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## What is MERS?

Middle East Respiratory Syndrome (MERS) is a viral respiratory illness caused by a coronavirus known as Middle East Respiratory Syndrome Coronavirus (MERS-CoV). MERS typically causes a severe respiratory illness that is often fatal. MERS was first discovered in 2012 in Saudi Arabia. MERS-CoV is not the same as the SARS-associated coronaviruses SARS-CoV, which causes severe acute respiratory syndrome (SARS), or SARS-CoV-2, which causes coronavirus disease 2019 (COVID-19). All three viruses are similar and can cause severe respiratory disease. However, unlike SARS-CoV and SARS-CoV-2, MERS-CoV does NOT appear to spread readily in communities. This is a very important difference between these viruses.

## Who gets MERS?

To date, all individuals who have been diagnosed with MERS were linked to travel to or lived in countries in and near the Arabian Peninsula. The Arabian Peninsula includes Bahrain, Iraq, Iran, Israel, the West Bank and Gaza, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, the United Arab Emirates, and Yemen. Only two people with MERS have been identified in the United States, both in 2014. Both lived and worked in Saudi Arabia, where they likely became infected.

Certain people may be at higher risk for developing severe disease, including those with weakened immune systems, older people, and people with chronic diseases, such as kidney disease, diabetes, cancer, and lung disease.

## How is MERS spread?

While the exact mode of transmission is not clear, MERS-CoV is felt to be spread by close contact—by respiratory droplets from an infected person to another person. Examples of how MERS can spread include a family member caring for another who is infected with MERS or a healthcare provider caring for a patient infected with MERS. Coughing and sneezing by an infected person can produce respiratory droplets that can likely infect others. Some people with MERS might become infected after having contact with infected camels.

## What are the symptoms of MERS?

Most people with MERS develop a severe respiratory illness with fever, cough, and shortness of breath. Many patients will need mechanical ventilation because of the severity of the illness. Complications of MERS include pneumonia, acute respiratory distress syndrome, and kidney failure. Other symptoms and/or signs reported with MERS include gastrointestinal manifestations (diarrhea, nausea, vomiting), muscle aches, sore throat, coughing up blood (hemoptysis), and inflammation of the sac that contains the heart (pericarditis).

Some people with MERS have had mild, cold-like symptoms or no symptoms at all.

## How soon after exposure do symptoms occur?

Symptoms usually appear 5 or 6 days after exposure, with a range of 2-14 days.

## How is MERS diagnosed?

MERS is diagnosed based on the patient's history, epidemiological data, symptoms and signs, imaging findings, and laboratory data. Patients may present with an acute respiratory illness, fever, and chest imaging that shows lung disease (e.g., pneumonia or acute respiratory distress syndrome). Patients may also have an epidemiological link to a case of MERS or recent travel to an area where MERS is circulating.

Clinical specimens are obtained for PCR testing for the MERS Coronavirus. Upper respiratory tract specimens, such as throat swabs, can be collected. Specimens from the lower respiratory tract (the lungs and pleura), such as sputa, lung washings, and aspirates of secretions, may provide a better diagnostic yield in identifying MERS CoV. Serologic testing looking at changes in antibody titers to MERS-CoV in a patient's blood may be useful. Currently, [CDC recommends](#) that upper respiratory, lower respiratory, and serologic specimens be obtained when evaluating a patient for MERS. When collecting specimens from a patient suspected of having MERS, it is very important to use proper infection control measures and personal protective equipment.

## What is the treatment for MERS?

Currently, there is no specific antiviral treatment for MERS. Treatment consists of supportive care and relief of symptoms. Patients with severe respiratory disease may require mechanical ventilation or even extracorporeal membrane oxygenation (ECMO). The current mortality rate from MERS is about 30-40%.

## How can MERS be prevented?

Unlike COVID-19, a vaccine to prevent MERS is not currently available. People should follow these tips to help prevent respiratory illnesses of any kind:

- Wash your hands often with soap and water for at least 20 seconds, and help young children do the same. If soap and water are not available, use an alcohol-based hand sanitizer. Wash your hands especially after coughing and sneezing, before and after caring for an ill person and before preparing foods and before eating.
- Cover your nose and mouth with a tissue when you cough or sneeze and then throw the tissue in the trash.
- Avoid touching your eyes, nose, or mouth with unwashed hands.
- Avoid close contact (such as kissing, sharing cups, or sharing eating utensils) with people who are sick.
- Clean and disinfect frequently touched surfaces and objects, such as toys and doorknobs, especially if someone is sick.
- Stay home when you are sick.

- Wash hands after animal contact and after visiting farms, markets, barns, petting zoos, and agricultural fairs.
- Avoid contact with animals who are sick.
- Before travel outside of the United States, please consult the following:
  - [CDC's Travel Health Notices webpage](#), and
  - The [U.S. Department of State Travel Advisories webpage](#)
- The [World Health Organization \(WHO\)](#) recommends the following preventive measures:
  - Anyone visiting places where camels are present should practice good general hygiene by washing hands before and after contact with these animals.
  - Avoid drinking raw camel milk or camel urine or eating camel meat that has not been properly cooked
  - People at higher risk of severe MERS illness should avoid close contact with camels
- When caring for a person with MERS, wear protective clothing and follow [infection control recommendations](#).

## How can I learn more about MERS?

- If you have concerns about MERS, contact your healthcare provider.
- Call your local health department. A directory of local health departments is located at the [VDH Local Health Districts page](#).
- Visit the [CDC MERS website](#).

## Translations

[MERS Fact Sheet in Arabic](#)

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