

# Novel Corona Virus (2019-nCoV) Infection Guidelines

V1.0

January 2020

**As only limited epidemiological data on 2019-nCoV infection is currently available, health care workers (HCWs) are advised to follow guidelines and tools designed for MERS-CoV case investigations.**

**The 2019-nCoV guidelines will be updated as more information becomes available.**

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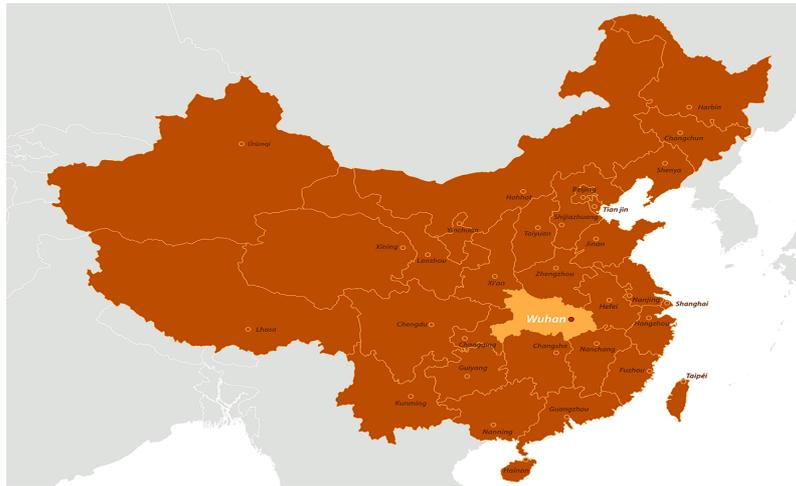
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## 1. INTRODUCTION

Coronaviruses (CoV) are a large family of 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). A novel coronavirus (2019-nCoV) is the new strain of coronavirus that has been identified on December 2019 in Wuhan city, Hubei province of China. Many countries have started their precautions and implemented screening for travelers coming from Wuhan City. Thailand, Japan, Singapore, Vietnam, France, the United States and other countries have reported an imported case Chinese patient. Most of the cases have had exposure to a large seafood and animal market in Wuhan (Huanan Seafood Wholesale Market).

Mode(s) of transmission have not been identified; however, the available information suggests that the 2019-nCoV is zoonotic pathogen that can be transmitted to humans through contact with infected animals or animal products. 2019-nCoV transmission through animal-to-person is possible due to the exposure of most of the cases to large seafood and/or to the animal market. The rapid increase in the number of cases having no animal exposure is suggestive of secondary person-to-person transmission. Most cases have been associated with fever and respiratory symptoms (coughing, shortness of breath and pneumonia). However, there is not much information about 2019-nCoV to draw definitive conclusions about transmission mode, clinical presentation or the extent to which it has spread. Investigations are currently in progress.



2019 Novel Coronavirus has spread from Wuhan, China. (CDC)

## 2. OBJECTIVES

This document provides guidelines on managing 2019-nCoV infections based on the best available scientific evidence and broad consensus. Its objective is to:

- Provide guidance on 2019-nCoV surveillance activities in the healthcare setting and in the community.
- Enhance the detection of confirmed cases/clusters of 2019-nCoV infection and any evidence of amplified or sustained human-to-human transmission
- Determine clinical and epidemiological characteristics of the 2019-nCoV infection incubation period, disease spectra, risk factors, secondary attack rates, and modes of transmission.
- Determine risk (including geographic) factors for infection with the virus.
- Provide guidance on infection prevention and control practices to be implemented when managing suspected and confirmed 2019-nCoV cases.
- Standardize the clinical management of 2019-nCoV patients.
- Provide guidance for rational use of resources including laboratory testing.
- Serve as a focus for quality control, including audit.

## 3. SURVEILLANCE CASE DEFINITIONS

### ▪ Suspected 2019-nCoV case is defined as:

1- A person with acute respiratory illness (fever with cough and/or shortness of breath) AND any of the following:

- A history of travel to China in the 14 days prior to symptom onset.
- A close physical contact in the past 14 days with a confirmed case of 2019-nCoV infection

Or

2- Severe Acute Respiratory illness (SARI\*) and testing for the common infectious etiologies\*\* were not revealing

\*SARI: An Acute respiratory illness with history of fever or measured temperature  $\geq 38$  C° and cough; onset within the last ~10 days; and requiring hospitalization.

\*\*Examples of common infectious etiologies include Streptococcus pneumoniae, Haemophilus influenzae type B, Legionella pneumophila, other recognized primary bacterial pneumonias, influenza viruses, and respiratory syncytial virus

### ▪ “Close Contact” is defined as:

- Health care associated exposure, including providing direct care for 2019-nCoV patients, working with HCWs infected with 2019-nCoV, visiting patients or staying in the same close environment of a 2019-nCoV patient.
- Working together in close proximity or sharing the same classroom environment with a with 2019-nCoV patient.
- Traveling together with 2019-nCoV patient in any kind of transportation.
- Living in the same household as a 2019-nCoV patient.

### ▪ Confirmed 2019-nCoV case is defined as:

A confirmed case is defined as a suspected case with laboratory confirmation of 2019-nCoV infection.

#### 4. INFECTION PREVENTION AND CONTROL (IPC)

The principles of infection prevention and control strategies associated with health care with suspected 2019-nCoV are:

1. Application of Standard Precautions for all patients.
2. Early recognition and source control.
3. Implementation of additional empiric precautions (droplet and contact and whenever applicable airborne precautions) for suspected cases.
4. Administrative controls.
5. 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/ cough etiquette is an important preventative measure.
- Suspected 2019-nCoV patients should be placed in an area separate from other patients, and additional Infection Prevention and Control IPC (droplet and contact) precautions should be 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 before and after all patient contact, and 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 /surgical mask for suspected 2019-nCoV 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 2019-nCoV infection:**

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

- Place patients in adequately ventilated single rooms.
- When single rooms are not available, cohort patients suspected of 2019-nCoV infection together (Place patient beds at least 1 meter 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.
- 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 2019-nCoV 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 2019-nCoV infection:**

Some aerosol generating procedures have been associated with increased risk of transmission of coronaviruses (SARS-CoV and MERS-CoV) such as 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), always perform the seal-check.
- HCW that all available types of (N95) are not fit to him should be avoided from aerosol-generating procedures or use PAPR.
- 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, 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 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 2019-nCoV.
- 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 2019-nCoV among HCWs and the importance of seeking medical care.
- Monitoring of HCW compliance, along with mechanisms for improvement as needed.
- Designating of centers that all confirmed cases of 2019-nCoV confirmed cases should be transferred and isolated in.

#### **4.5 Environmental and engineering controls**

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

#### **4.6 Contact and droplet precautions for 2019-nCoV infection**

Standard precautions should always be applied at all times. Additional contact and droplet precautions should continue until the patient is asymptomatic.

#### **4.7 Collection and handling of laboratory specimens from patients with suspected 2019-nCoV**

- 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.
- Document patient's full name, date of birth of suspected 2019-nCoV of potential concern clearly on the accompanying laboratory request form. Notify the laboratory as soon as possible that the specimen is being transported.

## 5. LABORATORY DIAGNOSIS

### 5.1 Specimen collection and shipment of 2019-nCoV

All staff who will be handling the 2019-nCoV 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:

- At the current time, samples for 2019-nCoV should be sent to National Health Lab (NHL) and diagnostic testing can be conducted only at NHL.
- As currently there is limited information about the 2019-nCoV, laboratories should NOT do viral isolation and culture from samples collected from patients suspected to have 2019-nCoV infection.
- Note that NHL will only perform 2019-nCoV diagnostic testing, the treating hospital should arrange other laboratory investigations for other common viral respiratory pathogens according to local policies and epidemiology and also detection of bacterial and fungal infections if indicated.

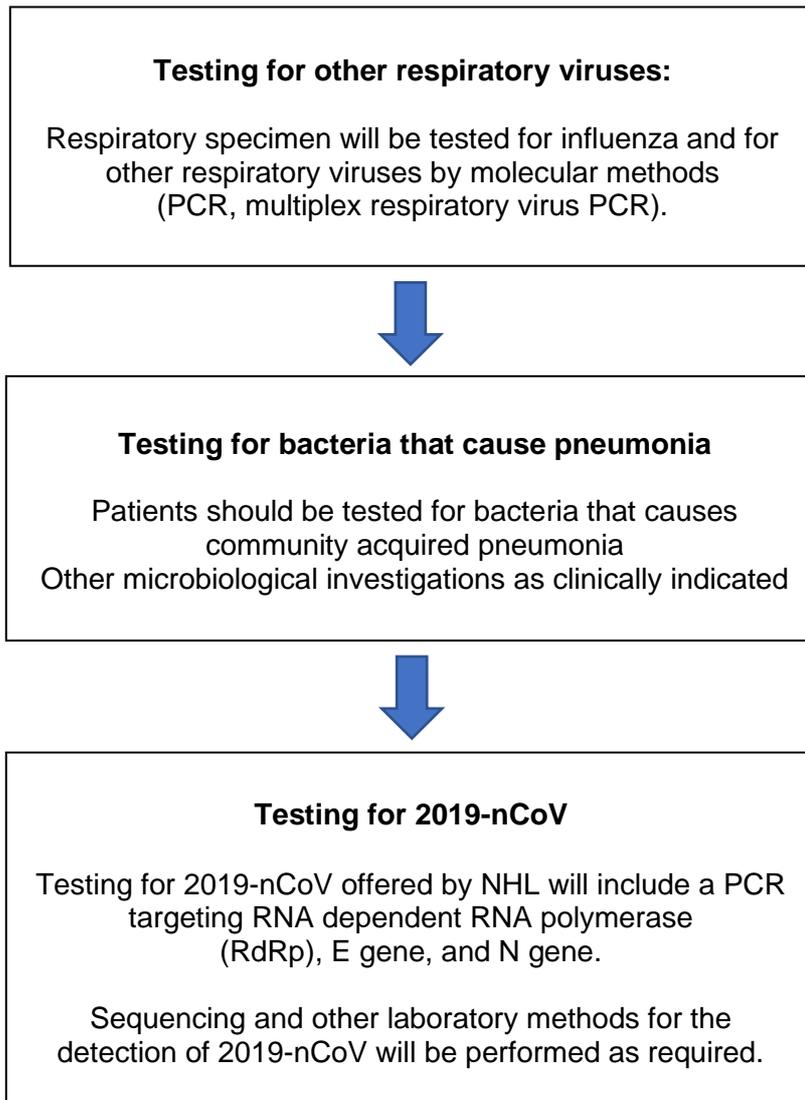
### Approach to sampling

- Any patient meets the criteria requires collection of 2 samples at the same time using recommended Viral Transport Media (VTM).
- First sample is for laboratory tests that can be performed in the hospital locally to identify common respiratory pathogens.
- Second sample has to be sent to the NHL for 2019-nCoV testing.
- Hospitals should develop internal processes to ensure that each sample set is collected and delivered to the intended Laboratories.

### 5.3 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 to NHL free of charge via the courier, SMSA, following appropriate regulations. The NHL provides a courier service for sample transportation and pickup locations throughout the country for collection of samples from MOH hospitals and other Health care facilities.
- All specimens must be appropriately packaged and addressed to the NHL
- Courier services are provided 7 days a week excluding national holidays:
- 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.

## 5.4 Testing Algorithm



**Note:**

- If the patient is not improving or deteriorating, testing should be repeated, even if previous tests are negative or were positive for another pathogen.
- A single negative test result does not exclude infection especially if this is from an upper respiratory tract sample. Collection of lower respiratory tract provide a better yield of detection of virus

## 6. TREATMENT

Since there no treatment recommendation is available, it is recommended to follow current MERS-CoV treatment guidelines until further information is available.

However, it is necessary to transfer a confirmed 2019-nCoV case to a designated hospital (see Appendix 6) in coordination with command and control center.

Intensive supportive care with treatment of symptoms is the main approach to manage the infection in people.

WHO published recommendations can be accessed at:

[https://www.who.int/internal-publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/internal-publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected)

## 7. PUBLIC HEALTH CONSIDERATION

### 7.1 Reporting of suspected Cases

The 2019-nCoV is an emerging pathogen, which is by default a category I reportable disease that should be immediately reported. Accordingly, all healthcare facilities are obliged to report immediately any suspected 2019-nCoV case fulfilling the above case definition by calling 1937 to report a notifiable infectious disease and through Health Electronic Surveillance Network (HESN) as **acute respiratory illness unspecified**.

### 7.2 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 2019-nCoV 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).

### **7.3 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 if:
  - the exposed contact had intense exposure to a confirmed 2019-nCoV 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.
- 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 of stable contacts (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 determining its suitability for home isolation.
- Regional public health teams should keep all line-lists in a good professional format.

### **7.4 Human Animal Interface New 2019-Novel Coronavirus**

As at the time of writing, field investigations into the source and mode(s) of transmission of the newly emerged Wuhan 2019-nCoV are ongoing and in the early stages. However, given that the first set of cases were linked to the Wuhan seafood market where live animals are also sold, it is thought that zoonotic transmission may be involved. Indeed, its transmission might be similar to other recently emerged coronaviruses (MERS-CoV and SARS-CoV) Building on past experience with MERS and SARS, the following is recommended for field investigation and the general public:

#### **7.4.1 Field investigation (assuming local transmission is reported)**

- Using a One Health approach, field investigation of potential animal exposure sites should be in coordination with the Ministries of Water, Environment and Agriculture (MEWA), Municipalities (MOM) and Interior. There might be a need to close the site and apply quarantine measures.
- Heightened general hygiene practice is recommended for those at occupational risk at such facilities (livestock and slaughterhouse workers, veterinarians, etc.) should practice good personal hygiene, including frequent hand washing after touching animals and animal products including the use of PPE and proper doffing and donning techniques.
- Animal health workers at the markets should report atypical animal health events to MEWA.

#### **7.4.2 General Public (assuming local transmission similar to that of Wuhan is reported)**

- Heightened general hygiene practice is recommended when visiting animal related markets. This includes
- Handwashing with soap and water after touching animals and animal products; where this is not available or impractical, recommended hand rub sanitizers might be used.
- Not touching eyes, nose and mouth with bare hands
- Not touching rotten animal products, strays (dogs and cats) or other animals (birds, bats, rodents, etc.) in the markets.
- Not touching animal waste or fluids in the market.
- Avoiding consumption of raw or undercooked animal products.
- Persons with comorbidities, usually at higher risk of severe infections, should avoid live animal markets, stray and wild animals. This also applies to Saudi residents with comorbidities travelling to endemic areas.

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

In response to the outbreak of 2019-nCoV, several countries and territories were reported to have implemented health screening of travelers arriving (directly or indirectly) from China. Exportation of 2019-nCoV to other countries in the region (Thailand, Japan and South Korea) through international travel of infected individuals have been reported. However, WHO advises against imposing travel or trade restrictions China based on the information currently available. Reports on imported cases in multiple countries worldwide highlight the importance of instituting vigilant surveillance at ports of entry for detecting any suspected cases among people arriving from or with history of travel to infected areas within a period of two weeks.

Importantly, on arrival to Saudi Arabia, travelers from China 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 2019-nCoV prevention and control procedures, public health measures at ports of entry must to be followed

### **7.5.1 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 China (directly/indirectly) 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, airborne precautions and use eye protection (goggles or a face shield) when dealing with suspected patients.
- 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 2019-nCoV 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 China or other infected countries 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 China or other infected countries 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.

## 7.6 Command and Control

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. CCC has adopted a 2019-nCoV preparedness and response plan and coordinates the activities of communication and surveillance, information, resource allocation, education and communication to prevent and control possible 2019-nCoV events.

### 7.6.1 2019-nCoV outbreak surge plan and response level:

Level of response is determined by the attack rate of the 2019-nCoV in the community or the surge level of bed capacity in each facility that are occupied by 2019-nCoV patients.

Attack rate of 2019-nCoV in community	Surge Levels (% of total bed Capacity)	Surge Strategies	Response Level	Responsibility
<5%	Pre-Surge	Basic	<ul style="list-style-type: none"> <li>• Normal function</li> </ul>	RCCC
5-10%	Minor Surge (<10%)	Enhanced	<ul style="list-style-type: none"> <li>• Closure of some Units</li> <li>• Defer cold cases</li> </ul>	RCCC
11-20%	Moderate Surge (11-30%)	Augmented	<ul style="list-style-type: none"> <li>• Establish early discharges</li> <li>• Stop routine admissions and procedures</li> <li>• Divert Patients for care to other hospitals</li> </ul>	NCCC
21-35%	Major Surge (31-50%)	Optimum	<ul style="list-style-type: none"> <li>• Defer all treatment for non-life-threatening condition</li> <li>• Triage all cases out</li> </ul>	NCCC
>35%	Large Scale Emergency >50%	Overcapacity	<ul style="list-style-type: none"> <li>• Hospital shutdown (except 2019-nCoV designated hospitals)</li> </ul>	NCCC
After event	After event	Basic	<ul style="list-style-type: none"> <li>• Normal function</li> </ul>	NCCC & RCCC

### 7.6.2 Management of hospitals during surge (2019-nCoV attack rate >35% or bed occupancy >50%):

MOH and private hospitals	Government non-MOH hospitals	Assigned nCoV centers
<ul style="list-style-type: none"> <li>• 2019-nCoV cases are to stay in the hospital unless large surge of cases that overwhelm capacity</li> <li>• Any transfers to another hospital should be discussed with the regional and central CCC</li> <li>• If the outbreak is related to exposure in the emergency department, downsize operation to critical cases only</li> <li>• If sustained transmission in a hospital unit (tertiary transmission), closure of the unit to new cases to be instituted and limit unit staff to the minimum required</li> <li>• If multiple units are involved in a 2019-nCoV outbreak, stop routine admissions and procedures. Divert patients for care to other hospitals</li> <li>• Information about the outbreak to be disseminated to all health institutions in the city/region</li> <li>• Complete hospital shutdown to be decided by the central CCC.</li> <li>• Reverting to normal operations to be decided by the regional and central CCC</li> </ul>	<ul style="list-style-type: none"> <li>• 2019-nCoV cases are to stay in the hospital unless large surge of cases that overwhelm capacity</li> <li>• Any transfers to another hospital should be discussed with the regional and central CCC</li> <li>• Institutions may develop their surge plan and approved by the central CCC</li> <li>• If the outbreak is related to exposure in the emergency department, downsize operation to critical cases only</li> <li>• If sustained transmission in a hospital unit (tertiary transmission), closure of the unit to new cases to be instituted and limit unit staff to the minimum required</li> <li>• If multiple units are involved in a 2019-nCoV outbreak, stop routine admissions and procedures. Divert patients for care to other hospitals</li> <li>• Information about the outbreak to be disseminated to all health institutions in the city/region</li> <li>• Downsizing or shutdown of services to be decided by the central CCC with discussion of the institution administration</li> </ul>	<ul style="list-style-type: none"> <li>• Adequate capacity must be continuously assured throughout the period</li> <li>• Bed occupancy of isolation rooms to be monitored and at 80% target surge plan to be activated with evacuation/transfer of non-2019-nCoV patients</li> <li>• This may require downsizing the routine operations such as elective admissions</li> <li>• In the case of an influx of a large number of 2019-nCoV cases, establish wards with a single room and HEPA filter to accommodate more 2019-nCoV cases</li> <li>• Then cohort 2019-nCoV cases in shared rooms</li> <li>• Arrange patients transfer to 2019-nCoV backup center when the above measures are inadequate to accommodate 2019-nCoV cases</li> </ul>

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

National and Regional CCCs oversee the preparedness activities and leads national 2019-nCoV 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 2019-nCoV 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 a 2019-nCoV 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:**

##### **A. Surveillance:**

- Visual triage for passengers arriving from China at Point of Entry.
- Thermal check for passengers arriving from China Point of Entry.
- Suspected cases must immediately be referred to the designated hospitals (see Appendix 6)
- No suspected cases were identified at this time.

##### **B. Infection Control:**

Currently we are working on guidelines for infection control and home isolation for suspected cases in collaboration with international experts and WHO.

### 7.6.4 Second: Response

- The deputy minister of public health will serve as National Commander for CCC, and the Regional health Directorate is the regional commander. The commander is responsible to activate ICS in coordination with relevant responders.

- The main goal of CCC and RCCC in response mode:

- Have real-time information of the incident (outbreak)
- Manage resources for lab and infection control requirements (acquisitions, tracking and monitoring)
- Monitor 2019-nCoV cases in hospitals or household isolation
- Plan and operate designated health facilities for the surge
- Coordinate all actions between responders and stakeholders

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12. Laboratory testing of human suspected cases of novel coronavirus (nCoV) infection Interim guidance 10 January 2020 WHO/2019-nCoV/laboratory/2020.1 (WHO/2019-nCoV/laboratory/2020.1)
13. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected (WHO/2019-nCoV/IPC/v2020.1)
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## APPENDIX 1

### Novel Coronavirus (2019nCoV) 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 <input type="checkbox"/> Non-HCW _____	Sex	<input type="checkbox"/> Male <input type="checkbox"/> Female		
Phone Number		Age			
Address	House No.: _____ Street name: _____ District name: _____ 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?	<input type="checkbox"/> Yes, Date of admission ____/____/____ <input type="checkbox"/> No				

Admitted to ICU?	Intubated?	On ECMO?	Patient died?
<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comorbid conditions (check all that apply):			
<input type="checkbox"/> None <input type="checkbox"/> Unknown <input type="checkbox"/> Pregnancy <input type="checkbox"/> Diabetes <input type="checkbox"/> Cardiac disease <input type="checkbox"/> Hypertension <input type="checkbox"/> Chronic pulmonary disease <input type="checkbox"/> Chronic kidney disease <input type="checkbox"/> Chronic liver disease <input type="checkbox"/> Immunocompromised <input type="checkbox"/>			
Other: _____			
<b>Epidemiological Information</b>			
<b>Visiting and Travel History:</b>			
Did the patient travel in the 14 days prior to illness onset?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
<b>If yes,</b>			
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?			
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown			
Please describe individual (including travel location)			
<b>If the patient was tourist/pilgrim, please complete information bellow:</b>			
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 _____	
<b>Airline Information:</b>			
Airline Name: _____ Flight Number: _____ Origin: _____			
Date of arrival: ___ / ___ / ___ Date of departure: ___ / ___ / ___ Transit destination: _____			
<b>Other Trans Information:</b>			

Type of transportation: _____	Date of arrival: ____/____/____
Port of entry: _____	Origin: _____
<b>Resident Information after arrival:</b>	
Name of resident (hotel, Hajj campaign, ..etc.): _____ where: _____	
Date of check in: ____/____/____ Date of check out: ____/____/____	
Note: (Describe the timeline of contact movement)	
<b>Contact Exposure</b>	
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?	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
<b>If yes, please complete the list of patient contact in the end of report</b>	
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?	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	Specify healthcare facility/reason: _____

<b>Animal Exposure:</b>	
Did the patient have direct/ indirect contact with any animals within the last 14 days?	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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 _____ F <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 _____ F <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 _____ F <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 _____ F <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 _____ F <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 _____ F <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 _____ F <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 _____ F <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 _____ F <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 _____ F <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 _____ F <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 _____ F <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 _____ F <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 _____ F <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 Illness

Date:

Time

MRN:

Name:

ID#:

Hospital:

	Points (adults)	Score
<i>A. Clinical symptom/sign</i>		
Fever $\geq 37.8$	1	
Cough (New or worsening)	1	
Shortness of breath (New or worsening)	1	
Sore throat and/or runny nose	1	
<i>B. Risk of exposure to 2019- nCoV</i>		
A history of travel to China in the last 14 days prior to symptom onset	5	
<b>Total Score</b>		

\* Patient or household

A SCORE  $\geq 6$ , PLACE PATIENT IN AN ISOLATION ROOM AND INFORM MD FOR ASSESSMENT

2019-nCoV TESTING SHOULD BE DONE ONLY ACCORDING TO CASE DEFINITION

Staff name: \_\_\_\_\_

ID number: \_\_\_\_\_

## APPENDIX 5

### نموذج الإبلاغ الفوري لحالة مشتبهة بفيروس كورونا الجديد 2019 في المملكة العربية السعودية Immediate\* reporting form for a suspected case with 2019-nCoV in Saudi Arabia

Date of reporting: dd/mm/yy Reporting person: Reporting facility: Reporting address: Reporting contact number:	Time:	وقت الإبلاغ: تاريخ الإبلاغ: يوم/شهر/سنة إسم المبلغ: الجهة المبلغة: عنوان المبلغ/الجهة: رقم التواصل للمبلغ/الجهة:
<b>Suspected** case information</b>		<b>معلومات الحالة المشتبهة**</b>
Name: Sex: Date of birth: dd/mm/yyyy Age: Nationality: ID number: ID type: Contact number(s): Address: Healthcare worker: <input type="checkbox"/> Yes <input type="checkbox"/> No (specify occupation)		الإسم: تاريخ الميلاد: يوم/شهر/سنة العمر: الجنسية: رقم الهوية/الجواز: رقم التواصل: العنوان: عامل في الرعاية الصحية: <input type="checkbox"/> نعم <input type="checkbox"/> لا (الرجاء تحديد المهنة)
<b>Does the case has any of the following symptoms?</b>		<b>هل الحالة المشتبهة لديها أي من الأعراض التالية؟</b>
Fever (or T ≥38 C°)? <input type="checkbox"/> Yes, onset: dd/mm/yyyy <input type="checkbox"/> No With cough? <input type="checkbox"/> Yes, onset: dd/mm/yyyy <input type="checkbox"/> No And/Or shortness of breath? <input type="checkbox"/> Yes, onset: dd/mm/yyyy <input type="checkbox"/> No Other (specify) Onset: dd/mm/yyyy Other (specify) Onset: dd/mm/yyyy Other (specify) Onset: dd/mm/yyyy Other (specify) Onset: dd/mm/yyyy		سخونة (أو درجة حرارة ≤ 38 C°)? مع سعال (كحة)? و/أو ضيق في التنفس? أخرى (حدد) أخرى (حدد) أخرى (حدد) أخرى (حدد)
<b>AND did the case had any of the following within 14 days before symptom onset:</b>		<b>وهل لدى الحالة المشتبهة أي من التالي خلال 14 يوماً قبل ظهور الأعراض:</b>
1. Travel to or live in China? <input type="checkbox"/> Yes, last date: dd/mm/yyyy location: <input type="checkbox"/> No 2. A close contact*** with a confirmed case of 2019-nCoV infection? <input type="checkbox"/> Yes, last date: dd/mm/yyyy location: <input type="checkbox"/> No		1. سفر أو إقامة بجمهورية الصين الشعبية? نعم، آخر تاريخ: يوم/شهر/سنة المكان: لا 2. إتصال وثيق*** مع حالة مؤكدة مصابة بفيروس كورونا الجديد 2019? نعم، آخر تاريخ: يوم/شهر/سنة المكان: لا

\*الرجاء الإبلاغ عن الحالات المشتبهة\*\* وطلب الفحص المخبري من خلال شبكة المراقبة الصحية الإلكترونية (حصن) عبر التعمية والفحص المخصص لذلك. إذا تعذر الإبلاغ من خلال حصن، فيرجى تعبئة هذا النموذج وإرساله عبر رسالة نصية أو من خلال تطبيق الواتس إلى الإدارة العامة لمكافحة الأمراض المعدية على الرقم 00966501486268. تاريخ آخر تحديث 29 يناير 2020. المصدر: المركز الوطني للوقاية من الأمراض ومكافحتها، وزارة الصحة، المملكة العربية السعودية.  
\*\*تعريف الحالة المشتبهة بفيروس كورونا الجديد (الغرض الرصد) هي شخص مصاب بمرض تنفسي حاد (حمى مع سعال و/ أو ضيق التنفس) وأي من التالي:  
1. تاريخ السفر إلى الصين في 14 يوماً قبل ظهور الأعراض.  
2. إتصال وثيق\*\*\* خلال الـ 14 يوماً الماضية مع حالة مؤكدة إصابتها بفيروس كورونا الجديد 2019.  
\*\*\*يعرف الإتصال الوثيق على النحو التالي: العيش في نفس المنزل مع مريض مصاب بفيروس كورونا الجديد 2019؛ التواجد في بيئة واحدة مثل (فصل دراسي، مقر عمل) مع مريض بفيروس كورونا الجديد 2019؛ السفر في أي نوع من وسائل النقل بوجود مريض بفيروس كورونا الجديد 2019؛ أو توفير الرعاية الصحية المباشرة لمريض بفيروس كورونا الجديد 2019، زيارة المرضى أو البقاء في نفس البيئة القريبة لمريض بفيروس كورونا الجديد 2019، أو العمل مع العاملين في مجال الرعاية الصحية للمصابين بفيروس كورونا الجديد 2019 خلال 14 يوماً قبل ظهور الأعراض.

## APPENDIX 6

### Novel Corona Virus Designated Hospitals

Region	Primary NCOV Hospital	nCoV 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	Al-Qunfudah General Hospital	