

**New Jersey Department of Health**  
**Surveillance Criteria and Testing for Middle East Respiratory Syndrome (MERS)**

Protocol for Healthcare Providers and Local Health Departments  
July 9, 2019

**Key steps in case screening for Middle East Respiratory Syndrome (MERS)**

- 1. Confirm that the case meets current SURVEILLANCE CRITERIA**
- 2. Ensure implementation of CONTROL MEASURES**
- 3. Ensure COLLECTION OF SPECIMENS for diagnostic testing**
- 4. Ensure NOTIFICATION procedures are followed**
- 5. Ensure completion of the MERS PERSON UNDER INVESTIGATION FORM**

**SURVEILLANCE CRITERIA**

**Healthcare Providers**

To rapidly detect the importation of MERS and the virus that causes it (MERS-CoV), NJDOH requests health care providers to report patients meeting one of the following criteria.

1. A patient with fever<sup>1</sup> AND pneumonia or acute respiratory distress syndrome (based on clinical or radiologic evidence) **AND one or more of the following:**
  - a. History of travel from countries in or near the Arabian Peninsula<sup>2</sup> within 14 days before symptom onset **OR**
  - b. Close contact<sup>3</sup> with a symptomatic traveler who developed fever<sup>1</sup> and acute respiratory illness (not necessarily pneumonia) within 14 days after traveling from countries in or near the Arabian Peninsula<sup>2</sup> **OR**
  - c. A member of a cluster of patients with severe acute respiratory illness (e.g., fever<sup>1</sup> and pneumonia requiring hospitalization) of unknown etiology in which MERS-CoV is being evaluated by state or local health officials
2. A patient with fever<sup>1</sup> AND symptoms of respiratory illness (not necessarily pneumonia; e.g., cough, shortness of breath) **AND** history of being in a healthcare facility (as a patient, worker, or visitor) within 14 days before symptom onset in a country in or near the Arabian Peninsula<sup>2</sup> in which recent healthcare associate cases of MERS have been identified, **OR**
3. Fever<sup>1</sup> **OR** symptoms of respiratory illness (not necessarily pneumonia; e.g. cough, shortness of breath) **AND** close contact<sup>3</sup> with a confirmed MERS case while the case was ill.

1. Fever ( $\geq 100.4^{\circ}\text{F}$ ) 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.
2. 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.
3. 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.

## INFECTION CONTROL

- Health care entities should put in place measures to detect suspect cases early (e.g., signage, triage assessments) and isolate all suspect cases immediately upon suspicion.
- **Standard, contact, and airborne precautions** are recommended for management of hospitalized patients with known or suspected MERS-CoV infection. Key infection control steps are outlined below. Additional information available at <http://www.cdc.gov/coronavirus/mers/infection-prevention-control.html>
  - **Hand Washing**: Healthcare providers should perform hand hygiene before and after all patient contact. Alcohol-based hand sanitizers can be used unless hands are visibly soiled in which case, soap and water should be used.
  - **Personal Protective Equipment (PPE)**: Gloves, gowns, eye protection, and respiratory protection should be used when a case of MERS is suspected. Use respiratory protection that is at least as protective as a fit-tested NIOSH-certified disposable N95 filtering facepiece respirator upon entry to the patient room or care area.
  - **Patient Placement**: Patients with suspected MERS infection should be placed in an Airborne Infection Isolation Room (AIIR) immediately upon identification. If an AIIR room is not available, the patient should be transferred as soon as is feasible to a facility where an AIIR is available. Pending transfer, place a facemask on the patient and isolate him/her in an examination room with the door closed. The patient should not be placed in any room where room exhaust is recirculated without high-efficiency particulate air (HEPA) filtration.
  - **Aerosol-Generating Procedures**: Aerosol-generating procedures (e.g., cough-generating procedures, bronchoscopy, sputum induction, intubation and extubation cardiopulmonary resuscitation, and open suctioning of airways) can cause higher concentrations of infectious respiratory aerosols and for this reason, these procedures should only be performed if medically necessary. If the procedures must be performed, health care providers present for the procedure should be limited, appropriate PPE should be worn, and the procedures should be conducted in an AIIR.
  - **Duration**: At this time, information is lacking to definitively determine a recommended duration for keeping patients in isolation precautions. Duration of precautions should be determined on a case-by-case basis, in conjunction with local, state, and federal health authorities. Factors that should be considered include the presence of symptoms related to MERS-CoV, date symptoms resolved, other conditions that would require specific precautions (e.g., tuberculosis, *Clostridium difficile*) and available laboratory information.
- People who are confirmed to have, or being evaluated for, MERS-CoV infection and do not require hospitalization for medical reasons may be cared for and isolated in a residential setting after a healthcare professional and public health official determines that the setting is suitable. Providers should consult with both NJDOH and their local health department to discuss home isolation, home quarantine, or other measures for close contacts and for patients who are being evaluated for MERS or who have tested positive. Additional guidance on this topic can be found at <http://www.cdc.gov/coronavirus/mers/hcp/home-care.html>
- Health care providers who care for patients with MERS-CoV should be monitored. They should immediately report any signs (e.g., fever) or symptoms (e.g., cough, shortness of breath) of acute illness to their supervisor or hospital designated person (e.g., occupational health) for a period of 14 days after the last known contact with a MERS CoV patient, regardless of their use

of PPE. HCP who develop any respiratory symptoms after an unprotected exposure (i.e., not wearing recommended PPE at the time of contact) to a patient with MERS-CoV should not report for work or should immediately stop working. These HCP should notify their supervisor, implement respiratory hygiene and cough etiquette, seek prompt medical evaluation, and comply with work exclusion until they are no longer deemed infectious to others.

- For asymptomatic HCP who have had an unprotected exposure (i.e., not wearing recommended PPE at the time of contact) to a patient with MERS-CoV, exclude from work for 14 days to monitor for signs and symptoms of respiratory illness and fever.
  - If necessary to ensure adequate staffing of the facility, the asymptomatic provider could be considered for continuing patient care duties after discussion with local, state, and federal public health authorities.
- These recommendations will be updated as additional information on MERS, its transmissibility, epidemiology, available treatment, or vaccine options become available. These interim recommendations are based upon currently available information.

## **COLLECTION AND TRANSPORT OF CLINICAL SPECIMENS**

The New Jersey Public Health and Environmental Laboratories (PHEL) has the capability to test for Middle East Respiratory Syndrome Coronavirus (MERS-CoV) using CDC's rRT-PCR assay. Approval for testing will be granted only after clinical and epidemiologic criteria of the suspect case is reviewed by the local and state health departments.

CDC currently recommends the collection of specimens from three different sources for each suspect case. Collection of one lower respiratory tract specimens (i.e., bronchoalveolar lavage, tracheal aspirate, pleural fluid, sputum), one upper respiratory tract specimen (nasopharyngeal and oropharyngeal (NP/OP)), and one serum sample are strongly recommended. ***Ideally, all three specimen types should be collected on all suspected MERS patients.*** It is advisable for respiratory specimens to be collected as soon as possible after symptoms begin – ideally within 7 days of symptom onset. However, if more than a week has passed since symptom onset and the patient is still symptomatic, respiratory samples should still be collected, especially lower respiratory specimens since respiratory viruses can still be detected by rRT-PCR. If preliminary results at PHEL are positive or inconclusive, specimens will be sent to CDC for additional testing and/or confirmation.

Additional information on specimen collection, handling and testing is available at:

<http://www.cdc.gov/coronavirus/mers/guidelines-clinical-specimens.html>

Appropriate infection control procedures should be followed when collecting samples and can be found at: <http://www.cdc.gov/coronavirus/mers/infection-prevention-control.html>

The SRD-1 form (available at <http://www.state.nj.us/health/forms/srd-1.dot>) should be completely filled out for **each** specimen that is sent. Label the **vial containing the specimen** with patient's first and last name, date of birth, medical record number, date of collection, and specimen type. Incorrectly labeled samples may be denied for testing. Additionally, laboratories may be asked to complete a CDC 50.34 form for specimens that will be transported to CDC. This form is available at:

<https://www.cdc.gov/laboratory/specimen-submission/pdf/form-50-34.pdf>. Laboratories should be

prepared to complete and electronically email this document in an encrypted fashion to NJDOH if requested.

The timeframe in which testing is conducted by PHEL or CDC will be determined on a case-by-case basis. **No specimen will be tested by PHEL until the case has been reviewed and approved by the CDS staff.**

NOTE: If PHEL receives a specimen without CDS review and approval, PHEL will hold the specimen and contact CDS.

## **Shipping**

CDS staff will carefully evaluate each report to determine the immediacy in which the specimen should be transported and tested. Samples may be shipped to PHEL via commercial carrier, private courier or hand carried. If CDS staff feels that immediate testing of the sample is warranted, the local health department and the hospital will be asked to assist in transporting specimens to PHEL. In most cases, CDS will ask the facility or LHD to hand carry specimens to PHEL on the same day the specimen was approved for testing. Directions to PHEL can be found at [https://www.nj.gov/health/forms/vir-16instr\\_1.pdf](https://www.nj.gov/health/forms/vir-16instr_1.pdf). If CDS determines the case to be a low priority, commercial carriers can be used to ship samples, which should be handled as Biologic Substance, Category B. When shipping via commercial carrier you must abide by IATA shipping regulations which can be found at [www.iata.org](http://www.iata.org) or <http://www.fmcsa.dot.gov/regulations/hazardous-materials>. Specific specimen storage instructions can be found in the following document on the CDC website: (<http://www.cdc.gov/coronavirus/mers/guidelines-clinical-specimens.html>)

## **NOTIFICATION**

### **Healthcare Providers**

Cases meeting the above surveillance criteria should be reported **IMMEDIATELY** to the local health department (LHD) where the patient resides. If the patient residence is unknown, report to your own local health department. Local health departments are available 24/7/365. Contact information for local health departments can be found at: [www.localhealth.nj.gov](http://www.localhealth.nj.gov) If LHD personnel are unavailable, healthcare providers should report the case to the New Jersey Department of Health (NJDOH), Communicable Disease Service (CDS) at 609-826-5964, Monday through Friday 8:00 AM - 5:00 PM. On weekends, evenings and holidays, CDS can be reached at (609) 392-2020.

### **Local Health Departments**

When a local health department receives a report regarding a patient meeting the MERS surveillance criteria, the protocols contained within this document for screening, isolation, and collection of lab specimens should be followed. Information should be communicated **IMMEDIATELY** to NJDOH CDS at 609-826-5964, Monday through Friday 8:00 AM - 5:00 PM. On weekends, evenings and holidays, CDS can be reached at (609) 392-2020.

The healthcare provider and/or the local health department should complete the **Middle East Respiratory Syndrome (MERS) Patient Under Investigation (PUI) Short Form** (please see the last page of this document). Completed forms should be faxed to CDS at 609-826-5972 or emailed via encrypted message to [InfluenzaAdvisoryGroup@doh.nj.gov](mailto:InfluenzaAdvisoryGroup@doh.nj.gov). This form will be reviewed by CDS staff

who will make the final determination if the case meets surveillance criteria and if a specimen will be accepted for testing. In addition to the PUI Form, details regarding the case should be entered into the Communicable Disease Reporting and Surveillance System (CDRSS) under “MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS (MERS-COV)”.

## **REFERENCES**

- NJDOH – General Information Page
  - <http://www.nj.gov/health/cd/topics/mers.shtml>
- CDC – General Information Page
  - <http://www.cdc.gov/coronavirus/mers/index.html>
- CDC – Information on Infection Control in Health Care Setting
  - <http://www.cdc.gov/coronavirus/mers/infection-prevention-control.html>
- CDC – Information for Laboratories
  - <https://www.cdc.gov/coronavirus/mers/lab/index.html>

## Middle East Respiratory Syndrome (MERS) Patient Under Investigation (PUI) Short Form

For Patients Under Investigation (PUIs), complete and send this form to  
[influenzaadvisorygroup@doh.state.nj.us](mailto:influenzaadvisorygroup@doh.state.nj.us) or fax to 609-826-5972.

Today's Date: \_\_\_\_\_ CDRSS #: \_\_\_\_\_ STATE: \_\_\_\_\_ COUNTY: \_\_\_\_\_

Interviewers: Name: \_\_\_\_\_ Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Sex:  M  F Age: \_\_\_\_\_ yr  mo Residency:  US resident  non-US resident, country: \_\_\_\_\_

Date of symptom onset: \_\_\_\_\_ Symptoms (mark all that apply):  Fever  Chills  Cough  Sore throat

Shortness of breath  Muscle aches  Vomiting  Diarrhea  Other: \_\_\_\_\_

**In the 14 days before symptom onset did the patient (mark all that apply):**

Have close contact<sup>1</sup> with a known MERS case?

Have close contact<sup>1</sup> with an ill traveler from the Arabian Peninsula/neighboring country<sup>2</sup>? If Yes, countries: \_\_\_\_\_

Visit or work in a health care facility in the Arabian Peninsula/neighboring country<sup>2</sup>? If Yes, countries/dates of work/visit: \_\_\_\_\_

Travel to/from the Arabian Peninsula/neighboring country<sup>2</sup>? If Yes, countries: \_\_\_\_\_

Date of travel **TO** this area: \_\_\_\_\_ Date of travel **FROM** this area: \_\_\_\_\_

Is the patient a member of a severe respiratory illness cluster of unknown etiology?  Yes  No  Unknown

Is the patient a health care worker (HCW)?  Yes  No  Unknown If Yes, did the patient work as a HCW in/near a country in the Arabian Peninsula<sup>2</sup> in the 14 days before symptom onset?  Yes  No  Unknown If Yes, countries: \_\_\_\_\_

Does the patient have any comorbid conditions? (mark all that apply):  None  Unknown  Diabetes  Cardiac disease  Hypertension

Asthma  Chronic pulmonary disease  Immunocompromised  Other: \_\_\_\_\_

	Yes	No	Unknown
<b>Was the patient:</b> Hospitalized? If Yes, admission date: _____			
Admitted to the Intensive Care Unit (ICU)?			
Intubated?			
<b>Did the patient die?</b> If Yes, date of death: _____			
<b>Did the patient have clinical or radiologic evidence of pneumonia?</b>			
<b>Did the patient have clinical or radiologic evidence of acute respiratory distress syndrome (ARDS)?</b>			

### General non-MERS-CoV Pathogen Laboratory Testing (mark all that apply)

Pathogen	Pos	Neg	Pending	Not Done	Pathogen	Pos	Neg	Pending	Not Done
Influenza A PCR					Rhinovirus and/or Enterovirus				
Influenza B PCR					Coronavirus ( <u>not</u> MERS-CoV)				
Influenza Rapid Test					<i>Chlamydomphila pneumoniae</i>				
RSV					<i>Mycoplasma pneumoniae</i>				
Human metapneumovirus					<i>Legionella pneumophila</i>				
Parainfluenzavirus					<i>Streptococcus pneumoniae</i>				
Adenovirus					Other: _____				

### MERS-CoV rRT-PCR Testing (mark all that apply)

Specimen Type	Date Collected	Positive	Negative	Equivocal	Pending	Not Done
Sputum						
Bronchoalveolar lavage (BAL)						
Tracheal Aspirate						
NP <sup>3</sup> OP <sup>3</sup> NP/OP <sup>3</sup> (circle one)						
Serum						
Other: _____						

### For CDC ONLY:

MERS-CoV Serology Testing	Date Collected	Positive	Negative	Pending	Not Done

<sup>1</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); or b) having direct contact with infectious secretions (e.g., being coughed on) while not wearing recommended personal protective equipment. 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.

<sup>2</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 (UAE); and Yemen.

<sup>3</sup> NP = nasopharyngeal, OP = oropharyngeal (throat swab)