

County of Riverside Department of Public Health
Interim Guidelines: Specimen Collection & Processing
Middle East Respiratory Syndrome Coronavirus (MERS-CoV) Testing
June 24, 2015

(Adapted from CDC Interim Guidelines dated 6/10/15)

General Guidelines:

- Notify County of Riverside Department of Public Health Disease Control at (951) 358-5107 before sending specimens.
- Send specimens from Riverside County medical providers to the Riverside County Public Health Laboratory, not to the 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 hours, 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.
- Related Center for Disease Control and Prevention's (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>.
- Collection of ALL THREE specimen types, lower respiratory, upper respiratory and serum specimens, for testing using the CDC MERS rRT-PCR assay is now strongly recommended.
- Collection of stool specimens for MERS-CoV testing is no longer recommended.
- Testing for MERS-CoV and other respiratory pathogens can be done simultaneously.
- Testing for common respiratory pathogens by molecular or antigen detection methods (not by viral culture) is strongly recommended.
- **Viral isolation in cell culture is not recommended at this time.** If done, activities must be done in a BSL-3 facility using BSL-3 work practices.

Collecting Respiratory Specimen

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

Upper respiratory tract

- Nasopharyngeal (NP) and Oropharyngeal (OP) 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. NP/OP specimens can be combined, placing both swabs in the same vial. Refrigerate specimen at 2-8°C up to 72 hours; if exceeding 72 hours, 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 nasopharyngeal areas.

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

- Nasopharyngeal Wash/Aspirate or 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 hours; if exceeding 72 hours, freeze at -70°C and ship on dry ice.

Blood Components

Serum (for rRT-PCR testing)

A single serum specimen collected during the first 10-12 days after symptom onset is recommended. The California Department of Public Health (CDPH) does not recommend whole blood or plasma for MERS-CoV PCR.

Serum (for serologic testing):

For 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 after acute sample was collected. Serological testing is for research/surveillance purposes and not for diagnostic purposes.

Serum Collection:

- Children and adults: Collect 1 tube (5-10 mL) of whole blood in a serum separator tube. The minimum amount of serum required for testing is 400 μL (200 μL for each test.)
- Infants: A minimum of 1 cc of whole blood is needed. If possible, collect 1 cc in a serum separator tube.
- Serum separator tubes should be stored upright for at least 30 minutes, and then centrifuged at 1000-1300 relative centrifugal force (RCF) for 10 minutes before removing the serum and placing in a separate sterile tube for shipping.
- Refrigerate specimen at 2-8°C and ship on ice-pack; freezing and shipment on dry ice is permissible.

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 pre-packed to prevent breakage and spillage. Specimen containers should be sealed with Parafilm® and placed in ziplock 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.

Questions on specimen collection and packing should be directed to the Riverside County Public Health Laboratory at (951) 358-5070.

Some things NOT to do:

- Do not place any dry ice in the "Primary Container" or "Secondary Container", foam envelopes, ziplock bags, cryovial boxes, or hermetically sealed containers.
- Do not place Primary Containers sideways or upside down in ziplock bags.
- Do not use red top Secondary Containers for Category A Infectious Substances.
- Do not place any paperwork in the Secondary Containers or ziplock 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.