



PUBLIC HEALTH ADVISORY
MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS (MERS-CoV)
May 22, 2014

SITUATION: The Centers for Disease Control and Prevention (CDC) has confirmed the first two imported cases of Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in the United States on May 2 & May 11. Both cases occurred among travelers to Saudi Arabia but are not linked. As of May 16 the first domestic secondary case was identified in Indiana. This case was exposed to the first case and remains asymptomatic, but lab testing indicates exposure and immune response to MERS-CoV.

BACKGROUND: MERS-CoV was first reported in Saudi Arabia in 2012. Most confirmed cases have had severe respiratory illness. Dromedary camels are a host species for MERS-CoV and there is evidence that exposure to dromedary camels or their products may be a risk factor; investigation of the routes of transmission and other potential sources is ongoing. Clusters of human-to-human spread have been documented in healthcare workers caring for MERS-CoV patients, but there is currently no evidence of sustained human-to-human transmission in community settings.

As of 5/16/14, 614 confirmed cases of human MERS-CoV infections, including 181 deaths, have been reported to the World Health Organization (WHO) since April 2012. A sharp increase in the number of confirmed MERS-CoV cases has occurred since March 2014, especially in Saudi Arabia & the United Arab Emirates, where healthcare-associated outbreaks are occurring. Affected Middle East countries include Jordan, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates, and Yemen. Cases have also been reported from other countries in Africa, Europe, Asia, and North America (U.S.).

ACTIONS REQUESTED OF CLINICIANS:

1. **SUSPECT MERS-CoV** in patients with a fever $\geq 38^{\circ}\text{C}$ (100.4°F) and pneumonia or acute respiratory distress syndrome (ARDS), who have traveled to countries in/near the Arabian Peninsula within 14 days of symptom onset or who meet other criteria described below in "Criteria for Testing".
2. **IMPLEMENT AIRBORNE PRECAUTIONS immediately** for suspected cases. Mask and isolate patient in an airborne infection isolation room. Do not use a regular exam room at least two hours after a suspected MERS-CoV patient has left the room. Notify your facility's Infection Control Professional immediately.
3. **REPORT suspected MERS-CoV cases immediately** to Alameda County Public Health Department (ACPHD) **by phone at (510) 267-3250**; after hours, call (925)422-7595 to contact the Public Health On-Call Duty Officer.
4. **TEST suspected cases who meet the clinical case definition.** Collect lower respiratory specimens, a throat or NP swab, serum and stool and HOLD for testing by Public Health. Call ACPHD for prior approval.

Clinical Presentation: Globally, 66% of cases are male and the median age is 49 years (range 9 months-94 years). Persons with pre-existing health conditions such as immunosuppression, diabetes, cancer, chronic kidney disease, or chronic cardiopulmonary conditions may be at increased risk of severe infection. Available data suggest that symptoms usually begin more than five days and up to 14 days after exposure.

Most confirmed cases have had severe acute respiratory illness with fever, cough, shortness of breath, and abnormal chest imaging. Patients may also have diarrhea, vomiting, headache, chills, and myalgia. Complications may include pneumonia, ARDS with multi-organ failure, renal failure, coagulopathy and pericarditis. However, some patients with confirmed MERS-CoV infection have had milder illness or were asymptomatic.

Patients with lower respiratory illness should also be evaluated for common causes of community-acquired pneumonia. Positive results for another respiratory pathogen (e.g., influenza) should not necessarily preclude testing for MERS-CoV because co-infection can occur.



Criteria for Testing: MERS-CoV polymerase chain reaction (PCR) testing will be performed by the California Department of Public Health (CDPH) only on patients who meet the following criteria:

Fever $\geq 38^{\circ}\text{C}$ (100.4 $^{\circ}\text{F}$) and pneumonia or acute respiratory distress syndrome AND one of the following:

- History of travel from countries in or near the Arabian Peninsula* within 14 days before symptom onset; OR
- Close contact with a symptomatic traveler who developed fever and acute respiratory illness (not necessarily pneumonia) within 14 days after traveling from countries in or near the Arabian Peninsula*; OR
- Is a member of a cluster of patients with severe acute respiratory illness (e.g. fever and pneumonia requiring hospitalization) of unknown etiology in which MERS infection is being evaluated.

* Countries considered to be in or near the Arabian Peninsula: Bahrain, Iraq, Iran, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian territories, Qatar, Saudi Arabia, Syria, the United Arab Emirates (UAE), and Yemen.

Report and Test Suspected Cases: Call ACPHD at (510) 267-3250 (after business hours, 925-422-7595) immediately to **report** suspected cases and obtain **approval for testing** and shipment instructions. Collect specimens as soon as possible for expedited testing by the Public Health Laboratory (PHL).

Different specimen types vary in their yield. Please prioritize collection of specimens in the following order, from highest to lowest priority:

1. Lower respiratory tract - bronchoalveolar lavage, tracheal aspirate, pleural fluid and/or sputum (2-3mL)
2. Upper respiratory tract - nasopharyngeal and oropharyngeal (throat) swabs collected on a synthetic swab (e.g., Dacron) only in sterile tube with 2-3mL of viral transport media (VTM). Nasal washes are **not** acceptable.
3. Serum – collect 5-10 ml of blood in a red top tube. Spin and retain serum.
4. Stool – (2-5g)

Specimens should be stored and shipped at 2 $^{\circ}$ - 8 $^{\circ}\text{C}$ within 72 hours, or frozen at -70 $^{\circ}\text{C}$ and shipped on dry ice. Laboratories should NOT attempt to perform viral culture on specimens from patients with suspected or laboratory-confirmed MERS infection. Call the ACPHD PHL for additional technical specimen processing instructions at (510) 268-2700. Use this specimen submittal form

http://cdph.ca.gov/programs/vrdl/Pages/CurrentVRDLSpecimen_Submittalforms.aspx.

Infection Control: Mask and isolate suspected MERS-CoV patients who are ill enough to be hospitalized immediately and implement Airborne, Contact and Standard precautions, including eye protection. Limit movement and transport of the patient for tests; if essential, mask the patient and notify receiving location of the patient's suspected diagnosis. For additional hospital infection prevention guidance:

<http://www.cdc.gov/coronavirus/mers/infection-prevention-control.html>.

Patients who are not ill enough to be hospitalized may be isolated at home. Provide patient with surgical masks. They should return home by private car, not public transportation. Advise them that ACPHD will be contacting them. Please reinforce the following key measures:

- **Stay home.**
- **Separate themselves from other people in the home.**
- **Call ahead of doctor's visits. Wear a facemask when in the same room with other people.**
- **Cover coughs and sneezes**
- **Avoid sharing personal items**
- **For additional home infection control guidance:** <http://www.cdc.gov/coronavirus/mers/hcp/home-care.html>.

Additional Information

California Department of Public Health: <http://www.cdph.ca.gov/programs/cder/Pages/MERS-CoV.aspx>

Centers for Disease Control and Prevention: <http://www.cdc.gov/coronavirus/mers/index.html>