

Supplementary webappendix

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Supplement to: Madani TA. Case definition and management of patients with MERS coronavirus in Saudi Arabia. *Lancet Infect Dis* 2014; **14**: 911–913.

Table 1.

Case Definition and Surveillance Guidance for MERS-CoV Testing in Saudi Arabia

Suspect Case (patients who should be tested for MERS-CoV)¹	
Case definition I	A person with fever and community-acquired pneumonia or acute respiratory distress syndrome based on clinical or radiological evidence. ²
OR	
Case definition II	A hospitalized patient with healthcare associated pneumonia based on clinical and radiological evidence. ²
OR	
Case definition III	A person with 1) acute febrile ($\geq 38^{\circ}\text{C}$) illness, AND 2) body aches, headache, diarrhea, or nausea/vomiting, with or without respiratory symptoms, AND 3) unexplained leucopenia ($\text{WBC} < 3.5 \times 10^9/\text{L}$) and thrombocytopenia ($\text{platelets} < 150 \times 10^9/\text{L}$) ³ .
OR	
Case definition IV	A person (including health care workers) who had protected or unprotected exposure ⁴ to a confirmed or probable case of MERS-CoV infection and who presents with upper ⁵ or lower ⁶ respiratory illness within 2 weeks after exposure. ⁷

Probable Case

A probable case is a patient in category I or II above with absent or inconclusive laboratory results for MERS-CoV and other possible pathogens who is a close contact⁸ of a laboratory-confirmed MERS-CoV case or who works in a hospital where MERS-CoV cases are cared for.

Confirmed Case

A confirmed case is a suspect case with laboratory confirmation⁹ of MERS-CoV infection

¹All suspected cases should have nasopharyngeal swabs, and, when intubated, lower respiratory secretions samples collected for MERS-CoV testing.

²Patients who meet the criteria for category I or II above should also be evaluated for common causes of community-acquired pneumonia (such as influenza A and B, respiratory syncytial virus, *Streptococcus pneumoniae*, *Hemophilus influenzae*, *Staphylococcus aureus*, and *Legionella pneumophila*). This evaluation should be based on clinical presentation and epidemiologic and surveillance information. Testing for MERS-CoV and other respiratory pathogens can be done simultaneously. Positive results for another respiratory pathogen (e.g H1N1 influenza) should not necessarily preclude testing for MERS-CoV because co-infection can occur.

³Laboratory tests to exclude other causes of this clinical presentation (e.g., Dengue, Alkhumra hemorrhagic fever virus, CMV, EBV, typhoid fever, and malaria) should be simultaneously performed if clinically and epidemiologically indicated.

⁴Protected exposure is defined as contact within 1.5 meters with a patient with confirmed or probable MERS-CoV infection while wearing all personal protective equipment (surgical mask, gloves, and gowns, and, when indicated, goggles, or N95 mask). Unprotected exposure is defined as contact within 1.5 meters with a patient with confirmed or probable MERS-CoV infection without wearing all personal protective equipment (surgical mask, gloves, and

gowns, and, when indicated, goggles, or N95 mask).

⁵Rhinorrhea, sore throat, and/or cough.

⁶Shortness of breath, hypoxemia, or pneumonic infiltration evident on chest x-ray.

⁷Testing asymptomatic contacts is generally not recommended. Under certain circumstances, such testing may be considered in consultation with an Infectious Diseases/Infection Control consultant.

⁸Close contact is defined as a) any person who provided care for the patient, including a healthcare worker or family member, or had similarly close physical contact; or b) any person who stayed at the same place (e.g. lived with, visited) as the patient while the patient was ill.

⁹Confirmatory laboratory testing requires a positive PCR on at least two specific genomic targets (upE and ORF1a) OR a single positive target (upE) with sequencing of a second target (RdRpSeq or NSeq). It is strongly advised that lower respiratory specimens such as sputum, endotracheal aspirate, or bronchoalveolar lavage should be used when possible. If patients do not have signs or symptoms of lower respiratory tract infection or lower tract specimens are not possible or clinically indicated, both nasopharyngeal and oropharyngeal specimens should be collected and combined in a single collection container and tested together. If initial testing of a nasopharyngeal swab is negative in a patient who is strongly suspected to have MERS-CoV infection, patients should be retested using a lower respiratory specimen or, if not possible, a repeat nasopharyngeal and oropharyngeal specimen. For patients in whom adequate lower respiratory samples are not possible, investigators may also want to consider other types of auxiliary testing such as nasopharyngeal wash for MERS-CoV PCR and paired acute and convalescent sera for serological tests. Collection of additional specimens such as stool, urine, and serum for MERS-CoV PCR is also recommended as the virus has also been demonstrated in these body fluids.