Home care for patients with Middle East respiratory syndrome coronavirus (MERS-CoV) infection presenting with mild symptoms and management of contacts

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Preamble

WHO has developed this rapid advice note to meet the urgent need for recommendations on the safe home care for patients with Middle East respiratory syndrome coronavirus (MERS-CoV) infection presenting with mild symptoms and public health measures related to management of asymptomatic contacts. The document is informed by evidence-based guidelines published by WHO, including *Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care: WHO interim guidance (1)*, and a review of the current evidence on MERS-CoV infection.

This document supersedes the original version, which was published in 2013. The updated recommendations have been reviewed by members of the WHO Global Infection Prevention and Control Network (GIPC Network) and other experts (see Acknowledgements).

These recommendations reflect current understanding of MERS-CoV infection related to infection prevention and control (IPC) and public health measures. Specific WHO guidance on clinical management, infection control in health care, laboratory diagnostics, and surveillance has already been published *(2–9)*. This document is complementary to WHO interim guidance on the management of asymptomatic persons who are positive for MERS-CoV in reverse transcriptase polymerase chain reaction (RT-PCR) assays *(2)*.

This rapid advice is intended for public health and infection prevention and control (IPC) professionals, health care managers, and health care workers. WHO continues to monitor the situation closely for any new data that may warrant revision of the contents of this rapid advice note or other documents. Should any factors change, WHO will issue a further update. Otherwise, this document will expire two years after the date of publication. Links are given here to additional sources and evidence. If you have further questions, send an email message to outbreak@who.int with "MERS home care question" in the subject line.

Background

Since 2012, approximately 20% of laboratory-confirmed MERS-CoV cases[1] have been classified as asymptomatic or having mild disease at the time of testing. These RT-PCR-positive persons with mild or no symptoms are usually identified when conducting laboratory screening tests as part of active case monitoring or contact investigations.[3] However, it is sometimes difficult to classify a case as "asymptomatic" because although the person may not have any symptoms at the time of testing, he or she may develop illness during the course of infection.

To date, several clusters[1] and outbreaks of human infection with MERS-CoV have been identified, mainly in health care settings *(10–17)*. Human-to-human transmission outside health care settings has occurred, but has been rare *(18)*. The investigation into clusters of MERS-CoV infection suggests that human-to-human transmission of the virus seems to have occurred mostly in the circumstances of unprotected close contact[1] with severely ill patients in health care or (less frequently) household settings *(18)*.

Evidence of transmission of the virus from non-severe cases is limited, but the role of such cases in transmission remains uncertain, and the role of surface contamination in health care settings has been well documented during the MERS outbreak in the Republic of Korea *(17–19)*.

Home care for patients with MERS-CoV infection presenting with mild symptoms

In view of the currently limited knowledge of the disease and its transmission, WHO recommends that confirmed *(2)* symptomatic cases of the MERS-CoV infection be isolated and monitored in a hospital setting. This would ensure both safety and quality of health care (in case patients' symptoms worsen) and public health security.

However, for several possible reasons, including situations when inpatient care is unavailable or unsafe (i.e. limited capacity and resources unable to meet demand for health care services), or in a case of informed refusal of hospitalization, alternative settings[2] for health care provision may need to be considered.

[1] Definition is available in *Surveillance for human infection with Middle East respiratory syndrome coronavirus (MERS-CoV): interim guidance* (9).
[2] These may include home settings and community isolation facilities. The latter are not covered in this document.

If such a reason exists, patients with mild symptoms[3] and without underlying conditions such as heart disease, renal failure, or immunocompromising conditions that place him/her at increased risk of developing complications may be cared for in the home environment. The same principle of care in the home environment applies to symptomatic patients no longer requiring hospitalization. This decision requires careful clinical judgment and should be informed by assessing the safety of the patient's home environment[4].

Because of the possibility of rapid progression to the acute respiratory distress syndrome (ARDS) and other severe, life-threatening complications, even otherwise healthy, contacts who are symptomatic or probable cases should be placed under close medical observation when receiving care at home.

A communication link with a health care provider should be established for the full duration of the observation period. Health care personnel should be involved in reviewing the current health status for the progression of symptoms[4] of contacts by phone and, ideally and if feasible, by face-to-face visits on a regular (e.g. daily) basis, performing specific diagnostic tests as necessary.

In addition, the patients and the household members should be educated on personal hygiene, basic infection prevention and control measures, on how to care for the infected member of the family as safely as possible, and to prevent spread of infection to household contacts. The patient and family should be provided with ongoing support, education and monitoring. They should adhere to the following recommendations.

- Place the patient in a well ventilated single room.
- Limit contact with the ill person as much as possible;[5] this includes household members and visitors.
- Household members should stay in a different room or, if that is not possible, maintain a distance of at least 1 m from the ill person (e.g. sleep in a separate bed).
- Ensure that shared spaces (e.g. kitchen, bathroom) are well ventilated (e.g. keep windows open).
- The caregiver should wear a medical mask fitted tightly to the face when in the same room with the ill person. Masks should not be touched or handled during use. If the mask gets wet or dirty with secretions, it must be changed immediately. Discard the mask after use and perform hand hygiene after removal of the mask.
- Ensure that anyone who is at increased risk of severe disease does not care for ill persons or come into close contact with them. The groups currently considered to be at increased risk for MERS-CoV infection[6] include: those with chronic heart, lung or kidney conditions; those with diabetes, immunosuppression or blood disease; and adults over 60 years of age. If contact with ill persons cannot be avoided by those with an increased risk of severe disease, alternative housing should be considered.
- Perform hand hygiene *(20)* following all contact with ill persons or their immediate environment. Hand hygiene should also be performed before and after preparing food, before eating, after using the toilet, and whenever hands look dirty. If hands are not visibly soiled, alcohol-based hand rub can be used. Perform hand hygiene using soap and water when hands are visibly soiled. Address safety concerns (e.g. accidental ingestion and fire hazards) before recommending alcohol-based hand rubs for household use.
- Assistance for ill persons to perform regular hand hygiene may be provided, as needed. This can be done using soap and water or alcohol-based hand rub.
- When using soap and water, disposable paper towels to dry hands is desirable. If not available, use dedicated cloth towels and replace them when they become wet.
- Respiratory hygiene should be practiced by all, especially ill persons, at all times. Respiratory hygiene refers to covering the mouth and nose during coughing or sneezing using medical masks, cloth masks, tissues or flexed elbow, followed by hand hygiene.
- Discard materials used to cover the mouth or nose, or clean them appropriately after use (e.g. wash handkerchiefs using regular soap or detergent and water).
- Avoid direct contact with body fluids, particularly oral or respiratory secretions, and stool. Use disposable gloves to provide oral or respiratory care and when handling stool, urine and waste, if possible. Perform hand hygiene after removing gloves.
- Gloves, tissues, masks and other waste generated by ill persons or in the care of ill persons should be placed in a lined container in the ill person's room before disposal with other household waste.[7]
- Avoid other types of possible exposure to ill persons or contaminated items in their immediate environment (e.g. avoid sharing toothbrushes, cigarettes, eating utensils, dishes, drinks, towels, washcloths or bed linen). Eating utensils and dishes should be cleaned with either soap or detergent and water after use and may be re-used instead of being discarded.
- Clean and disinfect frequently touched surfaces such as bedside tables, bedframes, and other bedroom furniture daily with regular household disinfectant containing cleaners or a diluted bleach[8] solution (1 part bleach to 99 parts water).
- Clean and disinfect bathroom and toilet surfaces at least once daily with regular household disinfectant containing cleaners or a diluted bleach[9] solution (1 part bleach to 99 parts water).
- Clean clothes, bedclothes, bath and hand towels, etc. of ill persons using regular laundry soap and water or machine wash at 60–90 °C with common household

[3] Low-grade fever, cough, malaise, rhinorrhoea, sore throat without any warning signs, such as shortness of breath or difficulty in breathing, increased respiratory (i.e. sputum or haemoptysis), gastro-intestinal symptoms such as nausea, vomiting, and/or diarrhoea and without changes in mental status (i.e. confusion, lethargy).

[4] A sample checklist is available on page 60 of *Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care: interim guidance (1).*

[5] An exception may be considered for a breastfeeding mother. Considering the benefits of breastfeeding and insignificant role of the breast milk in transmission of other respiratory viruses, the mother could continue breastfeeding. The mother should wear a medical mask when she is near her baby and perform careful hand hygiene before close contact with the baby. She would need also to apply the other hygienic measures described in this document.

[6] Currently there is no evidence to suggest increased risk for the MERS-CoV infection for pregnant women, but it may be prudent to prevent them from contact with the ill person.

[7] Countries may consider measures to ensure that the waste is disposed at a sanitary landfill, and not at an unmonitored open dump, wherever possible. Additional measures may be needed to prevent unhygienic reuse of gloves, masks, syringes and other items, and other hazards occurring from scavenging at waste disposal sites.

[8] Most household bleach solutions contain 5% sodium hypochlorite.

detergent, and dry thoroughly. Place contaminated linen into a laundry bag. Do not shake soiled laundry and avoid direct contact of the skin and clothes with the contaminated materials.

- Use disposable gloves and protective clothing (e.g. plastic aprons) when cleaning or handling surfaces, clothing or linen soiled with body fluids. Perform hand hygiene after removing gloves.
- Persons with symptoms should remain at home until their symptoms are resolved based on either clinical and/or laboratory findings (two negative RT-PCR tests at least 24 hours apart).
- All household members should be considered contacts and their health should be monitored as described below.
- If a household member develops symptoms of acute respiratory infection, including fever, cough, sore throat and difficult breathing, follow public health recommendations below.

Management of contacts

In view of the current evidence of limited human-to-human transmission of MERS-CoV outside hospital settings, persons (including health care workers) who may have been exposed to individuals with confirmed or probable MERS-CoV infection should be advised to monitor their health for 14 days from the last day of possible contact and seek immediate medical attention if they develop any symptoms, particularly fever, respiratory symptoms such as coughing or shortness of breath, or diarrhoea.

Human-to-human transmission of MERS-CoV has been amplified in health care settings, as has been seen in large health care associated outbreaks in Jeddah and Riyadh in 2014 and smaller outbreaks throughout Saudi Arabia, the United Arab Emirates and the Republic of Korea. During such outbreaks, WHO recommends that, if feasible, all contacts of laboratory confirmed cases, especially health care worker contacts and inpatients sharing rooms/wards with confirmed cases, regardless of the development of symptoms, be tested for MERS-CoV using PCR *(9)*.

A communication link with a health care provider should be established for the duration of the observation period. Health care personnel should be involved in reviewing the current health status of the contacts by phone and, ideally and if feasible, by face-to-face visits on a regular (e.g. daily) basis, performing specific diagnostic tests as necessary.

The healthcare provider should give advance instructions on where to seek care when a contact becomes ill, what should be the most appropriate mode of transportation, when and where to enter the designated health care facility, and what infection control precautions should be followed.

- Notify the receiving medical facility that a symptomatic contact will be coming to their facility.
- While traveling to seek care, the ill person should wear a medical mask.
- Avoid public transportation to the health care facility, if possible; call an ambulance or transport the ill person with a private vehicle and open the windows of the vehicle if possible.
- The ill contact should be advised to always perform respiratory hygiene and hand hygiene; stand or sit as far away from others as possible (at least 1 m), when in transit and when in the health care facility.
- Appropriate hand hygiene should be employed by the ill contact and caregivers.
- Any surfaces that become soiled with respiratory secretions or body fluids during transport should be cleaned with regular household disinfectant cleaners or a diluted bleach solution, whichever is most appropriate.

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- Abdullah Assiri, Director-General, Infection Control, Ministry of Health, Saudi Arabia
- Michael Bell, Deputy Director, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, GA, USA
- Nan Cleator, National Practice Consultant, Practice Quality & Risk Team, Victorian Order of Nurses Canada and member of the Infection Prevention and Control Expert Working Group, Public Health Agency of Canada, Ottawa, Canada
- Barry Cookson, Division of Infection and Immunity, University College, London, England
- John M. Conly, Departments of Medicine, Microbiology, Immunology and Infectious Diseases, Calvin, Phoebe and Joan Snyder Institute for Chronic Diseases, Faculty of Medicine, University of Calgary, Calgary, Canada
- Katherine Defalco, Nurse Consultant, Centre for Communicable Diseases and Infection Control, Public Health Agency of Canada, Ottawa, Canada
- Brenda Dyck, Program Director, Infection Prevention and Control Program, Winnipeg Regional Health Authority, Manitoba, Canada and member of the Infection Prevention and Control Expert Working Group, Public Health Agency of Canada, Ottawa, Canada
- Joanne Embree, Head, Department of Medical Microbiology and Infectious Diseases; Professor, Department of Pediatrics and Child Health, Department of Medical Microbiology and Infectious Diseases, University of Manitoba, Manitoba, Canada and member of the Infection Prevention and Control Expert Working Group, Public Health Agency of Canada, Ottawa, Canada
- Elaine Furukawa, Director of Training, Infection Control, Ministry of Health, Saudi Arabia
- B. Lynn Johnston, Hospital Epidemiologist, Queen Elizabeth II Health Sciences Centre, Halifax, Nova Scotia and Chair of the Infection Prevention and Control Expert Working Group, Public Health Agency of Canada, Ottawa, Canada
- Ahmad Mohammad Hakawi, Director-General, General Directorate of Infectious Diseases Control, Deputyship of Public Health, Ministry of Health, Saudi Arabia
- Jeffrey Hageman, Deputy Chief, Prevention and Response Branch, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, GA, USA
- Bonnie Henry, Medical Director, CD Prevention and Control Services and Public Health Emergency Services, BC Centre for Disease Control and Associate Professor, School of Population and Public Health, University of British Columbia, Vancouver, Canada
- Benedikt Huttner, Infection Control Program and WHO Collaborating Center on Patient Safety, University of Geneva Hospitals and Faculty of Medicine, Geneva, Switzerland

- M Mushtuq Husain, Principal Scientific Officer and Head, Department of Medical Social Science, Institute of Epidemiology, Disease Control and Research (IEDCR), Dhaka, Bangladesh
- David T. Kuhar, Medical Officer, Division of Healthcare Quality Promotion, Centers for Disease Control and Prevention, Atlanta, GA, USA
- Anna Liubimova, Professor, North-Western State Medical University, St Petersburg, Russian Federation
- Ziad A Memish, Deputy Minister for Public Health, Ministry of Health, Riyadh, Saudi Arabia
- Shaheen Mehtar, Chair, Infection Control Africa Network
- Nico T. Mutters, Specialist for Infection Control and Environmental Health and Specialist for Clinical Microbiology, Scientific Coordinator EUCIC
- Laurie O'Neil, Nurse Consultant, Centre for Communicable Diseases and Infection Control, Public Health Agency of Canada, Ottawa, Canada
- Fernando Otaiza-O'Ryan, Control de infecciones, Departamento de Calidad y Seguridad de la Atención, Subsecretaría de Redes Asistenciales, Ministerio de Salud, Chile
- Maria Clara Padoveze, School of Nursing, University of São Paulo, Brazil
- Filomena Pietrangelo, Manager-Prevention Sector, Occupational Health and Safety, McGill University Health Centre, Quebec, Canada and member of the Infection Prevention and Control Expert Working Group, Public Health Agency of Canada, Ottawa, Canada
- Natalia Pshenichnaya, Professor, Rostov State Medical University, Rostov, Russian Federation
- Chandrakant Ruparelia, Senior Technical Advisor, HIV/AIDS and infectious Diseases Unit, Technical Leadership Office, Jhpiego, Maryland, USA
- Nandini Shetty, Consultant Microbiologist, Reference Microbiology Services, Colindale, Health Protection Agency, England
- Jane Stafford, Consultant – Infection Prevention and Control, Hospital Services Branch, Department of Health, Government of New Brunswick, New Brunswick, Canada and member of the Infection Prevention and Control Expert Working Group, Public Health Agency of Canada, Ottawa, Canada
- Geoff Taylor, Medical Director, University of Alberta Hospital/Stollery Children's Hospital Infection Control Unit, Professor, Division of Infectious Diseases, University of Alberta, and member of the Infection Prevention and Control Expert Working Group, Public Health Agency of Canada, Ottawa, Canada
- Cathie Walker, Director of Health Protection, Elgin St. Thomas Health Unit, Ontario, Canada and member of the Infection Prevention and Control Expert Working Group, Public Health Agency of Canada, Ottawa, Canada
- Thomas Weaver, Director, Professional Practice, APIC and the Association for Professionals in Infection Control and Epidemiology
- Robert D. Weinman, National Medical Advisor, Public Service Occupational Health Program, Health Canada
- Leo Yee-Sin, National Centre for Infectious Diseases (NCID), Singapore
- WHO Staff: Janet Diaz, Team Lead, Clinical Management, WHO Health Emergencies Programme; Ana Paula Coutinho Rehse, Technical Officer, Infection, Prevention and Control, WHO Health Emergencies Programme, Regional Office for Europe; Dina Pfeifer, Medical Officer, Clinical Management, WHO Health Emergencies Programme, Regional Office for Europe; Anthony Twyman, IPC Consultant, Infection Prevention and Control Global Unit, Service Delivery and Safety, HIS, WHO; Maria Van Kerkhove, MERS-CoV Technical Lead, WHO Health Emergencies Programme

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