

Interim Guidelines - Specimen Collection & Processing

Middle Eastern Respiratory Syndrome Coronavirus (MERS-CoV) Testing

May 9, 2014 (Adapted from CDC Interim Guidelines dated 01/09/14)

General Guidelines:

- Notify Disease Control BEFORE sending specimens at (951) 358-5107.
- Send specimens from Medical Providers to County of Riverside Public Health Laboratory, not to federal or state laboratories.
- For short periods (≤ 72 hours), most specimens should be held at 2-8°C rather than frozen; for delays exceeding 72 hrs, freeze specimens at -70°C as soon as possible after collection (with exceptions noted below). Label each specimen container with the patient's ID number, specimen type and the date the sample was collected.
- For specimens collected more than 14 days after illness onset, serology is recommended.
- Related CDC documents, including interim guidelines for MERS-CoV specimen processing and MERS-CoV laboratory biosafety, may be accessed at:
<http://www.cdc.gov/coronavirus/mers/case-def.html>.

I. Collecting Respiratory Specimens

A. Lower Respiratory Tract:

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 hrs; if exceeding 72 hrs, freeze at -70°C and ship on dry ice.

Sputum:

Have the patient 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 hrs; if exceeding 72 hrs, freeze at -70°C and ship on dry ice.

B. Upper respiratory tract

Nasopharyngeal and Oropharyngeal Swabs:

Use only 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. Refrigerate specimen at 2-8°C up to 72 hrs; if exceeding 72 hrs, freeze at -70°C and ship on dry ice.

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 nostrils. Oropharyngeal swabs -- Swab the posterior pharynx, avoiding the tonsils and tongue.

Nasal Aspirates:

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 hrs; if exceeding 72 hrs, freeze at -70°C and ship on dry ice.

II. Blood Components

Serum:

For eventual serum antibody testing: Serum specimens should be collected during the acute stage of the disease, preferably during the first week after onset of illness, and again during convalescence, ≥ 3 weeks later.

- Children and adults: Collect 1 tube (5-10 mL) of whole blood in a serum separator tube. Allow the blood to clot, centrifuge briefly, and separate sera into sterile tube container. The minimum amount of serum required for testing is 200 μ L. Refrigerate specimen at 2-8°C and ship on ice-pack; freezing and shipment on dry ice is permissible.
- Infants: A minimum of 1 cc of whole blood is needed. If possible, collect 1 cc in an EDTA tube and in a serum separator tube. If only 1cc can be obtained, use a serum separator tube.

EDTA blood (plasma):

Collect 1 tube (10 mL) of heparinized (green-top) or EDTA (purple-top) blood. Refrigerate specimen at 2-8°C and ship on ice-pack; do not freeze.

III. Stool

Collect 2-5 grams of stool specimen (formed or liquid) in sterile, leak-proof, screw-cap sputum collection cup or sterile dry container. Refrigerate specimen at 2-8°C up to 72 hrs; if exceeding 72 hrs, freeze at -70°C and ship on dry ice.

IV. Shipping

Specimens from suspected MERS- CoV cases must be packaged, shipped, and transported according to the current edition of the International Air Transport Association (IATA) Dangerous Goods Regulations at <http://www.iata.org/whatwedo/cargo/dgr/Pages/index.aspx>.

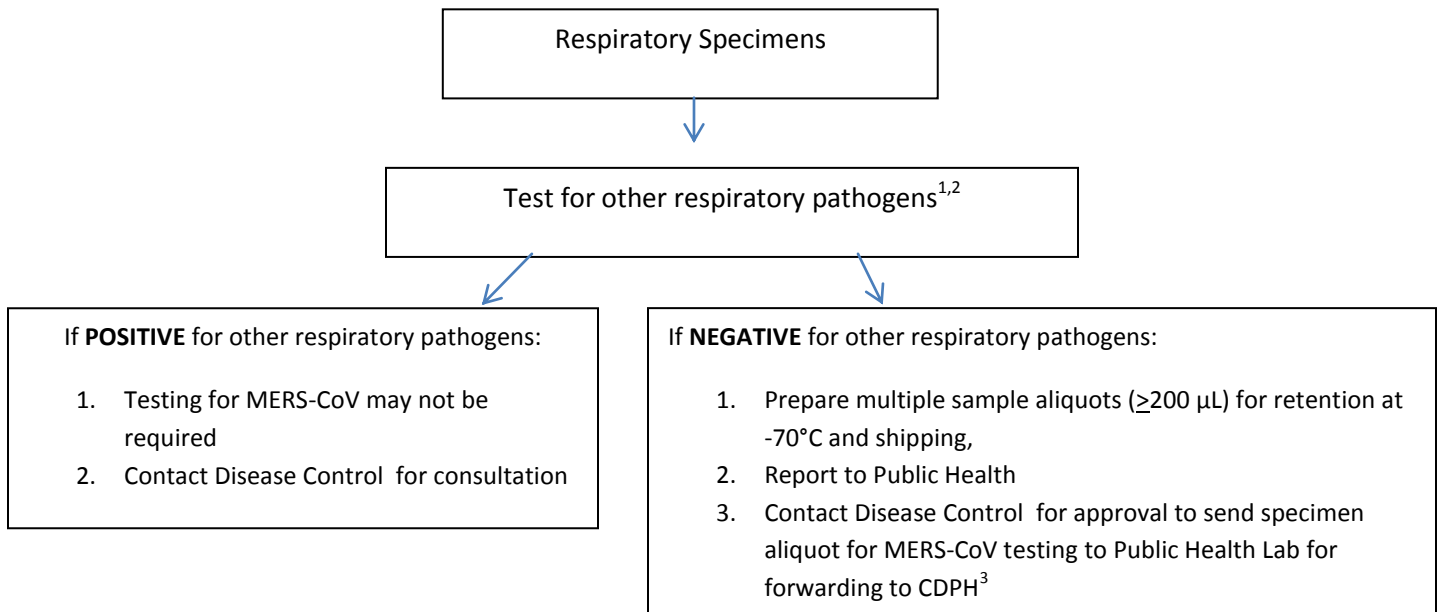
Specimens should be stored and shipped at the temperatures indicated above. If samples are unable to be shipped within 72 hours of collection, they should be stored at -70°C and shipped on dry ice.

All specimens must be prepacked to prevent breakage and spillage. Specimen containers should be sealed with Parafilm® and placed in zip lock bags. Place enough absorbent material to absorb the entire contents of the Secondary Container (containing Primary Container) and separate the Primary Containers (containing specimen) to prevent breakage. Send specimens with cold packs or other refrigerant blocks that are self-contained, not actual wet ice. This prevents leaking and the appearance of a spill. When large numbers of specimens are being shipped, they should be organized in a sequential manner in boxes with separate compartments for each specimen.

Some things not to do:

- Do not place any dry ice in the "Primary Container" or "Secondary Container", foam envelopes, zip lock bags, cryovial boxes, or hermetically sealed containers.
- Do not place Primary Containers sideways or upside down in zip lock bags.
- Do not use red top Secondary Containers for Category A Infectious Substances.
- Do not place any paperwork in the Secondary Containers or zip lock bags, so as not to damage the paperwork.
- Do not use biohazard/autoclave bags to prepack your materials due the inadequate seal of these bags.

V. MERS-CoV Specimen Processing Guidelines: RT-PCR Testing



¹Respiratory pathogens to be considered for testing by molecular or antigen detection methods (**not by viral culture**) include, 1) influenza A, influenza B, respiratory syncytial virus, human metapneumovirus, human parainfluenza viruses, adenovirus, human rhinovirus and other respiratory viruses; 2) Streptococcus pneumoniae, Legionella pneumophila, and other pathogens that cause severe lower respiratory infections. Season, clinical presentation, and epidemiologic/surveillance information should be considered when selecting which pathogens to test for. If your laboratory does not have molecular or antigen testing capability, contact Disease Control at (951) 358-5107.

²Virus isolation in cell culture and initial characterization of viral agents recovered in cultures of MERS-CoV specimens are NOT recommended at this time. However, if done, these activities must be performed in a BSL-3 facility using BSL-3 work practices.

³See “Interim Guidelines for Collection, Processing and Transport of Clinical Specimens from Patients Under Investigation for MERS” (Section IV) for shipping information.