

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Clinical Care Guidelines for SEHA Health Care Facilities

*Prepared and Approved by
SEHA Infection Prevention and Control Committee
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Purpose of this document

This document provides interim guidance on a clinical management of the MERS-CoV and to help prevent the transmission of acute infectious respiratory diseases during health care, with emphasis on acute respiratory diseases that may constitute a public health emergency of international concern. The guidance is for all SEHA health care facilities in Emirate of Abu Dhabi. This advice will be updated as more information becomes available.

These Guidelines are not intended to override the clinical decisions that will be made by clinicians providing individualized patient care.

Audience

These Guidelines are intended as guidance for:

- Clinicians and health care professionals
- Health professionals who are not normally involved in the care of people with acute infectious respiratory diseases
- Non-health-care professionals who might take care of patients with acute infectious respiratory diseases

Team Members

The development of these guidelines was a result of team effort with the members contributing their expertise. Feel free to contact anyone below if you require further clarification in a specific area.

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1. Introduction

1.1 Coronaviruses (CoV)

Coronaviruses are a large family of viruses that cause illness in humans and animals. In people, coronaviruses can cause illness ranging in severity from the common cold to Severe Acute Respiratory Syndrome (SARS). Middle East Respiratory Syndrome (MERS) is viral respiratory illness first reported in Saudi Arabia in 2012. It is caused by a coronavirus called MERS-CoV. Most people who have been confirmed to have MERS-CoV infection developed severe acute respiratory illness. They had fever, cough, and shortness of breath. About half of these people died.

2. Epidemiology

2.1 Epidemiology of a MERS-CoV

The MERS-CoV was first reported by Ali Mohamed Zaki on ProMED-mail on 15 September 2012, from a 60 year old male patient in Saudi Arabia with pneumonia and acute renal failure who died in July. Dr. Zaki sent the virus to Ron Fouchier in the Netherlands who sequenced its genome and confirmed that it is a beta-Coronavirus closely related to bat Coronaviruses.

At the beginning of September 2012 a 49 year old male Qatari national who had previously traveled to Saudi Arabia was admitted to an intensive care unit in Doha with severe respiratory illness. He was moved to the United Kingdom where laboratory tests confirmed the presence of the MERS-CoV. A comparison of a 200 nucleotide genome sequence with the one of the virus of the Saudi national revealed 99.5% identity. Alignment of this sequence with that of other Coronaviruses shows that the new virus is related to bat Coronaviruses.

This new virus is not the SARS Coronavirus, but because it is related to bat Coronaviruses there is concern that it could spread rapidly among humans and cause serious respiratory disease.

This is why WHO has placed health officials in its six regions on alert and has issued a case definition so that the disease may be readily detected.

26 March 2013 - The Robert Koch Institute informed WHO of a new confirmed case of infection with the Novel Coronavirus (nCoV) now known as the MERS-CoV.

The patient was a 73-year-old male from United Arab Emirates, who was transferred from a hospital in Abu Dhabi to Munich by air ambulance on 19 March 2013. He died on 26 March 2013.

In late 2012, a novel coronavirus now known as the Middle East Respiratory Syndrome Coronavirus (MERS-CoV), that had not previously been seen in humans was identified for the first time in a resident of the Middle East. As of July 13, 2013, globally, from September 2012 to date, WHO has been informed of a total of 82 laboratory-confirmed cases of infection with MERS-CoV, including 45 deaths (Updates are available at: http://www.who.int/csr/don/archive/disease/coronavirus_infections/en/). Thus far, all patients infected with MERS-CoV have had a direct or indirect link to the Middle East, however, local non-sustained human-to-human transmission has occurred in other countries, in people who had recently travelled to the Middle East.

Several countries in the Middle East have been affected, including Jordan, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). Recently, Tunisia has reported 1 probable and 2 confirmed cases of human infection with the novel coronavirus, with history of travel to the Arabian Peninsula for two of them. Cases with direct or indirect connection to the Middle East have also been reported by France, Germany, and the United Kingdom.

13 July 2013 - The Ministry of Health (MoH) in the United Arab Emirates (UAE) has notified WHO of a laboratory-confirmed case of infection with Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in the country.

The patient is an 82-year-old man with underlying medical conditions.

MERS-CoV disease represents a significant public health risk under the International Health Regulations (IHR2005). WHO has issued recommendations for enhanced surveillance and precautions for the testing and management of suspected cases.

Based on the current situation and available information, WHO encourages all Member States (MS) to continue their surveillance for severe acute respiratory infections (SARI) and to carefully review any unusual patterns. WHO is currently working with international experts and countries where cases have been reported to assess the situation and review recommendations for surveillance and monitoring.

2.2 Case Definitions

Case definitions for reporting are provided by WHO and are subject to change as more information becomes available (WHO Case Definitions for nCoV: http://www.who.int/csr/disease/coronavirus_infections/case_definition/en/index.html).

A) Confirmed Case:

A person with laboratory confirmation of infection with the MERS-CoV.

B) Probable case

Three combinations of clinical, epidemiological and laboratory criteria can define a probable case:

1. A person with a febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome)
AND
Testing for MERS-CoV is unavailable or negative on a single inadequate specimen¹
AND
The patient has a direct epidemiologic-link with a confirmed MERS-CoV case².
2. A person with a febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome)
AND
An inconclusive MERS-CoV laboratory test (that is, a positive screening test without confirmation)³
AND
A resident of or traveler to Middle Eastern countries where MERS-CoV virus is believed to be circulating in the 14 days before onset of illness.
3. A person with an acute febrile respiratory illness of any severity
AND
An inconclusive MERS-CoV laboratory test (that is, a positive screening test without confirmation)³
AND
The patient has a direct epidemiologic-link with a confirmed MERS-CoV case².

Notes:

Inconclusive testing: Patients with an inconclusive initial testing should undergo additional virologic and serologic testing to determine if the patient can be classified as a confirmed MERS-CoV case. It is strongly advised that lower respiratory specimens such as sputum, endotracheal aspirate, or bronchoalveolar lavage fluid be used when possible. If patients do not have signs or symptoms of lower respiratory tract infection and lower track specimens are not available or clinically indicated, both nasopharyngeal and oropharyngeal swab specimens should be collected. If initial testing of a nasopharyngeal swab is negative in a

patient who is strongly suspected to have MERS-CoV infection, patients should be retested using a lower respiratory specimen tract or a repeat nasopharyngeal specimen with additional oropharyngeal specimen if lower respiratory tract specimens are not possible, and paired acute and convalescent sera.

Asymptomatic cases: The demonstration of asymptomatic infection is useful for epidemiological investigations and should be pursued as part of case investigations, however, the burden of proof must be higher due to the risk misclassification because of false positive tests due to laboratory contamination. Generally, in most viral infections, an immunological response such as development of specific antibodies would be expected even with mild or asymptomatic infection and as such serological testing may be useful as additional confirmation of the diagnosis. Additional steps to reconfirm asymptomatic cases, or any case in which the diagnosis is suspect, could include re-extraction of RNA from the original clinical specimen and testing for different virus target genes, ideally in an independent laboratory.

Legend:

¹An inadequate specimen would include a nasopharyngeal swab without an accompanying lower respiratory specimen, a specimen that has had improper handling, is judged to be of poor quality by the testing laboratory, or was taken too late in the course of illness.

•²A direct epidemiological link may include:

- Close physical contact
- Working together in close proximity or sharing the same classroom environment
- Traveling together in any kind of conveyance
- Living in the same household
- The epidemiological link may have occurred within a 14 day period before or after the onset of illness in the case under consideration.

³Inconclusive tests may include:

- A positive screening test without further confirmation such as testing positive on a single PCR target
- A serological assay considered positive by the testing laboratory.

⁴Currently confirmatory testing requires molecular diagnostics including either a positive PCR on at least two specific genomic targets or a single positive target with sequencing on a second. However, the interim recommendations for laboratory testing for MERS-CoV should be consulted for the most recent standard for laboratory confirmation (http://www.who.int/csr/disease/coronavirus_infections/en/). See also notes on asymptomatic cases in this document.

Reporting:

HAAD, Communicable Diseases Department (CDD) Abu Dhabi requests that probable and confirmed cases be reported within 24 hours of being classified as such.

All the cases should be reported to the HAAD Communicable Disease Department, through electronic system of notification in the following link:

<https://bpmweb.haad.ae/UserManagement/login.aspx>

2.3 Transmission

MERS-CoV are thought to spread from person to person primarily through large-particle respiratory droplet transmission (e.g., when an infected person coughs or sneezes near a susceptible person). Transmission via large-particle droplets requires close contact between source and recipient persons because droplets do not remain suspended in the air and generally travel only a short distance (<6 feet).

Contact with contaminated surfaces is another source of transmission and transmission via droplet nuclei (also called “airborne” transmission) is possible.

Procedures that have been reported to be aerosol-generating and associated with a documented increased risk of pathogen transmission: these include intubation and related procedures, cardiopulmonary resuscitation, bronchoscopy, autopsy and surgery where high-speed devices are used.

All respiratory secretions and bodily fluids (e.g., diarrheal stool) of MERS-CoV cases should be considered potentially infectious.

2.4 Incubation Period

The estimated incubation period is unknown and currently is considered to be up to 14 days (2-14).

3. Clinical Findings and Complications

3.1 Symptoms

Pneumonia has been the most common clinical presentation; several patients developed Acute Respiratory Distress Syndrome (ARDS). Renal failure, pericarditis and disseminated intravascular coagulation (DIC) have also occurred.

Patients with respiratory disease due to MERS-CoV infection might experience the following symptoms:

1. fever $\geq 38^{\circ}\text{C}$
2. cough
3. shortness of breath
4. breathing difficulties
5. fatigue
6. gastrointestinal symptoms (diarrheas and /or vomiting)

3.2 Complications

- Lower respiratory tract disease (pneumonia, bronchiolitis, status asthmaticus),

- Acute Respiratory Distress Syndrome (ARDS)
- Renal failure
- Pericarditis
- Disseminated intravascular coagulation (DIC)

3.3 Medical Care for Patients with MERS-CoV

Patients with severe illness or acute respiratory distress syndrome should be evaluated and managed in the hospital.

3.3.1 Indication for admission of patients with a respiratory illness suspected to have MERS-CoV

- Evidence or suspicion of Lower Respiratory Tract Infection/Pneumonia.(e.g. dyspnea and pain or pressure in the chest)
- Hypoxia
- Moderate to severe gastrointestinal involvement
- Dehydration not corrected with initial resuscitation at ER
- Hemodynamically unstable
- CNS involvement like confusion, seizures or features of encephalopathy
- Worsening of chronic medical conditions
- Patient looks septic / toxic
- At this stage, all suspected cases should be admitted, as per HAAD recommendation.

In cases of children, indications for hospitalization include:

- Hypoxemia (oxygen saturation consistently less than 92 percent on room air)
- Respiratory exhaustion or apneic episode. Apnea defined as a ≥ 20 second pause in breathing
- Altered level of consciousness. Patient is agitated or irritable, seizures, or floppy infant
- Dehydration, or inability to maintain hydration orally; inability to feed in an infant
- Moderate to severe respiratory distress: ≥ 50 breaths per minute if under 1 year, or ≥ 40 breaths per minute if ≥ 1 year, difficulty breathing, apnea, grunting
- Toxic appearance, which is more common in children with bacterial pneumonia, may suggest a more severe course of pneumonia (e.g., cardiopulmonary compromise)
- Underlying conditions that may predispose to a more serious course of pneumonia (e.g., cardiopulmonary disease), might be worsened by pneumonia (e.g., metabolic disorder), or might adversely affect response to treatment (e.g., immunocompromised host)
- Presence of pneumonia or complications (e.g., effusion/empyema)

i) Failure of outpatient therapy (worsening or no response in 24 to 72 hours)

See *Appendix 5: Initial management of suspected cases of MERS-CoV.*

3.3.2 Investigation for Severe Pneumonia

Chemistry and hematology:

- Serum Electrolytes
- Serum Glucose
- Urea and Creatinine
- Liver Function test including Liver Enzymes
- Serum creatine kinase
- Serum lactate dehydrogenase
- Complete blood count and differential

Microbiology:

- Nasopharyngeal Aspirate for Respiratory Viral Panel
- MERS-CoV PCR
- Sputum culture if possible
- Blood culture
- For intubated patients, obtain Deep tracheal aspirate or BAL for:
 - a. quantitative culture
 - b. MERS-CoV PCR
 - c. Atypical PCR panel (Mycoplasma, chlamydia, legionella.)
 - d. Respiratory viral panel

Other investigations to consider if the etiology of the severe pneumonia is not identified:

- Legionella urinary antigen
- Mycoplasma titers
- Tuberculosis culture and PCR
- Bronchoscopy and biopsy
- Opportunistic pathogens in immuno-compromised patients
- Open lung biopsy

3.3.3 Outpatient management

- Individuals with respiratory illness, who are stable, with mild disease do not require investigations or treatment.
 - If the suspected MERS-CoV patient is discharged you must still complete electronic notification through HAAD, Communicable diseases department (CDD) website (<https://bpmweb.haad.ae>).
- Give clear instructions when to seek medical advice.
- Educate the patient and the family about Respiratory viruses and how its spread.
- Patient should stay at home till symptoms free.
- Issue a sick leave if needed.
- At this stage we investigate and isolate those who tested positive for MERS-CoV.

7. Testing for MERS-CoV

Specimen collection, storage and transportation

Specimens should reach the laboratory as soon as possible after collection. The importance of proper handling during transportation cannot be overemphasized. When there is likely to be a delay in the laboratory receiving respiratory tract specimens, it is strongly advised to freeze specimen on dry ice.

Specimen type	Transport medium	Transport to laboratory	Comment
Sputum	no	refrigerated Ship within 24 hrs.	Need to ensure the material is from the lower respiratory tract
Bronchoalveolar lavage	no	Refrigerated Ship within 24 hrs.	There may be some dilution of virus but still a worthwhile specimen
Tracheal aspirate	no	Refrigerated Ship within 24 hrs.	
Nasopharyngeal aspirate	no	Refrigerated Ship within 24 hrs.	
Combined nose/throat swab	Virus transport medium	Refrigerated Ship within 24 hrs.	Virus has been detected in this type of specimen
Nasopharyngeal swab	Virus transport medium	Refrigerated Ship within 24 hrs.	

It is important to remember that a series of negative results should not rule out the possibility of infection in a patient with clinical symptoms. A number of factors could result in false-negative results, including:

- poor quality of specimen, such as a respiratory tract specimen containing primarily oropharyngeal material
- the specimen was collected late or very early in the illness
- the specimen was not handled and shipped appropriately
- technical reasons inherent in the test, e.g., virus mutation or PCR inhibition

Interpretation of Laboratory results

To consider a case as laboratory-confirmed, one of the following conditions must be met:

- positive PCR assays for at least two different specific targets on the MERS-CoV genome
- OR
- one positive PCR assay for a specific target on the MERS-CoV genome and an additional different PCR product sequenced, confirming identity to known sequences of the new virus.

7.1 Which patients should be tested for MERS-CoV?

Priority for testing includes persons who require hospitalization.

7.2 Preferred specimens:

7.2.1 Respiratory specimens:

For Asymptomatic suspected contacts:

- a) Sputum. If not possible to obtain, than:
 - b) Nasopharyngeal swab, nasopharyngeal aspirate, or dual collected throat swabs / nasopharyngeal swabs.

For Symptomatic contacts:

- c) Sputum (without induction). If not possible to obtain, than:
 - d) Sputum with induction. If not possible to obtain, than:
 - e) Nasopharyngeal swab, nasopharyngeal aspirate, or dual collected throat swabs / nasopharyngeal swabs*.

For Intubated patient:

a) Endotracheal aspirate.

Note: Swabs should be placed into sterile universal transport media (UTM) and immediately placed on ice or cold packs or at 4-6°C (refrigerator) for transport to the laboratory. Nasopharyngeal aspirate and endotracheal aspirate does not need to be placed in the UTM.

See appendix 1: Technique for Nasopharyngeal Aspirate and Swab

7.2.1.1 Swabs

- Swab specimens should be collected using swabs with a synthetic tip (e.g. UTM swab) and an aluminum or plastic shaft. Swabs with cotton tips and wooden shafts are not recommended.
- The swab specimen collection vials should contain 1-3 ml of viral transport medium.

See appendix 2: Viral media and Dacron swab

7.2.2 Blood specimens:

- Blood specimen for serology testing should be taken.
- If test not available, blood specimen should be frozen and test performed once serology test will become available.

7.3 Shipping Clinical Specimens:

- Store the specimen refrigerated at 4-6 °C, however, specimen should not be stored longer than 24 hrs.
- Fill the laboratory request form (No special form yet).
- Clinicians should write on the form if the patient is admitted or not and where (e.g. ICU).
- Clinical specimens should be shipped on ice or cold packs (avoid dry ice) in appropriate packaging (triple bag).
- All specimens should be labeled clearly.
- Send the laboratory request form with the specimen to the reference lab (SKMC Hospital Laboratory).
- Working hours of the Molecular Lab are 8:00 to 17:00 hr on weekdays, but specimen will be accepted 24/7.
- Please inform the laboratory when you have sent a specimen:
 - Hala Imambaccus, Senior Supervisor (himambaccus@skmc.ae)
Mobile: 050-327-8662
 - Dr.Jurgen Sasse, Head, Molecular Diagnostics (jsasse@skmc.ae)
Mobile: 050-901-5121
 - Dr.Stefan Weber, Head Serology and Immunology (sweber@skmc.ae)
Mobile: 056-122-6299

7.4 Recommended Tests and Average Time for Lab Tests

- Immunofluorescence (DFA or IFA) OR Rapid influenza antigen test. The average time for the test results is 24 hours.
- If specimen is negative for influenza A and other viruses -- Real-time RT-PCR shall be performed for MERS-CoV.
- The average time is 48 hours.

7.5 Reporting confirmed case of MERS-CoV

- Microbiologist or Pathologist on call should inform the attending doctor immediately
- It's the lab's personal responsibility to do the following:
 - a. Complete the investigation
 - b. Notify the regional HAAD Communicable Disease Department on the following fax numbers:

Abu Dhabi: 02-4496966

Western: 02-8847835

Eastern: 03-7679556

7.6 Media handling

There should be no release of information to, or discussions with, the media.

8. Infection Control Guidelines for Patients with Confirmed or Suspected MERS-CoV in a Healthcare Setting

8.1 Implementation of Respiratory Hygiene/Cough Etiquette

To prevent the transmission of **all** respiratory infections in healthcare settings, including MERS-CoV, respiratory hygiene/cough etiquette should be implemented at the first point of contact (e.g., ER or ambulatory health services) with a potentially infected person and wear a surgical mask.

8.2 Screening Patients

Influenza like illness screening:

Healthcare facilities should establish mechanisms to screen patients for signs and symptoms of febrile respiratory illness at any point of entry to the facility.

There are 2 types of screening:

1. Passive surveillance (signage asking patients to self report symptoms)

2. Active surveillance (using the screening tool for influenza like illness in the emergency department). (See attached for an example of the screening tool Appendix 4: Screening Tool for Influenza-like Illness (ILI) in Health care facilities).

Health care facilities can use both types.

Early recognition:

- Ongoing surveillance for severe acute respiratory infections (SARI) must be in place. Any unusual patterns should be carefully reviewed
- Patients who develop SARI should be considered for MERS-CoV testing in consultation with Infectious Disease Physician or Microbiologist
- Consider the possibility of MERS-CoV infection in patients with:
 - fever, cough, shortness of breath, or breathing difficulties, or other symptoms suggesting an infection
 - atypical signs and symptoms, and initially without respiratory symptoms, such as diarrhea, in patients who are immunocompromised.

8.3 Infection Prevention and Control Recommendations

8.3.1 Patient placement

Any patient confirmed or probable case of MERS-CoV and present for care at healthcare facilities should be placed directly in a single room and the door should be kept closed. If the patient is severely sick or will require suctioning or nebulizer, he/she should be admitted directly into a negative pressure single room, with ≥ 12 air changes per hour (ACH) without controlled direction of air flow if available.

For procedures that are likely to generate aerosols (e.g., bronchoscopy, elective intubation, suctioning, administering nebulized medications), an airborne infection isolation room (AIIR) with negative pressure air handling with 6 to 12 air changes per hour can be used if its available.

The ill person should wear a surgical mask to contain secretions when outside of the patient room and should be encouraged to perform hand hygiene frequently and follow respiratory hygiene/cough etiquette practice.

8.3.2 Patient Transport

a) Within the healthcare facility

- Limit transportation of patient to essential procedures that cannot be performed in the patient's room.
- If possible, schedule the procedure at the end of the day.

- The patient's unit shall always notify the receiving department of the need for droplet precautions.
- Put a surgical mask on the patient prior to transport if possible.
- Maintain the precautions during transport. Personnel transporting or accompanying the patient do not require a masks if the patient is wearing a mask.
- PPE must be removed and disposed of in appropriate receptacles, and hands must be disinfected, after patient transport is complete.
- Stretchers, wheelchairs, or strollers used for transport must be disinfected after use.
- Parents or guardians accompanying patient off the unit are not to wear PPE unless carrying the child to the procedure.

b) To another healthcare facility

For the transportation to another health care facilities; the infection prevention and control guidelines apply and each organization should follow the transportation policy.

8.4 Limitation of Healthcare Personnel Entering the Isolation Room

Healthcare personnel entering the room of a patient in isolation should be limited to those performing direct patient care.

8.5 Isolation Precautions

All healthcare personnel who enter the patient's room should:

- 1) Maintain adherence to **hand hygiene by washing with soap and water or using alcohol-based hand rub.**
- 2) **Wear gowns, surgical mask (N95 Mask or Respiratory Hood for high-risk procedures), eye protections and non-sterile gloves.**
- 3) Follow the recommended sequences of wearing and removing PPE.

8.6 Management of Visitors

- Limit visitors for patients in isolation for MERS-CoV to persons who are important for the patient's emotional well-being and care.
- Visitors may be offered personal protective equipment and should be instructed by healthcare personnel on the use before entering the patient's room.
- Visitors should not be in the room during any procedures that are likely to generate aerosols (e.g. suctioning).
- Children and elderly visitors should not be allowed as they are considered highly vulnerable population.

8.7 Toys

- Patients should use their own toys, and should not share toys with other patients.
- Leave toys in the patient's room (or bed/crib).
- If toys are to be provided by the hospital, they must be non-porous and must be properly disinfected before subsequent use.

8.8 Duration of Precautions

Isolation precautions should be continued until the resolution of symptoms.

PCR can be repeated on day 5 and if the result is negative and patient is asymptomatic, isolation can be discontinued.

8.9 Surveillance of Healthcare Personnel

Health Care Workers (HCW) working in areas of a facility where there are patients being assessed or isolated for MERS-CoV should self-monitor daily for signs and symptoms of febrile respiratory infection.

Health Care Workers who develop these symptoms should be instructed not to report to work, notify their supervisor and immediately report to Occupational Health Department, Infection Control Department, or whoever deals with work related illness in your facility for determination of need for management.

Surveillance for Close Contact Health Care Workers identification should be performed by Infection Control staff.

All close contacts (asymptomatic and symptomatic) should be monitored and screened according to Occupational Exposure Policy and recommendations outlined in this document.

8.10 Management of Ill Healthcare Personnel

Healthcare personnel, who develop febrile respiratory illness and have been working in areas of the hospital where MERS-CoV patients are present, should be assessed by the Infectious diseases consultant or Occupational Health, referred to appropriate level care and infectious disease physician consulted for further investigation, care management and close monitoring.

8.11 Environmental Infection Control

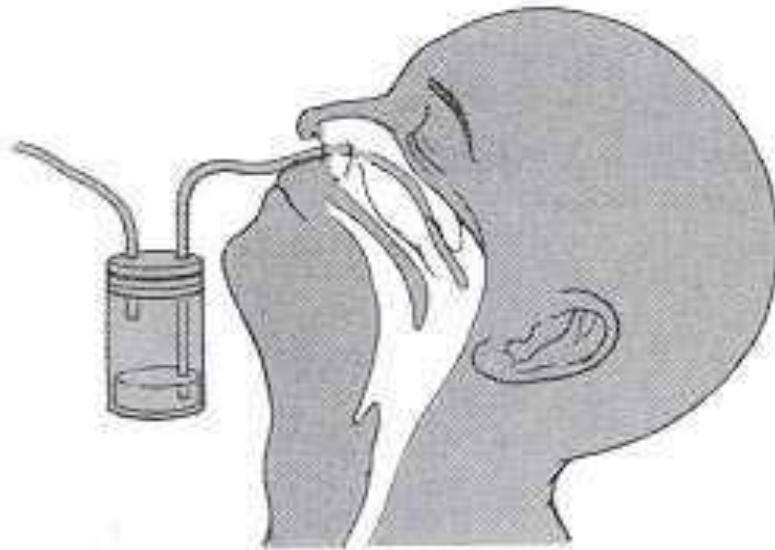
Routine cleaning and disinfection strategies used during influenza seasons can be applied to the environmental management of MERS-CoV. Management of laundry, utensils and medical waste should also be performed in accordance with procedures followed for seasonal influenza.

References:

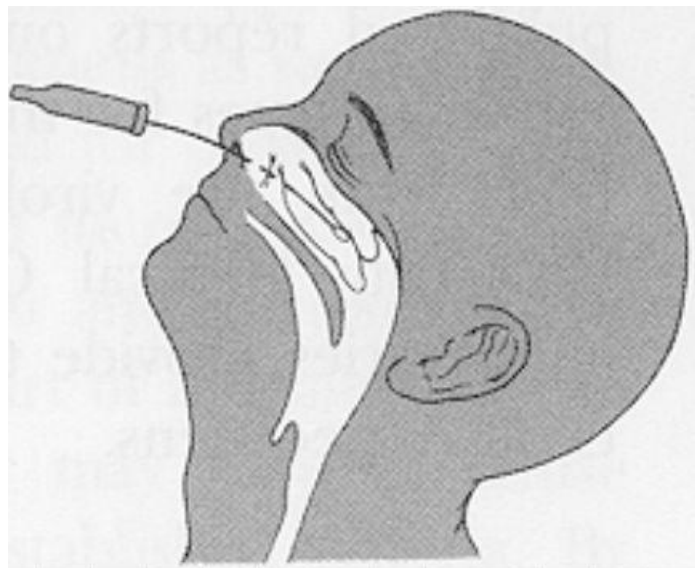
1. http://www.who.int/csr/disease/Coronavirus_infections/case_definition/en/index.html
2. http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317136300809
3. <http://www.cdc.gov/Coronavirus/ncv/>
4. http://www.who.int/csr/disease/coronavirus_infections/InterimGuidance_ClinicalManagement_NovelCoronavirus_11Feb13u.pdf
5. http://www.who.int/csr/disease/coronavirus_infections/MERSCoVCaseControlStudyPotentialRiskFactors_03Jul13.pdf
6. http://www.who.int/csr/disease/coronavirus_infections/MERS_CoV_investigation_guideline_Jul13.pdf
7. http://www.who.int/csr/disease/coronavirus_infections/IPCnCoVguidance_06May13.pdf
8. http://www.who.int/csr/disease/coronavirus_infections/InterimRevisedSurveillanceRecommendations_nCoVinfection_27Jun13.pdf

Appendix 1: Technique for Nasopharyngeal Aspirate and Swab

A) Nasopharyngeal aspirate:



B) Nasopharyngeal swabs:



Appendix 2: UTM (Universal Transport Medium) and flocked nylon swabs



Appendix 3: Disease Notification Forms

Health Authority – Abu Dhabi
Center of Diseases Control



هيئة الصحة – أبوظبي Appendix3

مركز مراقبة الأمراض

Infectious Diseases Notification Form

<u>Case information</u>	<u>Clinical Information</u>
Medical Record #	Diagnosis : _____
Name First _____ Middle _____ Family _____	<input type="checkbox"/> Suspected <input type="checkbox"/> Confirmed
Date of birth ___/___/___ Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	Date of Onset ___/___/___
Nationality :	<input type="checkbox"/> In-patient <input type="checkbox"/> Out-Patient
Passport #:	Date of admission ___/___/___
Emirates ID# :	
Emirates of residence: <input type="checkbox"/> AD <input type="checkbox"/> DXB <input type="checkbox"/> SHJ <input type="checkbox"/> AJ <input type="checkbox"/> UAQ <input type="checkbox"/> RAK <input type="checkbox"/> FUJ	Action taken: (tick All that apply) <input type="checkbox"/> Investigation done <input type="checkbox"/> Sent home <input type="checkbox"/> Admitted <input type="checkbox"/> Referred
Address : City _____ Area _____ Street: _____ House/flat No. _____	Details (specify. e.g. type of investigation, medication prescribed, or referral hospital name) _____ _____
Mobile Number:	
Home Number :	
<u>Employment information</u>	<u>Registration Information:</u>
Occupation:	Clinician's Name
Place of work/school:	First _____ Family _____
Telephone # of work/school:	ID / License # - Stamp & Signature :
Residency status: <input type="checkbox"/> UAE citizen <input type="checkbox"/> Resident Expatriates <input type="checkbox"/> Visitor	I certify that I have completed this form to the best of my knowledge
Sponsor's Name : First _____ Middle _____ Family _____	ID# _____ Date ___/___/___ Stamp& signature : _____
Sponsor's mobile:	Clinician's Contact Number :
Please Select the Diagnosis from the list below	Health Care Facility Name:

- AFP/ Poliomyelitis 📞 ① 📧 1
- Amebiasis 📞 ① 📧 7
- Anthrax 📞
- Avian Influenza (human) 📞
- Botulism 📞
- Brucellosis 📞 ① 📧 1
- Chickenpox 📞 ① 📧 7
- Chickenpox (hospitalizations and deaths) 📞 ① 📧 1
- Cholera 📞
- Creutzfeldt-Jakob Disease (CJD) 📞 ① 📧 7
- Dengue Fever 📞
- Diphtheria 📞
- Encephalitis, Specify Etiology: 📞 ① 📧 1
 - Viral
 - Bacterial
 - Fungal
 - Parasitic
- Escherichia coli: 📞 ① 📧 1
- Food borne Illness 📞 Specify:
- Giardiasis 📞 ① 📧 7
- Haemophilus influenzae invasive disease 📞 ① 📧 1
- Hemolytic Uremic Syndrome 📞
- Hepatitis A 📞 ① 📧 1
- Hepatitis B (specify acute case or chronic) 📞 ① 📧 7
- Hepatitis C (specify acute case or chronic) 📞 ① 📧 7
- Hepatitis D (Delta) 📞 ① 📧 7
- Hepatitis, other acute 📞 ① 📧 1 Specify.....
- Human Immunodeficiency Virus (HIV)/AIDS 📞
- Influenza 📞 ① 📧 7
- Invasive Pneumococcal Disease (IPD) 📞 ① 📧 7
- Hydatid Disease 📞 ① 📧 7
- Legionellosis 📞 ① 📧 1

- Leprosy (Hansen Disease) 📞 ① 📧 1
- Listeriosis 📞 ① 📧 7
- Malaria 📞 ① 📧 1
- Measles (Rubeola) 📞 ① 📧 1
- Meningitis Specify Etiology: 📞 ① 📧 1
 - Viral
 - Bacterial
 - Fungal
 - Parasitic
- Meningococcal Infections 📞 specify.....
- Mumps 📞 ① 📧 7
- Pertussis (Whooping Cough) 📞 ① 📧 1
- Plague 📞
- Rabies 📞
- Relapsing Fever 📞 ① 📧 1
- Rubella (German Measles) 📞 ① 📧 1
- Rubella Syndrome, Congenital 📞 ① 📧 1
- Scabies 📞 ① 📧 7
- Severe Acute Respiratory Syndrome (SARS) 📞
- Shigellosis 📞 ① 📧 1
- Smallpox (Variola) 📞
- Sexually Transmitted Infection (STIs) e.g. Chlamydia, Gonorrhea, Syphilis, other, 📞 ① 📧 7 specify.....
- Tetanus 📞 ① 📧 7
- Tuberculosis (Pulmonary) 📞
- Tuberculosis (Extra-Pulmonary) 📞 ① 📧 7
- Typhoid /Paratyphoid Fever 📞 ① 📧 1
- Typhus Fever 📞 ① 📧 1
- Viral Hemorrhagic Fevers (e.g., Crimean-Congo, Ebola, Lassa, and Marburg viruses) 📞
- Yellow Fever 📞
- Occurrence of any unusual diseases 📞 specify

📞 = Report immediately by telephone.

📞 ① 📧 1 = Report by fax, phone or mail within one calendar day of identification,

📞 ① 📧 7 = Report by fax, phone or mail within seven calendar days of identification

To be completed by the Communicable Disease Department

Received by (name): _____ Date: ___/___/___	CUID# : _____
Signature: _____ Time: _____	CIF # : _____
Investigator (name): _____ Date: ___/___/___	
Signature: _____ Time: _____	
Instructions: -----	
Outcome: <input type="checkbox"/> Cure <input type="checkbox"/> Follow-up <input type="checkbox"/> Lost to follow up <input type="checkbox"/> Traveled <input type="checkbox"/> Died <input type="checkbox"/> Other (specify):----- -	
Action taken: ----- ----- ----- ----- ----- ----- ----- ----- ----- ----- ----- -----	

District	Phone		Fax
	Disease Control	Director	
Abu Dhabi	(02) 419 3275	(02) 419 3602	(02) 449 6966
Western Region	(02) 884 6223	(02) 419 3602	(02) 884 7835
Eastern Region	(03) 767 8883	(02) 419 3602	(03) 767 9556
Dubai	(04) 273 1161	(04) 273 1467	(04) 272 6520
Sharjah	(06) 566 2111	(06) 567 0908	(06) 567 0911
Ajman	(06) 744 8585	(06) 701 0220	(06) 744 3873
Um Al Quwain	(06) 765 6941	(06) 765 6941	(06) 765 4441
Ras Al Khaimah	(07) 222 3111	(07) 222 3111	(07) 222 2114
Fujairah	(09) 222 7114	(09) 222 2230	(09) 222 4626

Appendix 4: Screening Tool for Influenza-like Illness (ILI) in Health care facilities

1. **Do you sneeze or cough or have shortness of breath?**

- If the answer is 'no', no further action is required
- If the answer is 'yes',

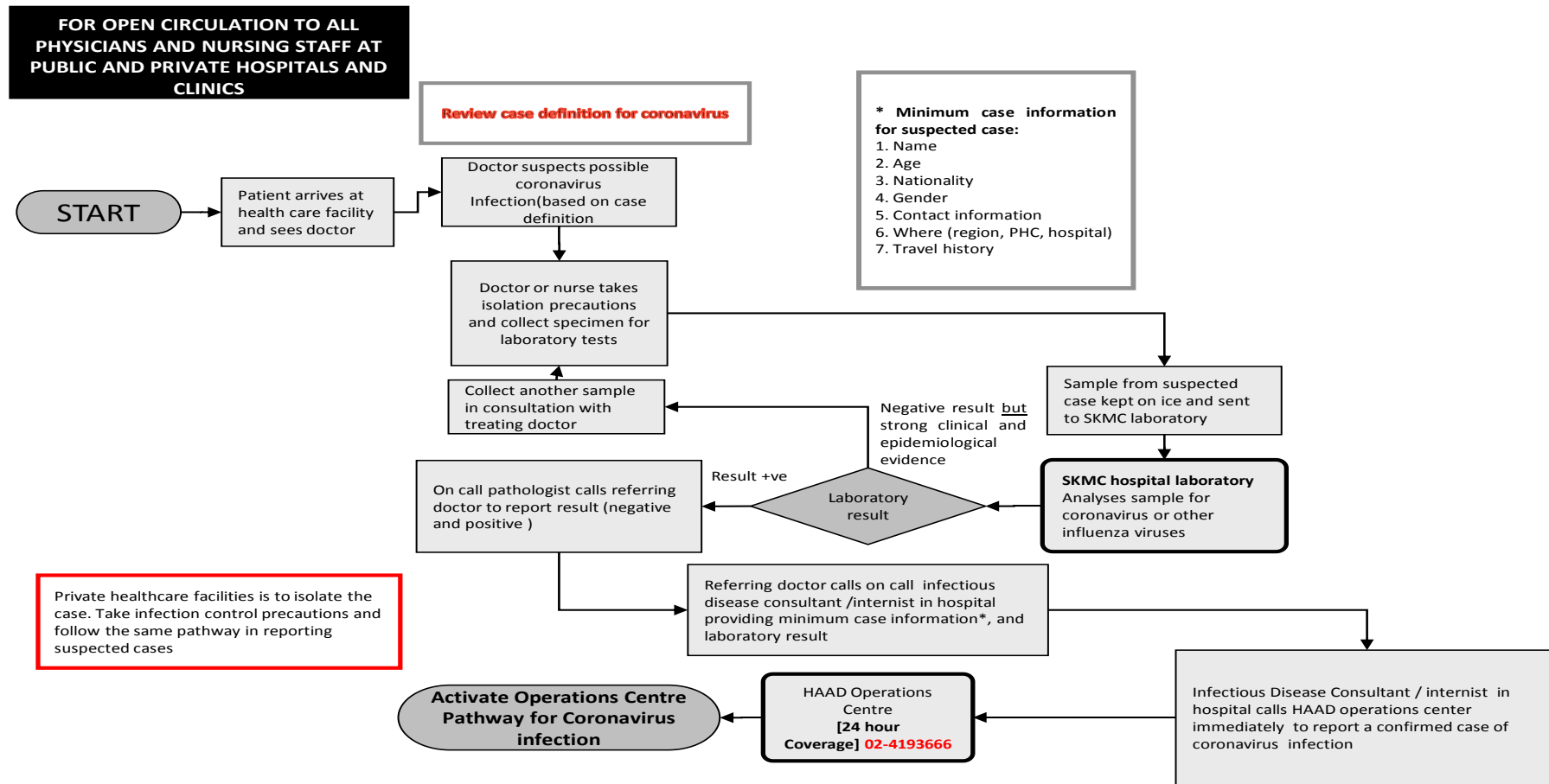
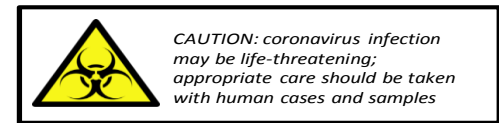
Patient should perform hand hygiene using alcohol-based hand sanitizer and put on a mask

2. **Do you have a fever or have you feel feverish in the last 24 hours?**

- If the answer is 'no', take the patient's temperature;
 - ✓ If the temperature is ≥ 38 C, Manage the patient as ILI
 - ✓ If the temperature is < 38 C, no further action
- If 'yes', take the patient's temperature, and manage the patient as ILI regardless of temperature measurement and inquire about other symptoms of ILI

Appendix 5: Initial Management of the Suspected Cases of MERS-CoV in the Emergency Room

Process for suspected case and initial management of possible Coronavirus Infection



Version: 1.1

NOTES



- This pathway is to be used only for suspected or confirmed coronavirus infection
- On call infectious disease consultant/internist must make a clinical decision if this is a highly suspicious case for coronavirus based on:
 - ✓ Clinical history
 - ✓ Case definition
 - ✓ Epidemiology
 - ✓ Laboratory result
- In case of high suspicion for coronavirus infection infectious diseases consultant/internist take infection control precautions, and notify the HAAD Operations Centre.
- HAAD Operations Centre will then call the key contacts for coronavirus infection.

For further information check the WHO website

http://www.who.int/csr/disease/coronavirus_infections/en/index.html