



Epidemiology Unit

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Revised Guidelines for Clinical Management of Patients with Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) Infection

MERS-CoV Infection

Middle East Respiratory Syndrome-Corona virus Infection was first reported in 2012 in Saudi Arabia. It was caused by a new strain of a corona virus previously not identified in humans. Globally, since September 2012, WHO has been notified of 1,334 laboratory-confirmed cases of infection with MERS-CoV, including at least 471 related deaths, with an approximate case fatality rate of 36%. Recently an outbreak has been reported in the Republic of Korea. With the increase in cross border travel, vigilance is required by health personnel to promptly detect patients that could be suffering from this infection.

MERS-CoV is a zoonotic virus, with evidence to date indicating that camels are the source of infection to humans. Human-to-human transmission occurs mostly in health-care settings and, to a much limited extent, within communities, mainly within households. However the virus does not seem to pass easily from person to person unless there is close contact, such as that occurs when providing unprotected care to a patient. Different modes such as droplet and contact transmission are possible. There have been clusters of cases in healthcare facilities. Thus far, no sustained community transmission has been documented.

MERS-CoV causes an acute, serious respiratory illness with **fever, cough, shortness of breath, and breathing difficulties**. **Pneumonia** is common, but not always present. Gastrointestinal symptoms, including **diarrhoea**, have also been reported. The infection can progress to **respiratory failure, septic shock, renal failure, pericarditis, and disseminated intravascular coagulation**.

Cass definition of a suspected case

A person with an acute febrile respiratory infection (characterized by **fever, cough, shortness of breath, and breathing difficulties**) with clinical, radiological, or histopathological evidence of pulmonary parenchymal disease (e.g. pneumonia or Acute Respiratory Distress Syndrome, (ARDS);

AND

A resident of or traveler to countries where MERS-CoV virus is believed to be circulating in the 14 days before onset of illness (Middle Eastern countries, South Korea etc.)

OR

Direct epidemiological link* with a with a laboratory-confirmed case

*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 transportation such as planes and ships
- Living in the same household
- Health care associated exposure, including providing direct care for MERS-CoV patients, working with health care workers infected with MERS-CoV, visiting patients or staying in the same close environment of individuals infected with MERS-CoV.

The epidemiological link may have occurred within a 14-day period before or after the onset of illness in the case under consideration.

Persons at high risk

The virus appears to cause more severe disease in older people, pregnant women, people with weakened immune systems, and those with chronic lung, heart (excluding hypertension), metabolic, renal, liver or neurological disease

Hospital Admission

- Patients with symptoms and signs of severe/complicated or progressive illness (i.e. those with shortness of breath or difficulty in breathing with respiratory rate >25/minute, measured hypoxia with oxygen saturation <92% on room air, clinical or radiological signs of pneumonia, CNS involvement, severe dehydration, signs of other organ failure, worsening of underlying chronic disease conditions) should be immediately admitted to hospitals.
- Patients in high risk groups presenting with symptoms and signs of severe/complicated or progressive illness should be immediately admitted to hospitals.
- All pregnant mothers with suspected MERS-CoV should be referred to a center with specialist care for assessment and management.
- **For patients coming from/visited a MERS-CoV infected country within the past 14 days, who have symptoms suggestive of MERS-CoV infection, but do not belong to the above categories, Medical Officer should do a risk assessment including a direct epidemiological link with a MERS-CoV confirmed/suspected patient, detailed travel history and consider admission to hospital.**

Treatment

- Treatment is supportive and based on the patient's clinical condition. No specific antiviral treatment is recommended.
- Close monitoring of patients with SARI for signs of clinical deterioration, such as severe respiratory distress/respiratory failure or tissue hypoperfusion/shock is essential for timely application of supportive care interventions.
- Although the patient may be suspected to have MERS corona virus infection, appropriate empiric antimicrobials should be administered as soon as possible for community-acquired pathogens based on local epidemiology and guidance until the diagnosis is confirmed. Empiric therapy can then be adjusted on the basis of laboratory investigation results.
- Patients with Severe Acute Respiratory Infections (SARI) should be treated cautiously with intravenous fluids, because aggressive fluid resuscitation may worsen oxygenation, especially in settings where there is limited availability of mechanical ventilation.
- Prolonged use of systemic high-dose corticosteroids can result in serious adverse events in patients with SARI, including opportunistic infection, avascular necrosis, new health-care-associated bacterial infection and possibly prolonged viral replication. Therefore, corticosteroids should be avoided unless they are indicated for another reason.

Laboratory Diagnosis

- **Samples must be taken only from patients that fit into the case definitions given.**
- Nasopharyngeal swabs are inferior samples for MERS CoV diagnosis and should not be used.
- Samples to be collected:
 - Tracheal aspirates
 - Broncho- alveolar lavage
 - Nasopharyngeal aspirate
 - Postmortem samples - true cut needle biopsy (through intercostals space) taken soon after death or tracheal aspirate.
- All samples should be transported in a labeled primary container/bag in **Viral Transport Media (VTM)** within a secondary container with ice to MRI.
- A specimen transporter with ice packs should be used as a secondary container and ice should not be melted when reaching the laboratory. Sample bottles should be properly secured and non leaking.
- Two autopsy samples should be sent in ice with the 1st sample in VTM and the 2nd sample in 70% alcohol.

- All samples should be accompanied with a request form indicating a **brief clinical history** including date of onset and **travel history** (date returned to Sri Lanka) and **personal details** of the patient i.e. name, age, sex, address and risk factors. For this purpose influenza request form can be used.
- It is important to send a **second sample** in instances where the first sample becomes negative but there is a high suspicion of MERS-CoV infection.

Please note that samples can be handed over to MRI 24hrs of the day throughout the week including weekends.

Infection control and waste management

Infection prevention and control measures are critical to prevent the possible spread of MERS-CoV in health care facilities. Facilities that provide care for patients suspected or confirmed to be infected with MERS-CoV should take appropriate measures to decrease the risk of transmission of the virus from an infected patient to other patients, health-care workers, or visitors.

Consider special arrangements for vulnerable groups at high risk for complications.

All health-care workers should always apply,

- **Standard precautions** consistently with **all patients**, regardless of their diagnosis at all times.
- **Droplet precautions** in addition to the standard precautions when providing care to patients with **symptoms of acute respiratory infection**;
- **Contact precautions** and eye protection in addition when caring for **probable or confirmed cases of MERS-CoV infection**
- **Airborne precautions** when performing **aerosol generating procedures**

Standard Precautions

- Hand hygiene (i.e. wash hands well with soap and water before and after attending to the patient and immediately after removal of PPE)
- Respiratory hygiene and cough etiquette (i.e. covering the mouth and nose during coughing or sneezing with a medical mask, cloth mask, tissue, sleeve or flexed elbow)
- For procedures with a risk for splashes onto the face and body use the following PPE:
 - facial protection (either a medical mask and eye-visor or goggles, or a face shield)
 - a gown and clean gloves
- Prevention of needle sticks/sharps injuries

- Cleaning and disinfection of the environment and equipment with routine disinfectants
- Safe waste management

Droplet Precautions

In addition to standard precautions;

- Patients with symptoms of acute febrile respiratory illness should be triaged.
- Ensure that triage and waiting areas are adequately ventilated.
- Avoid crowding of patients together. Maintain a distance of ≥ 1 meter between infectious patient and others
- Place patient in a single room or cohort with similar patients
- Limit patient movement and ensure that patients wear medical masks when outside their rooms
- Use a medical mask when within < 1 m of patient

Airborne Precautions

- Ensure that healthcare workers performing **aerosol-generating procedures** (aspiration of respiratory tract, intubation, resuscitation, bronchoscopy, physiotherapy and autopsy) use PPE, including gloves, long-sleeved gowns (clean/sterile as required for the procedure), eye protection and **N95 or equivalent mask**
- Use adequately ventilated rooms when performing aerosol-generating procedures
- Limit entry of unnecessary personnel into the room.

In addition to Standard Precautions, all individuals, when in close contact (within 1 m) or upon entering the room/cubicle of patients with **laboratory confirmed MERS- CoV infection** should:

- Wear a medical mask
- Wear eye protection (i.e. goggles or a face shield)
- Wear a clean, sterile/non sterile, long-sleeved gown and gloves
- Perform hand hygiene before and after contact with the patient and his/her surroundings and immediately after removal of PPE

In addition, for patients with **laboratory confirmed MERS-CoV infection**:

- **Avoid movement and transport** of patients out of the isolation room or area unless medically necessary. If transport is required, use routes of transport that minimize exposures of staff, other patients and visitors
- Inform the receiving area of the patient's diagnosis and necessary precautions to take, as soon as possible before the patient's arrival
- **Clean and disinfect patient-contact surfaces** (e.g. bed) with routine disinfectants after use
- Ensure that healthcare workers who transport patients wear appropriate PPE and perform hand hygiene afterwards

While **Standard Precautions should continue to be applied throughout**, additional precautions should be used during the duration of symptomatic illness and continued for 24 hours after the resolution of symptoms.

Notification

In the event of a laboratory confirmed case of MERS-CoV, relevant **Medical Officer of Health (MOH)** areas where close contacts of the patient are likely to be (including the area of residence), and the **Epidemiology Unit** should be **immediately notified**.

Investigation of suspected MERS-CoV infection in the field

- All notified cases of suspected/confirmed MERS-CoV infection and their close contacts should be investigated in the field by the MOH along with the Public Health Inspector (PHI).
- A risk assessment should be done, including any direct epidemiological link with a MERS-CoV confirmed/suspected patient and a detailed travel history.
- Patients should be assessed for the development of symptoms for a 14 day period from the date of exposure.
- Those who develop signs and symptoms of infection should be directed to the closest hospital for further care.
- Close contacts of any suspected/confirmed cases should be advised to minimize unnecessary travel.

In the Event of a Death from MERS-CoV Infection

1. In the event of a MERS-CoV associated death, notify immediately to Epidemiology unit by telephone, fax or email.
2. Standard, droplet and airborne precautions should be used as relevant when handling deceased individuals from MERS-CoV infection and when preparing bodies for autopsy or transfer to mortuary services.
3. It is advised that proper hand washing with soap and water is done when direct contact with the body occur during funeral proceedings.

Further information could be obtained from;

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



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