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GUAM PUBLIC HEALTH LABORATORY GUIDELINES – MERS-CoV
(Middle East Respiratory Syndrome Coronavirus)

Case Definition	<p>A patient under investigation (PUI) for MERS-CoV is a person with the following characteristics:</p> <ul style="list-style-type: none"> Fever ($\geq 38^{\circ}\text{C}$, 100.4°F) and pneumonia or acute respiratory distress syndrome (based on clinical or radiological evidence) <p>AND EITHER</p> <ul style="list-style-type: none"> History of travel from countries in or near the Arabian Peninsula¹ within 14 days before symptom onset; <p>OR</p> <ul style="list-style-type: none"> Close contact 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;¹ Is 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. <p><small>¹ Countries considered in or near the Arabian Peninsula: Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian territories, Qatar, Saudi Arabia, United Arab Emirates and Yemen.</small></p>
Specimen Requirements	<p>Preferred Specimens</p> <ul style="list-style-type: none"> Lower Respiratory tract specimens – Sputum, bronchoalveolar lavage, tracheal aspirate, pleural fluid <p>Other Acceptable Specimens</p> <ul style="list-style-type: none"> Nasopharyngeal specimen Oropharyngeal specimen Stool Serum
Specimen Collection Guidelines	<p>GMH Laboratory and Public Health Community Centers can send specimens to Guam Public Health Laboratory (GPHL) for packing to be sent to Hawaii State Laboratory or CDC.</p>

Specimen Types and General Guidelines:

1. Respiratory Specimens

- a. Bronchoalveolar lavage, tracheal aspirate, pleural fluid
Collect 2-3 ml into a sterile, leak-proof, screw-cap sputum collection cup or sterile dry container. Refrigerate specimen at 2-8°C up to 72 hours; freeze if more than 72 hours.
- b. Sputum
Patient should rinse the mouth with water and then expectorate deep cough sputum directly into a sterile, leak-proof, screw-cap sputum collection cup or sterile dry container. Refrigerate specimen at 2-8°C up to 72 hours, freeze if more than 72 hours.
- c. Nasopharyngeal AND oropharyngeal swabs (NP/OB swabs)
Use only synthetic fiber swabs with plastic shafts. Use swabs in the UTM viral transport kit provided by the GPHL. Place swabs immediately into the viral transport media. Specimens can be refrigerated at 2-8°C up to 72 hours; freeze if longer than 72 hours.
 - Nasopharyngeal 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.
 - Oropharyngeal swabs:
Swab the posterior pharynx, avoiding the tongue.

2. Blood Components

2.1 Serum (for serological testing)

Collect serum specimens during the acute stage of the disease, preferably during the first week after the onset of illness, and during convalescence, ≥ 3 weeks after the acute sample was collected. Serum sample collected 14 or more days after symptom onset is also acceptable.

Note: The MERS-CoV serologic test is for research/surveillance purposes and not for diagnostic purposes.

2.2 Serum (for RT-PCR)- for detection of virus, not antibodies

Collect serum specimen during the first week after symptom onset, preferably within 3-4 days after symptom onset.

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	<p><u>Children and Adults:</u> Collect 5-10 ml of whole blood in a serum separator tube. Spin, separate and transfer serum (minimum of 200 ul) into a sterile tube container. Refrigerate specimen at 2-8°C. Frozen samples also acceptable.</p> <p><u>Infants:</u> collect 1 ml of whole blood in EDTA tube. Refrigerate specimen at 2-8°C. Do not freeze.</p> <p>3. Stool Collect 2-5 grams of stool specimen (formed or liquid) in a sterile, leak-proof, screw-cap sputum collection cup or sterile dry container. Refrigerate at 2-8°C for up to 72 hrs; if exceeding 72 hrs, freeze at -70°C.</p>
<p>Specimen Submission Guidelines</p>	<ul style="list-style-type: none"> • Submit appropriate type of specimen, depending on the number of days between specimen collection and symptom onset and symptoms at the time of specimen collection. Refer to Specimen Collection instructions above for acceptable specimens. • Fill out COMPLETELY the MERS Patient Under Investigation (PUI) Short Form and submit with the specimen. • Call the GPHL at 474-7158, 473-7153, or 471-7355 to inform staff of the specimen delivery. • Follow storage and transport requirements for each specimen type. • Specimens will be sent to Hawaii State Laboratory or CDC for testing. • Physicians/providers will be notified of the result by GPHL Central Laboratory Technologist once final result is received from the reference laboratory.
<p>Safety Precautions</p>	<ul style="list-style-type: none"> • Observe Universal Precautions when handling specimens from MERS Patient Under Investigation (PUI). • Use appropriate personal protective equipment (PPE) such as disposable gloves, laboratory coat/gown, mask, and eye protection when handling potentially infectious specimens from MERS PUI. • Specimens for transport to GPHL must be placed in a sealed bag and placed in a sealed, decontaminated primary container. • All disposable wastes used for collection should be autoclaved.
<p>Specimen Transport Guidelines</p>	<p>Transport specimens with cold packs (2-8 C), with dry ice if exceeding 72 hrs. Deliver specimens to Guam Central Public Health laboratory no later than 4 PM, Mondays-Fridays.</p>

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<p>Rejection Criteria</p>	<ul style="list-style-type: none"> • Specimen quantity is insufficient to perform the test; • Dry swabs • Specimen received in a container that is leaking. • Specimen is not collected in a proper container or special handling instruction is not followed; • Specimen is not received at 2-8°C/ packed on cold packs; • Unlabeled specimens; • Illegible/ incomplete MERS Short forms (e.g., no date of onset, travel history, etc.) • Specimen label does not match the MERS short form.
<p>Result Notification</p>	<p>Laboratory reports will be forwarded to the submitting facility, territory epidemiologist, and the BCDC Administrator via FAX</p> <p>Any other request for copies of laboratory reports, apart from that stipulated above will not be accepted.</p>
<p>Contact</p>	<p>Alan Mallari, Microbiologist II, GPHL (Primary) (671) 474-7158 or 471-7355 alan.mallari@dphss.guam.gov</p> <p>Joy S. Villanueva, Chemical Terrorism Medical Technologist 1, GPHL (alternate) (671) 473-7153 (671) 474-7158 FAX joy.villanueva@dphss.guam.gov</p> <p>Josephine T. O'Mallan, BCDC Administrator, Guam Department of Public Health & Social Services (671) 473-7142; (671) 888-9276 (emergency) Josephine.omallan@dphss.guam.gov</p>

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

References:

1. CDC Interim Guidance on Specimen Collection, Processing and Testing for Patients for Middle East Respiratory Syndrome Coronavirus- Version 2, Jan. 9, 2014.
2. CDC Interim Guidance on Case Definitions for MERS Patients Under Investigation (PUI), Aug. 19, 2013
3. CDC Interim Laboratory Safety Guidelines for Handling and Processing Specimens Associated with Middle East Respiratory Syndrome Coronavirus (MERS-CoV)