminal cleaning should be done using manual method and /or ultraviolet germicidal irradiation or hydrogen peroxide dry mist or vapor.

## 5. LABORATORY DIAGNOSIS:

### 5.1 Specimen collection and shipment of SARS-CoV-2

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

### 5.2 Laboratories to perform diagnostic testing:

- Testing is limited to qualified laboratories with a certified Class II BSC in a BSL-2 facility and those designated by Saudi CDC.
- To provide diagnostic testing for COVID-19, the laboratory should do testing using as least one confirmatory target in addition to the screening targets.
- In the current time laboratories should NOT attempt viral isolation and culture from samples collected from patients suspected to have COVID-19.

### 5.3 Samples to be collected

1. Lower respiratory tract samples: including endotracheal aspirate, bronchoalveolar lavage fluid or sputum.
  2. Upper respiratory tract samples:
    - a. Nasopharyngeal and oropharyngeal swabs in viral transport medium in separate tubes.
    - b. Nasopharyngeal wash/aspirate
- 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.
  - Repeat testing should be performed if initial testing is negative and there is a high index of diseases suspicion. Patients should be retested using a lower respiratory sample or, if not possible, repeat collection of a nasopharyngeal sample.
  - In HESN you can register the case, for test requested select COVID-19, and select the designated laboratory.
  - HESN request form is to be completed and must be attached with sample.
    - A single negative test result, especially from upper respiratory tract sample, does rule out the infection.

- Negative RT-PCR results must be interpreted in correlation with clinical findings, history, and other diagnostic procedures.
- Positive RT-PCR for COVID-19 indicate infection with SARS-CoV-2. However, it does not rule out co-infection with other viruses.

#### **5.4 Notification and Result Reporting HESN portal**

- All laboratories testing for COVID-19 are required to report all positive results immediately to the public health authorities through HESN portal.
- All samples with positive results from MOH, Governmental non-MOH and private Sectors should be sent to National Health Laboratory, Saudi CDC for further confirmation and characterization.
- Store respiratory samples at 2-8°C and ship to National health Laboratory, Saudi CDC on ice pack.

#### **5.5 Storage and Shipment of samples**

- Store samples at 2-8°C and ship on ice pack to NHL. 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.
- Samples can be shipped free of charge via the courier, SMSA, following appropriate regulations. The courier service is available for sample transportation and pickup locations throughout the country for collection of samples from MOH hospitals and other Health care facilities. Specimens pick up can be requested from SMSA at the following number (8006149999)
- All specimens must be appropriately packaged
- Courier services are provided 7 days a week.
- The courier will package and transport the samples in accordance with Category B transportation regulations and the WHO guidance on regulations for the transport of infectious substances 2019-2020.
- For detailed guidelines on Sample collection, packaging and shipping, please refer to MERS-CoV guidelines version 5.1 (Appendix E).

## 6. General Outline of management:

Up-to-date, there is no clinically approved antivirals therapy for COVID-19; newly tested antivirals for COVID-19 indication are not allowed to be used unless you and your institution are aware and enrolled in an approved clinical trial with approved IRB. Since there is lack of approved treatment options, there are few recommendations to be followed with confirmed cases.

The indication for use of antivirals was based on the expert advice and must be used only for confirmed case and under supervision of Infectious diseases consultants as presented in the following table:

Category	
Mild to moderate	Severe
<p>1. If the patient have mild symptoms and no risk factors for poor outcome (age &gt;60 years, cases with underlying co-morbidities, e.g., chronic cardiovascular disease, chronic respiratory disease, diabetes, cancer). - <b>Home isolation or isolation in designated facilities may be considered based on assessment by public health team and CCC.</b></p> <p>2. mild cases with risk factors for poor outcomes <u>outcome</u> (age &gt;60 years, cases with underlying co-morbidities, e.g., chronic cardiovascular disease, chronic respiratory disease, diabetes, cancer) -<b>must be admitted to hospital for isolation for 14 days</b></p>	<p>Patient with <math>\geq 1</math> of the following symptoms: Symptoms <math>\geq 1</math> of the following: - Respiratory rate <math>\geq 30</math>/min (adults); <math>\geq 40</math>/min (children &lt; 5) - Blood oxygen saturation <math>\leq 93\%</math> - PaO<sub>2</sub>/FiO<sub>2</sub> ratio &lt;300 - Lung infiltration &gt;50% of the lung field within 24-48 hours -<b>must be admitted to hospital for isolation for 14 days</b></p>
Supportive Care	
<ul style="list-style-type: none"> <li>- Treat symptoms</li> <li>- Consult Infectious Disease Specialist</li> </ul>	<ul style="list-style-type: none"> <li>- Treat symptoms</li> <li>- ICU admission, decision by ICU treating team</li> <li>- Consult Infectious Specialist</li> <li>- Consider carefully antibiotics or antifungals according to local epidemiology</li> </ul>
Antiviral Therapy	
<ul style="list-style-type: none"> <li>- Consider starting hydroxychloroquine 400 mg every 12 hours for 1 day, followed by 200 mg BID up to Day 5</li> <li>- If hydroxychloroquine is not available, consider chloroquine 600 mg (10mg/kg) at diagnosis and 300 mg (5 mg/kg) 12 hours later, followed by 300 (5 mg/kg) BID up to Day 5 or chloroquine phosphate 1000 mg at diagnosis and 500 mg 12 hours later, followed by 300 mg BID up to Day 5</li> </ul>	<ul style="list-style-type: none"> <li>- Start hydroxychloroquine 400 mg every 12 hours for 1 day, followed by 200 mg BID up to Day 5</li> <li>- If hydroxychloroquine is not available, consider chloroquine 600 mg (10mg/kg) at diagnosis and 300 mg (5 mg/kg) 12 hours later, followed by 300 (5 mg/kg) BID up to Day 5 or chloroquine phosphate 1000 mg at diagnosis and 500 mg 12 hours later, followed by 300 mg BID up to Day 5</li> <li>- Consider alternative therapy (Lopinavir200mg/ Ritonavir50 mg) as 2 tabs PO BID for 7 days and (hydroxy) chloroquine up to 7 days</li> </ul>

### Precautions

<ul style="list-style-type: none"> <li>- Hydroxychloroquine &amp; Chloroquine</li> <li>- Avoid Ibuprofen</li> <li>- Labs and work-up: CBC, Urea/Electrolytes, creatine, CRP, LFTs, Chest X-ray with additional G6PD screening if chloroquine will be used</li> <li>- Perform ECG every 3 days if initial QTc 400-500 msec, and biochemistry according to underlying disease</li> </ul>	<ul style="list-style-type: none"> <li>- Lopinavir/ritonavir</li> <li>- Avoid Ibuprofen</li> <li>- Labs and work-up: CBC, Urea/Electrolytes, creatine, CRP, LFTs, Chest X-ray with additional G6PD screening if chloroquine will be used</li> <li>- Perform ECG every 3 days if initial QTc 400-500 msec, and biochemistry according to underlying disease</li> </ul>
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However, it is necessary to transfer a confirmed COVID-19 case to a designated hospital (see Appendix 6) in coordination with command and control center.

## 6. PUBLIC HEALTH CONSIDERATIONS

### 6.1 Reporting of suspected Cases

The COVID-19 is an emerging pathogen, which is by default as **category I** reportable disease that should be immediately reported. All healthcare facilities **must** report suspected cases immediately through Health Electronic Surveillance Network (HESN). Failure of healthcare organizations and/or professionals to report reportable infectious diseases is punishable by law.

### 6.2 Rapid Response Teams (RRTs)

The public health team or rapid response team (RRT) at regional health affairs (or equivalent body) is responsible of initiating the epidemiological investigation. After activation through regional command and control leader, the team should complete the epidemiological investigation in both settings; health care settings and the community settings using the COVID-19 epidemiological investigation forms. The form includes detailed items such as travel history and possible exposures which needs vigilant history taking and probing. Contacts identification is another important part of needed information (contacts as defined within surveillance case definition paragraph) and then list them for their tracing documentation (Contact tracing form).

### 6.3 Risk Communication

Risk communication is integral to the success of response to any health emergency and possible outbreaks. During outbreaks, panics, rumors and misunderstandings are raising between people. Thus, risk communication helps prevent infodemics, alleviate confusion and avoid misunderstandings. Most important and effective interventions in a public health response to any event or outbreak is to proactively communicate and engage and share strategies with the community.

Ensure to update health care workers about COVID-19 status globally and in Saudi Arabia. The internal communication plan should be developed for communicating information about suspected or confirmed cases inside the facility. The assigned risk communication team should be formed with clear roles and responsibilities. The main role of the team is to understand the concerns, believes, behaviors, rights and duties during alert and outbreak phases. Announcement of cases will be among the spokesperson of MOH only. To avoid any panic or rumors among the public. The main official sources of COVID-19 information are the MOH and SCDC.

#### 6.4 Household and Community Contacts Management

Contacts are managed as per MERS-CoV guidelines, in terms of listing, daily follow up looking for symptoms (fever or respiratory symptoms) among originally asymptomatic, and clinical assessment for those who develop symptoms. Contacts are categorized by the presence or absence of suggestive symptoms at the first assessment:

- Contacts without suggestive symptoms should be listed for follow up on daily bases by phone or face-to face if feasible. Clinical assessment is not generally required at this stage. In certain situations, this may be considered in addition to nasopharyngeal swab if:
  - the exposed contact had intense exposure to a confirmed COVID-19 case (e.g. direct care, sleeping in same room)
  - the exposed contact is Immunocompromised (e.g. cancer, organ failure, use of immunosuppressive medications) or has other chronic underlying conditions (e.g. diabetes, hypertension)
- Contacts with suggestive symptoms should be assessed clinically and referred to a designated healthcare facility (Appendix 6) if admission deemed necessary.
- A nasopharyngeal swab should be collected by trained personnel and sent for testing for all symptomatic contacts.
- Contacts who develop symptoms require enhanced monitoring for disease progression. Health status must be checked by phone and if feasible, by face-to-face visits on a daily base.
- The observation period of a community and household contacts is 14 days after the last exposure. Longer observation may be required if more than one generation of transmission is identified.
- The home isolation or Isolation in designated facility of clinically stable contacts (who do not need hospitalization) can be considered. Ensuring the person being informed about infection prevention procedures and respiratory etiquette. Environmental assessment of the house is needed to determine its suitability for home isolation.
- Regional public health teams should keep all line-lists in a good professional format.

#### 6.5 Quarantine and Homestay Guide for Corona Virus Disease (Covid-19)

The decision to restrict the activities of persons suspected of being infected, or to separate them from others, depends on the assessment of the level of risk of transmission, the type of infectious disease, and the expected incubation period in a manner that leads to preventing the spread of infection or contamination.

### 6.5.1 Actions to be Taken During Quarantine

- Monitor the health status of the individuals under quarantine twice daily using the attached form. **(APPENDIX 3)**
- Ensure that both, the workers follow the precautionary measures, such as washing hands and wearing a medical mask.
- Disinfect all exposed surfaces and tools that are touched on a daily basis with disinfectants that are approved by the Ministry of Health, by trained people who are wearing gloves, medical masks, and medical gowns during cleaning.
- When washing clothes of quarantined individuals is needed, personal protective equipment (gloves, medical masks and medical gowns) is used, using warm water and detergent for as long as possible and then drying them using the clothes dryer.
- 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.

### 6.5.2 Medical Advice / Guidance for Individuals under quarantine:

Health care worker should advice the Individuals under quarantine to adhere the following points:

1. Maintain hand cleanliness by ensuring to wash them regularly with soap and water, or using an alcohol-based gel for a period of no less than 20 seconds.
2. Cover the mouth and nose when coughing or sneezing, using a tissue or upper sleeves, making sure to throw the used tissue in the trash and wash your hands immediately afterwards.
3. Wear a medical mask if other people are in the room, such as the health staff and/or visitors.
4. Avoid sharing personal utensils for eating and drinking or other personal items.

## 6.6 Duration of Isolation Precautions for Covid-19 Infection

### • Confirmed Cases:

#### • For symptomatic confirmed patients

- Re- testing must be done patient is clinically recovered .
- If result is positive, then repeat the test every 72 hours.
- In order to discontinue hospital isolation precautions, two negative samples 24 hours apart are required for all patients. After discharge, patients are recommended to continue 14 days of home isolation.

#### • For asymptomatic confirmed patients

- Re- testing must be done every 72 hours after confirmation
- In order to discontinue designated facility isolation precautions, two negative respiratory samples 24 hours apart are required for all patients. After discharge, patients are recommended to continue 14 days of home isolation.

### • Suspected Cases

- All suspected cases must be tested initially with Covid-19 PCR
- If suspected case is clinically stable, home isolation or isolation in designated facility may be considered based on assessment by public health team and CCC until result become available.
- If patient is clinically unstable, must be admitted to hospital for isolation for 14 days.
- If result of initial test is positive, patient is considered as confirmed case.

## 6.7 Human-Animal Interface and SARS CoV 2:

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, spillover 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).

If the situation arises that a local confirmed case has no direct or indirect link to confirmed cases in endemic countries or travelers returning from such places with history of animal exposure, joint investigations, using a One Health approach, in coordination the Ministries of Water, Environment and Agriculture (MEWA), Municipalities (MOMRA) and Interior are required.

## **6.8 Points of entry and traveler health**

In response to the outbreak of COVID-19, several countries and territories were reported to have implemented health screening of travelers arriving (directly or indirectly) from China. The spread of COVID-19 from China to nearby and faraway countries through international travel of infected individuals have been reported. With increasing number of cases, points of screening for travellers coming from any country were added. Recently, All International flights from/to the Kingdom of Saudi Arabia Airports were Suspended for two weeks starting from 15th of March.

Importantly, on arrival to Saudi Arabia after period of flight suspension, travelers from any country in general may undergo health screening, including recording body temperature, questionnaire to be filled that include any epidemiological contact. Travelers with symptoms (fever, cough, or difficulty breathing) will undergo additional health assessment based on SCDC and MoH regulations.

For proper implementation of COVID-19 prevention and control procedures, public health measures at ports of entry must to be followed:

### **Public health measures at ports of entry (PoE)**

- Ensure routine measures, trained staff, and appropriate space and stockpile of adequate equipment are in place at points of entry for assessing and managing potentially infected or ill travelers onboard (airplane or ship) or upon arrival.
- Implement entry screening (including temperature recording) on all travelers arriving from any country at any point of entry.
- Ensure procedures and means are in place for communicating information on ill travelers between conveyances and points of entry.
- Communicate and share information on ill travelers between PoE and national health authorities and designated hospitals before patient's arrival to hospitals.
- Use standard precautions, contact precautions, droplet precautions and use eye protection (goggles or a face shield) when dealing with suspected cases.
- Organize safe transportation of symptomatic travelers to hospitals or designated facilities for clinical assessment and treatment.

- Ensure a functional public health emergency and contingency plan is in place at point of entry to respond to public health events.
- Ensure the existence of equipment necessary to disinfect and sterilize sites and tools that are expected to be contaminated with SARS-CoV-2 by infected cases.
- Increase health awareness and preventions methods for travelers, conveyance operators and operators working at the point of entry.
- Inform people who are travelling to avoid being in crowded places, avoid contact with sick people or animals (alive/ dead), avoid being in animal markets, and avoid eating raw or undercooked meat. Also, inform travelers to wash hands often with soap and water, to use alcohol-based hand sanitizer and to cover their mouth and nose with a tissue or your sleeve (cough etiquette) when coughing or sneezing.
- Inform travelers to request urgent medical health care by contacting the health service when feeling sick.
- If a traveler on board of an aircraft/a ship has signs and symptoms indicative of acute respiratory infections, the model of Maritime declaration of health or the health part of the aircraft general declaration should be used by conveyance operators to register the health information onboard and submit to point of entry health authorities upon arrival.
- A passenger locator form should be used in the event of a sick traveler detected on board a plane. This form is useful for collecting contact information for passengers and can be used for follow-up if necessary. Travelers should also be encouraged to self-report if they feel ill. The cabin crew should follow the operational procedures recommended by International Air Transport Association (IATA) with regard to managing suspected communicable disease on board an aircraft.

## 6.9 Command and Control

The Ministry of Health has National and Regional Command and Control Centers CCC (i.e. Incident Command System) to coordinate roles and responsibilities of different entities to expedite real-time response during events. The CCC has activated a COVID-19 preparedness and response plan; it coordinates communications, surveillance, information, resource allocation and educational activities to prevent and control possible COVID-19 events.

### 6.9.1 First: preparedness and real-time surveillance

National and Regional CCCs oversee the preparedness activities and leads national COVID-19 surveillance through enforcing the existing structure of incident command with relevant stakeholders to achieve unified, consistent, and timely actions over a significant period.

#### The aim of the preparation and surveillance

- Determine and establish operational response plan to COVID-19 outbreak.
- Education and training for all levels of responders with relevant plans and procedures.
- Ensure that preparation plan of; reporting, alert, escalation, stockpiles, bed capacities, isolation capacities and RRTs, are updated and disseminated to relevant stakeholders.
- Ensure timely and effective command and control of COVID-19 outbreak.
- Enforce Surveillance and appropriate levels of alert.
- Ensure real-time and accurate information flow to expedite actions.
- Public Health awareness.

#### Current Preparation of CCC:

##### Surveillance and PoE:

- Visual triage for passengers arriving from any Country at all Point of Entry.
- Thermal screening of passengers arriving from any Country at all Point of Entry.
- Declaration of being in contact with a known case in the last 14 days at all PoE
- Suspected cases must immediately be managed by RRTs and referred to designated hospitals (see Appendix 6)

**Preparedness of Healthcare Facilities:**

- Risk assessment and gap closure
- Strengthen all healthcare facilities including the 25 Designated hospital (20 Primary and 5 secondary)
- Infection control procedures and visual triage is enforced and monitored in all healthcare facilities
- Monitor capacity for isolation bed, healthcare workers, and medical critical medical supplies
- Prepare and disseminate technical guidelines and operational protocols

**Community based preparedness:**

- Support public places by PPEs capacity
- CCC have Prepared a Risk communication plans during different stages of possible outbreak

**Communication and Health awareness:**

- Designated a hotline for the public consultations or general questions about the disease
- Designated hotline for the Healthcare workers for medical consultations
- Health awareness on social media, PoE and schools

**6.9.2 Second: Response**

The CCC commanders are responsible to activate ICS to coordinate actions of the relevant responders.

- The main goal of CCC and RCCC in response mode:
  - a. Have real-time information of the incident (outbreak)
  - b. Manage resources for lab and infection control requirements (acquisitions, tracking and monitoring)
  - c. Monitor COVID-19 cases in hospitals or household isolation
  - d. Plan and operate designated health facilities for the surge
  - e. Coordinate all actions between responders and stakeholders

## 7. MANAGING BODIES OF DECEASED COVID-19 PATIENTS:

- Deceased bodies of COVID-19 patients may pose a risk of infection transmission.
- Isolation precautions should be continued to the died COVID-19 patient.
- Cadaver bags that fulfill MOH approved specifications should be used for transport of dead bodies of deceased COVID-19 patients and those handling the body at this point should use PPE (surgical mask, clean gloves, isolation gown).
- The trolley carrying the body must be disinfected after transmission.
- Only experienced morgue staff are dealing with bodies of deceased COVID-19 patients, the morgue's staff should be well trained, familiar with standard precautions and transmission based precautions while handling dead bodies, especially hand hygiene, safe and proper use of PPE.
- Morgue's staff should be informed about infectious status of the deceased, risk of infection and appropriate precautions required through use of Morgue's transportation card attached to the dead body or to the bag about the disease and transmission based precautions required.
- Prevents relatives from direct surface contact with the body such as touching or kissing it is acceptable to open the body bag for family viewing wearing PPE
- The body is prepared for burial in 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 after ensuring that there are equipment and trained people to deal with the dead bodies of infectious diseases.
- Limit the number of morgue's personnel dealing with the dead body to the minimum number required.
- All personnel performing or attending the body washing and preparation should wear PPE (surgical mask, isolation gown, clean gloves) and should perform hand hygiene after removal of the gloves.
- If family members wish to perform the body washing, this should be under supervision must strictly adhere to standard precautions and use PPE.
- Body washing of COVID-19 cases are preferably be done at hospitals. However, it can be safely performed in public washing facilities, If the

dead body transmitted outside the healthcare facility to be prepared for burial the receiving facility should be informed by the disease, mode of transmission and precautions needed during body preparation, a public health worker is identified to accompany the body in order to ensure compliance with the required precautions throughout the pre-burial period.

### **8.1 Collection of Postmortem 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 HIPA filter 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 gown.
- Face shield or a face mask and goggles.

### **8.2 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 postmortem and cleaning of the autopsy room should be kept to assist in future follow up, if necessary.

### **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, a portable HEPA 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 unit is not possible, the procedure should be performed in the most protective environment possible.

### **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 N-95 respirator (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 20 seconds or use alcohol-based hand sanitizer if hands are not visibly dirty. Ensure that hand hygiene facilities are readily available at the point of use (e.g., at or adjacent to the PPE doffing area).

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APPENDIX 1

Corona Virus Disease 2019 (COVID-19) Form

Date of initial notification: \_\_\_\_dd/\_\_\_\_mm/\_\_\_\_yyyy

Notification					
Name of who completed the form			Contact number		
Date			Email		
Hospital Name			City		
At the time of this report, is the case?			<input type="checkbox"/> Confirmed	<input type="checkbox"/> Suspected	
			<input type="checkbox"/> Case under investigation	<input type="checkbox"/> Not a case	
Patient Information					
Full name			Date of Birth	____dd/____mm/____yyyy	
Identification number:			Marital status		
Occupation	<input type="checkbox"/> HCW	Sex	<input type="checkbox"/> Male	<input type="checkbox"/> Female	
	<input type="checkbox"/> Non-HCW				
Phone Number			Age		
Address	House No.: _____ Street name: _____ District _____ City: _____ Province/Region: _____				
Education					
Clinical Information					
Date of symptoms onset			____/____/____		
Symptoms	Yes	No	Symptoms	Yes	No
Fever $\geq 38^{\circ}$			Nausea		
History of fever (not measured).			Vomiting		
Sore throat			Headache		
Runny nose			Muscle pain		
Cough			Joint pain		
Shortness of breath			Diarrhea		
Other (specify):					

### Hospitalization Information

Is/was the patient hospitalized?  Yes, Date of admission \_\_\_\_/\_\_\_\_/\_\_\_\_  No

Admitted to ICU?	Intubated?	On ECMO?	Patient died?
<input type="checkbox"/> Yes <input type="checkbox"/> No			

Comorbid conditions (check all that apply):

- None  Unknown  Pregnancy  Diabetes  Cardiac disease  
 Hypertension  Chronic pulmonary disease  Chronic kidney disease  
 Chronic liver disease  Immunocompromised  
 Other: \_\_\_\_\_

### Epidemiological Information

#### Visiting and Travel History:

Did the patient travel in the 14 days prior to illness onset?  Yes  No  Unknown

**If yes,**

Trip 1: Dates of travel: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ to \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Country \_\_\_\_\_ City \_\_\_\_\_  
 Trip 2: Dates of travel: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ to \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Country \_\_\_\_\_  
 City \_\_\_\_\_ Trip 3: Dates of travel: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ to \_\_\_\_ / \_\_\_\_ / \_\_\_\_  
 Country \_\_\_\_\_ City \_\_\_\_\_

In the 14 days prior to illness onset, did the patient have close contact with someone who travelled outside the Country?

Yes  No  Unknown

Please describe individual (including travel location)

**If the patient was tourist/pilgrim, please complete information below:**

Did the patient travel with?	<input type="checkbox"/> Airline <input type="checkbox"/> Ship <input type="checkbox"/> Bus <input type="checkbox"/> Car <input type="checkbox"/> Other _____
------------------------------	---

**Airline Information:**

Airline Name: \_\_\_\_\_ Flight Number: \_\_\_\_\_ Origin: \_\_\_\_\_

Date of arrival: \_\_\_/\_\_\_/\_\_\_ Date of departure: \_\_\_/\_\_\_/\_\_\_ Transit destination: \_\_\_\_\_

**Other Trans Information:**

Type of transportation: \_\_\_\_\_ Date of arrival: \_\_\_/\_\_\_/\_\_\_  
Port of entry: \_\_\_\_\_ Origin: \_\_\_\_\_

**Resident Information after arrival:**

Name of resident (hotel, Hajj campaign, ..etc.): \_\_\_\_\_ where: \_\_\_\_\_

Date of check in: \_\_\_/\_\_\_/\_\_\_ Date of check out: \_\_\_/\_\_\_/\_\_\_

Note: (Describe the timeline of contact movement)

**Contact Exposure**

Did the patient have contact with a known or suspect case, or with any sick person before becoming ill (14 days prior to illness onset)?	<input type="checkbox"/> Yes <input type="checkbox"/> No  <input type="checkbox"/> Unknown
--	--

Did the patient have contact with anyone during illness period?

Yes    No    Unknown

**If yes, please complete the list of patient contact in the end of report**

In the 14 days before or after becoming ill, did the patient attend a public event where a large number of people were present (i.e., a sporting event, wedding, concert, Hajj and Umrah)?

<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<i>If yes, please describe the event (include date and location)</i>
---	--

In the 14 days before or after becoming ill, did the patient visited any healthcare facility or setting?

Yes    No    Unknown Specify healthcare facility/reason: \_\_\_\_\_

### Animal Exposure:

Did the patient have direct/ indirect contact with any animals within the last 14 days?

Yes  No  Unknown

If yes, please specify and describe the contact (when/where/extent)

Did the patient visit any of the following locations where animals may be present within the last 14 day?

Yes  No  Unknown

If yes, check all that apply:  Farm  Petting zoo  Agricultural event  Live animal market  Slaughterhouse  Pet store

Other: \_\_\_\_\_

Please describe (when/where/extent):

Did the patient has any other occupation that regularly deals with animal?

Yes, specify \_\_\_\_\_  No  Unknown

Note:

## APPENDIX 2

List of patient's contacts					
Name of contact	Relation to patient	Last contact date	City	Sex	Phone
		___ / ___ / ___		<input type="checkbox"/> Male <input type="checkbox"/> Female	
		___ / ___ / ___		<input type="checkbox"/> Male <input type="checkbox"/> Female	
		___ / ___ / ___		<input type="checkbox"/> Male <input type="checkbox"/> Female	
		___ / ___ / ___		<input type="checkbox"/> Male <input type="checkbox"/> Female	
		___ / ___ / ___		<input type="checkbox"/> Male <input type="checkbox"/> Female	
		___ / ___ / ___		<input type="checkbox"/> Male <input type="checkbox"/> Female	
		___ / ___ / ___		<input type="checkbox"/> Male <input type="checkbox"/> Female	
		___ / ___ / ___		<input type="checkbox"/> Male <input type="checkbox"/> Female	
		___ / ___ / ___		<input type="checkbox"/> Male <input type="checkbox"/> Female	
		___ / ___ / ___		<input type="checkbox"/> Male <input type="checkbox"/> Female	

For follow up of contacts, use the contact tracking form to collect additional information.

APPENDIX 3

Contact Tracing Form

Novel Coronavirus

Name of the contact: \_\_\_\_\_ ID/ Iqama number: \_\_\_\_\_

Age: \_\_\_\_\_ Nationality: \_\_\_\_\_ Phone #: \_\_\_\_\_

Daily Contact Follow-Up Form

1 Day after last exposure / /	2 Day after last exposure / /	3 Day after last exposure / /	4 Day after last exposure / /	5 Day after last exposure / /
<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____
6 Day after last exposure / /	7 Day after last exposure / /	8 Day after last exposure / /	9 Day after last exposure / /	10 Day after last exposure / /
<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____
11 Day after last exposure / /	12 Day after last exposure / /	13 Day after last exposure / /	14 Day after last exposure / /	
<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	<input type="checkbox"/> No symptoms <input type="checkbox"/> Fever _____ °C <input type="checkbox"/> Shortness of breath <input type="checkbox"/> Sore throat <input type="checkbox"/> Cough <input type="checkbox"/> Headache <input type="checkbox"/> Muscle/joint pain <input type="checkbox"/> Diarrhea _____ times/day <input type="checkbox"/> Vomiting/nausea <input type="checkbox"/> Runny nose Others _____	

Note

Region: \_\_\_\_\_ Public Health Investigator: \_\_\_\_\_

## APPENDIX 4

### Visual Triage Checklist

#### Visual Triage Checklist for Acute Respiratory Illnesses

Date:	Time:	MRN:
Name:	ID#:	Hospital:

Circle the number reflecting the patient's condition (exposure and clinical picture) and calculate the final score:

Risks for Acute Respiratory Illnesses	Score		
<b>A. Exposure Risks</b> (in the past 14 days prior to symptom onset)	<i>Any Patient (Adult or Pediatric)</i>		
1. Had a history of travel abroad or to the identified high-risk area in the kingdom (Qatif region*)  <b>OR</b> A close physical contact in the past 14 days prior to symptom onset with a confirmed case of COVID-19  <b>OR</b> Working in or attended a healthcare facility where patients with confirmed COVID-19 were admitted.	5		
2. Exposure to a confirmed MERS case in the last two weeks	3		
3. Exposure to camel or products (direct or indirect*) in the last two weeks	2		
4. Visit to a healthcare facility that had MERS case in the last two weeks	1		
<b>B. Clinical Signs and Symptoms</b>	<i>Any Patient with Exposure Risk No. 1</i>	<i>Patient with or without Exposure Risk No. 2, 3, or 4</i>	
		<i>Pediatric</i>	<i>Adult</i>
1. Fever	1	1	2
2. Cough (new or worsening)	1	1	2
3. Shortness of breath (new or worsening)	1	1	2
4. Sore throat and/or runny nose	-	-	1
5. Nausea, vomiting, and/or diarrhea	-	-	1
6. Chronic renal failure, CAD/heart failure	-	-	1
<b>Total Score</b>			

\*Patient or household

A score  $\geq 4$ , place patient in an isolation room and inform MD for assessment. MERS-CoV testing should be done only according to case definition.

A score  $\geq 6$ , place patient in an isolation room and inform MD for assessment. COVID-19 testing should be done only according to case definition.

Staff name: \_\_\_\_\_ ID number: \_\_\_\_\_



\*\*\*CURB-65: Confusion, Urea nitrogen, Respiratory rate, Blood pressure, 65 years of age and older.

## APPENDIX 6

### Corona Virus Disease-2019 Designated Hospitals

Region	Primary COVID-19 Hospital	COVID-19 Backup Hospital
Riyadh	Prince Mohammed bin Abdul-Aziz Hospital	Imam Abdulrahman Alfaisal Hospital
Makkah	Al-Noor Hospital	East Jeddah Hospital
Jeddah	King Abdullah Medical Complex	
Taif	King Faisal Hospital	
Madinah	Ohud Hospital	
Eastern Region	Dammam Medical Complex	Qatif Central Hospital
Ahsa	King Fahd General Hospital in Hafuf	
Hafr Al-Batin	King Khalid General Hospital	
Al-Qassim	Buraidah Central Hospital	King Saud Hospital-Qassim
Tabuk	King Fahd Hospital	
Hail	King Khalid Hospital	
Al-Jouf	King Abdulaziz Specialist Hospital	
Northern Borders	Arar Central Hospital	
Al-Qurayyat	Qurayyat General Hospital	
Asir	Asir Central Hospital	Khamis Mushait General Hospital
Bisha	King Abdullah Central Hospital	
Albaha	King Fahd Hospital	
Jazan	Bish Hospital	
Najran	King Khalid Hospital	
Al Qunfudah	South Al-Qunfudah General Hospital	

## APPENDIX 7

### Discontinuation of hospital isolation

