Coronavirus Disease

COVID-19 GUIDELINES

V 3.0
The COVID-19 guidelines were done with the best available data and evidence. These guidelines will be updated as more information becomes available.
VERSIONS UPDATE

Version 1.0

- Was written and published on January 10th, 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

Version 1.3

- Updated the case definition
- Updated the Infection and Prevention Control (IPC) section
- Updated the contact tracing
- Updated the reporting form, the visual triage checklist form and investigation form

Version 2.0

- Updated standard precautions for all patients.
- Updated “implementation of empiric additional precautions.
- Updated transportation of suspected and confirmed cases.
- Updated sample to be collected.
- Updated notification and result reporting HESN portal.
- Updated household and community contacts management.
- Updated actions to be taken during quarantine.
- Updated criteria for recovery and discontinuing isolation.
- Updated follow up forms.
- Updated visual triage checklist.
- Updated flow chart for criteria for recovery and discontinuing isolation.

Version 3.0

- Updated Covid-19 confirmed case definition.
- Added Covid-19 reinfection case definition.
- Added rapid antigen testing.
- Added vaccination against SARS-CoV-2.
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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 was identified in December 2019 in Wuhan city, Hubei province of China, and has been named by the International Committee on Taxonomy of Viruses (ICTV) as Severe Acute Respiratory Syndrome Coronavirus-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 Coronavirus “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 200 other countries. Most of the cases involved in the first cluster in December 2019 were linked to the large Wuhan Seafood Market.

The original source(s) of SARS-CoV-2 transmission remain unidentified. However, available genetic and epidemiological data suggest 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, transmission of the virus mainly through droplets mode, less frequently through contact, it can be transmitted as well through aerosol in case of aerosol generated procedure and close contact in indoor sitting. Investigations are currently in progress. Some people may transmit the virus despite being asymptomatic. However, researchers do not know how often this may happen.
2. OBJECTIVES

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

- 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

3.1 Definition of COVID-19 Suspected Cases

<table>
<thead>
<tr>
<th>Clinical Presentation</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patient with acute respiratory illness (sudden onset of at least one of the following: fever(^1) (measured or by history), cough, or shortness of breath</td>
<td>Not required</td>
</tr>
<tr>
<td>2. Patient with sudden onset of at least one of the following: headache, sore throat, rhinorrhea, nausea, diarrhea or loss of smell or taste. <strong>AND</strong> in the 14 days prior to symptom onset, met at least one of the following criteria</td>
<td>• Had contact(^2) with a confirmed COVID-19 case <strong>OR</strong> • Working in or attended a healthcare facility where patients with confirmed COVID-19 were admitted.</td>
</tr>
<tr>
<td>3. Any admitted adult patient with unexplained severe acute respiratory infection (SARI), either Community Acquired Pneumonia (CAP) or Hospital Acquired Pneumonia (HAP).</td>
<td>Not required</td>
</tr>
</tbody>
</table>

3.2 Definition of COVID-19 Confirmed Cases

A person who is confirmed by nucleic acid amplification test (PCR) by a certified clinical laboratory which is authorized by Public Health Authority.

OR

A person who meets suspected case definition AND tested positive by a RDT kit that is authorized by SFDA and validated by public health authority.

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\(^1\) Fever is frequently reported (77–98%) but elderly and people with severe comorbidities may not mount fever initially.

\(^2\) Contact is defined as anyone with any of the following exposures:
- Being within 2 meter of a confirmed COVID-19 case for >15 minutes;
- Direct physical contact with a confirmed COVID-19 case;
- Providing direct care for a confirmed COVID-19 patient without using proper personal protective equipment (PPE);
- Living in the household with a confirmed COVID-19 case;
- Sharing a room, meal, or other space with a confirmed COVID-19 case;
- Sitting within 2 rows (in any direction) of a confirmed COVID-19 case for >15 minutes and any crew in direct contact with the case in a public or shared transportation.
### 3.3 COVID-19 Reinfection:

There were many reported cases of Covid-19 reinfection around the world until now. Cases were relatively young and immunocompetent. The clinical presentation differed between the cases; while most were asymptomatic, others showed mild to moderate symptoms that required hospitalization.

#### 3.3.1 Definition of COVID-19 Reinfection: (APPENDIX 8)

<table>
<thead>
<tr>
<th>Time frame/symptoms</th>
<th>Asymptomatic</th>
<th>Symptomatic (Fever, worsening cough, SOB)</th>
<th>Surveillance definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>At any time</td>
<td>If isolated virus found by <strong>gene sequencing</strong> different from previous infection isolate.</td>
<td></td>
<td><strong>Confirmed case of Reinfection</strong></td>
</tr>
<tr>
<td>More than or equal to 90 days</td>
<td>Any case regardless to symptoms that tests positive (PCR).</td>
<td>Manage it as confirmed case.</td>
<td></td>
</tr>
</tbody>
</table>
| Less than 90 days    |  | - Rule out the other possible causes  
- If hospitalized (sever case), isolate till resolution of symptoms. | **Presumed Reinfection** |
|                      | No further action is needed. | If **mild** isolate till resolution of symptoms | **Previous infection** |
4. INFECTION PREVENTION AND CONTROL (IPC)

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

- Early recognition and source control.
- Application of standard precautions for all patients.
- Implementation of empiric additional precautions.
- Management of exposure to COVID-19 in healthcare facilities.
- Transportation of suspected and confirmed COVID-19 patients.
- Administrative controls.
- Environmental and engineering controls.
- Collection and handling of laboratory specimen.
- Environmental cleaning and disinfection after a COVID-19.
- Infection control in radiological examination for COVID-19.

Early recognition and source control

- Encourage HCWs to have a high level of clinical suspicion.
- Activation of respiratory triage (see Appendix 5).
- 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.

Application of Standard Precautions for all patients

Standard Precautions include:

- Universal masking of all healthcare workers, patients and visitors.
- 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 and proper selection, use of PPE.
- 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:

- Universal masking of all HCWs, patients and visitors in hospital areas should be followed.
- Cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others.

Implementation of empiric additional precautions

4.1.1 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.
- It is preferred and strongly recommended not to cohort suspected COVID-19 patients because it carries a risk of transmission of infection between patients if one of them will be confirmed.
- In cases of severe shortage of single rooms, it is possible to cohort suspected COVID-19 patients together with strict adherence to the following standards:
  a. One patient only should be admitted in each multibed room, then another patient will be put to bed far from the first patient’s bed, and so on until the need to admit patients in all the beds of the room.
  b. There must be a physical separation between the patients' beds (single use curtains – mobile or fixed partitions) and in the event of unavailability the distance between the bed and the other, distance should not be less than two meters.
  c. It is strictly forbidden to implement aerosol-generating procedures (AGPs) such as respiratory suctioning and nasopharyngeal swabbing in these cohort rooms, the patient should be directed to a single room.
  d. If the mobile HEPA filter devices are available, a device can be placed between each of two beds
- Strict adherence by health care workers to infection control practices, hand hygiene between patients, new gloves between patients, wearing new set of personal protective equipment if the worn set become visibly soiled.
- Never share the patient care equipment between patients and it is preferable if available to use single use equipment.
- Patients should be asked to wear surgical mask throughout their hospitalization period, they are required not to move in the rooms between beds and corridors
- Use a surgical mask with an eye/facial protection (i.e. goggles or a face shield).
- Use gloves and a clean, non-sterile, long-sleeved fluid resistant isolation 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. With cleaning between patients

If transport is required,

- Notify the receiving area of necessary precautions as soon as possible before the patient’s arrival.
- Use pre-determined transport routes (get help from security) to minimize exposures to staff and to others and apply surgical mask to patient.
- Transferred patient should not wait in the waiting or recovery room.
- Isolation signage should be hanged to the patient transportation equipment
- Ensure that HCWs who are transporting patients wear appropriate PPE as described in this section and perform hand hygiene.
- Routinely clean and disinfect patient-contact surfaces with MOH approved disinfectant.

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 including communication tools like mobile no.

### 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.
- Always perform the seal-check when putting on a disposable particulate respirator.
- For nasopharyngeal swabbing, in case of non-availability of respirators the HCW can use surgical mask and face shield during the process.
▪ HCW that all available types of respirators 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 isolation 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.
▪ In case of unavailability of negative pressure room, nasopharyngeal swab could be taken in well-ventilated single room with portable HEPA filter.
▪ Limit the number of persons present in the room to the absolute minimum required for the patient’s care and support.

4.3.3 Choosing appropriate respiratory protection
▪ Adhering to appropriate infection control measures is crucial in protecting HCWs from secondary infection.
▪ In certain situation such as caring for suspected or confirmed cases of COVID-19 in poor ventilated areas, higher respiratory protection (high efficacy respirators) is preferred if available.
▪ Selection of high efficacy respirators should be based on the fit-test.

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 healthcare workers who had exposed to confirmed COVID-19 case and identify the risk category according to the "Management of Healthcare Workers Exposed to COVID-19" guide.

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 15 minutes:
- Patients should be followed daily for symptoms for 14 days after exposure.
- Testing (Nasopharyngeal swabs or deep respiratory sample if intubated) for COVID-19 is required (preferably 24 hours or more after the 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.

**Transportation of Suspected and Confirmed COVID-19 Patients outside the facility**

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:

a) There should be arrangement between the transporting facility and the receiving facility for transportation timing, personal and clinical information.

b) The patient should be masked with surgical mask during transportation.

c) The patient must be health educated about respiratory etiquette.

d) The driver should wear surgical mask during transportation.

e) Never transport suspected with confirmed COVID-19 in one vehicle.

f) The used vehicle should be disinfected using MOH approved disinfectant (quaternary ammonium chloride wipes or spray / freshly prepared sodium hypochlorite solution 1000 ppm).

**4.5.1 Precautions during Patient transport by ambulance**

- Ambulance staff that handles the suspected/confirmed cases should be vaccinated against SARS-CoV-2.
- 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.
- 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.
▪ It is best to limit contact with patient contact. 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.

▪ To the extent possible, staff should ensure patients are isolated from other patients. This includes not allowing family members and other contacts to accompany suspected and confirmed SARS-CoV-2 infected patients in the ambulance. However, if they accompany the patient, they must wear a facemask.

▪ 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.

▪ 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.

▪ 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 (including N95 mask and goggles). 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 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.

4.5.4 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.

- After patient transfer, terminal cleaning should be done using manual method and/or hydrogen peroxide dry mist or vapor.

- 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.
4.5.5 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 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 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. (More detailed recommendations on updated Guideline of Management of Healthcare Workers Exposed to COVID-19).
Administrative controls

- Establishment of sustainable IPC infrastructures and activities.
- Adequate staff training and specifically appropriate human behavior, and patients’ care givers education.
- Vaccination coverage to all HCWs in the facility with prioritization to high risk groups.
- Staff that manages suspected/confirmed cases should be chosen based on their immunization status as much as possible.
- 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.

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 1.5-2-meter distance should be maintained between each suspect patient and others.

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

- All samples 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, surgical 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.

### Environmental cleaning and disinfection after suspected or confirmed COVID-19 patients 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 4th generation, freshly prepared sodium hypochlorite solution 1000 ppm with consideration to the contact time 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.

### Infection Control in Radiological examination for suspected or confirmed COVID-19 Cases

a) Chest X-ray for patients with suspected/confirmed COVID-19 should be done at the patient room with portable machine (as possible as we can) to limit transportation of patients which may increase the risk of transmission of infection.

b) Imaging patients with suspected/confirmed COVID-19 should only be considered for emergent situations.

c) Transmission based Precautions of contact, droplet and/or airborne infection should be applied with suspected/confirmed COVID-19 patients depending on patient status and the procedure.

d) Portable radiographic machines should be used as possible as we can to limit transportation of patients which may increase the risk of transmission of infection.
e) Dedicated portable x-ray machine for isolation wards, ER (one for each unit) to minimize the risk of spread of infection and when available, use cassette/detector single use/disposable covers to minimize risk of spread of infection.

f) It should be highlighted in the imaging request that the patient is suspected or confirmed COVID-19.

g) The radiology technician should be trained from infection control department about standard and transmission-based precautions especially hand hygiene, proper selection and use of PPE.

h) Portable machine should be disinfected after each use with approved MOH disinfectant and according to the manufacturer recommendations.

4.1.2 Infection control for suspected or confirmed COVID-19 in the Radiology Department

a. If the portable machine is not available or cases requested for static machines and/or advanced imaging/procedure, (e.g. CT scan, MRI, IR, etc.), the referring physician should discuss the case with the radiology consultant and infection control department before sending the patient for imaging.

b. The patient should be directly taken into the modality room without delay and should not be waiting in general waiting areas of the department.

c. The modality scan area should be clear of other patients and/or unnecessary staff.

d. Items/equipment that are not needed in the examination should be cleared.

e. Radiology staff should don the necessary PPE when dealing with the patient and doff them after the finish of the process.
5. LABORATORY DIAGNOSIS

5.1 Specimen collection and shipment of SARS-CoV-2
All staff who will be handling the SARS-CoV-2 samples should be trained for appropriate collection, packaging, transportation, analysis, and specimen storage. When collecting the specimen, avoid sample contamination and follow the instructions and adhere to infection control measures and wear appropriate PPE as described in section 4.8. It is advised to have sufficient quantity of sample in case of repeating the test or preforming 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.
- Ensure that the laboratory have all the required standard operating procedures (SOP) in place and that laboratory staff are trained in all relevant procedures.
- To provide diagnostic testing for COVID-19, the laboratory should perform RT-PCR testing using confirmatory test approved by the Public Health Laboratory.
- Virus isolation from samples collected from positive cases or patients suspected to have COVID-19 should only be done in a BSL-3 facility and require special trained staff to perform procedures involving viral isolation.

5.3 Samples to be collected
a. Lower respiratory tract samples: including endotracheal aspirate, Broncho alveolar lavage fluid or sputum.
b. Upper respiratory tract samples:
   i. Sample collection in Adults:
      - Whenever feasible, nasopharyngeal swab should be the first choice when collecting samples.
      - If nasopharyngeal swab is not feasible, Nasal wash/aspirate can be considered.
      - Oropharyngeal swab can be used when both previous options aren’t feasible.
   ii. Sample collection in children (<12 years old):
      - Oropharyngeal swab should be considered.
      - If not feasible, nasal wash/aspirate can be considered.
      - If not feasible, nasopharyngeal swab can be considered (only flexible nasopharyngeal swab should be used)
▪ 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 suspicion. Patients should be retested using a lower respiratory sample or, if not possible, repeat collection of a nasopharyngeal sample.
▪ Weak positive RT-PCR results should be interpreted carefully. Laboratories should refer samples to the public health Laboratory for laboratory confirmation of any unexpected results.
▪ 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 not rule out the infection.
▪ Negative RT-PCR results must be interpreted in correlation with clinical findings, history, and other diagnostic procedures. As poor quality of the specimen, time of collection during the course of the disease, shipment and shipment condition, some PCR technical reasons could lead to false negative results
▪ Positive RT-PCR for COVID-19 indicate infection with SARS-CoV-2. However, it does not rule out co-infection with other pathogens.
* Disclaimer: follow the manufacture instruction while selecting proper VTM, shapes may vary according to different manufacturers
5.4 Rapid Antigen Testing for SARS-CoV-2

- Antigen-detection diagnostic tests are designed to directly detect SARS CoV-2 proteins produced by replicating virus in respiratory secretions and have been developed as both laboratory-based tests, and for near-patient use, so called rapid diagnostic tests, or RDTs.
- It can be used in:
  a. Screening clinics (such as TATMAN) for screening and diagnostic purposes for symptomatic suspected cases or close contacts.
  b. RDT can be beneficial in detecting suspected clusters of cases and help in tracing and implementation of infection control measures, after the approval of Command & Control Center. In areas such as prisons, and long-term care facilities, RDT can be beneficial in rapid detecting or screening of possible cases of SARS-CoV-2, where implementation of infection control measures and tracing should be taken, considering the long turnaround time of PCR, as long as the positive subjects be tested with RT-PCR.
- Different commercial RDTs are available with highly variable sensitivity compared to RT-PCR for detection of SARS-CoV-2. Therefore, selection should be based on the sensitivity and specificity of the antigen test.
- RDT should be:
  a. Return result in less than 15 minutes.
  b. Easy to use and doesn’t require extensive training.
  c. Should be Authorised and registered by SFDA
  d. Should be validated & assessed locally by Public Health Authority for sensitivity and specificity before use.
- Result should be interpreted according to diagram (APPENDIX 9)

5.5 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.
- Samples with positive results from MOH, Governmental non-MOH and private Sectors should be sent to Public Health Laboratory, Saudi public health Authority for further confirmation and characterization according to updated memo regarding to numbers and frequency.
- Store respiratory samples at 2-8°C and ship directly to Public Health Laboratory, Saudi Public Health Authority on ice pack.

5.6 Storage and Shipment of samples

- Store samples at 2-8°C and ship on ice pack to Public Health Laboratory. 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
▪ 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. PUBLIC HEALTH CONSIDERATIONS

**Reporting of suspected Cases**

The COVID-19 is an emerging pathogen, which is by default a 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.

**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).

**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 Public.

**Household and Community Contacts Management**

For contact tracing, a contact is defined as anyone with any of the following exposures to a confirmed COVID-19 case from 2 days before the case’s onset of symptoms (from 2 days before the sample which led to confirmation was collected if the case is asymptomatic) to 14 days after the case’s onset of symptoms (to 14 days after the sample which led to confirmation was collected if the case is asymptomatic) or until the case is reported as recovery, whichever is earlier:

- Being within 2 meters of a confirmed COVID-19 case for >15 minutes;
- Direct physical contact with a confirmed COVID-19 case;
Providing direct care for a confirmed COVID-19 patient without using proper personal protective equipment (PPE);
- Living in the household with a confirmed COVID-19 case;
- Sharing a room, meal, or other space with a confirmed COVID-19 case;
- Sitting within 2 rows of a confirmed COVID-19 case for >15 minutes and any crew in direct contact with the case in a public or shared transportation.

The public health team at the regional health directorate is responsible for listing, tracing, and follow up looking for symptoms (fever or respiratory symptoms) of household and other contacts of patients with COVID-19 infection in the community. Regional public health teams should keep all lists of contacts in a good professional format. Self-reporting should be conducted daily, even if no symptoms are present (so-called zero reporting).

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. For example, in the event that contacts are in close proximity to each other (e.g., being in the same household) and one of them becomes a COVID-19 case, the follow-up period is reset to 14 days after the last exposure to the new case.

Contacts are categorized by the presence or absence of suggestive symptoms at the first assessment and status of immunization against SARS-CoV-2:

1. Unvaccinated contacts without suggestive symptoms should be listed for follow up on weekly bases by phone or face-to-face whichever feasible, with adhering to the status of TAWAKLNA app status in regards of isolation. 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 is immunocompromised (e.g. cancer, organ failure, use of immunosuppressive medications) or has other chronic underlying conditions (e.g. diabetes, hypertension).
   - The exposed contact is a health care worker (according to updated protocol; Management of Healthcare Workers Exposed to COVID-19 on covid-19).

2. Vaccinated contacts without suggestive symptoms aren’t required to isolate themselves and should be advised to self-monitor for 14 days in case suggestive symptoms appear.

3. Contacts with suggestive symptoms or who later develop symptoms should be isolated (regardless of vaccination status), assessed clinically and referred to a healthcare facility if admission deemed necessary. A nasopharyngeal swab should be collected by trained personnel and sent for testing for all symptomatic contacts. Home isolation or isolation in healthcare facility of clinically stable symptomatic contacts (who do not need hospitalization) can be considered. Ensuring the contact being informed about infection prevention procedures and respiratory etiquette. Environmental assessment of the contact’s house is needed to determine its suitability for home isolation.
Quarantine and Homestay Guide for Contacts

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

Actions to be Taken During Quarantine

- Instruct individuals under quarantine that they should not leave their home or facility quarantine or contact with others unless for medical reasons.
- Monitor the health status of the young, without other comorbidities individuals under quarantine every three days using the attached form. (APPENDIX 3).
- Monitor the health status of individuals with known comorbidities, or old age, under quarantine everyday using attached form. (APPENDIX 4).
- Ensure that both, the workers follow the precautionary measures, such as washing hands and wearing a surgical 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, surgical masks, and medical gowns during cleaning.
- When washing clothes of quarantined individuals is needed, 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.
- 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.

Medical Advice / Guidance for Individuals under quarantine:

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

- 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.
- 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.
- Wear a surgical mask if other people are around.
- Avoid sharing personal utensils or other personal items.
Vaccination
Ever since COVID-19 was declared a worldwide pandemic, pharmaceutical companies have been racing to develop vaccines to help in stopping the transmission of the disease. Currently there are number of vaccines that have proven to be effective and safe through clinical trials.

For latest guidelines on vaccination refer to “Interim guidelines for the use of SARS-CoV-2 vaccine” published on public health Authority official website.

7. Criteria for Recovery and Discontinuing Isolation
Confirmed Cases

<table>
<thead>
<tr>
<th>Immunization status</th>
<th>Patient Status</th>
<th>Description</th>
<th>Instructions</th>
</tr>
</thead>
</table>
| Unimmunized         | Severe infection | Patients who are hospitalized at noncritical wards with laboratory confirmed COVID-19 | Isolation should last until all of the following criteria are fulfilled:  
  - At least 10 days have passed since the onset of symptoms AND no recorded fever in the last 3 days without the use of antipyretics AND improvement of other symptoms (Cough, SOB and GI symptoms).  
  - Patient can be discharged before recovery based on clinical criteria, per evaluation of the treating physician, home- isolation should be continued until fulfilled the recovery criteria. |
| Immunocompromised* and critical cases (ICU admitted patients) | | Isolation should last until one of the following criteria are fulfilled:  
  At least 21 days after symptom onset AND resolution of fever for at least 3 days, AND clinical improvement of symptoms other than fever (Cough, SOB and GI symptoms).  
  OR  
  At least 3 days have passed since recovery (resolution of the fever without using fever reducing medication and symptom improvement (Cough, SOB and GI symptoms) AND followed by 2 negative respiratory samples ≥ 24 hours apart. |
| Mild confirmed cases | Confirmed COVID-19 patients never hospitalized due to mild symptoms or asymptomatic presentation | These patients can end self-isolation 10 days after the onset of symptoms AND resolution of fever for at least 3 days AND clinical improvement of other symptoms.  
  For asymptomatic lab-confirmed cases 10 days have passed since the date of collection of the respiratory sample with the first positive PCR result. |
| Immunized | Confirmed COVID-19 fully vaccinated patients never hospitalized due to mild symptoms or asymptomatic presentation | These patients can end self-isolation 7 days after the onset of symptoms and resolution of fever for at least 24 hours without antipyretics.  
  For asymptomatic lab-confirmed cases 7 days have passed since the date of collection of the respiratory sample with the first positive PCR result. |

*Neutropenia (absolute neutrophils count <500/mm3), leukemia or lymphoma, HIV with CD4 count < 200, Splenectomy, Early post-transplant, Cytotoxic chemotherapy, on high dose steroid therapy: >40 mg prednisone or its equivalent (>160 mg hydrocortisone, >32 mg methylprednisolone, >6 mg dexamethasone, >200 mg cortisone) daily for > 2 weeks.
Suspected Cases

- All suspected cases must be tested with COVID-19 RT-PCR.
- If clinically unstable, the suspected case must be isolated in a hospital until the result becomes available and/or the case is clinically stable for discharge.
- If a suspected case is clinically stable, home isolation or isolation in a healthcare facility may be considered if home isolation is not possible, based on the assessment of public health team and CCC until the result becomes available.
- If the result is positive, the suspected case is considered as a confirmed case and managed accordingly.
8. 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.

9. 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 travelers coming from any country were added.

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, quarantine, and PCR test (refer to quarantine and isolation guidelines). Travelers with symptoms (fever, cough, or difficulty breathing) will undergo additional health assessment based on public health Authority and MoH regulations.

For proper implementation of COVID-19 prevention and control procedures, the following 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, contact, and droplet precautions (with face shield or goggles for eye protection) 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 necessary equipment to disinfect and sterilize sites and tools that are expected to be contaminated with SARS-CoV-2 by infected cases.
▪ Increase health awareness and prevention 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.

10. 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.
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 Points of Entry (PoE):

- Visual triage for passengers arriving from any country at all Points of Entry.
- Thermal screening of passengers arriving from any country at all Points 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.

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

**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
11. MANAGING OF DECEASED BODIES

- Deceased bodies of COVID-19 patients may pose a risk of infection transmission.
- Isolation precautions should be continued to the deceased COVID-19 case.
- 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, and 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. However, 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 not allowed 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 with infectious diseases.
- Limit the number of morgue’s personnel dealing with the dead body to the minimum number required.
- All persons performing or attending the body washing and preparation should wear PPE (surgical mask, isolation gown, and 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 and 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, as well as public health worker is identified to accompany the body in order to ensure compliance with the required precautions throughout the pre-burial period.
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 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.

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 assisting 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, 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.

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).
12. REFERENCES


2. Middle East Respiratory Syndrome Coronavirus; Guidelines for Healthcare Professionals, 2018, v 5.1. Saudi Arabia: Ministry of Health


13. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected (WHO/2019-nCoV/IPC/v2020.1)


13. APPENDIX

APPENDIX 1

Coronavirus Disease 2019 (COVID-19) Investigation Form

Date of initial notification: _____dd/_____/_______ yyyy

**Notification**

<table>
<thead>
<tr>
<th>Name of who completed the form</th>
<th>Contact number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Email</td>
</tr>
<tr>
<td>Hospital Name</td>
<td>City</td>
</tr>
</tbody>
</table>

At the time of this report, is the case? □ Confirmed □ Suspected □ Case under investigation □ Not a case

**Patient Information**

<table>
<thead>
<tr>
<th>Full name</th>
<th>Date of Birth</th>
<th>Nationality</th>
<th>Identification number:</th>
<th>Marital status</th>
<th>Occupation</th>
<th>Sex</th>
<th>Male □</th>
<th>Female □</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Phone Number</th>
<th>Age</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Address</th>
<th>House No.:</th>
<th>Street name:</th>
<th>District</th>
<th>City:</th>
<th>Province/Region:</th>
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</table>

**Clinical Information**

<table>
<thead>
<tr>
<th>Date of symptoms onset</th>
<th>Symptoms</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fever ≥38º</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>History of fever (not measured).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sore throat</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Runny nose</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cough</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Other (specify): |

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever ≥38º</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of fever (not measured).</td>
<td></td>
<td></td>
</tr>
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<td>Sore throat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Runny nose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cough</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hospitalization Information**

<table>
<thead>
<tr>
<th>Is/was the patient hospitalized?</th>
<th>□ Yes, Date of admission <em><strong><strong>/</strong></strong></em>/______</th>
<th>□ No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Admitted to ICU?</th>
<th>Intubated?</th>
<th>On ECMO?</th>
<th>Patient died?</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Yes</td>
<td>□ Yes</td>
<td>□ Yes</td>
<td>□ Yes</td>
</tr>
<tr>
<td>□ No</td>
<td>□ No</td>
<td>□ No</td>
<td>□ No</td>
</tr>
</tbody>
</table>
Comorbid conditions (check all that apply):

- None
- Unknown
- Pregnancy
- Diabetes
- Cardiac disease
- Hypertension
- Chronic pulmonary disease
- Chronic kidney disease
- Chronic liver disease
- Obesity
- Smoking (any type)
- 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 bellow:

Did the patient travel with? □ Airline □ Ship □ Bus □ Car □ 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

<table>
<thead>
<tr>
<th>Did the patient receive vaccination against SARS-CoV-2?</th>
<th>Yes</th>
<th>No</th>
<th>Date: / /</th>
</tr>
</thead>
<tbody>
<tr>
<td>If so which type?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type: ..................................................</td>
<td></td>
<td></td>
<td>Doses: .................</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>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)?</th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Did the patient have contact with anyone during illness period?</th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
</tr>
</thead>
</table>

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

### Animal Exposure:

<table>
<thead>
<tr>
<th>Did the patient have direct/indirect contact with any animals within the last 14 days?</th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Did the patient visit any of the following locations where animals may be present within the last 14 days?</th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
</tr>
</thead>
</table>

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

Please describe (when/where/extent):

<table>
<thead>
<tr>
<th>Did the patient has any other occupation that regularly deals with animal?</th>
<th>Yes, specify ________________</th>
<th>No</th>
<th>Unknown</th>
</tr>
</thead>
</table>

### Note:
### APPENDIX 2

List of patient’s contacts

<table>
<thead>
<tr>
<th>Name of contact</th>
<th>Relation to patient</th>
<th>Last contact date</th>
<th>City</th>
<th>Sex</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>1 Day after last exposure</th>
<th>5 Day after last exposure</th>
<th>9 Day after last exposure</th>
<th>13 Day after last exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ No symptoms</td>
<td>☐ No symptoms</td>
<td>☐ No symptoms</td>
<td>☐ No symptoms</td>
</tr>
<tr>
<td>☐ Fever ______ °C</td>
<td>☐ Fever ______ °C</td>
<td>☐ Fever ______ °C</td>
<td>☐ Fever ______ °C</td>
</tr>
<tr>
<td>☐ Shortness of breath</td>
<td>☐ Shortness of breath</td>
<td>☐ Shortness of breath</td>
<td>☐ Shortness of breath</td>
</tr>
<tr>
<td>☐ Sore throat</td>
<td>☐ Sore throat</td>
<td>☐ Sore throat</td>
<td>☐ Sore throat</td>
</tr>
<tr>
<td>☐ Cough</td>
<td>☐ Cough</td>
<td>☐ Cough</td>
<td>☐ Cough</td>
</tr>
<tr>
<td>☐ Headache</td>
<td>☐ Headache</td>
<td>☐ Headache</td>
<td>☐ Headache</td>
</tr>
<tr>
<td>☐ Muscle/joint pain</td>
<td>☐ Muscle/joint pain</td>
<td>☐ Muscle/joint pain</td>
<td>☐ Muscle/joint pain</td>
</tr>
<tr>
<td>☐ Diarrhea times/day</td>
<td>☐ Diarrhea times/day</td>
<td>☐ Diarrhea times/day</td>
<td>☐ Diarrhea times/day</td>
</tr>
<tr>
<td>☐ Vomiting/nausea</td>
<td>☐ Vomiting/nausea</td>
<td>☐ Vomiting/nausea</td>
<td>☐ Vomiting/nausea</td>
</tr>
<tr>
<td>☐ Runny nose</td>
<td>☐ Runny nose</td>
<td>☐ Runny nose</td>
<td>☐ Runny nose</td>
</tr>
<tr>
<td>Others</td>
<td>Others</td>
<td>Others</td>
<td>Others</td>
</tr>
<tr>
<td>☐ No symptoms</td>
<td>☐ No symptoms</td>
<td>☐ No symptoms</td>
<td>☐ No symptoms</td>
</tr>
<tr>
<td>☐ Fever ______ °C</td>
<td>☐ Fever ______ °C</td>
<td>☐ Fever ______ °C</td>
<td>☐ Fever ______ °C</td>
</tr>
<tr>
<td>☐ Shortness of breath</td>
<td>☐ Shortness of breath</td>
<td>☐ Shortness of breath</td>
<td>☐ Shortness of breath</td>
</tr>
<tr>
<td>☐ Sore throat</td>
<td>☐ Sore throat</td>
<td>☐ Sore throat</td>
<td>☐ Sore throat</td>
</tr>
<tr>
<td>☐ Cough</td>
<td>☐ Cough</td>
<td>☐ Cough</td>
<td>☐ Cough</td>
</tr>
<tr>
<td>☐ Headache</td>
<td>☐ Headache</td>
<td>☐ Headache</td>
<td>☐ Headache</td>
</tr>
<tr>
<td>☐ Muscle/joint pain</td>
<td>☐ Muscle/joint pain</td>
<td>☐ Muscle/joint pain</td>
<td>☐ Muscle/joint pain</td>
</tr>
<tr>
<td>☐ Diarrhea times/day</td>
<td>☐ Diarrhea times/day</td>
<td>☐ Diarrhea times/day</td>
<td>☐ Diarrhea times/day</td>
</tr>
<tr>
<td>☐ Vomiting/nausea</td>
<td>☐ Vomiting/nausea</td>
<td>☐ Vomiting/nausea</td>
<td>☐ Vomiting/nausea</td>
</tr>
<tr>
<td>☐ Runny nose</td>
<td>☐ Runny nose</td>
<td>☐ Runny nose</td>
<td>☐ Runny nose</td>
</tr>
<tr>
<td>Others</td>
<td>Others</td>
<td>Others</td>
<td>Others</td>
</tr>
</tbody>
</table>
## APPENDIX 4

### Contact Tracing Form

**Novel Coronavirus**

**Name of the contact:** ___________________________  **ID/Qama number:** ___________________________

**Age:** ______  **Nationality:** ___________________________  **Phone #:** ___________________________

### Daily Contact Follow-Up Form

<table>
<thead>
<tr>
<th>1 Day after last exposure</th>
<th>2 Day after last exposure</th>
<th>3 Day after last exposure</th>
<th>4 Day after last exposure</th>
<th>5 Day after last exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>No symptoms</td>
<td>No symptoms</td>
<td>No symptoms</td>
<td>No symptoms</td>
<td>No symptoms</td>
</tr>
<tr>
<td>Fever °C</td>
<td>Fever °C</td>
<td>Fever °C</td>
<td>Fever °C</td>
<td>Fever °C</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>Shortness of breath</td>
<td>Shortness of breath</td>
<td>Shortness of breath</td>
<td>Shortness of breath</td>
</tr>
<tr>
<td>Sore throat</td>
<td>Sore throat</td>
<td>Sore throat</td>
<td>Sore throat</td>
<td>Sore throat</td>
</tr>
<tr>
<td>Cough</td>
<td>Cough</td>
<td>Cough</td>
<td>Cough</td>
<td>Cough</td>
</tr>
<tr>
<td>Headache</td>
<td>Headache</td>
<td>Headache</td>
<td>Headache</td>
<td>Headache</td>
</tr>
<tr>
<td>Muscle/joint pain</td>
<td>Muscle/joint pain</td>
<td>Muscle/joint pain</td>
<td>Muscle/joint pain</td>
<td>Muscle/joint pain</td>
</tr>
<tr>
<td>Diarrhea times/day</td>
<td>Diarrhea times/day</td>
<td>Diarrhea times/day</td>
<td>Diarrhea times/day</td>
<td>Diarrhea times/day</td>
</tr>
<tr>
<td>Vomiting/nausea</td>
<td>Vomiting/nausea</td>
<td>Vomiting/nausea</td>
<td>Vomiting/nausea</td>
<td>Vomiting/nausea</td>
</tr>
<tr>
<td>Runny nose</td>
<td>Runny nose</td>
<td>Runny nose</td>
<td>Runny nose</td>
<td>Runny nose</td>
</tr>
<tr>
<td>Others</td>
<td>Others</td>
<td>Others</td>
<td>Others</td>
<td>Others</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6 Day after last exposure</th>
<th>7 Day after last exposure</th>
<th>8 Day after last exposure</th>
<th>9 Day after last exposure</th>
<th>10 Day after last exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>No symptoms</td>
<td>No symptoms</td>
<td>No symptoms</td>
<td>No symptoms</td>
<td>No symptoms</td>
</tr>
<tr>
<td>Fever °C</td>
<td>Fever °C</td>
<td>Fever °C</td>
<td>Fever °C</td>
<td>Fever °C</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>Shortness of breath</td>
<td>Shortness of breath</td>
<td>Shortness of breath</td>
<td>Shortness of breath</td>
</tr>
<tr>
<td>Sore throat</td>
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<td>Cough</td>
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<tr>
<td>Headache</td>
<td>Headache</td>
<td>Headache</td>
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<td>Muscle/joint pain</td>
<td>Muscle/joint pain</td>
</tr>
<tr>
<td>Diarrhea times/day</td>
<td>Diarrhea times/day</td>
<td>Diarrhea times/day</td>
<td>Diarrhea times/day</td>
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</tr>
<tr>
<td>Vomiting/nausea</td>
<td>Vomiting/nausea</td>
<td>Vomiting/nausea</td>
<td>Vomiting/nausea</td>
<td>Vomiting/nausea</td>
</tr>
<tr>
<td>Runny nose</td>
<td>Runny nose</td>
<td>Runny nose</td>
<td>Runny nose</td>
<td>Runny nose</td>
</tr>
<tr>
<td>Others</td>
<td>Others</td>
<td>Others</td>
<td>Others</td>
<td>Others</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11 Day after last exposure</th>
<th>12 Day after last exposure</th>
<th>13 Day after last exposure</th>
<th>14 Day after last exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>No symptoms</td>
<td>No symptoms</td>
<td>No symptoms</td>
<td>No symptoms</td>
</tr>
<tr>
<td>Fever °C</td>
<td>Fever °C</td>
<td>Fever °C</td>
<td>Fever °C</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>Shortness of breath</td>
<td>Shortness of breath</td>
<td>Shortness of breath</td>
</tr>
<tr>
<td>Sore throat</td>
<td>Sore throat</td>
<td>Sore throat</td>
<td>Sore throat</td>
</tr>
<tr>
<td>Cough</td>
<td>Cough</td>
<td>Cough</td>
<td>Cough</td>
</tr>
<tr>
<td>Headache</td>
<td>Headache</td>
<td>Headache</td>
<td>Headache</td>
</tr>
<tr>
<td>Muscle/joint pain</td>
<td>Muscle/joint pain</td>
<td>Muscle/joint pain</td>
<td>Muscle/joint pain</td>
</tr>
<tr>
<td>Diarrhea times/day</td>
<td>Diarrhea times/day</td>
<td>Diarrhea times/day</td>
<td>Diarrhea times/day</td>
</tr>
<tr>
<td>Vomiting/nausea</td>
<td>Vomiting/nausea</td>
<td>Vomiting/nausea</td>
<td>Vomiting/nausea</td>
</tr>
<tr>
<td>Runny nose</td>
<td>Runny nose</td>
<td>Runny nose</td>
<td>Runny nose</td>
</tr>
<tr>
<td>Others</td>
<td>Others</td>
<td>Others</td>
<td>Others</td>
</tr>
</tbody>
</table>

**Note**

Region: ____________  Public Health Investigator: ________________________________
### Visual Triage Checklist for Acute Respiratory Infection

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

<table>
<thead>
<tr>
<th>Risks for Acute Respiratory Illnesses</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Exposure Risks</strong></td>
<td></td>
</tr>
<tr>
<td>Any Patient (Adult or Pediatric)</td>
<td></td>
</tr>
<tr>
<td>A. A history of travel abroad in the past 14 days.</td>
<td></td>
</tr>
<tr>
<td>OR A contact with a confirmed case of COVID-19 or MERS-CoV in the last 14 days prior to symptom onset.</td>
<td>3</td>
</tr>
<tr>
<td>OR An exposure to camel or camel’s products (direct or indirect*) in the last 14 days prior to symptom onset.</td>
<td></td>
</tr>
<tr>
<td>OR Working in a healthcare facility.</td>
<td></td>
</tr>
<tr>
<td><strong>B. Clinical Signs and Symptoms</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Pediatric</strong> (≤14 years)</td>
<td><strong>Adult</strong> (&gt;14 years)</td>
</tr>
<tr>
<td>1. Fever or recent history of fever.</td>
<td>4</td>
</tr>
<tr>
<td>2. Cough (new or worsening).</td>
<td>4</td>
</tr>
<tr>
<td>3. Shortness of breath (new or worsening).</td>
<td>4</td>
</tr>
<tr>
<td>4. headache, sore throat, or rhinorrhea</td>
<td>1</td>
</tr>
<tr>
<td>5. Nausea, vomiting, and/or diarrhea.</td>
<td>1</td>
</tr>
<tr>
<td>6. Chronic renal failure, CAD/heart failure, Immunocompromised patient.</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Score</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Patient or household member

A score ≥ 4, ask the patient to perform hand hygiene, wear a surgical mask, direct the patient through the respiratory pathway, and inform MD for assessment.

MRSE-CoV or COVID-19 testing should only be performed according to case definitions.

Staff name: _________________________         ID number: __________________

[Image]
Immediate reporting* form for a suspected case with COVID-19 in Saudi Arabia

<table>
<thead>
<tr>
<th>Date of reporting: dd/mm/yyyy</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting person:</td>
<td></td>
</tr>
<tr>
<td>Reporting facility:</td>
<td></td>
</tr>
<tr>
<td>Reporting address:</td>
<td></td>
</tr>
<tr>
<td>Reporting contact number:</td>
<td></td>
</tr>
</tbody>
</table>

**Suspected case information**

<table>
<thead>
<tr>
<th>Name:</th>
<th>Sex:</th>
<th>Date of birth: dd/mm/yyyy</th>
<th>Age:</th>
<th>Nationality:</th>
<th>ID type: (specify)</th>
<th>ID number:</th>
<th>Contact number(s):</th>
<th>Address:</th>
<th>Healthcare worker:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No (specify occupation)</td>
</tr>
</tbody>
</table>

**Definition 1**

- Does the case has at least 1 of the following symptoms** (with high index of clinical suspicion***):  
  - Fever (or T ≥38 °C)?  
    - Yes, onset: dd/mm/yyyy  
    - No
  - Cough?  
    - Yes, onset: dd/mm/yyyy  
    - No
  - Shortness of breath?  
    - Yes, onset: dd/mm/yyyy  
    - No

**Definition 2**

- Or  
  - Does the case has at least 1 of the following symptoms:  
    - Runny nose?  
      - Yes, onset: dd/mm/yyyy  
      - No
    - Sore throat?  
      - Yes, onset: dd/mm/yyyy  
      - No
    - Headache?  
      - Yes, onset: dd/mm/yyyy  
      - No
    - Nausea?  
      - Yes, onset: dd/mm/yyyy  
      - No
    - Diarrhea?  
      - Yes, onset: dd/mm/yyyy  
      - No

AND met at least 1 of the following criteria in the last 14 days prior to symptom onset:

- Had contact with a confirmed COVID-19 case?  
  - Yes, last date: dd/mm/yyyy  
  - No
- Lived in or worked in a facility known to be experiencing an outbreak of COVID-19?  
  - Yes, last date: dd/mm/yyyy  
  - No

**Definition 3**

- Or  
  - Does the case has any of the following conditions:  
    - Admitted adult (> 14 years) with unexplained severe acute respiratory infection (SARI) either as Community Acquired Pneumonia (CAP) or Hospital Acquired Pneumonia (HAP)?  
      - Yes  
      - No

---

*ONLY report and request laboratory testing for suspected** cases. Official reporting in Saudi Arabia is through the Health Electronic Surveillance Network (HESN) by selecting the cCoV2019 investigation e-forms and testing panel. If unable to report through HESN, kindly fill out this form and send it via an SMS or WhatsApp message to the Generate Directorate of Communicable Disease Control at 00966550148628. Updated 21 May 2020. Source: Saudi Center for Disease Prevention and Control, Ministry of Health, Saudi Arabia.

**Clinicians should be alert to the possibility of atypical presentations in patients who are immunocompromised. Fever is frequently reported (77-98%) but elderly and people with severe comorbidities may not mount fever initially. Some patients may present with gastrointestinal symptoms like diarrhea and nausea prior to developing fever and lower respiratory tract symptoms.**

***Clinicians should use their judgement to determine if a patient should be tested for COVID-19 based on an epidemiology risk factor and presence of other symptoms consistent with COVID-19 including sore throat, new loss of taste or smell, chills, muscle pain, and/or fatigue.
APPENDIX 7 Discontinuation of isolation

CONFIRMED COVID-19 CASE

IMMUNIZATION STATUS

YES

IMMUNOCOMPROMISED

NO

SEVERITY

SEVER

NO

MILD

At least 7 days have passed since symptoms started
AND
Resolution of fever for at least 24 hours W/O antipyretics
OR
those who are lab-confirmed and asymptomatic can end isolation if 7 days passed since test was done and no symptoms appeared

At least 10 days have passed since symptoms started
AND
- No recorded fever in the last 3 days W/O antipyretics
AND
- Improvement in the other symptoms

At least 21 days passed since symptoms started
AND
- No recorded fever for 3 days W/O antipyretics
AND
- Improvement of other symptoms
OR
- At least 3 days have passed since recovery (resolution of fever W/P antipyretics and respiratory symptoms improvement (Cough and SOB))
AND
- followed by 2 negative respiratory samples 24 hours apart

(EXCLUDING HCWS)
APPENDIX 8: Definition of COVID-19 Reinfection

Positive PCR in previously infected

≥ 90 days

Consider it as previous infection

Symptomatic

Presumed Reinfection

Treat as Confirmed case

Confirm by molecular seq

- isolate till resolution of symptoms
- consider it as Previous infection

- isolate till resolution of symptoms
- consider it as Sus Reinfection

NO

NO

YES

YES

Sever

MILD

No further action
APPENDIX 9: Rapid Antigen Testing Interpretation

**SETTING**

- **Cluster in Closed Places**
  - **+VE**
    - YES: Treat as a confirmed case
    - NO: Perform another rapid test in 48 hrs
      - -VE: Exclude COVID-19
      - NO: -VE EXCLUDE COVID-19

- **Screening Clinic**
  - **SYMPTOMS**
    - YES: +VE
      - YES: Treat as a confirmed case
      - NO: Perform PCR in same visit
      - +VE: TREAT AS A CONFIRMED CASE
      - -VE: TREAT AS A CONFIRMED CASE
      - NO: NO (CONTACT)
      - -VE: TEST AND ISOLATE ACCORDING TO PROTOCOL

  - NO (CONTACT)
    - YES: +VE
      - YES: TREAT AS A CONFIRMED CASE
      - NO: TREAT AS A CONFIRMED CASE
      - +VE: TREAT AS A CONFIRMED CASE
      - -VE: TREAT AS A CONFIRMED CASE