Information for clinicians, laboratories and public health personnel on Middle East Respiratory Syndrome coronavirus (MERS-CoV)

27 May 2014

What’s new in this advice?
- Updated case numbers
- More information about the source of infection
- New advice for travellers

Summary
- The number of reported cases of Middle East Respiratory Syndrome coronavirus (MERS-CoV) increased sharply in April and May 2014. As of 23 May 2014, MERS-CoV had been identified in 635 patients with 193 deaths.
- All cases have been linked with travel to or residence in the Middle Eastern countries of Saudi Arabia, the United Arab Emirates (UAE), Qatar, Oman, Jordan, Kuwait, Lebanon and Yemen, or with contact with travellers retuning from these areas.
- Dromedary camels are the suspected source of sporadic human infections, though the exact routes of direct or indirect exposure remain unknown. Person-to-person transmission is known to occur, particularly in healthcare settings, and particular attention to infection control is required.
- Sporadic infections have typically presented with, or later developed severe acute lower respiratory disease and this has predominantly occurred in adult males with certain underlying medical conditions.
- Mild or asymptomatic secondary infections have occurred in people of all ages, and have most frequently been associated with healthcare settings.
- People with underlying medical conditions are advised to take appropriate precautions when visiting farms or barns or market environments where camels may be present in affected countries, including avoiding contact with camels.

In patients with suspected pneumonia or pneumonitis with a history of recent residence or travel (in the 14 days prior to symptom onset) in the Middle East*, or close contact with confirmed or probable cases, the following is recommended in hospital settings:

1. The patient should be placed in a single room with negative pressure air-handling, and implement transmission-based precautions (contact and airborne), including the use of personal protective equipment (PPE).
2. Investigations and management should be performed as for community acquired pneumonia. Appropriate specimens should also be collected for MERS-CoV PCR testing.

Note: Transiting through an international airport (<24 hours duration, remaining within the airport) in the Middle East is not considered to be risk factor for infection.

* Countries in the Middle East and immediate surrounding areas may be defined as Bahrain, Iraq, Iran, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian territories, Qatar, Saudi Arabia, Syria, the United Arab Emirates (UAE), and Yemen.

What are the symptoms and how do I manage a suspected case?
The likelihood of a case of pneumonia or pneumonitis in Australia being due to MERS-CoV is very low, and clinicians should investigate as usual, but be aware of the possibility of MERS-CoV in patients with a compatible exposure history (travel or residence in the Middle East in the 14 days before illness, or exposure to confirmed/probable cases in the 14 days before illness onset).

Sporadic infections have typically presented with, or later developed severe acute lower respiratory disease, with radiological, clinical or histopathological evidence of pneumonia and/or pneumonitis. Typical symptoms have included fever, cough, shortness of breath, and breathing difficulties. Sporadic cases have predominantly been adult males with underlying medical conditions that may have predisposed them to infection, or may have increased the severity of the disease. These underlying conditions have included diabetes, kidney disease, hypertension, asthma and lung diseases, cancer and cardiovascular disease. Clinicians should be aware of the possibility of atypical presentations including fever and diarrhoea.

Secondary infections acquired through person-to-person spread have occurred in people of all ages, may frequently have mild influenza-like symptoms or be asymptomatic. Secondary infections have most frequently been associated with healthcare settings, but have also occurred amongst family contacts.

Who do I test for MERS-CoV?
Testing should be considered for:

1. Individuals with pneumonia or pneumonitis and history of travel *to, or residence in, the Middle East*, in the 14 days before illness onset.
2. Individuals with pneumonia or pneumonitis and history of contact with those in point 1 above in the 14 days before illness onset.
3. Health care workers with pneumonia, who have been caring for patients with severe acute respiratory infections, particularly patients requiring intensive care, without regard to place of residence or history of travel, where another cause has not been confirmed.

Notes:

^Transiting through an international airport (<24 hours stay, remaining within the airport) in the Middle East is not considered to be risk factor for infection.
Countries in the Middle East and immediate surrounding areas may be defined as Bahrain, Iraq, Iran, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian territories, Qatar, Saudi Arabia, Syria, the United Arab Emirates (UAE), and Yemen.

Clinicians should be aware of the possibility of atypical non-respiratory presentations, but testing for MERS-CoV should be performed in patients with radiological evidence of pneumonitis with the appropriate travel/contact history.

**How do I test for MERS-CoV?**

Routine tests for acute pneumonia should be performed where indicated, including bacterial culture, serology, urinary antigen testing and tests for respiratory viruses.

Respiratory samples including upper respiratory tract viral swabs, nasopharyngeal aspirates, sputum, bronchoalveolar lavage fluid, lung biopsies and post-mortem tissues are suitable for testing for MERS-CoV. There is now increasing evidence that lower respiratory tract specimens such as bronchoalveolar lavage, sputum and tracheal aspirates contain the highest viral loads, therefore, lower respiratory tract specimens should be collected where possible.

The WHO emphasises repeat testing (especially of lower respiratory tract specimens) in compatible cases as initial results may be negative.

Transmission-based contact and airborne precautions must be used when taking respiratory specimens. These are described in *NHMRC: Australian Guidelines for the Prevention and Control of Infection in Healthcare – 2010* (particularly section B2.4), and include:

- Contact precautions, including close attention to hand hygiene
- Airborne transmission precautions, including routine use of a P2 respirator, disposable gown, gloves, and eye protection when entering a patient care area
- A requirement for negative pressure air-handling

Laboratory staff should handle specimens under PC2 conditions in accordance with AS/NZS 2243.3:2010 Safety in Laboratories Part 3: Microbiological Safety and Containment.

Specimens should be transported in accordance with current regulatory requirements.

Routine testing for suspected cases of MERS-CoV infection will be based on detection of target sequences of viral RNA by real-time reverse-transcriptase polymerase chain reaction (rRT-PCR). A confirmed case requires a positive rRT-PCR for two target viral sequences and sequencing where necessary, as per the WHO testing algorithm. Serological tests for MERS-CoV are not currently available in Australia.

**Are health workers at risk from the MERS-CoV?**

Many confirmed cases have occurred in healthcare-associated clusters. A large number of these cases have been healthcare workers.
The particular conditions or procedures that lead to transmission in hospital are not well known. However, in the only published study, lapses in infection control were known to have occurred for seven healthcare workers who acquired the infection from cases in Saudi Arabia.

What are the recommended isolation and PPE recommendations for patients in hospital?

These recommendations on isolation and PPE for probable and confirmed cases take a deliberately cautious approach by recommending measures that aim to control the transmission of pathogens that can be spread by the airborne route. These measures are detailed in NHMRC: Australian Guidelines for the Prevention and Control of Infection in Healthcare - 2010 - External Link (particularly section B2.4). In summary, transmission-based precautions for suspected, probable and confirmed cases should include:

- Placement of confirmed and probable cases in a negative pressure room if available, or in a single room from which the air does not circulate to other areas
- Airborne transmission precautions, including routine use of a P2 respirator, disposable gown, gloves, and eye protection when entering a patient care area
- Contact precautions, including close attention to hand hygiene
- If transfer of the confirmed or probable case outside the negative pressure room is necessary, asking the patient to wear a surgical face mask while they are being transferred and to follow respiratory hygiene and cough etiquette.

What is the MERS-CoV?

Coronaviruses are a large and diverse family of viruses that include viruses that are known to cause illness in humans, including the common cold, and in animals. MERS-CoV has never previously been detected in humans or animals but appears most closely related to coronaviruses previously found in bats. It is genetically distinct from the SARS coronavirus, and appears to behave differently.

What is the current situation?

The first known cases of MERS-CoV occurred in March 2012, and were identified retrospectively. As of 23 May 2014, MERS-CoV has been identified in 635 patients with 193 deaths. The number of cases has increased sharply in April and May 2014, and the rapid increase in case numbers has been linked to spread in healthcare settings in the United Arab Emirates and Saudi Arabia, with approximately 75% of recent cases being reported from these settings.

All cases have been linked with travel to or residence in the Middle Eastern countries of Saudi Arabia, the United Arab Emirates (UAE), Qatar, Oman, Jordan, Kuwait, Lebanon and Yemen, or with contact with travellers returning from these areas. Imported and import-related cases have been reported in an increasing number of countries in Europe and Southeast Asia and in the United States.

Dromedary camels are the suspected source of sporadic human infections, though the exact routes of direct or indirect exposure remain unknown. Person-to-person transmission is known to have occurred, particularly in large clusters occurring in healthcare settings.
Pre-travel advice, travel restrictions, periods of peak travel

The WHO does not currently recommend any restrictions to travel due to the MERS-CoV outbreak.

Peak periods of travel - Umrah and Hajj

Clinicians, laboratories and public health practitioners should be aware that many Muslims from Australia will travelled to Saudi Arabia to undertake the Umrah, particularly during the period at the end of Ramadan in late June/July and for the Hajj in October.

Pre-travel advice

Travellers should be aware of relevant immunisation requirements and the importance of personal hygiene including frequent hand washing, avoiding close contact with animals and with people who are suffering from acute respiratory infection, and should be advised to seek medical attention as soon as possible if they feel unwell. They should also follow usual food hygiene practices for travellers, including avoiding drinking raw milk or eating food that may be contaminated with animal secretions or products unless they are properly washed, peeled or cooked.

The WHO advises that people at potentially higher risk of severe disease due to MERS-CoV should in addition consider avoiding contact with camels. For further information, refer to:

DFAT’s Smartraveller website information for travellers (http://www.smartraveller.gov.au/)

The latest WHO updates, available from the WHO website (http://www.who.int/csr/disease/coronavirus_infections/en/)

Further advice

WHO situation updates and the latest advice is available from the WHO website:

United States Centers for Disease Control and Prevention MERS-CoV pages MERS-CoV
http://www.cdc.gov/CORONAVIRUS/MERS/INDEX.HTML

European Centre for Disease Prevention and Control - risk assessments

Reporting

The relevant state/territory public health unit/communicable diseases branch must be notified urgently of any suspected (and probable or confirmed) cases in order to discuss patient testing and/or referral and coordinate management of contacts.

Confirmed and probable cases must be reported to state/territory public health authorities immediately on being classified as such. State and territory authorities should notify the Commonwealth Department of Health which is responsible for reporting to WHO (under IHR 2005).
Advice for contacts of cases
Contacts of cases should be directed to your state/territory communicable disease branch/centre for advice.

Who do I contact if I have a suspected case?
Contact your state/territory communicable disease branch/centre.

ACT   (02) 6205 2155
NSW   1300 066 055

Contact details for the public health offices in NSW Area Health Service Areas
(www0.health.nsw.gov.au/publichealth/infectious/phus.asp)

NT   (08) 8922 8044
Queensland   13 432 584

Contact details for the public health offices in QLD Area

SA   1300 232 272
Tasmania   1800 671 738
Victoria   1300 651 160

WA   (08) 9388 4801 After hours (08) 9328 0553

Contact details for the public health offices in WA
(www.public.health.wa.gov.au/3/280/2/contact_details_for_regional_population_public_he.pm)