

# Middle East Respiratory Syndrome (MERS)

## Traveler Summary

### Key Points

- Middle East respiratory syndrome (MERS) is a viral infection acquired through the inhalation of aerosolized respiratory droplets or ingestion of bodily fluids from infected dromedary camels or through direct contact with contaminated surfaces or bodily fluids from infected persons in health care settings. Predominant occurrence is in Saudi Arabia and neighboring countries.
- Risk is generally low for travelers but may be increased in persons exposed to camels in affected areas or those utilizing health care facilities in affected areas (especially for persons with underlying medical conditions).
- Symptoms are variable and may include mild respiratory illness, fever, cough, and shortness of breath.
- Consequences of infection include pneumonia, multiorgan failure, and death.
- Prevention includes observing respiratory hygiene (cough and sneeze etiquette) and hand hygiene (frequent, thorough handwashing).
- No vaccine or preventive drugs are available.

### Introduction

MERS coronavirus (MERS-CoV) is an acute respiratory illness (caused by a coronavirus) commonly found in Saudi Arabia and neighboring countries. Inhalation of airborne respiratory droplets, ingestion of bodily fluids from infected dromedary camels (single-humped, and 94% of the world's camel population) in Africa and the Middle East, and contact with other cases in health care settings are responsible for almost all human cases of MERS-CoV. Since 2012, over 2000 cases (with a death rate of 36%) have been reported.

### Risk Areas

MERS-CoV is prevalent in Saudi Arabia and common in other countries in the Middle East, such as United Arab Emirates, Jordan, Qatar, Oman, Kuwait, Yemen, Lebanon, and Iran. Since 2012, about 30 cases have been exported from the Arabian Peninsula and identified in Europe (UK, Germany, France, Italy, Greece, Netherlands, Austria, and Turkey), Africa (Tunisia, Algeria, and Egypt), Asia (Malaysia, Philippines, Thailand, and South Korea), and the Americas (US).

### Transmission

MERS-CoV is mainly transmitted via inhalation of aerosolized respiratory droplets or ingestion of bodily fluids from infected camels. In health care settings (with insufficient infection-control practices), MERS-CoV may be transmitted via direct contact with surfaces, equipment, or samples contaminated with respiratory secretions, stool, urine, or serum from infected persons.

### Risk Factors

Risk is generally low for travelers but may be increased in the following cases:

- Travel to areas where cases have been reported
- Direct or indirect contact with camels (including carcasses, bodily fluids, secretions, urine, raw meat, camel droppings) or with persons engaging in animal-related activities (e.g., feeding, cleaning, slaughtering, birthing, milking)
- Contact with persons who have had contact with camels, including those with subclinical infections acquired from camels
- Consumption of unpasteurized camel milk, camel urine, or improperly cooked meat
- Close contact with a person diagnosed with MERS-CoV (especially high risk)
- Inpatient or outpatient visit to health care facilities in an affected area
- Underlying medical condition (chronic diseases or immunosuppression)
- Elderly persons
- Women who are pregnant
- Smokers

### Symptoms

Symptoms commonly develop within 5 days (range: 2 to 13 days) after infection and include mild respiratory illness (especially in young healthy persons), fever, cough, and shortness of breath. Gastrointestinal symptoms occur in about 30% of cases.

## Consequences of Infection

MERS-CoV infection may progress rapidly to pneumonia (present in about half of the cases), difficulty breathing, sudden drop in blood pressure, and multiorgan failure. Death occurs in about 35% to 40% of symptomatic cases. Older individuals (over the age of 50 years) and persons with underlying health conditions (e.g., diabetes or cardiovascular disease) have higher death rates.

## Need for Medical Assistance

Travelers who have been exposed to or who develop symptoms of MERS-CoV upon return from the Arabian Peninsula or neighboring countries should observe respiratory hygiene (cough and sneeze etiquette), hand hygiene (frequent, thorough handwashing), and social distancing (maintaining a distance of 1 m [3 ft] from ill-appearing persons), wear a face mask, and seek immediate medical attention, informing the provider of his or her travel history.

## Prevention

### Nonvaccine

Travelers going to affected countries, especially older individuals and persons with underlying health conditions, should:

- Observe respiratory hygiene (cough and sneeze etiquette), hand hygiene (frequent, thorough handwashing), and social distancing (maintaining a distance of 1 m [3 ft] from ill-appearing persons).
- Avoid physical contact with wild or farm animals and camels in affected areas of the Middle East.
- Avoid consumption of camel products (e.g., unpasteurized milk, undercooked meat, and urine).
- Be aware that the presence of infection control standards sufficient to protect travelers presenting to hospitals with unrelated illnesses cannot be assumed.

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