

**This is an official**  
**CDC HEALTH ADVISORY**

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**Updated Information and Guidelines for Evaluation of Patients  
for Middle East Respiratory Syndrome Coronavirus (MERS-CoV)  
Infection**

**Summary:** *The Centers for Disease Control and Prevention (CDC) continues to work with the World Health Organization (WHO) and other partners to closely monitor Middle East Respiratory Syndrome Coronavirus (MERS-CoV) globally, including the cases of MERS-CoV infection recently reported by China and the Republic of Korea, to better understand the risks to public health. The purpose of this HAN Advisory is to provide updated guidance to state health departments and healthcare providers in the evaluation of patients for MERS-CoV infection, which have been revised in light of the current situation in the Republic of Korea. Healthcare providers and public health officials should maintain awareness of the need to consider MERS-CoV infection in ill persons who have recently traveled from countries in or near the Arabian Peninsula<sup>1</sup> or in the Republic of Korea as outlined in the guidance below. Please disseminate this information to healthcare providers, especially infectious diseases specialists, intensive care physicians, internists, infection preventionists, and to emergency departments and microbiology laboratories.*

**Background**

On May 20, 2015, the Republic of Korea (Korea) reported to WHO a case of laboratory-confirmed<sup>2</sup> MERS-CoV infection, the first case in what is now the largest outbreak of MERS-CoV outside of the Arabian Peninsula<sup>1</sup>. The index case is a 68 year-old male who travelled to Bahrain, United Arab Emirates (UAE), Kingdom of Saudi Arabia (KSA), and Qatar, prior to returning to Korea on May 4. He subsequently became ill and sought medical care at several healthcare facilities before being diagnosed with MERS-CoV on May 20. Since then, as of June 10, 107 additional laboratory-confirmed<sup>2</sup> cases of MERS-CoV have been identified according to the Republic of Korea Ministry of Health, for a total of 108 cases, including 9 deaths; WHO has confirmed 64 of these cases and 5 deaths. One of these cases is a contact associated with this outbreak who travelled from Korea to China on May 26 while symptomatic, tested positive for MERS-CoV in China on May 29, and is the first reported case from China; no other countries have reported any cases of MERS-CoV infection linked to this outbreak. According to available WHO reports, all reported cases are epidemiologically linked to the index case, with transmission limited to other patients, healthcare workers, and visitors in healthcare facilities where case-patients received care. This outbreak is still under investigation, and active contact tracing and prevention measures are ongoing in Korea and China. CDC is closely monitoring the situation to better understand the public health risks associated with this outbreak.

First identified and reported to cause severe acute respiratory illness in September 2012, MERS-CoV has caused infections worldwide, with 25 countries reporting cases to date. As of June 10, 2015, 1,219 laboratory-confirmed<sup>2</sup> cases of MERS-CoV infection have been reported to and confirmed by WHO, including at least 449 (37%) deaths. The majority of cases (~85%) have been reported from KSA. All reported cases have been directly or indirectly linked through travel or residence to nine countries: KSA, UAE, Qatar, Jordan, Oman, Kuwait, Yemen, Lebanon, and Iran. In the United States (US), nationwide surveillance for MERS-CoV has been ongoing since 2012, and as of June 5, 2015, 45 states have submitted specimens to CDC or conducted their own testing for MERS-CoV based on CDC criteria available in their current form at <http://www.cdc.gov/coronavirus/mers/case-def.html>. Of the 584 total

persons tested in the US, two patients tested positive for MERS-CoV in May 2014 and were determined to be imported cases from KSA; the remaining 582 patients tested negative.

### **Recommendations**

CDC continues to recommend that healthcare providers and health departments throughout the US be prepared to detect and manage cases of MERS. Healthcare providers should continue to routinely ask their patients about their travel history and healthcare facility exposure and to consider a diagnosis of MERS-CoV infection in persons who meet the criteria for patient under investigation (PUI), which has been revised to include considerations of recently being in a Korean healthcare facility and is available at <http://www.cdc.gov/coronavirus/mers/case-def.html>. Specifically, persons who meet the following updated criteria for PUI should be evaluated for MERS-CoV infection in addition to other common respiratory pathogens<sup>3</sup> and reported immediately to state and local health departments:

- A. Fever AND pneumonia or acute respiratory distress syndrome (based on clinical or radiologic evidence) AND one of the following:
- A history of travel from countries in or near the Arabian Peninsula<sup>1</sup> within 14 days before symptom onset, OR close contact<sup>4</sup> 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<sup>1</sup>, OR
  - A history of being in a healthcare facility (as a patient, worker, or visitor) in the Republic of Korea within 14 days before symptom onset, OR
  - 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-CoV is being evaluated, in consultation with state and local health departments in the US,

OR

- B. Fever AND symptoms of respiratory illness (not necessarily pneumonia; e.g., cough, shortness of breath) AND a history of being in a healthcare facility (as a patient, worker, or visitor) within 14 days before symptom onset in a country or territory in or near the Arabian Peninsula<sup>1</sup> in which recent healthcare-associated cases of MERS have been identified,

OR

- C. Fever OR symptoms of respiratory illness (not necessarily pneumonia; e.g., cough, shortness of breath) AND close contact<sup>4</sup> with a confirmed MERS case while the case was ill.

The above criteria serve as guidance for testing; however, patients should be evaluated and discussed with public health departments on a case-by-case basis if their clinical presentation or exposure history is equivocal (e.g., uncertain history of health care exposure).

Health departments should immediately report PUIs to CDC using the MERS PUI short form available at <http://www.cdc.gov/coronavirus/mers/interim-guidance.html>, and should send completed investigation short forms by fax to CDC at 770-488-7107, or attach the short form to an email and send to [eocreport@cdc.gov](mailto:eocreport@cdc.gov) with the subject line: MERS Patient Form.

Recommendations may be updated as additional data become available. Guidance on the evaluation of patients for MERS-CoV infection, clinical specimen collection and testing, infection control, and home care and isolation measures is available on the CDC MERS website at <http://www.cdc.gov/coronavirus/mers/index.html>.

Healthcare providers should adhere to recommended infection control measures, including standard, contact, and airborne precautions while managing patients in healthcare settings who are PUIs or confirmed cases of MERS-CoV infection. Updated guidance on MERS-CoV infection control in healthcare settings is available at <http://www.cdc.gov/coronavirus/mers/infection-prevention-control.html>.

For PUIs, CDC recommends collecting multiple specimens from different sites after symptom onset for testing with the CDC MERS-CoV rRT-PCR assay, including a lower respiratory specimen (e.g., sputum, bronchoalveolar lavage fluid, or tracheal aspirate), a nasopharyngeal/oropharyngeal swab, and serum. Additional guidance for collection, handling, and testing of clinical specimens is available at <http://www.cdc.gov/coronavirus/mers/guidelines-clinical-specimens.html>.

CDC interim guidance to prevent MERS-CoV from spreading in homes and communities in the US is available at <http://www.cdc.gov/coronavirus/mers/hcp/home-care.html>.

No vaccine or specific treatment for MERS-CoV infection is available; care is supportive. WHO has posted guidance for clinical management of MERS patients at [http://www.who.int/csr/disease/coronavirus\\_infections/InterimGuidance\\_ClinicalManagement\\_NovelCoronavirus\\_11Feb13u.pdf?ua=1](http://www.who.int/csr/disease/coronavirus_infections/InterimGuidance_ClinicalManagement_NovelCoronavirus_11Feb13u.pdf?ua=1).

<sup>1</sup> Countries considered in the Arabian Peninsula and neighboring include: Bahrain; Iraq; Iran; Israel, the West Bank, and Gaza; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia; Syria; the United Arab Emirates; and Yemen.

<sup>2</sup> Confirmatory laboratory testing requires a positive polymerase chain reaction test result on at least two specific genomic targets for MERS-CoV or a single positive target with sequencing on a second.

<sup>3</sup> Examples of respiratory pathogens causing community-acquired pneumonia include influenza A and B, respiratory syncytial virus, *Streptococcus pneumoniae*, and *Legionella pneumophila*.

<sup>4</sup> Close contact is defined as: a) being within approximately 6 feet (2 meters) or within the room or care area for a prolonged period of time (e.g., healthcare personnel, household members) while not wearing recommended personal protective equipment (i.e., gowns, gloves, respirator, eye protection—see <http://www.cdc.gov/coronavirus/mers/infection-prevention-control.html>); or b) having direct contact with infectious secretions (e.g., being coughed on) while not wearing recommended personal protective equipment (i.e., gowns, gloves, respirator, eye protection—see <http://www.cdc.gov/coronavirus/mers/infection-prevention-control.html>). Data to inform the definition of close contact are limited. At this time, brief interactions, such as walking by a person, are considered low risk and do not constitute close contact.

#### **For more information:**

For additional information, please consult the CDC coronavirus website at:

<http://www.cdc.gov/coronavirus/mers/index.html>. State and local health departments with questions should contact CDC's Emergency Operations Center (770-488-7100).

*The Centers for Disease Control and Prevention (CDC) protects people's health and safety by preventing and controlling diseases and injuries; enhances health decisions by providing credible information on critical health issues; and promotes healthy living through strong partnerships with local, national, and international organizations.*

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##This message was distributed to state and local health officers, public information officers, epidemiologists, HAN coordinators, and clinician organizations##