



HEALTH HOLDING

HAFER ALBATIN HEALTH  
CLUSTER  
MATERNITY AND  
CHILDREN HOSPITAL

<b>Department:</b>	Infection Prevention and Control Department		
<b>Document:</b>	Multidisciplinary Policy and Procedure (MPP)		
<b>Title:</b>	Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) Management		
<b>Applies To:</b>	Nurses and Technician		
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## 1. PURPOSE:

- 1.1 Provide guidance on MERS-CoV surveillance activities in the healthcare setting and in the community.
- 1.2 Provide guidance on the infection control precautions for suspected and confirmed MERS-CoV cases.

## 2. DEFINITONS:

- 2.1 Middle East Respiratory Syndrome (MERS) is a viral respiratory disease caused by a novel coronavirus (Middle East Respiratory Syndrome Coronavirus, or MERS-CoV) that was first identified in Saudi Arabia in 2012.

## 3. POLICY:

- 3.1 The early identification, isolation and reporting of Acute Respiratory Infection (ARI) of potential concern are central to effective containment and treatment. Standard, contact, and, airborne precautions are recommended for management of patients with suspected MERS-CoV infection particularly for patients who are critically ill, and when performing aerosol-generating procedures which may be associated with an increased risk of infection transmission.

## 4. PROCEDURE:

- 4.1 Case Definition: Suspected Case and confirmed case. See appendix 7.1
- 4.2 Administrative Interventions
  - 4.2.1 Triage for patients with Acute Respiratory Illness (ARI)
    - 4.2.1.1 For early identification of all patients with ARI in the Emergency Room and dialysis units.
    - 4.2.1.2 Visual triage station should be placed at the entry point of the healthcare facility (i.e. emergency room entrance, dialysis unit entrance) or other designated areas and attended by a trained nurse or nurse assistant.
    - 4.2.1.3 All patients in emergency room attendees (except those with immediately life-threatening conditions) must be triaged at the entrance using predefined scoring. See appendix 7.2
    - 4.2.1.4 Identified ARI patients should be asked to perform hand hygiene and wear a surgical mask. They should be isolated and evaluated immediately in an area separate from other patients, ideally a separate room
  - 4.2.2 Dedicate a waiting area for the ARI patients with spatial separation of at least 1.2 meter between each ARI patient and others.
  - 4.2.3 Post visual alerts (in appropriate languages) at the entrance of healthcare facilities (e.g. emergency rooms and clinics). Messages in the visual alerts include the following:
    - 4.2.3.1 Cover your mouth and nose with a tissue when coughing or sneezing.
    - 4.2.3.2 Dispose of the tissue in the nearest waste receptacle immediately after use.

- 4.2.3.3 Perform hand hygiene (e.g. hand washing with non-antimicrobial soap and water, alcohol-based hand sanitizer, or antiseptic hand wash) after having contact with respiratory secretions and contaminated objects or materials.
- 4.2.4 Prevent overcrowding in clinical areas to reduce the risk of transmission between patients and to staff
  - 4.2.4.1 The distance that should be maintained between patients' beds are: Minimum of 1.2 meters in General wards, Hemodialysis units and
  - 4.2.4.2 Emergency units: Minimum of 2.4 meters in Critical care units.
- 4.3 Transmission Precautions
  - 4.3.1 For patients with suspected, or confirmed MERS-CoV infection who are NOT CRITICALLY ILL, Standard, Contact, and Droplet precautions are recommended
  - 4.3.2 For patients who are CRITICALLY ILL, Standard, Contact, and Airborne precautions are recommended due to the high likelihood of requiring aerosol-generating procedures
- 4.4 Patient Placement
  - 4.4.1 Patients with suspected or confirmed MERS-CoV infection who are not critically ill should be placed in single patient rooms in an area that is clearly segregated from other patient-care areas. A portable HEPA filter could be used and placed according to the manufacturer recommendations.
  - 4.4.2 Critically ill patients with suspected or confirmed MERS-CoV infection should be placed in Airborne Infection Isolation Rooms (Negative Pressure Rooms), if available. When negative pressure rooms are not available, the patients should be placed in adequately ventilated private rooms with a portable HEPA filter and is placed according to the manufacturer recommendations
  - 4.4.3 When single rooms are not available, suspected or confirmed MERS-CoV patients should be placed with other patients of the same diagnosis (cohorting). If this is not possible, place patient beds at least 1.2 meters apart.
- 4.5 Patient Transport
  - 4.5.1 Avoid the movement and transport of patients out of the isolation room or area unless medically necessary. The use of designated portable X-ray, ultrasound, echocardiogram and other important diagnostic machines is recommended when possible. If transport is unavoidable, the following should be observed:
    - 4.5.1.1 Patients should wear a surgical mask during movement to contain secretions.
    - 4.5.1.2 Use routes of transport that minimize exposures of staff, other patients, and visitors.
    - 4.5.1.3 Notify the receiving area of the patient's diagnosis and necessary precautions as soon as possible before the patient's arrival
    - 4.5.1.4 Ensure that healthcare workers (HCWs) who are transporting patients wear appropriate PPE and perform hand hygiene afterward.
- 4.6 Personal Protective Equipment (PPE) For HCWs: The following PPE should be worn by HCWs upon entry into patient rooms or care areas in the respected order:
  - 4.6.1 Gowns (clean, non-sterile, long-sleeved disposable gown).
  - 4.6.2 Surgical mask (or N95 when airborne precautions are applied)
  - 4.6.3 Eye protection (goggles or face shield)
  - 4.6.4 Gloves
  - 4.6.5 For patients on airborne precautions, any person entering the patient's room should wear a fit-tested N95 mask instead of a surgical mask. For those who failed the fit testing of N95 masks (e.g. those with beards), an alternative respirator, such as a powered air-purifying respirator (PAPR), should be used
    - 4.6.5.1 Upon exit from the patient room or care area, PPEs should be removed and discarded.
    - 4.6.5.2 Except for N95 masks, remove PPE at the doorway or in the anteroom. Remove N95 mask after leaving the patient room and closing the door
    - 4.6.5.3 Remove PPEs in the following sequence: 1. Gloves, 2. Goggles or face shield, 3. Gown and 4. Mask or respirator

- 4.6.6 The following also should be noted:
  - 4.6.6.1 The outside of gloves, masks, goggles and face shield are contaminated
  - 4.6.6.2 Never wear a surgical mask under the N95 mask as this prevents proper fitting and sealing of the N95 mask thus decreasing its efficacy.
  - 4.6.6.3 For female staff who wear veils, the N95 mask should always be placed directly on the face behind the veil and not over the veil. In this instance, a face-shield should also be used along with the mask to protect the veil from droplet sprays
  - 4.6.6.4 Whenever possible, use either disposable equipment or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers).
- 4.7 Environmental Cleaning and Disinfection
  - 4.7.1 Consider designating specific, well-trained housekeeping personnel for cleaning and disinfecting of MERS-CoV patient rooms/units.
  - 4.7.2 Define the scope of cleaning that will be conducted each day; identify who will be responsible for cleaning and disinfecting the surfaces of patient-care equipment (e.g. IV pumps, ventilators, monitors, etc.)
  - 4.7.3 Consider using a checklist to promote accountability for cleaning responsibilities.
  - 4.7.4 Housekeeping personnel should wear PPE as described above. Housekeeping staff should be trained by the infection control team about MERS-CoV, in proper procedures for PPE use, including removal of PPE, and the importance of hand hygiene.
  - 4.7.5 Keep cleaning supplies outside the patient room (e.g. in an anteroom or storage area).
  - 4.7.6 Keep areas around the patient free of unnecessary supplies and equipment to facilitate daily cleaning.
  - 4.7.7 Use MOH-approved disinfectants. Follow manufacturer's recommendations for use-dilution (i.e. concentration), contact time, and care in handling.
  - 4.7.8 Clean and disinfect MERS-CoV patients' rooms at least daily and more often when visible soiling/contamination occurs.
  - 4.7.9 Give special attention to frequently touched surfaces (e.g. bedrails, bedside and over-bed tables, TV control, call button, telephone, lavatory surfaces including safety/pull-up bars, door knobs, commodes, ventilator and monitor surfaces) in addition to floors and other horizontal surfaces
  - 4.7.10 Wipe external surfaces of portable equipment for performing x-rays and other procedures in the patient's room with a MOH-approved disinfectant upon removal from the patient's room.
  - 4.7.11 After an aerosol-generating procedure (e.g. intubation), clean and disinfect horizontal surfaces around the patient. Clean and disinfect as soon as possible after the procedure.
  - 4.7.12 Clean and disinfect spills of blood and body fluids by current recommendations for spill management.
  - 4.7.13 Cleaning and disinfection after MERS-CoV patient discharge or transfer:
    - 4.7.13.1 Follow standard procedures for terminal cleaning of an isolation room.
    - 4.7.13.2 Clean and disinfect all surfaces that were in contact with the patient or may have become contaminated during patient care including items such as blood pressure cuffs, pulse oximeters, stethoscopes, etc
    - 4.7.13.3 Wipe down mattresses and headboards with an MOH-approved disinfectant.
    - 4.7.13.4 Privacy curtains should be removed, placed in a bag in the room and then transported to be laundered.
    - 4.7.13.5 No special treatment is necessary for window curtains, ceilings, and walls unless there is evidence of visible soil.
    - 4.7.13.6 Use hydrogen peroxide vapor or UVC machines for disinfection of the room as mandatory part of the terminal cleaning process.
    - 4.7.13.7 If all the procedures mentioned above are followed, then the patient room can be used immediately for another patient after terminal cleaning.
- 4.8 MEDICAL WASTE
  - 4.8.1 Housekeeping staff must wear disposable gloves and perform hand hygiene after removal of gloves when handling waste.

- 4.9 TEXTILES: See Policy no.82 for Laundry
- 4.10 Infection prevention and control precautions for aerosol-generating procedures. See policy no.28 Aerosol Generating Procedure
- 4.11 FIT TEST AND SEAL CHECK. See Policy 015 N96 Fit Test.
- 4.12 Management of Exposure to MERS-CoV in Healthcare Facilities
  - 4.12.1 Healthcare workers exposed to a MERS-CoV case
    - 4.12.1.1 Asymptomatic healthcare workers WITH protected exposure OR unprotected low-risk exposure (more than 1.5 meters of the patient):
      - 4.12.1.1.1 Testing healthcare workers for MERS-CoV is not recommended
      - 4.12.1.1.2 Healthcare workers can continue their duties
      - 4.12.1.1.3 Healthcare workers shall be assessed daily for 14 days post exposure for the development of symptoms
      - 4.12.1.1.4 Healthcare workers should delay travel until cleared by infection control team.
      - 4.12.1.1.5 Asymptomatic healthcare workers WITH protected exposure OR unprotected low-risk exposure are considered CLEAR if they:
        - 4.12.1.1.5.1 Remain asymptomatic AND
        - 4.12.1.1.5.2 The observation period is over (14 days post exposure).
    - 4.12.1.2 Healthcare workers who had unprotected high-risk exposure (within 1.5 meters of the patient) or have suggestive symptoms regardless of exposure type:
      - 4.12.1.2.1 Healthcare workers shall stop performing their duties immediately.
      - 4.12.1.2.2 Testing (Nasopharyngeal swabs) for MERS-CoV is required (preferably 24hr or more after the exposure)
      - 4.12.1.2.3 Healthcare workers shall not resume their duties until cleared by infection control team.
      - 4.12.1.2.4 Healthcare workers should delay travel until cleared by infection control team.
      - 4.12.1.2.5 Healthcare workers who test positive for MERS-CoV (regardless of the exposure type); healthcare workers who develop MERS-CoV suggestive symptoms (regardless of the exposure type) and healthcare workers who had unprotected high-risk exposure are considered CLEAR if:
        - 4.12.1.2.5.1 They are asymptomatic for at least 48 hrs AND
        - 4.12.1.2.5.2 The observation period is over (14 days post exposure) AND
        - 4.12.1.2.5.3 Had at least one negative RT-PCR for MERS-CoV.
  - 4.12.1.3 Patients exposed to a MERS-CoV case
    - 4.12.1.3.1 Patients sharing the same room (any setting e.g. ward with shared beds, open ICU, open emergency unit, etc.) with a confirmed case of MERS-CoV for at least 30 minutes:
      - 4.12.1.3.1.1 Testing (Nasopharyngeal swabs or deep respiratory sample if intubated) for MERS-CoV is required (preferably 24hr or more after the exposure).
      - 4.12.1.3.1.2 Patients should be followed daily for symptoms for 14 days after exposure.
      - 4.12.1.3.1.3 If negative on initial testing, exposed patients should be retested with RTPCR if they develop symptoms suggestive of MERS-CoV within the follow up period.

4.12.1.3.1.4 Patients discharged during the follow up period must be reported to public health department to continue monitoring for symptoms.

- 4.13 OUTBREAK MANAGEMENT: See policy no.121 Outbreak Management of Healthcare Associated Infections
- 4.14 Patient transportation and prehospital emergency medical services
- 4.14.1 Train EMS staff, including drivers, on basic infection control skills with emphasis on respiratory protection. Like other healthcare workers, respirator fit testing is also required.
  - 4.14.2 Minimize the number of people involved in the transport.
  - 4.14.3 When possible, use vehicles that have a separate driver and patient compartments and close the door/window between these compartments.
  - 4.14.4 Use a vehicle equipped with a HEPA filter incorporated into the ventilation unit especially for transporting patients on mechanical ventilation. If this unit is not available, set the regular vehicle's ventilation system to the non-circulating mode.
  - 4.14.5 Transport staff including the driver shall use PPE as described above (Personal Protective Equipment for Healthcare Workers).
  - 4.14.6 Place a surgical mask on the patient (if tolerated) and have the patient cover the mouth/nose with a tissue when coughing
  - 4.14.7 Oxygen delivery with a non-rebreather face mask may be used to provide oxygen support during transport.
  - 4.14.8 Coordinate with the receiving facility to receive the patient at the ambulance door and limit the need for EMS personnel to enter the emergency department.
  - 4.14.9 Remove and discard PPEs in a medical waste container and follow standard operating procedures for reprocessing used linen
  - 4.14.10 Clean and disinfect the vehicle and reusable patient-care equipment using an MOHapproved hospital disinfectant. Personnel performing the cleaning should wear a disposable gown and gloves (a respirator is generally not needed).
  - 4.14.11 Ensure appropriate follow-up and care of EMS personnel who transport MERS-CoV patients as recommended for HCWs.
- 4.15 DURATION OF ISOLATION PRECAUTIONS FOR MERS-COV INFECTION
- 4.15.1 The infectivity period for MERS-CoV may last as long as virus is being shed. Out of protocol testing in confirmed MERS-CoV patients is discouraged. For all patients, retesting can be done at the end of the first week of confirmation
  - 4.15.2 In order to discontinue isolation precautions, two negative lower respiratory samples 24 hours apart are required for ventilated patients and one negative respiratory sample in other patients including home isolated individuals

## 5. MATERIALS AND EQUIPMENT:

### 5.1 Forms and Records:

- 5.1.1 Visual Triage Checklist
- 5.1.2 Severity Scores for Community-Acquired Pneumonia (CURB 65)\*

### 5.2 Materials and Equipment

- 5.2.1 N/A
- 5.2.2

## 6. RESPONSIBILITIES:

- 6.1
- 6.2

## 7. APPENDICES:




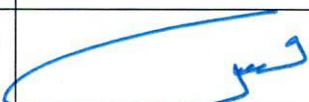
- 7.1 Case Definition: Suspected Case and confirmed case.

- 7.2 Visual Triage Checklist
- 7.3 Severity Scores for Community-Acquired Pneumonia (CURB 65)\*
- 7.4 Algorithm for Managing Suspected MERS-CoV Patients

**8. REFERENCES:**

- 8.1 Middle East Respiratory Syndrome Coronavirus; Guidelines For Healthcare Professionals. Command And Control Center. Version 5.1 May 21, 2018

**9. APPROVALS:**

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## Forms and Records:

### 5.1.1 Visual Triage Checklist

	Points (adults)	Pints (children)	Score
<i>A. Clinical symptom/sign</i>			
Fever	2	1	
Cough (New or worsening)	2	1	
Shortness of breath (New or worsening)	2	1	
Nausea, vomiting, diarrhea	1	-	
Sore throat and/or runny nose	1	-	
Chronic renal failure, CAD/heart failure	1	-	
<i>B. Risk of exposure to MERS</i>			
Exposure to a confirmed MERS case in the last two weeks	3	3	
Exposure to camel or products (Direct or indirect*) in the last two weeks	2	2	
Visit to a healthcare facility that had MERS case in the last two weeks	1	1	
<b>Total Score</b>			

\* Patient or household

A SCORE  $\geq$  4, PLACE PATIENT IN AN ISOLATION ROOM AND INFORM MD FOR ASSESSMENT

MERS COV TESTING SHOULD BE DONE ONLY ACCORDING TO CASE DEFINITION

### 5.1.2 Severity Scores for Community-Acquired Pneumonia (CURB 65)\*

Clinical Factor	Points
Confusion	1
Blood urea nitrogen > 19 mg per dL	1
Respiratory rate $\geq$ 30 breaths per minute	1
Systolic blood pressure < 90 mm Hg OR Diastolic blood pressure $\leq$ 60 mm Hg	1
Age $\geq$ 65 years	1
<b>Total points</b>	

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

### 7.1 Case Definition: Suspected Case and confirmed case.

**Definition: Suspected Case and confirmed case.**

Age	Clinical Presentation	Epidemiologic Link
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Adults	I. Severe pneumonia (severity score $\geq 3$ points) or ARDS (based on clinical or radiological evidence)	Not required
Adults <sup>2</sup>	II. Unexplained deterioration <sup>3</sup> of a chronic condition of patients with congestive heart failure or chronic kidney disease on hemodialysis	Not required
Children and adults	III. Acute febrile illness ( $T \geq 38^{\circ} C$ ) with/without respiratory symptoms OR IV. Gastrointestinal symptoms (diarrhea or vomiting), AND leukopenia ( $WBC \leq 3.5 \times 10^9 /L$ ) or thrombocytopenia (platelets $< 150 \times 10^9 /L$ )	Within 14 days before symptom onset: 1. Exposure <sup>4</sup> to a confirmed case of MERS-CoV infection OR 2. Visit to a healthcare facility where MERS-CoV patients(s) has recently (within 2 weeks) been identified/treated OR 3. Contact with dromedary camels <sup>5</sup> or consumption of camel products (e.g. raw meat, unpasteurized milk, urine)

## CONFIRMED CASE

A Confirmed case is defined as a suspected case with laboratory confirmation of MERS-CoV infection.

<sup>1</sup> All suspected cases should have samples collected for MERS-CoV testing (nasopharyngeal swabs or sputum, and when intubated, lower respiratory secretions)

<sup>2</sup> Adult is defined as  $> 14$  years old

<sup>3</sup> Chronic renal failure and congestive heart failure patients may exhibit fever and presence of fluid overload may mask the radiological features of pneumonia

<sup>4</sup> Exposure is defined as a contact within 1.5 meters with a confirmed MERS-CoV patient.

<sup>5</sup> Exposure to camels include:

- o Direct physical contact with camels or their surroundings (milking and handling excreta are especially risky), drinking raw camel milk or other unpasteurized products derived from camel milk, and handling raw camel meat.
- o Indirect contact include casual contact with camel places like visiting camel market or farms without direct physical contact with camels, living with a household member who had direct contact with camels.

## 7.2 Algorithm for Managing Suspected MERS-CoV Patients

