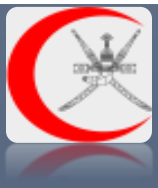

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DIRECORATE GENERAL FOR DISEASE SURVEILLENCE & CONTROL
MINISTRY OF HEALTH
OMAN

National Middle East Respiratory Syndrome-Corona virus (MERS-CoV) Guidelines for Healthcare Workers

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1. Introduction

Middle East respiratory syndrome (MERS-COV) is a viral respiratory disease caused by a novel coronavirus. Coronaviruses are a large family of viruses that can cause diseases ranging from the common cold to Severe Acute Respiratory Syndrome (SARS). The virus was firstly identified in Saudi Arabia in 2012.

Since 2012, 27 countries (12 in the Eastern Mediterranean Region) have reported cases of MERS-COV including Algeria, Austria, Bahrain, China, Egypt, France, Germany, Greece, Islamic Republic of Iran, Italy, Jordan, Kuwait, Lebanon, Malaysia, the Netherlands, Oman, Philippines, Qatar, Republic of Korea, Kingdom of Saudi Arabia, Thailand, Tunisia, Turkey, United Arab Emirates, United Kingdom, United States, and Yemen. Till date, WHO has been notified of 2,220 laboratory-confirmed cases of infection with MERS- -CoV with at least 790 deaths. Approximately 80% of human cases have been reported by Saudi Arabia. Cases identified outside the Middle East are usually traveling people who were infected in the Middle East and then travelled to areas outside the Middle East. Very few outbreaks occurred in countries outside the Middle East.

1.1 Mode of transmission

- Animal to Human (Zoonotic): direct or indirect contact with infected dromedary camels which are the major reservoir for MERS-CoV. Strains of MERS-CoV that are identical to human strains have been isolated from dromedaries in several countries, including Egypt, Oman, Qatar, and Saudi Arabia and MERS-CoV specific antibodies have been identified in dromedaries in the Middle East, Africa and South Asia.
- Human to human transmission: the virus does not seem to pass easily from person to person unless there is close contact, such as occurs when providing unprotected care to a patient. Human to human transmission is still limited among family members, patients, and health care workers and so far, no sustained human to human transmission has been documented anywhere in the world. Health care associated outbreaks have occurred in several countries, with the largest outbreaks seen in Saudi Arabia, United Arab Emirates, and the Republic of Korea.

1.2 Clinical presentation

- The clinical spectrum of MERS-CoV infection ranges from asymptomatic to mild respiratory symptoms or severe acute respiratory disease and death.
- Typical MERS-CoV symptoms include:
    - Respiratory symptoms: Fever, cough and shortness of breath with or without pneumonia
    - Gastrointestinal symptoms may precede respiratory symptoms, including nausea/vomiting and diarrhea
    - Other early symptoms have included headache, chills and myalgia
    - Severe illness may leads to respiratory failure that requires mechanical ventilation and support in an intensive care unit.

1.3 Complications

It is estimated that the case fatality rate is 35%. However, some scientists suggest that this may be an overestimate of the true mortality rate, as mild cases of MERS-CoV may be missed and the case fatality rates is counted only amongst the laboratory-confirmed cases.

1.4 At risk group

The virus cause more severe disease and may leads to complications and even death in:

- Elderly
- Immunocompromised
- Patients of chronic diseases such as renal disease, cancer, chronic lung disease, and diabetes.

2. Situation of Middle East Respiratory Syndrome (MERS) in Oman

Till date, at total of 10 cases have been locally confirmed in Oman. The first case was reported in September 2013 and the last one in November 2017. No secondary cases have been reported among healthcare workers. The majority of the cases had history of exposure to camels. All cases were treated in public hospitals with mortality rate of 33%.

3. Objective of the Guidelines

- To providing updated scientific and technical information regarding MERS-CoV for healthcare professionals in all aspects related to surveillance, laboratory investigation, clinical management, infection prevention and control and risk communication.

4. Surveillance (National Acute Respiratory Infection Surveillance)

- In order to establish a platform for high suspicious and alert for MERS-CoV infection, MERS-CoV surveillance is now integrated with the National Acute Respiratory Infection Surveillance through the intensified surveillances.
- Intensified SARI surveillance is implemented in all wards in all regional and tertiary care hospitals dealing with SARI cases such as General Medicine, Pediatrics, ICU, etc.
- Respiratory sampling is obtained from all patients fulfilling the case definition based on triggers.
- The selected triggers incorporate the possible forms of the latest World Health Organization (WHO) case definition (annex 1) for probable MERS-CoV case.

- Intensified SARI case definition: A person admitted to hospital with the following:
    - Respiratory symptoms, i.e.
    - Fever >38°C and new onset of (or exacerbation of chronic) cough or breathing difficulty.
        - And

One of the following triggers

- Evidence of severe illness progression, i.e. either radiographic evidence of infiltrates consistent with pneumonia or a diagnosis of acute respiratory distress syndrome or severe ILI which may also include complications such as encephalitis, myocarditis or other severe and life-threatening complications.
- The patient needs admission to the ICU or another area of the hospital where critically ill patients are cared for with or without mechanical ventilation.
- No alternate diagnosis within 72 hours of hospitalization, i.e. results of preliminary clinical and or laboratory investigations, within 72 hours of hospitalization, cannot ascertain a diagnosis that reasonably explains the illness.
- One or more of the following exposures/conditions:
    - A high risk group (pregnant, immunocompromised, chronic condition viz. diabetes mellitus and hypertension.)
    - Residence in or recent travel within <10 days of illness onset to a country where human cases of novel influenza virus or other emerging/re-emerging pathogens have recently been detected or are known to be circulating in animals.
    - Close contact with a confirmed case of MERS-CoV within 10 days prior to onset of symptoms
    - History of exposure involving direct health care, laboratory, animal exposure specially camels.
    - Part of cluster with similar respiratory symptoms.

4.1 Laboratory investigation

Laboratories are essential to confirm diagnosis, isolation and characterization of the virus and thus to support surveillance. The Central Public Health Laboratory (CPHL) performs real time RT-PCR assays for the screening and confirmation of MERS-CoV, targeting different gene regions of the virus, as well as testing of other respiratory viruses.

4.1.1 Laboratory samples

Collection and testing of three types of specimens is required

1. Lower respiratory specimens (preferred sample):
    - BAL or endotracheal.
    - Sputum
2. Upper respiratory specimens:
    - Nasopharyngeal aspirate
    - a set of nasopharyngeal swab and oropharyngeal swab in VTM
    - Serum (5ml) from all patients if within 12 days of onset of illness

In transporting the samples ensure the following:

- Referring laboratory should notify CPHL before sending sample.
- Triple packing must be used
- Maintain the temperature 2℃ -8℃ during storage and transportation
- Specimens should be flagged as "MERS-CoV" and requested online using Al Shifa system with a CPHL code 87770 (MOH code: Test ID 1355).

4.1.2 Laboratory results

Laboratory results will be sent to the concerned hospital by Al Shifa system to ensure getting results on time and as soon as possible. Line list of tested cases will be sent to DCDSC (via email). If negative results obtained and MERS-CoV infection remains suspected, testing a second lower respiratory sample is mandatory.

4.2 Epidemiological investigation

Once MERS-CoV case is confirmed, a detailed epidemiological investigation should be conducted immediately:

4.2.1 Investigation team

- At the Governorate:
    - Department of Communicable Disease Surveillance & Control:
        - Director of Communicable Disease Surveillance & Control (Team Leader).
        - Epidemiologist
        - Infection Prevention & Control.
        - Health Inspector
    - Hospital
        - Infection Prevention & Control

4.2.2 Objective of investigation

- Determine the possible source/s of infection
- Contact investigation
- Collect human as well as animal samples
- Increase community awareness about MERS-CoV and preventive measures
- Prevent dissemination of infection

4.2.3 Household and community contact investigation

- List all contacts
- Collect all related epidemiological data from contacts: name , age, sex, relation to patient, residence, contact details, date of last contact to the patient, type of contact, duration of contact, protected contact or not, any underlying health problem pose the contact to risk of complications (diabetes, renal failure, chronic lung disease, and immunocompromised), travel history, contact with camels (Annex 2). Additional details is needed for HCWs
- According to the collected data, classify contacts according to:
    - Exposure: either close or transient contacts
    - Symptom: either symptomatic or asymptomatic

Then specify the recommended actions needed for each contact

4.3 Management of household and community close contacts (annex 3)

Close contact is defined (according to CDC) as:

i) Being within approximately 6 feet, or within the room or care area, of a confirmed MERS-CoV case for a prolonged period of time (such as caring for, living with, visiting, or sharing a healthcare waiting area or room with, a confirmed MERS-CoV case) while not wearing recommended personal protective equipment or PPE (e.g., gowns, gloves, NIOSH-certified disposable N95 respirator, eye protection)

ii) Having direct contact with infectious secretions of a confirmed MERS-CoV case (e.g., being coughed on) while not wearing recommended personal protective equipment.

Symptomatic contacts:

- Symptomatic contacts should be assessed clinically.
- Assessing clinicians should consider that the spectrum of illness due to MERS-CoV infection is incompletely defined. Although most reported cases have had severe acute lower respiratory illness, mild infections. Additionally, in some cases, diarrhea preceded respiratory symptoms. Other early symptoms have included headache, chills, myalgia, nausea/vomiting and diarrhea.
- Collect respiratory sample (nasopharyngeal swabs) and blood sample (5 ml serum in EDTA) to be tested for MERS-CoV
- If positive; field investigation is needed starting with listing his own contacts as before.

Asymptomatic contact:

Asymptomatic community contacts or contacts on conveyances (e.g., airplane, bus) should not interrupt any of his daily activity, such as going to work, school, or other public areas.

- Educate contacts about the diseases, mode of transmission, symptoms to be monitored and when, who and how to report any symptom

- Follow up all the contacts for 14 days from the last exposure for the appearance of these symptoms; which include:

  a) Fever (38° C, or higher).

  b) Coughing.

  c) Shortness of breath.

  d) Other early symptoms to watch for are chills, body aches, sore throat, headache, diarrhea, nausea/vomiting, and runny nose.

- If the contact develop any related symptom, respiratory sample should be collected and tested for MERS-CoV and if positive; should be considered as a case.
- Asymptomatic close contacts may be considered for evaluation (testing for MERS-CoV) based on risk assessment for certain condition:
  - Share exposure history with the patient
  - Close contact with the patients; depending on the duration and distance of exposure and the clinical symptoms of the person with MERS-CoV (e.g., coughing likely increases exposure risk).
  - If exposed contact is immunocompromised (e.g. cancer, organ failure, use of immunosuppressive medications) or has other chronic underlying conditions (e.g., diabetes, hypertension)
  - If asymptomatic contact sample give positive results for MERS-CoV; should be kept under home quarantine and repeat the test after 7 days.

5. Pharmaceutical interventions

5.1 Vaccination

Currently vaccine is 'NOT' available for MERS-CoV

5.2 Antiviral agents

- At this time, there is no conclusive evidence from rigorous clinical trials in humans to recommend any virus-specific treatments for patients with suspected or confirmed MERS-CoV infection.

- **Treatment is supportive and based on the patient's clinical condition. Clinical management of SARI patient when (MERS-CoV) infection is suspected should focus on:**
  - Early supportive therapy and monitoring
  - Management of severe respiratory distress, hypoxemia and ARDS
  - Management of septic shock
  - Prevention of complications
  - Considering the patient's co-morbid condition(s) as the impact on the management of their critical illness and their prognosis

6. Non-pharmaceutical interventions

The main aim of non-pharmaceutical intervention is to prevent the spread of infection. Each individual is expected to practice following general preventive measures.

6.1 At hospital (Infection prevention and control)

6.1.1 Administrative Interventions

All the health care facilities should observe the following especially in the season of acute respiratory infections:

- Instruction for patients and persons who accompany them (e.g., family, friends) should be displayed in the out-patient departments or day care to inform healthcare personnel of symptoms of acute respiratory illness when they first register for care.

- Provide space and encourage persons with symptoms of respiratory infections to sit as far away from others as possible.
- Provide supplies to perform hand hygiene to all patients upon arrival to facility (e.g., at entrances of facility, waiting rooms, at patient check-in) and throughout the entire duration of the visit to the healthcare setting.
- Ensure all persons with symptoms of a respiratory infection adhere to respiratory hygiene and cough etiquette, hand hygiene, and triage procedures throughout the duration of the visit. Consider the following points:
  - **Respiratory Hygiene/Cough Etiquette**
    - Cover your mouth and nose with a tissue when coughing or sneezing.
    - Dispose of the tissue in the nearest waste receptacle right after use.
    - 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.
- Attention should be paid for healthcare worker training on proper donning, doffing and disposal of any personal protective equipment

6.1.2 Transmission Precautions

- Adhere to standard precautions, assume that every person is potentially infected or colonized with a pathogen that could be transmitted in the healthcare setting.
- Adhere to specific infection prevention and control precautions in addition to the standard precautions:
  - **Droplet & contact precautions:** For patients with suspected, probable, or confirmed MERS-CoV infection who are **Not** critically ill.
  - **Airborne & contact precautions:** Should be implemented for patients with suspected, probable, or confirmed MERS-CoV infection when they are;
    - Critically ill (e.g. pneumonia with respiratory distress or hypoxemia), due to the high likelihood of requiring aerosol-generating procedures.
    - Critically or non-critically ill but anticipating or performing aerosol- generating procedures;

- Bronchoscopy
- Sputum induction
- Intubation and/or extubation
- Cardiopulmonary resuscitation
- Open suctioning of airways
- Manual ventilation via ambu bagging through a mask before intubation

6.1.3 Patient Placement

Place patients with suspected, probable, or confirmed MERS-CoV infection as follows:

- **Those who are not critically ill** should be placed in single patient rooms in an area that is clearly segregated from other patient-care areas.
- **Critically ill** (e.g. pneumonia with respiratory distress or hypoxemia) should be placed in Airborne Infection Isolation Rooms (Negative Pressure Rooms) due to the high likelihood of requiring aerosol-generating procedures.
- When single rooms are not available, place patients with the same diagnosis together (cohorting). If this is not possible, place patient beds at least 1.2 meters apart.
- Put the isolation sign so that it is visible and clear for all HCWs, patients and visitors.
- 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.
- Use either disposable equipment or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers).
- If equipment needs to be shared among patients, clean and disinfect it after each patient use.
- Use the log sheet for all persons who enter the isolation room. (Annexes 5-6)

6.1.4 Performing Aerosol-Generating Procedures (AGP)

- Performing AGP on patients with suspected or confirmed MERS-CoV infection is more likely to generate higher concentrations of infectious respiratory aerosols than coughing, sneezing, talking, or breathing.
- These procedures potentially put HCWs at an increased risk for MERS-CoV exposure.
- Precautions for aerosol-generating procedures on patients with suspected or confirmed MERS-CoV include:
    - Perform these procedures only if they are medically necessary and cannot be postponed.
    - Limiting the number of HCWs present during the procedure to only those essential for patient care and support.
    - Ensure that HCWs whose duties require them to perform or be present during these procedures are offered influenza vaccination.
    - Conducting the procedures in an airborne infection isolation room (AIIR) when feasible.
    - Considering use of portable High Efficiency Particulate Air (HEPA) filtration units to further reduce the concentration of contaminants in the air.
    - HCWs should adhere to standard precautions, including wearing gloves, a gown, and either a face shield that fully covers the front and sides of the face or goggles.
    - HCWs should wear respiratory protection equivalent to a fitted N95 filtering respirator or equivalent N95 respirator (e.g., powered air purifying respirator, elastomeric) during aerosol-generating procedures.
    - Unprotected HCWs should not be allowed in a room where an aerosol-generating procedure has been conducted until sufficient time has elapsed to remove potentially infectious particles.
    - Conduct environmental surface cleaning following procedures (see section on environmental infection control).

6.1.5 Patient Transport

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:

- Patients should wear a surgical mask to contain secretions (N95 mask is not required for this purpose).
- Use routes of transport that minimize exposures of staff, other patients, and visitors.
- Patients with MERS-CoV can be transported to other healthcare facility in ambulance with strict adherence to infection control practices.
- As far as possible family members and close relatives must **Not** travel in the same vehicle. In case it is deemed necessary for them to travel in the same vehicle evaluate them for fever and lower respiratory symptoms. If either is present they must wear a surgical mask while travel.
- Use vehicle with close door/ window between driver and patient compartment.
- Notify the receiving area of the patient's diagnosis and necessary precautions as soon as possible before the patient's arrival.
- Do not touch unnecessary surfaces in the vehicle.
- Clean and disinfect the vehicle according to the housekeeping policy of the healthcare facility.
- Use MOH approved disinfectants only.
- Ensure that healthcare workers (HCWs) who are transporting patients wear appropriate PPE and perform hand hygiene afterward.

6.1.6 Personal Protective Equipment (PPE) for Health Care Workers (HCWs)

The following PPE should be worn by HCWs upon entry into patient rooms or care areas in the respected order:

- Gowns (clean, non-sterile, long-sleeved disposable gown)
- Surgical mask (or N95 when airborne precautions are applied)
- Eye protection (goggles or face shield)

- Gloves

  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.
- Upon exit from the patient room or care area, PPEs should be removed and discarded.
- 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.
- Remove PPEs in the following sequence: 1. Gloves, 2. Goggles or face shield, 3. Gown and 4. Mask or respirator.
- The following also should be noted:
    - The outside of gloves, masks, goggles and face shield is contaminated.
    - Never wear a surgical mask under the N95 mask as this prevents proper fitting and sealing of the N95 mask thus decreasing its efficacy.
    - Whenever possible, use either disposable equipment or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers).

6.1.7 Environmental Cleaning and Disinfection

Recent data suggested that the environment in health care facilities used for MERS-CoV patients is widely contaminated. Thorough environmental cleaning and disinfection are critical.

- Consider designating specific, well-trained housekeeping personnel for cleaning and disinfecting of MERS-CoV patient rooms/units.
- 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.).
- Consider using a checklist to promote accountability for cleaning responsibilities

- Housekeeping personnel should wear PPE as described above. These staff should be trained by the infection control team in proper procedures for PPE use, including removal of PPE, and the importance of hand hygiene.
- Keep cleaning supplies outside the patient room (e.g., in an anteroom or storage area).
- Keep areas around the patient free of unnecessary supplies and equipment to facilitate daily cleaning.
- Use MOH- approved disinfectant, follow manufacturer's recommendations for inuse dilution (i.e., concentration), contact time, and care in handling.
- Clean and disinfect MERS-CoV patients' rooms at least daily and more often when visible soiling/contamination occurs.
- 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, doorknobs, commodes, ventilator and monitor surfaces) in addition to floors and other horizontal surfaces.
- 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.
- After an aerosol-generating procedure (e.g., intubation), clean and disinfect horizontal surfaces around the patient.
- After discharge, privacy curtains should be removed and placed in a bag in the room and then transported to be laundered.
- After discharge, follow standard procedures for terminal cleaning of an isolation room.

6.1.8 Medical Waste

- Contain and dispose of MERS-CoV-contaminated medical waste in yellow bag and follow the national guidelines of medical waste management.
- Wear disposable gloves when handling waste.
- Perform hand hygiene after removal of gloves.

6.1.9 Textiles (Linen and Laundry)

- Store clean linen outside patient rooms, taking into the room only linen needed for use during the shift.
- Place soiled linen directly into a red laundry bag in the patient's room. Contain linen in a manner that prevents the linen bag from opening or bursting during transport and while in the soiled linen holding area.
- Wear gloves and gown when directly handling soiled linen and laundry (e.g., bedding, towels, personal clothing).
- Do not shake or otherwise handle soiled linen and laundry in a manner that might aerosolize infectious particles.
- Wash and dry linen per the Laundry services Policy.

6.1.10 Dishes and Eating Utensils

Use disposable dishes and eating utensils to serve MERS-CoV patients.

6.1.11 Managing the Visitor to the Patient

- Visitors who have been in contact with the patient before and during hospitalization are a possible source of MERS-CoV for other patients, visitors, and staff.
- For persons with acute respiratory symptoms, facilities should develop visitor restriction policies that consider location of patient being visited (e.g., oncology units) and circumstances, such as end-of-life situations, where exemptions to the restriction may be considered at the discretion of the facility. Regardless of restriction policy, all visitors should follow precautions for respiratory hygiene and cough etiquette.
- Visits to patients in isolation for MERS-CoV should be scheduled and controlled to allow for:
- Screening visitors for symptoms of acute respiratory illness before entering the hospital.
- Providing instruction, before visitors enter patients' rooms, on hand hygiene, limiting surfaces touched, and use of personal protective equipment (PPE)
- Visitors/attendants should not be present during aerosol-generating procedures.

6.1.12 Duration of isolation precautions for MERS-CoV infection

- The duration of infectivity for MERS-CoV infection is unknown
- Respiratory sample should not be repeated for non-improving, critically ill in-patients.
- Testing for MERS-CoV should be repeated after one week for improving patients in the medical ward and then every three days.
- If the sample is still positive, but the patient is medically fit to go home, he/she can be allowed to go home with instruction to isolate him/herself at home and come wearing a surgical mask to the clinic for follow-up.
- For home-isolated patients (asymptomatic but still positive), testing is to be done one week after discharge and then weekly till its negative.
- Discontinue isolation in the hospital or the home setting if the patient is asymptomatic and MERS-CoV PCR test is negative.

6.1.13 Management of Exposure to MERS-CoV in Healthcare Facilities (HCF)

A) Healthcare workers (HCWs) exposed to a MERS-CoV case (Annex 7)

General Considerations:

- The infection control unit of the facility should trace all contacts within the HCF, conduct risk and symptoms stratification, and follow them for respiratory symptoms for a total of 14 days from last exposure with the case.
- The list of contacts (HCW & patients) should be shared with the CDIPC and arrange for periodic reporting of updates until finalizing observation period.
- Please note: so far we didn't have secondary MERS-CoV cases transmission in our health care facilities.
- Symptomatic HCWs should not be allowed to take care of patients and he/she should be on sick leave for the period of their illness.
- Testing should not be done before 24 hours of exposure.
- Should delay travel until cleared by infection control team.
- Healthcare workers who test positive for MERS-CoV (regardless of the exposure type) and healthcare workers who develop MERS-CoV suggestive symptoms (regardless of the exposure type) are considered **CLEAR if**:

- They are asymptomatic for at least 48 hrs **AND**
- The observation period is over (14 days post exposure) **AND**
- Have at least one negative RT-PCR for MERS-CoV.

A.1 High-risk exposure:

Defined as: Contact with confirmed MERS-CoV case within 1.5 meters and without appropriate PPE **OR** contact more than 1.5 meter and without taken appropriate PPE while perform AGP. The high –risk exposure contact are further classified as:

- **Symptomatic**
  - Testing (Nasopharyngeal swabs) for MERS-CoV is recommended
  - Should stop performing duties immediately.
  - Should not resume duties until cleared by infection control team.
  - If still symptomatic repeat MERS-CoV test and look for an alternative cause
  - If test negative and still symptomatic consult with central department for infection prevention & control (hotline : 91313315)
- **Asymptomatic:**
  - Testing (Nasopharyngeal swabs) for MERS-CoV is recommended
  - Daily follow up by infection control team to assess for respiratory symptoms
  - Contact should be off work until the initial test for MERS-CoV is reported negative and re-evaluated by IPC team
  - Report immediately to the Staff Health Clinic or Emergency Department if develop symptoms within 14 days from last contact with index case.

A.2 Low-risk exposure:

Defined as: Contact with confirmed MERS-CoV case within 1.5 meters or more but wearing appropriate PPE for the preformed procedure.

- Testing for MERS-CoV is not recommended if asymptomatic.
- Continue to work in the HCF unless develop symptoms.
- Report immediately to the infection control team, Staff Health Clinic or Emergency Department if symptoms develop within 14 days from last exposure to index case.
- If develop symptoms within 14days post exposure, follow symptomatic contact management

B) Patients exposed to a MERS-CoV case

Management of patients who had been admitted in the same room with patients with MERS-CoV infection before recommended isolation precautions as the following:

- Put patient in appropriate isolation
- Testing for MERS-CoV should be done (preferably 24hr or more after the exposure).
- Monitor respiratory symptoms for 14 days, starting from the day when last exposed to the ill person. Watch for these symptoms:
    - Fever (38° C or higher). Check your temperature twice a day.
    - Coughing
    - Shortness of breath
    - Other early symptoms to watch for are chills, body aches, sore throat, headache, diarrhea, nausea/vomiting, and runny nose.
- If the contact develops symptoms he/she should be managed as a suspected MERS-CoV case and managed accordingly.
- If asymptomatic, exposed patient can be discharged from the facility if not otherwise clinically indicated to stay. Appropriate discharge instructions should be given by admitting team, to report if he/ she develops any of the symptoms from the above mentioned list to the nearest local health center.
- His /her name and residential area must be informed by the infection control team to the region department of diseases surveillance and control for follow-up in the community.

6.1.14 Managing bodies in the mortuary

- Deceased bodies may pose a potential risk of infections when handled by either family members or body washers although no confirmed case of MERS-CoV has ever been reported to be transmitted postmortem.
- In the event of MERS-CoV patient's death, the facility infection control team should be informed to ensure communication with the regional infection control team for body wash and burial procedure arrangement and supervision in the community.
- Body washing and preparation of confirmed or suspected cases should be done by the regional municipalities where washing is performed in designated areas, and current standard precaution measures are adequate to prevent transmission. Washers should be continuously trained on standard precaution of washing deceased bodies and the proper use of PPEs. Infection Prevention and Control departments at regional health directorates should provide necessary training and supervise.
- If family members wish to perform the body washing, this should be under the supervision of the regional infection control team to ensure strict adherence to all standard precautions.

6.2 At community

6.2.1 Advice to the public

¤ Each individual is expected to practice the following general preventive measures for respiratory infections:

- Avoid close contact with people who appear unwell and have fever and cough.

- Wash hands with soap and water or hand sanitizer thoroughly and often.
- Practice good health habits including adequate sleep, eating nutritious food, and keeping physically active.

¤ Individuals in contact with camels or its products are expected to practice the following general preventive measures:

- While visiting farms, markets, barns, or other places where dromedary (<2 years of age) camels and other animals are present, practice general hygiene measures, including regular hand washing before and after touching animals, and should avoid contact with sick animals.
- Avoid the consumption of raw or undercooked animal products, including milk and meat. Animal products that are processed appropriately through cooking or pasteurization are safe for consumption, but should also be handled with care to avoid cross contamination with uncooked foods.
- Camel meat and camel milk are nutritious products that can continue to be consumed after pasteurization, cooking, or other heat treatments.
- Peoples at high risk to develop severe disease from MERS-CoV infection (diabetes, renal failure, chronic lung disease, and immunocompromised persons) should avoid contact with camels, drinking raw camel milk or camel urine, or eating meat that has not been properly cooked.

6.2.2 Advice for patients with respiratory symptoms

¤ If you developed high fever, cough or sore throat you are expected to follow the following steps:

- Separate yourself from other people in your home or work as much as possible.
- Cover your coughs and sneezes or you can cough or sneeze into your sleeve.
- Throw used tissues and immediately wash your hands with soap and water or disinfect it with waterless alcohol-based hand sanitizer.
- Wash your hands often and thoroughly with antiseptic soap and water.

- Avoid touching your eyes, nose, and mouth with unwashed hands.
- Avoid sharing household items e.g; dishes, drinking glasses, cups, eating utensils, towels, bedding, or other items with other people in your home.
- If you are severely ill, you should visit your doctor; before your medical appointment, call the healthcare provider and disclose data related to camel contact, contact to known MERS-CoV case, travel history. This will help the healthcare provider's office takes steps to keep other people from getting infected.

7. Information dissemination

The overall communications strategy covers the gathering, collation and dissemination of information for a variety of audiences, which can be divided broadly into:

7. 1 Strategic Communications

Two way strategic communications will involve the Ministry of Health, and all other governmental agencies and organizations, including the private health establishments and the international agencies. The Government briefings and public information will be controlled and

monitored by Director General of diseases surveillance and Control under the supervision of higher officials of the ministry of health.

7.2 Professional Information and Guidance

Regular circulars to the health professionals to be issued when required and as urgency indicates through appropriate means and routes.

7.3 Communications with the Public and the Media

Media communications to be coordinated initially by the Ministry of Health Public Relation Office. They will also co-ordinate cross government communication and depending on the scale will also co-ordinate the media and public communication for the other Government Departments involved. Health education should be conducted by all the available means before and during the expected influenza season.

Methods

- Newspaper articles in Arabic and English
- Video clips
- Lectures
- SMS messages
- Social media

Message

Educating public about the nature of the disease, mode of transmission, symptoms, preventive measures and public health advice…etc….

8. Collaboration with Ministry of Agriculture

- Coronaviruses are widespread in animal species and they can infect livestock and a wide range of wild species, including camels, bats, rodents and wild birds.
- Several studies have reported high proportions of camels with antibodies against MERS-CoV or that of a closely-related virus, both in countries where human cases were detected and also in countries with no reported cases.
- Some of these studies have shown that MERS-CoV has been circulating in camels in Saudi Arabia since at least 1992. Genetic evidence of MERS-CoV infection was found in tests of camel samples from a farm in Qatar and in other studies in Egypt and Saudi Arabia.

8.1 The objectives of coordinated intervention

- Protect human health of MERS-CoV by reducing risk to humans from a potential animal source.
- Ensure animal health and production systems, to support people's livelihoods, maintain cultural values, safe trade, animal welfare, and growth of the economy.

8.2 The role of Ministry of Agriculture

8.2.1 Surveillance

- Once a human case of MERS-CoV related to camel exposure detected, immediate contact and collaboration with the local authority of ministry of agriculture and fisheries is needed.
- Joint or well-coordinated investigations should be conducted surrounding the identification of human cases.
- Collection of samples for serological and viral detection (i.e., swabs, tissues) from animals.
- In undertaking the investigations, systems of unique animal identification within identified barns should be operated for possible follow-up and monitoring.
- The samples must be appropriately labelled (species, age, sex, unique identification).
- Attempts for virus isolation should not be undertaken in laboratories unable to ensure the laboratory safety of its personnel (below level BSL3).
- Collect serological and viral samples from multiple species (and not just focus on camels on the premises)

8.2.2 Response

- If PCR positive identified in camel with epidemiological association with human cases:
    - The case should be immediately reported to OIE.
    - PCR positive animals to be isolated on the premises until animals are retested and PCR negative.

- Milking and slaughter of positive animals for the purposes of supplying the food chain be prohibited throughout the period of isolation.
- Animal products (including milk) and all bio-waste (animal faecal matter) be kept on the premises and managed effectively against pests, scavenging animals or cross-contamination.

9. Annexes:

Annex 1: WHO MERS CoV case definition

Probable case

Definition 1

• A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome); and

• Direct epidemiologic link2 with a laboratory-confirmed MERS-CoV case; and

• Testing for MERS-CoV is unavailable, negative on a single inadequate specimen or inconclusive.

Definition 2

• A febrile acute respiratory illness with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome) that cannot be explained fully by any other etiology; and

• The person resides or travelled in the Middle East, or in countries where MERS-CoV is known to be circulating in dromedary camels or where human infections have recently occurred; and

• Testing for MERS-CoV is inconclusive.

Definition 3

• An acute febrile respiratory illness of any severity; and

• Direct epidemiologic link2 with a confirmed MERS-CoV case; and

• Testing for MERS-CoV is inconclusive.

Confirmed case

A person with laboratory confirmation of MERS-CoV infection, irrespective of clinical signs and symptoms.

Annex 2: Log sheet for all houshold and /or community contacts of MERS-CoV patients

	Personal data						Contact details						Related data							
	Name	Relation to pt	Age	Sex	Residence	Phone #	Date last contact	Type	Duration	Distance from pt	Protected (Y/N)	Travel history	Contacts with camels	underlying health problem	Symptoms (Y/N)	Symptoms	classification	Actions	end of follow up
1																			
2																			
3																			
4																			
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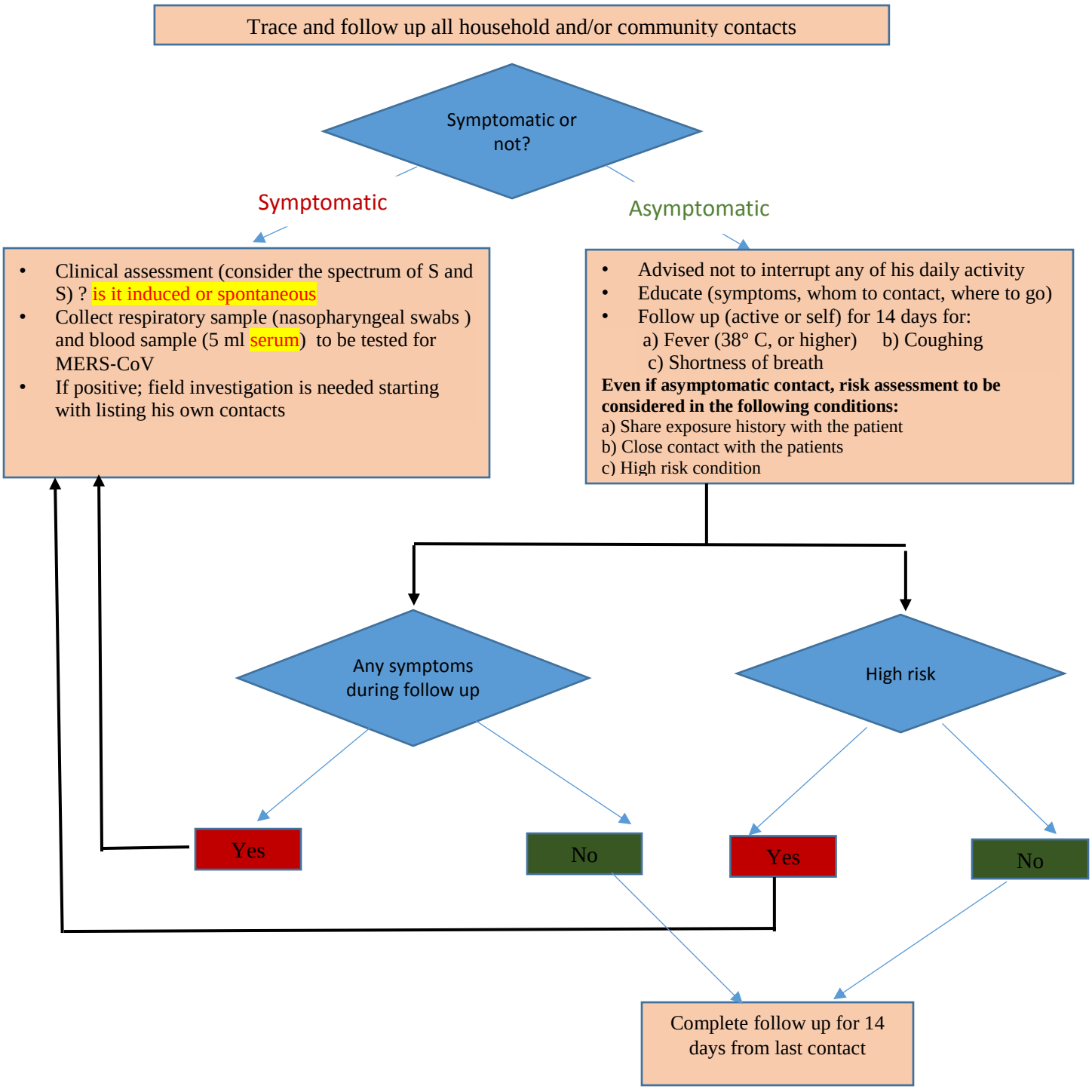
Annex 3: Management of household and community close contacts



Annex 4: Log sheet for all HCWs contacts of MERS-CoV patients

Facility:

Ward:

Bed Number:

Patient's Sticker

Date	Name (HCWs, Housekeeping, Visitors/family members, etc...)	Staff Number	Time in	Time out

- If the patient moves to another area such as Radiology, Theater, etc…, please use another log sheet
- Log sheet to be sent to infection control team

Annex 5: Line Listing Record for Healthcare Workers Contacts

Facility:

	Personal Data			Daily Progress Use Legend: SF=Symptoms Free; F=Fever; C=Cough; N/V=Nausea/Vomiting; BA=Body Aches; H=Headache; Died=Death; HOS=Hospitalization; Test=MERS-CoV tested										
	Name	Age /Sex	Exposure Risk (high or low)	Day 1 D/M/Y	Day 2 D/M/Y	Day 3 D/M/Y	Day 4 D/M/Y	Day 5 D/M/Y	Day 6 D/M/Y	Day 7 D/M/Y	Day 8 D/M/Y	Day 9 D/M/Y	Day 10 D/M/Y	Day 11 D/M/Y
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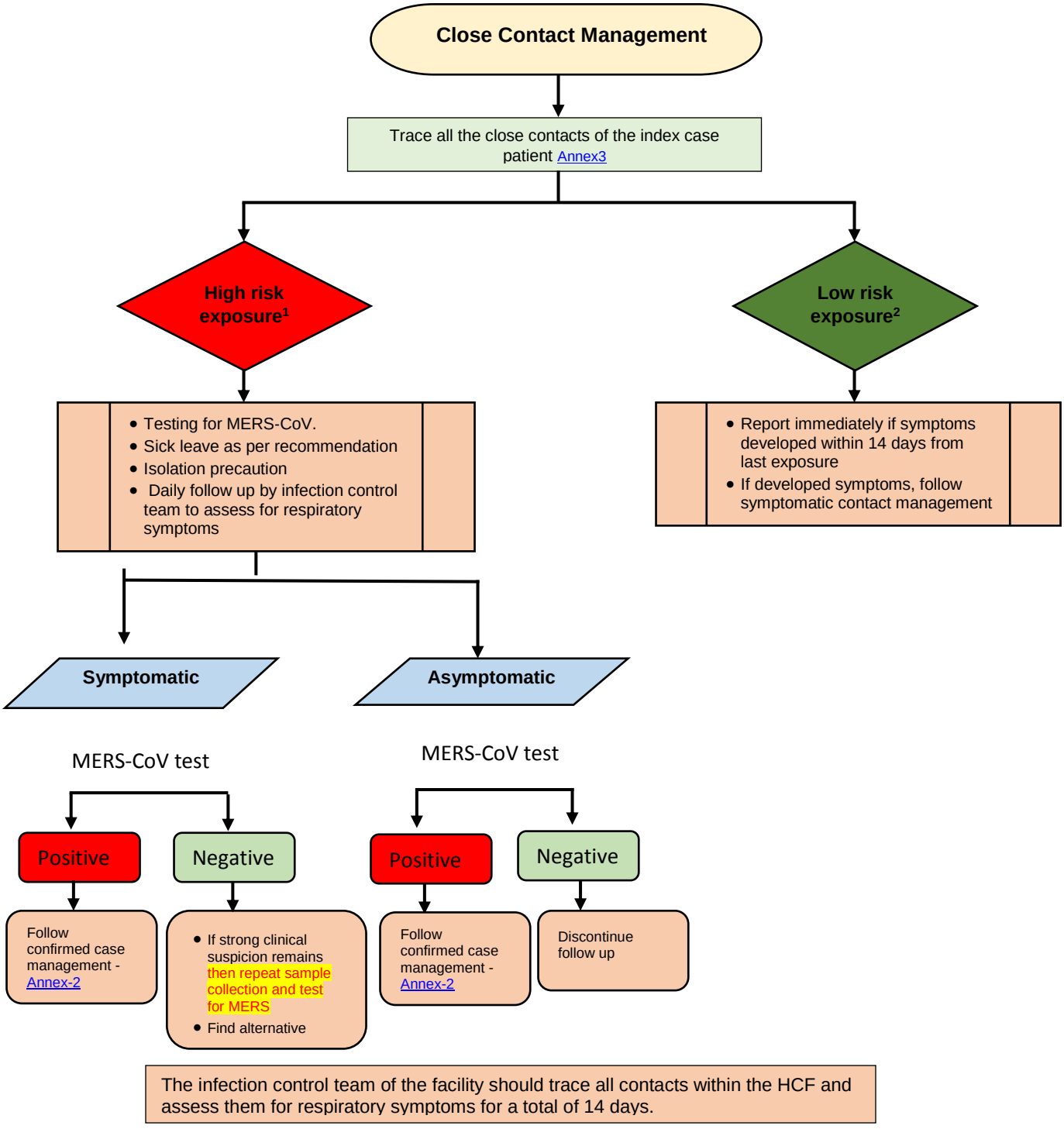
Annex 6: Management of HCWs Contact of MERS-CoV Case



[1]-**High-risk exposure:** Contact with confirmed MERS-CoV case within 1.5 meters and without appropriate PPE **OR** contact more than 1.5 meter and without taken appropriate PPE while perform AGP.
[2]-**Low-risk exposure:** Contact with confirmed MERS-CoV case within 1.5 meters or more but wearing appropriate PPE for the preformed proced