



NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**
Division of Public Health

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December 30, 2019 – *Replaces version posted July 27, 2016*

To: All North Carolina Health Care Providers
From: Erica Wilson, MD, MPH, Medical Epidemiologist
Scott Shone, PhD, HCLD(ABB), Laboratory Director
Re: **Middle-East Respiratory Syndrome Coronavirus (MERS-CoV) (3 pages)**

This memo is intended to provide the latest information to all North Carolina clinicians regarding the Middle-East Respiratory Syndrome Coronavirus or MERS-CoV, including specimen testing requirements.

This version has been modified to include links to updated recommendations for monitoring and movement of persons with potential exposure to MERS-CoV, as well as specimen testing requirements at the NC State Laboratory of Public Health.

Summary

MERS-CoV is a coronavirus that was first identified in 2012 and has been associated with severe respiratory infections among persons who live in or have traveled to the Middle East and persons (including health care providers) exposed to MERS cases outside of the Middle East. The first travel-associated cases in the United States were confirmed in May, 2014. There has been clear evidence of person-to-person transmission both in household and healthcare settings, but no evidence of sustained person-to-person transmission within the community.

Case Investigation and Testing

- A person meeting both the clinical features and epidemiological criteria listed below should be considered a Patient Under Investigation (PUI).

Clinical Criteria		Epidemiologic Criteria
Severe illness Fever ¹ and pneumonia or acute respiratory distress syndrome (based on clinical or radiological evidence)	and	A history of travel from countries in or near the Arabian Peninsula ² within 14 days before symptom onset, or close contact ³ with a symptomatic traveler who developed fever ¹ and acute respiratory illness (not necessarily pneumonia) within 14 days after traveling from countries in or near the Arabian Peninsula ² . – or – A member of a cluster of patients with severe acute respiratory illness (e.g., fever ¹ 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.
Milder illness Fever ¹ 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 ² in which recent healthcare-associated cases of MERS have been identified.
Fever ¹ or symptoms of respiratory illness (not necessarily pneumonia; e.g., cough, shortness of breath)	and	Close contact ³ with a confirmed MERS case while the case was ill.

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES • DIVISION OF PUBLIC HEALTH • STATE LABORATORY OF PUBLIC HEALTH

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AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

- **Clinicians caring for patients meeting these criteria should immediately contact their local health department or the state Communicable Disease Branch (919-733-3419; available 24/7) to discuss laboratory testing and control measures.**
- Persons who meet criteria should also be evaluated for common causes of community-acquired pneumonia, if not already done. (*Note: Viral culture should not be attempted in cases with a high index of suspicion.*) MERS-CoV infection should still be considered even if another pathogen is identified, since co-infections have been reported.
- Any cluster of severe acute respiratory illness in healthcare workers in the United States should be thoroughly investigated. Occurrence of a severe acute respiratory illness cluster of unknown etiology should prompt immediate notification of local public health for further investigation and testing.
- Testing for MERS-CoV is available at the North Carolina State Laboratory of Public Health. Testing requires consultation and pre-approval from the state Communicable Disease Branch. Detailed information about specimen collection and transport is listed on the next page and at <https://slph.ncpublichealth.com/bioterrorism/mers.asp>.

Infection Control

- Transmission of MERS-CoV has been documented in healthcare settings. See CDC's updated Interim Guidance for Healthcare Professionals at <https://www.cdc.gov/coronavirus/mers/interim-guidance.html>
- Standard, contact, and airborne precautions are recommended for management of patients in healthcare settings with known or suspected MERS-CoV infection. These include:
 - Use of fit-tested NIOSH-approved N95 or higher level respirators
 - Use of gowns, gloves and eye protection
 - Use of negative-pressure airborne infection isolation rooms if available
- A facemask should be placed on the patient if an airborne infection isolation room is not available or if the patient must be moved from his/her room.
- Additional guidance is available at <http://www.cdc.gov/coronavirus/mers/infection-prevention-control.html>.

Monitoring and Movement of Exposed persons

- Recommendations for public health monitoring and movement restrictions for healthcare personnel and others potentially exposed to MERS-CoV are based on the level of exposure (high risk, some risk, and low risk). Details are available at <https://www.cdc.gov/coronavirus/mers/hcp/monitoring-movement-guidance.html>.

Treatment

- No antivirals are currently available for treatment of MERS-CoV or other novel coronavirus infections.

Reporting

- MERS-CoV infections are reportable in North Carolina. Physicians are required to contact their local health department or the state Communicable Disease Branch (919-733-3419) as soon as MERS-CoV infection is reasonably suspected.

Recommendations may change as new information becomes available. Updated information and guidance are available from the CDC at <http://www.cdc.gov/coronavirus/mers/index.html>.

¹Fever may not be present in some patients, such as those who are very young, elderly, immunosuppressed, or taking certain medications. Clinical judgement should be used to guide testing of patients in such situations.

²Countries 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 (UAE); and Yemen.

³Close contact is defined as: a) being within approximately 6 feet (2 meters) or within the room or care area of a confirmed MERS case 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); or b) having direct contact with infectious secretions of a confirmed MERS case (e.g., being coughed on) while not wearing recommended personal protective equipment.

NCSLPH MERS-CoV Specimen Collection and Testing Guidelines

Testing Criteria

- All suspect or probable cases of MERS-CoV infections based on the clinical criteria described on page one should be reported to the **NC DPH Communicable Disease Branch at (919) 733-3419 for prior approval for laboratory testing.**

Testing Employed

- The NCSLPH has validated the CDC MERS-CoV rRT-PCR assay that has been granted FDA Emergency Use Authorization. Presumptive positive specimens will be forwarded to the CDC for confirmation.
- Estimated turn-around time for initial results is 5-48 hours, once specimens are received.
- USE APPROPRIATE PRECAUTIONS WHEN COLLECTING SPECIMENS FOR MERS-CoV TESTING:
<https://www.cdc.gov/coronavirus/mers/infection-prevention-control.html>

To increase the likelihood of detecting infection, the CDC recommends collecting multiple specimens from different sites at different times after symptom onset, if possible.

All three specimen types (not just one or two of the three), lower respiratory, upper respiratory and serum specimens should be collected for the CDC MERS rRT-PCR assay.

Specimens for MERS-CoV rRT-PCR Testing at NCSLPH – SUBMIT ALL THREE SPECIMEN Types for Testing			
Specimen Type	Optimal Collection Time	Specimen Volume	Shipment
1. Lower Respiratory: Bronchioalveolar lavage (preferred specimen), tracheal aspirate, pleural fluid, and/or sputum (patient should rinse mouth with water prior to collection for sputum samples)	As soon as possible after symptoms begin – ideally within 7 days, and before antiviral medication.	2–3 mL fluid contained in a sterile leak- proof cup	Refrigerated (4°C), placed on cold packs if shipment is to be received within 72 h of collection. For delays exceeding 72 h, freeze at -70°C & ship on dry ice.
2. Upper Respiratory: Nasopharyngeal (NP) <u>AND</u> oropharyngeal (OP) swabs (preferred specimens), NP wash/ aspirate, or nasal aspirates Use only synthetic fiber swabs with plastic shafts in viral transport media		NP and OP swabs can be combined in 2 – 3 mls viral transport media	
3. Serum	<14 days; optimally, collected during the first 10-12 days after symptom onset	Adults: 3–5 mL Infants: 0.5-1 mL	
Appropriate Specimens for MERS-CoV Testing Conducted at the CDC			
Serum (for serologic testing)	Convalescent: ≥ 14 days after symptom onset	Adults: 3–5 mL Infants: 0.5-1 mL	See above

All specimen submissions **must** have a completed [BTEP Specimen Submission Form](#)

CONTACT THE BTEP UNIT (919-807-8600) PRIOR TO ANY SHIPMENT OR IF YOU HAVE QUESTIONS.

Additional Information:

- [Interim Guidelines for Collecting, Handling, and Testing Clinical Specimens from PUIs for MERS-CoV - v2.1](#)
- NC Division of Public Health Epidemiology Section - [MERS-CoV Information](#):