Middle East Respiratory Syndrome (MERS) Coronavirus Infection

Coronaviruses are large enveloped RNA viruses that infect humans and animals. Some animal species may act as reservoirs for novel (new) strains of coronaviruses infective to humans. Although most coronaviruses cause mild to moderate respiratory symptoms (e.g. runny nose, cough, sore throat, fever), some coronaviruses can cause severe disease such as pneumonia and acute respiratory distress.

In 2012, a coronavirus called Middle East Respiratory Syndrome coronavirus (MERS-CoV) was identified in Saudi Arabia. MERS-CoV has been associated with severe respiratory illness in humans and likely originated from an animal source. Most people infected with MERS-CoV either lived in or recently traveled from the Arabian Peninsula before becoming ill. A few people became infected after having close contact with an infected person with recent travel to the Arabian Peninsula. Transmission of MERS-CoV is through close contact, such as caring for or living with an infected person. The first travel-associated MERS cases in the United States were confirmed in May 2014.

Case Definitions

The clinical and epidemiologic criteria may be modified and case definitions may be refined as determined by the Centers for Disease Control and Prevention (CDC).

Patient Under Investigation (PUI)

A person with the following characteristics should be considered a patient under investigation (PUI):

Clinical Criteria		Epidemiologic Criteria
Severe illness Patient has fever and pneumonia OR fever and acute respiratory distress syndrome with no other more likely alternative diagnosis	**and** ≥1 of the following epidemiologic risk factors	Within 14 days before symptom onset, a history of travel from countries in or near the Arabian Peninsula[1] -or- Within 14 days before symptom onset, history of close contact with a person who themselves developed fever and acute respiratory illness within 14 days of residing in or travel to countries in or near the Arabian Peninsula -or- Within 14 days before symptom onset, a history of direct physical contact with camels[2] in North, West, or East Africa[3] -or- Is a member of a cluster of patients with severe acute respiratory illness of unknown etiology -or- High risk occupational exposure to MERS-CoV, such as laboratory or research personnel[4]
Milder illness Patient has fever or symptoms of respiratory illness (e.g., cough and/or shortness of breath) with no other more likely alternative diagnosis	**and** ≥1 of the following epidemiologic risk factors	Within 14 days of symptom onset, a history of being in a health care facility (as a patient, worker, or visitor) in a country or territory in or near the Arabian Peninsula where recent health care–associated cases of MERS have been identified -or- Within 14 days of symptom onset, a history of direct physical camel contact[2] in or near the Arabian Peninsula -or- Within 14 days of symptom onset, a history of close contact[5] with a person with confirmed MERS-CoV infection while that person was ill -or- High risk occupational exposure to MERS-CoV, such as laboratory or research personnel[4]

Confirmed Case

A confirmed case is a person with laboratory confirmation of MERS-CoV infection. Confirmatory laboratory testing requires a positive MERS real-time reverse transcription polymerase chain reaction (rRT-PCR) test.

Close Contacts of a Confirmed Case

As part of investigation of confirmed cases, close contacts[5] of a confirmed case should be actively monitored by health departments, or monitor themselves, for fever or symptoms of respiratory illness for 14 days after the close contact. State and local public health departments should strongly consider quarantining contacts during active monitoring periods. A person who develops fever or symptoms of respiratory illness within 14 days following close contact with a confirmed case of MERS should be tested for MERS infection.

Close Contacts of a PUI

Evaluation and management of close contacts of a PUI should be discussed with state and local health departments. Close contacts of a PUI should monitor themselves for fever and respiratory illness and seek medical attention if they become ill within 14 days after contact. Healthcare providers should consider the possibility of MERS in these contacts.

Footnotes

[1]Countries considered in or near the Arabian Peninsula include: Bahrain; Iraq; Iran; Israel, the West Bank and Gaza; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia; Syria; the United Arab Emirates (UAE); and Yemen.

[2]Direct physical contact could include touching, riding, hugging, kissing, grooming, or exposure to respiratory secretions but does not include consumption of cooked camel meat.

[3]Because the risk for MERS-CoV transmission from camels in North, West, and East Africa is not yet fully understood, consider MERS evaluation for travelers coming from these regions who develop severe respiratory illness within 14 days of direct physical camel contact.

[4]Diagnostic and research facilities that handle MERS-CoV should have established procedures instructing their staff in how to prevent and respond to occupational exposures. Laboratory exposure can occur through contact with infected animals and viral specimens without proper precautions and personal protective equipment (PPE).

[5]Close contact is defined as a) being within approximately 6 feet (2 meters), or within the room or care area, of a confirmed MERS patient 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 patient) while not wearing recommended personal protective equipment or PPE (e.g., gowns, gloves, NIOSH-certified disposable N95 respirator, eye protection); or b) having direct contact with infectious secretions of a confirmed MERS patient (e.g., being coughed on) while not wearing recommended personal protective equipment.