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Health Advisory

Middle East Respiratory Syndrome Coronavirus (MERS-CoV): Guidelines for Surveillance, Diagnosis, and Infection Prevention

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The Middle East Respiratory Syndrome Coronavirus is a novel coronavirus that was first reported to cause human infection characterized by severe acute lower respiratory illness in September 2012. Since then, 91 cases (46 deaths) have been identified worldwide in eight countries. All cases have had direct or indirect links to the Middle East (Saudi Arabia, Jordan, Qatar, United Arab Emirates (UAE)) during their incubation period. There have been *no documented cases of MERS-CoV in the United States*. However, in an effort to continue heightened surveillance efforts, providers are encouraged to consider MERS-CoV testing for individuals who present with severe acute respiratory illness and report a travel history to the Middle East in the 14 days prior to symptom onset. Lower respiratory specimens are to be collected and cases are to be *immediately reported* to the Philadelphia Department of Public Health (PDPH) Division of Disease Control. This health advisory provides specific recommendation for diagnosis, infection control, and reporting to public health authorities.

Epidemiology

A total of 91 cases of laboratory-confirmed cases of MERS-CoV infection been reported to the World Health Organization. Median age of case-patients is 56 years (range: 14 months to 94 years). The current case fatality rate is 50%. At least eight clusters have provided evidence of limited human-to-human transmission of MERS-CoV including nosocomial transmission. The incubation period has been estimated at 14 days based on information from these cluster investigations.

Clinical Presentation

The majority of patients present as an acute respiratory infection with fever, cough, and shortness of breath. However, in immunocompromised individuals, initial clinical presentations may be atypical, including diarrhea and abdominal pain. Infection rapidly progresses to pneumonia or acute respiratory distress syndrome (ARDS). Treatment is largely supportive.

Surveillance and Disease Reporting

Providers should collect clinical specimens and immediately report to the Philadelphia Department of Public Health (PDPH) Division of Disease Control any persons who meet the following criteria as a MERS-CoV patient under investigation:

- A person with an acute respiratory infection, which may include fever ($\geq 38^{\circ}\text{C}$, 100.4°F) and cough; AND
- Suspicion of pulmonary parenchymal disease (e.g., pneumonia or acute respiratory distress syndrome based on clinical or radiological evidence of consolidation); AND
- History of travel from the Arabian Peninsula or neighboring countries* within 14 days; AND
- Symptoms not already explained by any other infection or etiology, including clinically indicated tests for community-acquired pneumonia (e.g. *Legionella pneumophila*, *Streptococcus pneumoniae*, influenza, etc).

In addition, the following persons may be considered for evaluation for MERS-CoV infection:

- Persons who develop severe acute lower respiratory illness of known etiology within 14 days after traveling from the Arabian Peninsula or neighboring countries* but who do not respond to appropriate therapy for community-acquired pneumonia; OR

- Persons who develop severe acute lower respiratory illness who are close contacts (e.g. persons who lived with and/or provided direct patient care) of a symptomatic traveler who developed fever and acute respiratory illness within 14 days of traveling from the Arabian Peninsula or neighboring countries*.

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

Any clusters of severe acute respiratory illness without a confirmed etiology should also be reported to PDPH as soon as possible. Cases and clusters can be reported to PDPH by calling 215-685-6740 during business hours or 215-686-4514 after hours and requesting to speak with Disease Control on-call staff.

Laboratory Testing

Currently the FDA has approved under Emergency Use Authorization an rRT-PCR assay developed by CDC for the identification of MERS-CoV. The Pennsylvania Bureau of Laboratories (PABOL) can now perform this assay. Lower respiratory specimens have a documented higher sensitivity for the identification of MERS-CoV. Therefore the following specimens are recommended to be collected during the course of illness: sputum, bronchoalveolar lavage, bronchial wash, or tracheal aspirate. Nasopharyngeal swabs and stool specimens may also be collected though the sensitivity from testing of these specimens is lower than that of lower respiratory specimens. Specimens can be refrigerated up to 72 hours, but should be frozen at -70°C if exceeding 72 hours.

Although not currently available, serological testing is being developed. For these reasons serum specimens may also be collected during the acute and convalescent (≥ 3 weeks later) stages.

For assistance with laboratory testing and coordination of specimen transport to CDC or PABOL please contact PDPH Division of Disease Control at 215-685-6740.

Infection Control

Nosocomial clusters of MERS-CoV have been identified in Europe and Saudi Arabia. It is essential that until transmission is better understood that facilities adhere to strict infection control precautions. Patients with suspect or confirmed with MERS-CoV should be placed under *standard, contact, and airborne precautions*.

Preparedness

Providers and facilities are encouraged to review their preparedness plans to ensure their capability to evaluate patients with emerging respiratory viruses such as MERS-CoV and novel influenza. Facilities should review infection control plans, develop protocols for triaging patients, and ensure adequate supplies of personal protective equipment. To assist facilities with their preparedness efforts, CDC has developed a checklist available at: <http://www.cdc.gov/coronavirus/mers/preparedness/index.html>.

Additional Resources

For additional information regarding MERS-CoV including more specific epidemiology, laboratory, infection control, and preparedness information please visit: <http://www.cdc.gov/coronavirus/mers/index.html>.