

Current Event

Testing Nasopharyngeal (NP) Swabs for MERS-CoV

Command and Control Center discussed the importance of taking appropriate NP swabs correctly.

Editorial Notes

Knowledge about case definitions for MERS-CoV is needed to determine which patients should be tested (*Weekly Monitor* 2:21). Healthcare workers (HCW) who collect specimens from patients suspected or confirmed to be infected with MERS-CoV must wear appropriate personal protective equipment (PPE); and all those involved in collection and transporting specimens should be trained in safe handling practices and spill decontamination procedures.

The cellular receptor for MERS-CoV (Dipeptidyl peptidase 4 (DPP4) is expressed on non-ciliated bronchial epithelial cells, explaining the observation that lower respiratory tract specimens such as bronchoalveolar lavage, sputum and tracheal aspirates contain the highest viral loads. These specimens should be collected whenever possible. The nasopharyngeal and oropharyngeal swabs should be placed in the same tube that contain virus transport medium to increase the viral load. Both upper and lower respiratory tract specimens should be collected whenever possible.

The first follow up specimen should be taken a week after the diagnosis. The frequency of subsequent specimen collection will depend on local circumstances but should be at least every 2-4 days. If the release of a patient from an isolation ward requires consecutive negative RT-PCR results, specimens can be collected daily. Two consecutive negative results in clinically recovered persons indicate shedding

- Seat the patient, looking upwards with the neck fully extended
- Insert the pernasal swab through a nostril and advance along the floor of the nose until it reaches the nasopharynx.
- It has been suggested that the swab be held against the posterior nasopharynx for up to 30 seconds or until the patient coughs. In practice, it is more likely that a patient will only be able to tolerate this for a few seconds.
- Remove the swab and plunge into transport tube



Taking Nasopharyngeal (NP) Swabs - Step by Step

of the virus has stopped.

Initial processing of all specimens including those for RT-PCR analysis should take place in a class II or class III biosafety cabinet with current certification. All technical procedures should be performed in a way that minimizes the generation of aerosols and droplets. To date, these rRT-PCR assays have shown no cross-reactivity with other respiratory viruses including human coronaviruses. Current MERS-CoV tests include: An assay targeting upstream of the E protein gene (upE) (highly sensitive, recommended for screening), assays targeting the open reading frame 1b (ORF 1b), (equal sensitivity).

Open reading frame 1a (ORF 1a) (less sensitive than the ORF 1a assay) Each rRT-PCR run should include both external and internal controls, and laboratories should participate in external quality assessment schemes whenever possible.

Two target sites on the MERS-CoV genome suitable for sequencing to aid confirmation have been identified. These are in the RNA-dependent RNA polymerase (RdRp) and (N) genes. Virus isolation is not recommended as a routine diagnostic procedure.

Recent Publications:

Alshukairi AN, Khalid I, Ahmed WA, Dada AM, Bayumi DT, Malic LS, Althawadi S, Ignacio K, Alsalmi HS, Al-Abdely HM, Wali GY, Qushmaq IA, Alraddadi BM, Perlman S. Antibody Response and Disease Severity in Healthcare Worker MERS Survivors. *Emerg Infect Dis.* 2016 Jun;22(6). doi: 10.3201/eid2206.160010.

MERS-CoV in KSA 2016*

Region	Case	Primary	Secondary	U.C.
Qassim	36	10	23	3
Riyadh	30	19	9	2
Hail	7	6	0	1
Jeddah	5	4	0	1
Asir	5	4	1	0
Taif	4	3	1	0
Najran	4	3	0	1
Al-Ahsaa	3	3	0	0
Madinah	2	2	0	0
Eastern Region	2	2	0	0
Al-Baha	1	0	0	1
Bisha	1	1	0	0
Makkah	0	0	0	0
Tabuk	0	0	0	0
Al-Joaf	0	0	0	0
Jazan	0	0	0	0
Northern Borders	0	0	0	0
Qunfotha	0	0	0	0
Hafr Al-Batin	0	0	0	0
Qurayyat	0	0	0	0
Total	100	57	34	9

Case: Confirmed Symptomatic. U.C.: Unclassified cases

*Period: Form 3 Jan to 28 May 2016

Regions with new cases of this week are highlighted in yellow.

