



Middle East Respiratory Syndrome (MERS)

Disease Plan

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Questions about this disease plan?

Contact the Utah Department of Health Bureau of Epidemiology: 801-538-6191.

✓ WHY IS MIDDLE EAST RESPIRATORY SYNDROME IMPORTANT TO PUBLIC HEALTH?

Middle East Respiratory Syndrome (MERS) is a newly recognized virus that first appeared in the Middle East in 2012 that causes severe respiratory illness. All identified cases have occurred in or have been associated with travel to the Middle East. In 2015, an outbreak of MERS occurred in South Korea -- primarily among healthcare workers after the virus was introduced into a hospital by a traveler from the Middle East. MERS appears to have a high case fatality rate. There is no cure and no vaccine to prevent MERS. Correct diagnosis and early detection of cases and their contacts is crucial in preventing future cases and outbreaks.

✓ DISEASE AND EPIDEMIOLOGY

Clinical Description

Initial symptoms of MERS include fever, cough, and shortness of breath, which may progress to pneumonia, acute respiratory distress, and sometimes kidney failure. Diarrhea has also been reported. Many persons with laboratory-confirmed MERS have chronic underlying medical conditions or immunosuppression. The full clinical spectrum is unknown. This could be due to healthy people with mild illnesses not seeking medical attention and therefore not identified as cases. Further research, such as serosurveys, is needed to identify who is at risk for MERS, and to understand the full range of disease manifestations.

Causative Agent

MERS is caused by a newly recognized beta coronavirus that was first reported in 2012 in Saudi Arabia.

Differential Diagnosis

Community-acquired pneumonia, influenza, respiratory syncytial virus (RSV) infection, adenovirus infection, rhinovirus infection, infection with other coronaviruses (i.e., severe acute respiratory syndrome or SARS), metapneumovirus infection, acute respiratory distress syndrome, or brucellosis.

Laboratory Identification

All testing must be discussed with and approved by the Utah Department of Health (UDOH) State Epidemiologist before submission to the Utah Public Health Laboratory (UPHL). UPHL uses a polymerase chain reaction (PCR) assay from the Centers for Disease Control and Prevention (CDC) to detect MERS in serum specimens and respiratory samples (naso-pharyngeal or oral-pharyngeal (NP/OP) swabs, sputum, lower respiratory tract aspirates or washes). Confirmatory testing is performed at CDC.

Treatment

No vaccine currently exists for MERS, and no specific treatment has been recommended. Medical care is supportive.

Case Fatality

As of June 20, 2015, 1,334 laboratory-confirmed cases of human infection with MERS have been reported to the World Health Organization (WHO), including at least 471 deaths. The case fatality for these cases is 35%. This case fatality rate may be an overestimation due to underreporting of cases with mild symptoms.

Reservoir

MERS is considered a zoonotic virus that can lead to secondary infections among people. Most infections have occurred in the Middle East and community-acquired infections are thought to be associated with direct or indirect contact with infected dromedary camels or camel-related products. Infection acquired by exposure to camels represents a minority of all cases.

Preliminary results from an ongoing investigation in Qatar were shared with the World Health Organization (WHO) and announced in a press release by the Supreme Council of Health in Qatar (WHO document, no citation listed). Their results show that people working closely with camels (i.e., farm workers, slaughterhouse workers and veterinarians) may be at higher risk of MERS than people who do not have regular close contacts with camels. In Qatar and several other countries, animals, including goats, cows, sheep, water buffalo, swine and wild birds, have been tested for antibodies to MERS, with no positive results. The absence of antibodies in these animals indicates that the likelihood of other animals having a substantial role in transmission of MERS is very low. These studies provide evidence that camels are a likely primary source of the MERS that is infecting humans.

Transmission

Once a person is infected with MERS and is symptomatic, the person can transmit infection to others, but the specific modes of transmission, risk factors and conditions facilitating transmission are not well established.

There has been no community-wide transmission observed. While human-to-human transmission has been observed in households in affected countries, most human cases reported to date have resulted from human-to-human transmission in healthcare settings. Suboptimal infection prevention and control measures in healthcare settings have sometimes resulted in large numbers of secondary cases. As of June 2015, no evidence of sustained community transmission beyond small clusters has been reported in any country. Transmission has occurred between patients, visitors, and healthcare personnel in a hospital or healthcare setting.

Susceptibility

MERS affects individuals who reside in or visit affected countries. These countries are mostly located on or near the Arabian Peninsula. However, recently, persons returning from South Korea and had exposure to a healthcare setting may be at risk. Risk factors include contact with infected patients in healthcare facilities or being a family member or household contact of a MERS case.

Incubation Period

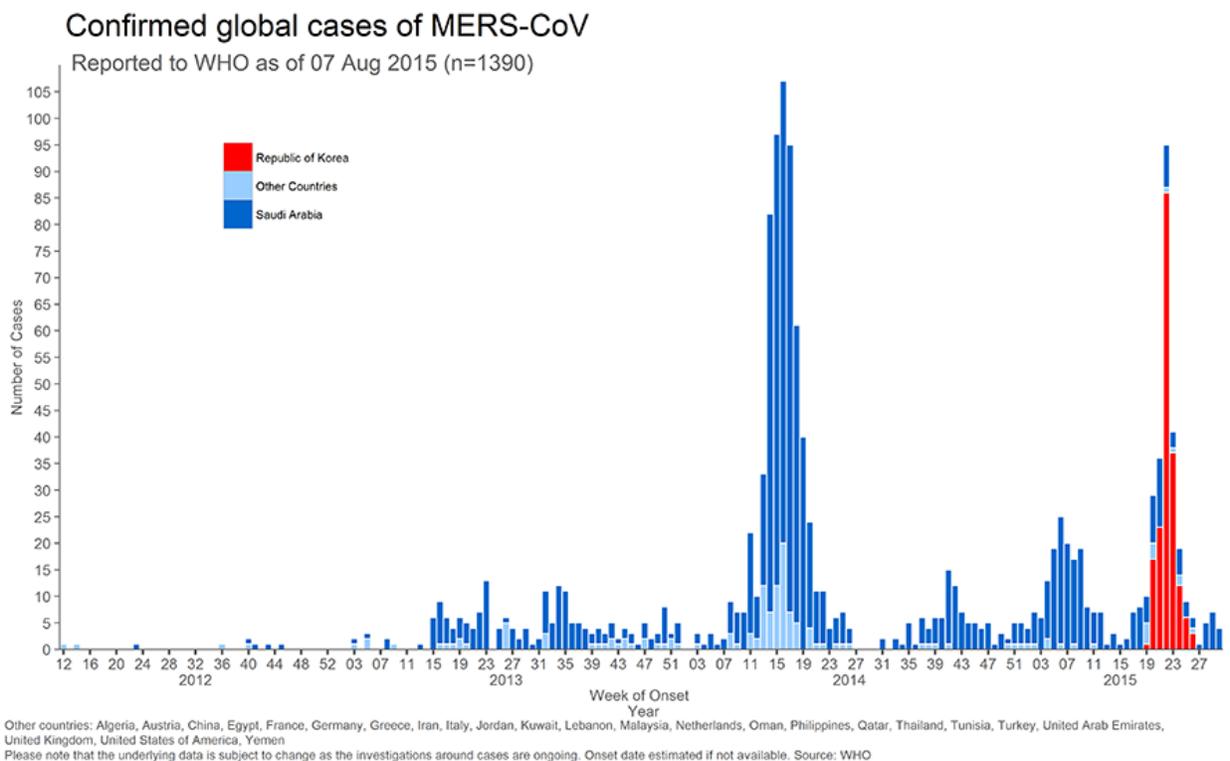
While the incubation period is still under investigation, the current case definition uses an onset of illness within 14 days of travel to affected countries.

Period of Communicability

The period of communicability for MERS is unknown at this time. Until further guidance is available, airborne and contact infection control precautions should be implemented. Suspected MERS cases should be isolated (i.e., not going to work or to school) until 10 days after fever has resolved, provided respiratory symptoms are absent or improving.

Epidemiology

In September 2012, a novel coronavirus infection was reported in a man in Saudi Arabia. The case was admitted to a hospital with pneumonia and acute kidney injury in June 2012. A few days later, a separate report appeared of an almost identical virus detected in a second patient with acute respiratory syndrome and acute kidney injury. The second patient initially developed symptoms in Qatar, but had traveled to Saudi Arabia before he became ill and then sought care in the United Kingdom. Since that time, many subsequent cases and clusters of infections have been reported.



MERS has caused infections worldwide, with 26 countries reporting cases to date. Reporting countries include, in the Middle East: Egypt, Iran, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia (KSA), United Arab Emirates (UAE) and Yemen; in Africa: Algeria, and Tunisia; in Europe: Austria, France, Germany, Greece, Italy, the Netherlands, Turkey and the United Kingdom; in Asia: China, the Republic of Korea, Malaysia Philippines and Thailand; and in North America: the United States of America (USA). As of August 13, 2015, 1,401 laboratory-confirmed² cases of MERS-CoV infection have been reported to and confirmed by WHO, including at least 500 (36%) deaths. The majority of cases (~85%) have been reported from KSA. All reported cases have been directly or indirectly linked through travel or residence to nine countries: KSA, UAE, Qatar, Jordan, Oman, Kuwait, Yemen, Lebanon, and Iran.

On May 20, 2015, the Republic of Korea notified WHO of the first laboratory-confirmed case of Middle East respiratory syndrome coronavirus (MERS-CoV). The index case had recently traveled to KSA, Qatar, UAE, and Bahrain. The person was not ill during travel and his source of infection is under investigation; however, thus far no contact with camels or healthcare facilities in the Middle East has been identified. Spread of infection from the index case has resulted in the largest outbreak of MERS outside the Middle East. Since the identification of the first laboratory-confirmed case, aggressive contact tracing has been in place and as of June 19, 2015, more than 10,000 contacts were being followed and were in quarantine or isolation at home or in state-run facilities. Included in the 186 cases reported to date, one case whose exposure was in the Republic of Korea traveled to China, Hong Kong SAR by plane, and then to Guangdong, China, by bus. The case was symptomatic while traveling. Chinese authorities have placed this person in isolation and have identified contacts in Hong Kong SAR and China. The contacts are in quarantine and are being followed and tested for MERS-CoV. This is the first MERS-CoV case reported in China. No additional cases have been identified among contacts in Hong Kong SAR or in China.

For the most recent case count, visit the WHO MERS summary updates website at: <http://www.who.int/emergencies/mers-cov/en/> or CDC's summary information at: <http://www.cdc.gov/coronavirus/mers/index.html>.

The first MERS cases in the U.S. were reported in May 2014 in Indiana and Florida. Both cases occurred in healthcare providers who lived and worked in Saudi Arabia and who had traveled to the U.S. from Saudi Arabia. They are believed to have been infected in Saudi Arabia. Both cases were hospitalized in the U.S. and later discharged. There were no MERS infections in any contacts of either U.S. MERS patient. No additional cases have been reported in the U.S. despite ongoing nationwide surveillance. Testing has been conducted on 514 patients from 45 states since January 2015.

MERS Infection in Utah

There have been no identified MERS infections in Utah as of March 2015. Utah public health has investigated and ruled out 13 persons of MERS. All 13 persons investigated in Utah reported travel to the Middle East.

PUBLIC HEALTH CONTROL MEASURES

Public Health Responsibility

- Rapidly identify imported cases of MERS with the goal of preventing secondary transmission.
- Provide education to the general public (regarding disease transmission) and to clinicians (regarding disease diagnosis, reporting, and prevention).
- Monitor disease trends.

Prevention

CDC continues to recommend that healthcare providers and health departments throughout the U.S. be prepared to detect and manage cases of MERS. Healthcare providers should continue to routinely ask their patients about their travel history and healthcare facility exposure and to consider a diagnosis of MERS infection in persons who meet the criteria for patient under investigation (PUI) (defined at <http://www.cdc.gov/coronavirus/mers/case-def.html>).

Enhancing infection prevention and control awareness and implementation measures is critical to prevent the spread of MERS in healthcare facilities. It is not always possible to identify patients with MERS early and for this reason, all healthcare facilities should have standard protocols in place for triaging possible infectious disease cases early and isolating them in private rooms with a mask until a travel history and exposure risks can be assessed. For possible MERS cases, contact and airborne infection control precautions should be implemented until a diagnostic test to rule out MERS is performed. Local and state public health authorities should be contacted

immediately to request testing (see **Laboratory Identification**) and to begin to assess risk of spread to others.

The WHO and CDC have issued recommendations for the prevention and control of MERS infections in healthcare settings. An increased level of infection control precautions is recommended when caring for patients with probable or confirmed MERS infection compared with that used for patients with community-acquired coronaviruses or other community-acquired respiratory viruses. CDC recommends the use of standard contact and airborne precautions for the management of hospitalized patients with known or suspected MERS infection. Prevention recommendations for individuals *not in* a healthcare setting include isolating ill persons with home isolation and by restricting activities outside the home. Home isolation includes wearing a mask, respiratory etiquette, avoiding sharing household items, and proper hand hygiene. Complete information can be found on [CDC's website](#) for preventing MERS spread in the home and communities.

Other recommendations include enhanced travel precautions to affected countries, as well as avoiding contact with camels, including drinking raw camel milk or urine, or eating undercooked camel meat. The WHO has posted a general precaution for anyone visiting farms, markets, barns, or other places where animals are present. Travelers should practice general hygiene measures, including regular hand washing before and after touching animals, and avoiding contact with sick animals. Travelers should also avoid consumption of raw or undercooked animal products. Complete information can be found on [CDC's Travel website](#).

Chemoprophylaxis

Currently, there is no chemoprophylaxis available.

Vaccine

Currently, there is no vaccine to prevent MERS infection.

Isolation and Infection Prevention

Isolation: Cases should be strictly isolated. If in a non-healthcare environment, isolation includes restricting activities, wearing a mask, respiratory etiquette, avoiding sharing household items, and proper hand hygiene. Complete information can be found on [CDC's website](#) for preventing MERS spread in the home and communities.

Hospital: Immediately implement standard contact and airborne precautions for a MERS PUI. Gloves, gowns, eye protection and an N95 or higher respirator should be used by healthcare workers for all patient care activities. As information about MERS becomes available, these recommendations will be re-evaluated and updated as needed.

An Airborne Infection Isolation Room (AIIR) should be used to care for a PUI. If this is not available, transfer the patient as soon as possible to a facility with an AIIR. Pending transfer, place a facemask on the patient and house him/her in a single-patient room with the door closed.

The patient should not be placed in any room where room exhaust is recirculated without high-efficiency particulate air (HEPA) filtration. Once in an AIIR, the patient's facemask may be removed.

When outside of the AIIR, patients should wear facemasks to contain secretions. Limit transport and movement of a patient outside of the AIIR to medically-essential purposes. Implement staffing policies to minimize the number of personnel that must enter the room. Infection prevention recommendations may be updated as information about transmission and the severity of clinical illness caused by MERS becomes available.

For full details of these precautions, visit <http://www.cdc.gov/coronavirus/mers/infection-prevention-control.html>.

Environmental Measures: The approach to environmental cleaning and disinfection for MERS will follow the same principles used for controlling the spread of other infections in healthcare settings.

Personal Protective Equipment: Personnel involved in cleaning and disinfection activities should wear appropriate personal protective equipment. Wear full protective attire as required for contact and airborne precautions (disposable gown, utility gloves, and N95 or higher respirator) and eye protection (goggles or face shield).

Type of Cleaning and Disinfectant Agents: Any EPA-registered hospital detergent-disinfectant currently used by healthcare facilities for environmental sanitation may be used. Follow all manufacturer recommendations for use, including dilution (i.e., concentration), contact time and care in handling.

Cleaning Methods: In-patient rooms housing MERS patients should be cleaned and disinfected daily and at the time of patient transfer or discharge.

- Daily cleaning and disinfection should include horizontal surfaces (i.e., over-bed table, nightstand), surfaces that are frequently touched by patients and healthcare personnel (i.e., bed rails, phone), and lavatory facilities. To facilitate daily cleaning, the area around the patient should be kept free of unnecessary equipment and supplies.
- Terminal cleaning and disinfection following transfer or discharge should include the type of surfaces described above plus visibly soiled vertical surfaces, frequently touched surfaces (i.e., light cords and switches, door knobs), and durable patient equipment (i.e., bed, night stand, over bed table, wheelchair, commode). Curtain dividers also should be changed and laundered as appropriate for the curtain fabric. There is no need to routinely clean and disinfect walls, window drapes, and other vertical surfaces unless visibly soiled; disinfectant fogging for purposes of air disinfection is not recommended.
- Patient care equipment such as mechanical ventilators, pulse oximeters, and blood pressure cuff, should be cleaned and disinfected in accordance with current CDC recommendations, manufacturer's instructions and facility procedures for critical, semi-critical and non-critical surfaces.

Cubicles or rooms in outpatient areas where patients with suspected MERS are evaluated should be cleaned and disinfected before another patient is seen or cared for in that environment. Areas that should be specifically targeted for cleaning include the examination table and horizontal surfaces that may have been touched by the patient or healthcare provider.

Quarantine

Contacts exposed to a confirmed or probable case of MERS should be monitored for 14 days after exposure for symptoms of MERS. Activity restrictions are not necessary.

✓ CASE INVESTIGATION

Reporting

Criteria for Reporting:

Report any illness to public health authorities that meets the following criteria:

- Any human patient with fever and one or more of the following signs of respiratory illness (pneumonia, severe acute respiratory distress, cough, or shortness of breath) and one of the following epidemiologic links:
 - Close contact¹ of a person with confirmed MERS
 - History of travel from countries in or near the Arabian Peninsula¹ within 14 days before symptom onset
 - Close contact¹ with a symptomatic traveler who developed fever and acute respiratory illness (not necessarily pneumonia) within 14 days after traveling from countries in or near the Arabian Peninsula²
 - A member of a cluster of patients with severe acute respiratory illness (i.e., fever and pneumonia requiring hospitalization) of unknown etiology in which MERS is being evaluated
 - A history of being in a healthcare facility (as a patient, worker, or visitor) in the Republic of Korea within 14 days before symptom onset
 - Being in a healthcare facility (as a worker, patient, visitor) within 14 days before symptom onset in a country or territory in or near the Arabian Peninsula² in which recent healthcare-associated cases of MERS have been identified
- Any human patient that has detection of MERS by PCR test validated by CDC in respiratory specimens, stool, serum, Ethylenediamine Tetraacetic Acid (EDTA) blood (plasma), and post-mortem tissue.
- Any human patient that has detection of MERS by Enzyme Immunoassay (EIA) screening test AND either Immunofluorescent Assay (IFA) or microneutralization confirmatory test in a single serum specimen collected >14 days after symptom onset.
- Any human patient that has detection of MERS by EIA screening test AND either IFA or microneutralization confirmatory test in paired sera collected >21 days apart.
- A person whose death certificate lists MERS as a cause of death or a significant condition contributing to death.

- All patients hospitalized in Utah, regardless of state of residence, with suspected MERS are reportable.

Note: Patients suspected of MERS are reportable regardless of hospitalization status. All cases of this condition should be reported within 3 days of identification. Reporting should be on-going and routine.

Table of criteria to determine whether a case should be reported to public health authorities

Criterion	Reporting	
Clinical Evidence		
Fever		N
Pneumonia		O
Severe Acute Respiratory Distress		O
Cough		O
Shortness of breath		O
Death certificate lists MERS infection as a cause of death or a significant condition contributing to death	S	
Laboratory Evidence		
Detection of MERS by PCR test validated by CDC in respiratory specimens, stool, serum, EDTA blood (plasma), or post-mortem tissue	S	
Detection of MERS by EIA screening test AND either IFA or microneutralization confirmatory test in a single serum specimen collected >14 days after symptom onset	S	
Detection of MERS by EIA screening test AND either IFA or microneutralization confirmatory test in paired sera collected >21 days apart	S	
Epidemiological Risk Factors		
Close contact ¹ of a person with confirmed MERS		O
History of travel from countries in or near the Arabian Peninsula ² within 14 before symptom onset		O
Close contact ¹ with a symptomatic traveler who developed fever and acute respiratory illness (not necessarily pneumonia) within 14 days after traveling from countries in or near the Arabian Peninsula ²		O
A member of a cluster of patients with severe acute respiratory illness (i.e., fever and pneumonia requiring hospitalization) of unknown etiology in which MERS is being evaluated		O
Being in a healthcare facility (as a worker, patient, visitor) within 14 days before symptom onset in a country or territory in or near the Arabian Peninsula ² in which recent healthcare-associated cases of MERS have been identified.		O
A history of being in a healthcare facility (as a patient, worker, or visitor) in the Republic of Korea within 14 days before symptom onset.		O

S = These criterion alone are sufficient to report a case

N = All "N" criteria in the same column are Necessary to report a case

O = At least one of these "O" (Optional) criteria in each column – in conjunction with all "N" criteria in the same column – is required to report a case

1. Close contact is defined as:
 - a. being within approximately 6 feet (2 meters) or within the room or care area for a prolonged period of time (i.e., healthcare personnel, household members) while not wearing recommended personal protective equipment (i.e., gowns, gloves, respirator, eye protection— see [Infection Prevention and Control Recommendations](#); or
 - b. having direct contact with infectious secretions (i.e., being coughed on) while not wearing recommended personal protective equipment (i.e., gowns, gloves, respirator, eye protection – see [Infection Prevention and Control Recommendations](#). Data to inform the definition of close contact are limited. Brief interactions, such as walking by a person, are considered low risk and do not constitute close contact.
2. Countries considered in the Arabian Peninsula and neighboring include: Bahrain; Iraq; Iran; Israel, the West Bank, and Gaza; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia; Syria; the United Arab Emirates (UAE); and Yemen.

Case Definition

MERS (Utah, 2015):

Clinical Criteria

An acute illness with fever and one or more symptoms of respiratory illness, including: pneumonia, severe acute respiratory distress, cough, or shortness of breath.

Laboratory Criteria

- Detection of MERS by PCR test validated by CDC in respiratory specimens, stool, serum, EDTA blood (plasma), and post-mortem tissue
- Detection of MERS by EIA screening test AND either IFA or microneutralization confirmatory test in a single serum specimen collected >14 days after symptom onset
- Detection of MERS by EIA screening test AND either IFA or microneutralization confirmatory test in paired sera collected >21 days apart

Epidemiological Criteria

- Close contact¹ of a person with confirmed MERS
- History of travel from countries in or near the Arabian Peninsula² within 14 before symptom onset
- History of being in a healthcare facility (as a patient, worker, or visitor) in the Republic of Korea within 14 days before symptom onset
- Close contact¹ with a symptomatic traveler who developed fever and acute respiratory illness (not necessarily pneumonia) within 14 days after traveling from countries in or near the Arabian Peninsula²
- A member of a cluster of patients with severe acute respiratory illness (i.e., fever and pneumonia requiring hospitalization) of unknown etiology in which MERS is being evaluated
- Being in a healthcare facility (as a worker, patient, visitor) within 14 days before symptom onset in a country or territory in or near the Arabian Peninsula² in which recent healthcare-associated cases of MERS have been identified

Case Classification

A confirmed case meets the laboratory criteria below.

Confirmed: A laboratory-confirmed case.

Probable:

- Fever and one of the following: pneumonia, severe acute respiratory distress, cough, shortness of breath; AND
- Absent or inconclusive laboratory testing, AND
- Close contact¹ of a person with confirmed MERS

Person Under Investigation (PUI):

- Fever and one of the following: pneumonia, severe acute respiratory distress; AND
- One of the following epidemiologic criteria:
 - History of travel from countries in or near the Arabian Peninsula² within 14 days before symptom onset
 - Close contact¹ with a symptomatic traveler who developed fever and acute respiratory illness (not necessarily pneumonia) within 14 days after traveling from countries in or near the Arabian Peninsula²
 - A member of a cluster of patients with severe acute respiratory illness (i.e., fever and pneumonia requiring hospitalization) of unknown etiology in which MERS is being evaluated

OR

- Fever and one of the following: pneumonia, severe acute respiratory distress, cough, shortness of breath; AND
 - Being in a healthcare facility (as a worker, patient, visitor) within 14 days before symptom onset in a country or territory in or near the Arabian Peninsula² in which recent healthcare-associated cases of MERS have been identified

Classification Table I
Criteria for defining a case of MERS

Criterion	Confirmed	Probable	PUI	
<i>Clinical Evidence</i>				
Fever		N	N	N
Pneumonia		O	O	O
Sever Acute Respiratory Distress		O	O	O
Cough		O		O
Shortness of breath		O		O

Laboratory Evidence				
Detection of MERS by PCR test validated by CDC in respiratory specimens, stool, serum, EDTA blood (plasma), or post-mortem tissue	S	A		
Detection of MERS by EIA screening test AND either IFA or microneutralization confirmatory test in a single serum specimen collected >14 days after symptom onset	S	A		
Detection of MERS by EIA screening test AND either IFA or microneutralization confirmatory test in paired sera collected >21 days apart	S	A		
Epidemiological Risk Factors				
Close contact ¹ of a person with confirmed MERS		N		
History of travel from countries in or near the Arabian Peninsula ² within 14 days before symptom onset			O	
Close contact ¹ with a symptomatic traveler who developed fever and acute respiratory illness (not necessarily pneumonia) within 14 days after traveling from countries in or near the Arabian Peninsula ²			O	
A member of a cluster of patients with severe acute respiratory illness (i.e., fever and pneumonia requiring hospitalization) of unknown etiology in which MERS is being evaluated			O	
Being in a healthcare facility (as a worker, patient, or visitor) within 14 days before symptom onset in a country or territory in or near the Arabian Peninsula ² in which recent healthcare-associated cases of MERS have been identified				O
A history of being in a healthcare facility (as a patient, worker, or visitor) in the Republic of Korea within 14 days before symptom onset.			O	

N = All “N” criteria in the same column are Necessary to classify a case.

O = At least one of these “O” (Optional) criteria in the same column – in conjunction with all “N” criteria in the same column – is required to classify a case.

A = Absent or inconclusive laboratory results

1. Close contact is defined as:
 - a. being within approximately 6 feet (2 meters) or within the room or care area for a prolonged period of time (i.e., healthcare personnel, household members) while not wearing recommended personal protective equipment (i.e., gowns, gloves, respirator, eye protection– see [Infection Prevention and Control Recommendations](#); or
 - b. having direct contact with infectious secretions (i.e., being coughed on) while not wearing recommended personal protective equipment (i.e., gowns, gloves, respirator, eye protection – see [Infection Prevention and Control Recommendations](#). Data to inform the definition of close contact are limited. At this time, brief interactions, such as walking by a person, are considered low risk and do not constitute close contact.

2. Countries considered in the Arabian Peninsula and neighboring include: Bahrain; Iraq; Iran; Israel, the West Bank, and Gaza; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia; Syria; the United Arab Emirates (UAE); and Yemen.

Case Investigation Process

Following immediate notification of the UDOH, the LHD may be asked to assist in investigating any recent travelers.

1. Gather the following information and enter it into UT-NEDSS:
 - a. The person's name, age, address, phone number, status (i.e., hospitalized, at home, deceased), and parent/guardian information, if applicable.
 - b. The name and phone number of the healthcare facility or hospital where the individual is or was hospitalized.
 - c. The name and phone number of the attending physician.
 - d. The name and phone number of the infection control official at the hospital.
 - e. If the person was seen by a healthcare provider before hospitalization or seen at more than one hospital, these names and phone numbers.
2. Please complete the MERS case investigation form in UT-NEDSS and include the following information:
 - a. Record information relevant to disease prevention and control.
 - Specifically, focus on the period beginning a minimum of 14 days prior to the case's onset date. Determine the date(s) and geographic area(s) of travel to identify where the patient may have become infected.
 - b. Include any additional comments regarding the case.
 - c. If you have made several attempts to obtain case information but have been unsuccessful (i.e., the case or healthcare provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please fill out the form with as much information as you have gathered. Please note in UT-NEDSS the reason(s) why information could not be obtained.
3. The LHD should work with facility Infection Preventionist (IP) to ensure that appropriate infection control precautions are implemented in the healthcare setting while lab tests are pending.
4. UDOH will report the suspect case to CDC and submit the completed CDC PUI form at end of investigation.
5. Suspect MERS cases ruled out by laboratory testing that are still within the 14 day incubation period should be entered into NEDSS as a 'MERS Monitoring event' and monitored for symptoms until 14 days since exposure have passed.
6. Public health should ensure that non-hospitalized cases of MERS are isolated and restricting activities.
7. Ensure that correct specimens (NP swab and/or OP swab, sputum and serum) are collected. Public health will facilitate the transport of specimens to UPHL.

PUIs should be monitored daily for 14 days after their last exposure (refer to Epidemiologist Risk Factors in table above) using the MERS Monitoring Event - Encounter Form in UT-NEDSS. The LHD should provide instructions to the PUI on daily reporting of temperature, and symptoms to

watch for, as well information on self-isolation and reducing risk to household or other close contacts.

Monitoring information can be provided to the LHD can occur via telephone, email or text messaging. If during the 14-day monitoring time frame the PUI develops fever, cough, shortness of breath, or trouble breathing, the PUI should be told alert the LHD immediately. If the PUI needs medical help, the individual should be instructed to wear a mask when around other people, consult with their healthcare provider and report the MERS risk exposure. If the PUI has an outpatient or emergency department visit, the PUI should be told to put on a mask before entering the facility and to report the potential MERS exposure. Infection control measures should continue until MERS testing is done.

If severe acute respiratory illness develops within the first 14 days following the last exposure, the individual should be reported to UDOH. UDOH will report the case to CDC and complete the CDC PUI form.

If milder symptoms develop during the 14-day monitoring period, call the UDOH Epidemiology at 801-538-6191 to discuss management of the contact with the State Epidemiologist.

Outbreaks

An outbreak is defined as one case of MERS in Utah.

Declaration of an outbreak can be useful to elicit media coverage and support from physicians for improved interventions including: case detection, and reporting. When an outbreak is declared, additional public health resources may need to be allocated to control the situation. Local health departments are urged to consult with the UDOH during outbreaks in order to develop situation-specific control measures and identify additional resources.

Identify Case Contacts

Brief interactions, such as walking by a person, are considered low risk and do not constitute close contact. A close contact is defined as:

- a. being within approximately 6 feet (2 meters) or within the room or care area for a prolonged period of time (i.e., healthcare personnel, household members) while not wearing recommended personal protective equipment (i.e., gowns, gloves, respirator, eye protection – see CDC’s [Infection Prevention and Control Recommendations](#); or
- b. having direct contact with infectious secretions (i.e., being coughed on) while not wearing recommended personal protective equipment (i.e., gowns, gloves, respirator, eye protection – see CDC’s [Infection Prevention and Control Recommendations](#).

Case Contact Management

Any person who has had close contact with a PUI, probable or confirmed MERS case while the person was ill, should be carefully monitored for 14 days for the appearance of respiratory symptoms.

Case contacts should be monitored daily for 14 days using the MERS Monitoring Event - Encounter Form in UT-NEDSS. The LHD should provide instructions to contacts on daily reporting of temperature, and symptoms to watch for. Reporting to the LHD can occur via telephone, email or text messaging. If the contact develops fever, cough, shortness of breath, or trouble breathing, the contact should be told to alert the LHD immediately. If the contact needs medical help, the contact should be instructed to wear a mask when around other people and to consult with their healthcare provider and report the MERS risk exposure. If the contact has an outpatient or emergency department visit, the contact should be told to put on a mask before entering the facility and to report the potential MERS exposure. Infection control measures should continue until MERS testing is done.

If severe acute respiratory illness develops within the first 14 days following exposure to a PUI, the exposed individual should be considered a "Patient Under Investigation" and be reported to UDOH. UDOH will report the case to CDC and complete the CDC PUI form.

If milder symptoms develop during the 14-day period, call the UDOH Epidemiology at 801-538-6191 to discuss management of the contact with the State Epidemiologist.

✓ REFERENCES

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✓ ACKNOWLEDGEMENT

This document was adapted from Washington State Department of Health.

✓ VERSION CONTROL

1.03.15: New Plan

✓ UT-NEDSS Minimum/Required Fields by Tab

Demographic

- First Name
- Last Name
- Parent/Guardian
- Area Code
- Phone Number
- Date of Birth
- Birth Gender
- Race
- Ethnicity
- Street
- City
- County
- Zip
- State

Clinical

- Disease
- Admission Date
- Onset Date
- Date Diagnosed
- Hospitalized
- Date of Death
- Died
- Pregnancy Status
- Discharge Date
- Disease
- Health Facility
- Onset Date
- Treatment
- Treatment Given

Laboratory

- Collection Date
- Lab
- Lab Test Date
- Organism
- Result Value
- Specimen Source
- Test Result

- Test Type
- Sent to state lab?

Epidemiological

- Healthcare Worker
- Group Living
- Occupation
- Place Exposures Type
- Place Name
- Date of Exposure
- Street
- City
- State
- County
- Zip Code
- Imported from
- Risk Factors

Contacts

- Name
- Last Name
- First Name
- Date of Birth
- Disposition
- Disposition Date
- Contact Type
- Phone Number

Reporting

- Date first reported to public health
- Reporter Last Name
- Reporter First Name
- Phone Number
- Reporting Agency Name

Administrative

- Event Name
- Outbreak Name
- LHD Case Status
- Outbreak Associated