وزارة الصحة
Ministry of Health

Weekly Monitor MERS-CoV

Volume 2 Issue 24 Tuesday 14 June 2016

Current Event

Serological Laboratory Testing for MERS-CoV

Command and Control Center reviewed the current Serological testing for MERS-CoV.

Editorial Notes

Non-culture diagnostic laboratory work including RT-PCR analysis on clinical specimens from patients who are suspected or confirmed to be infected with MERS-CoV should be conducted adopting practices and procedures described for basic laboratory – Biosafety Level 2 (BSL-2).

Serum samples should also be stored for antibody detection (MERS-CoV nucleic acid detected by RT-PCR), particularly if lower respiratory tract samples are not available. Paired serum samples should ideally be collected 14-21 days apart, with the first sample taken during the first week of illness. If only a single sample can be collected, it should be done at least 14 days after the onset of symptoms. MERS-CoV has been detected in urine and faeces but at levels below those found in the lower respiratory tract. In RT-PCR confirmed cases, repeat sequential sampling for RT-PCR testing is strongly encouraged in the respiratory tract (upper and lower) and multiple other body compartments (e.g. serum, urine and stool) since it will add to current knowledge about the duration of virus shedding and can guide decision making for infection prevention and control measures.

Any testing for the presence of MERS-CoV should be performed in appropriately equipped laboratories by staff trained in the relevant technical and safety procedures. The handling and processing of specimens from cases with suspected or confirmed MERS-CoV infection intended for additional laboratory tests such as haematology or blood gas analysis should follow local guidelines for processing potentially infectious material.

For antibody detection, paired serum samples are required for confirmation of infection with the initial sample collected in the first week of illness and the second ideally collected 2-3 weeks later. If only a single serum sample can be collected, this should occur at least 14 days after onset of symptoms or exposure of last documented contact.

Handling of live virus (such as when performing neutralization assays) should be performed only in laboratories capable of meeting additional essential containment requirement including practices recommended for Biosafety Level 3 (BSL-3) laboratories in the WHO Laboratory Biosafety Manual.

MERS-CoV Serological Tests:

- Are for surveillance or investigational purposes and not for diagnostic purposes
- Presence of antibodies to MERS-CoV indicates that a person had been previously infected with the virus and developed an immune response
- Could help learn more about how the virus is transmitted and can detect asymptomatic infection with MERS-CoV; revealed a broader spread of MERS disease than was initially thought

- ELISA, or enzyme-linked immunosorbent assay, is a screening test used to detect the presence and concentration of specific antibodies that bind to a viral protein
- IFA, or immunofluorescence assay, is a confirmatory test in which specific antibodies
- The micro-neutralization assay (MNA) is a highly specific confirmatory test used to measure neutralizing antibodies, or antibodies that can neutralize virus. This method is considered the gold standard for detection of specific antibodies in serum samples. However, compared with the ELISA and IFA, the MNA is labor-intensive and time-consuming, requiring at least 5 days before results are available

ELISA	IFA	Micro-neutralization	Result
Positive	Indeterminate	Positive	Positive
Positive	Indeterminate or Negative	Negative	Negative

Cases of MERS-CoV: International Week (IW) No. 23: 5 – 11 June 2016

Total	**0**
Symptomatic (S)	0
Asymptomatic (AS)	0
Healthcare worker (S)	0
Healthcare Worker (AS)	0

Recent Publications:

Zyoud SH. Global research trends of Middle East respiratory syndrome coronavirus: a bibliometric analysis. BMC Infect Dis. 2016 Jun 7;16(1):255. doi: 10.1186/s12879-016-1600-5.

MERS-CoV in KSA 2016*

Region	*Case*	*Primary*	*Secondary*	*U.C.*
Qassim	36	10	23	3
Riyadh	31	20	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
Tabuk (1)	1	1	0	0
Makkah	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	***102***	***59***	***34***	***9***

Case: Confirmed Symptomatic. **U.C. :** Unclassified cases
***Period:** Form 3 Jan to 11 June 2016
Regions with new cases of this week are highlighted in yellow.