

Middle East Respiratory Syndrome Coronavirus (MERS Co-V) Lab Protocol for Person Under Investigation (PUI) **Main Campus**

Routine blood work will be processed as usual in the core lab as MERS Co-V is not a blood borne pathogen and may be drawn at any point during the patient encounter. **Before a respiratory specimen is collected, consultation with the Academic General Infectious Disease Attending MD On Call and the state epidemiologist or county health department will be necessary. NPHL staff must be notified prior to the collection of specimens (24/7 pager # 402-888-5588).**

When Specimens Should Be Collected for MERS Co-V Testing

MERS Co-V is detected in nasal/oropharyngeal (NP/OP) swabs and lower respiratory tract specimens (bronchoalveolar lavage, tracheal aspirate, and pleural fluid). **MERS Co-V testing should take place prior to other respiratory pathogen testing in a PUI meeting clinical criteria 1 or 2 in the MERS Co-V Protocol. If test results prove negative the specimen will be reflexed to the hospital core lab for a Respiratory Pathogen Panel (RPP). For PUI meeting clinical criteria 3, an RPP should be submitted to the hospital core lab. If the RPP is negative the Academic General Infectious Disease Attending MD On Call should be consulted for further instructions.**

NOTE: A Respiratory Pathogen Panel (RESPP) requires collection of either a nasal wash or a nasopharyngeal swab, both in 2-3ml of viral Transport Medium (VTM)

Test Name	Preferred Specimen	Acceptable Specimen	How to order
Mers Co PCR Assay	NP wash + NP/OP swab in 2-3ml of VTM	NP/OP swab in 2-3ml of VTM	NPHL Requisition form MERSC

Respiratory specimens should be collected as soon as possible after symptoms begin – ideally within 7 days. CDC recommends the following:

- ◆ if symptom onset for a PUI with respiratory symptoms was less than 14 days ago, a single serum specimen, and NP specimen **OR** lower respiratory specimen (BAL) should be collected for MERS PCR testing.
- ◆ if symptom onset for a PUI with an ongoing respiratory tract infection, especially lower, was 14 or more days ago, a single serum specimen for serologic testing in addition to a lower respiratory specimen and an NP/OP specimen

Personnel required for Mers Co PCR Assay Specimen Collection

- ◆ Primary nurse
- ◆ Task nurse (Doffer)
- ◆ Nebraska Public Health Laboratory (NPHL) Representative

Materials for all Specimen Collections

- ◆ Biohazard Ziploc bags x2 per set of tubes
- ◆ Bleach wipes
- ◆ Nasal washing kit
- ◆ Phlebotomy supplies (for peripheral/Central line draws)
- ◆ Cooler for specimen transport (**NO ICE**)

- ◆ Preprinted specimen labels or patient chart labels (do not bring lab scanner/labeler into the isolation room)

Procedure for all Specimens

Nursing Staff will collect specimens

- ◆ *Do not start the process unless the Task RN is present*
 - ◆ Gather required materials:
 - ◆ Don **MERS Co-V specific** PPE before entering room
 - ◆ Set out a clean area for the procedure using a disposable chux
 - ◆ Label specimen per existing Nebraska Medicine/NPHL protocols
 - ◆ Prepare supplies
 - **Bronchoalveolar lavage, tracheal aspirate, pleural fluid:** collect 2-3 mL into the sterile leak proof container in Viral Transport Medium (VTM) per the usual lab protocol.
- OR**
- **NP wash/aspirate or nasal aspirates:** Collect 2-3 mL into a sterile, leak-proof container using VTM, per the usual lab protocol.
- AND**
- **NP swabs:** insert a swab into the nostril parallel to the palate. Leave the swab in place for a few seconds to absorb secretions. Swab both nasopharyngeal areas. Put swab into VTM per the usual lab protocol.

Note: Use only FLOQSwab kit (synthetic fiber swabs with plastic shafts). Do not use calcium alginate swabs or swabs with wooden shafts, as they may contain substances that inactivate some viruses and inhibit PCR testing. Place swabs immediately into sterile tubes containing 2-3 ml of viral transport media. NP/OP specimens can be combined, placing both swabs in the same vial.



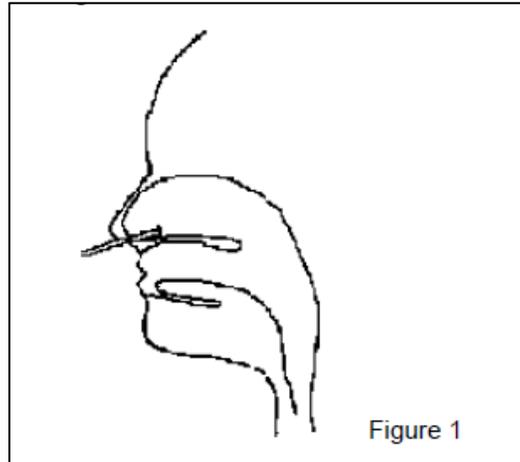
Use NPHL procedure to collect: NASOPHARYNGEAL WASHINGS/Swab

Video Link: <https://www.youtube.com/watch?v=DVJNWefmHJE>

Washing:

1. Cut off the distal end of the butterfly catheter (needle and butterfly) catheter extension set so that about 2-3 inches of tubing are left attached to the hub.
2. Draw up 2-3mls of saline into a syringe.
3. Attach syringe to hub of butterfly catheter. Purge tubing with saline.

4. Gently remove excess mucous from patient's nose. (If patient is an adult, ask the patient to gently blow nose. For pediatrics, a bulb syringe may be used to remove excess mucous.)
5. Position patient in supine position with the head of bed up 30°. The head should be turned to one side and tilted slightly backward.
6. Stabilize the patient's head and gently place the catheter into the nare. Placement should be in the nare (nasal wall), not the nasopharynx. Depending on the size of the patient, this should be about 1-2 cm in adults and 0.5 cm to 1.0 cm in children (0.5 cm in neonates). See Figure 1.



7. Instill .5 2 mls saline (.5 1mls for infants and children, 1 2mls for adults) into the nare and aspirate back mucous, saline and epithelial cells.
 8. Repeat this process using the same syringe until the sample is cloudy or appears to hold cellular debris. (If the sample is inadequate, the process may be repeated on the opposite nare, using a second sterile syringe and tubing. Usually one nare is sufficient.)
- NOTE:** There may be some blood streaks in the mucous. This is normal and patients/parents should be told this is expected and will stop in a few minutes.
9. Transfer contents of tubing and syringe into transport media using the following process: Depress syringe plunger and express fluid from syringe and tubing into transport media. Then withdraw media/fluid back into syringe and tubing. Depress syringe plunger again, expressing fluid from syringe and tubing back into transport media.
- NOTE:** This is necessary to recover any cells or virus adhering to the tubing or syringe.

Nasal Swab:

1. Insert a FLOQSwab into the same nares from which the wash was performed approximately 3 cm and gently rub the mucosa.
2. Place the swab back into transport media containing aspirated material.

Packaging Specimen per NPHL protocol:

Staff in isolation room should hand off Mers Co PCR Assay Specimen to clean area as follows:

- ◆ Place preprinted label on each specimen container with proper identifiers.
- ◆ Wipe all surfaces of the specimen container with a hospital approved bleach wipe to remove any residual secretions or blood
- ◆ Task RN will hold a Biohazard bag, open for the LABELED specimen tubes to be dropped in

- ◆ **For blood work going to the core lab:** Multiple tubes can be placed in the same biohazard bag
- ◆ Task RN will seal the bags
- ◆ Task RN will wipe down outside of bag, with a bleach wipe and either place in NPHL transport container or send to lab per the usual protocol
- ◆ Mers Co PCR Assay Specimens will be retrieved by NPHL staff
- ◆ Blood work going to the core lab will be wiped and packaged in the same manner to reduce bioburden from the patient care room on specimen container.

Transportation of Mers Co PCR Assay Specimen

NPHL Staff will transport specimen(s) in durable, leak-proof container, such as a cooler. In compliance with 29 CFR 1910.1030, specimens should be placed in this container for transport within a facility and should be hand carried to laboratory. **DO NOT** use the pneumatic tube system. **Do NOT** leave specimen unattended.

- ◆ Transportation of blood specimens will be handled in the usual manner per policy as MERS Co-V is not a blood borne pathogen.

Special Information

- ◆ Collecting a respiratory specimen before approval is given should not be considered.
- ◆ Routine blood work will be processed as usual in the core lab as MERS Co-V is not a blood borne pathogen.

The approved CDC MERS Co-V molecular assay will be performed by NPHL upon receipt of the specimens. This assay requires **approximately 6 hours** to completed once the specimen is received and will be ordered as **MERSC (Middle Eastern Respiratory Syndrome Coronavirus)**

- ◆ Labs in addition to the molecular assay (CBC, BMP etc.) will be performed in collaboration with the core lab and NPHL for a patient under investigation for MERS Co-V infection.
- ◆ **Respiratory Pathogen Panel (RESPP): nasal wash or nasopharyngeal swab in 2-3 ml VTM per usual lab protocol may be performed once MERS Co-V has been ruled out**

Special Request for Biopsy Specimen

- ◆ Prior to collecting a **respiratory biopsy specimen**, call the Dissection Laboratory (**402-559-9208**) or page the pathologist resident on-call (**888-1380**) to obtain a Biopsy Kit (10% neutral buffered formalin contained in a bottle and placed into a sealed plastic bag with absorbent). NPHL personnel or other designated individual will obtain the kit from the Dissection Laboratory (located at HL28270, next to the operating rooms) and transport the kit to the ED patient room of the PUI. Following collection of the biopsy specimen, the specimen will be packaged as described in this document and transported to the Dissection Laboratory. The specimen will subsequently sit in 10% neutral buffered formalin at ambient temperature for 24 hours before processing.

Test	Order code	Tube type	Performed at
Tissue biopsy	EXAM	10% neutral buffered formalin	Dissection lab (HL28270)

References:

Nebraska Department of Health and Human Services Health Alert Network: Updated Guidance for the Evaluation of Severe Respiratory Illness Associated with Middle East Respiratory Syndrome Coronavirus (MERS Co-V) 08/19/14
Nebraska Biocontainment Unit Policy # 1.210 Obtaining and Processing Laboratory Specimens
Centers for Disease Control and Prevention: Interim Guidelines for Collecting, Handling, and Testing Clinical Specimens from Patients Under Investigation (PUIs) for Middle East Respiratory Syndrome Coronavirus (MERS-CoV) - Version 2 Updated 6/2015