NEWLY EMERGING DISEASE : "MERS" AND ITS PREVENTION

Mr. Keshava Reddy,
Asst. Professor, Rama College of Nursing, Kanpur

Background

After Swine flu and Ebola, the Middle East Respiratory Syndrome Corona Virus (MERS-CoV) is the new global threat that has put many Asian countries, including India, on high alert[1]. It is respiratory illness caused by a virus Middle East Respiratory Syndrome Coronavirus (MERS-CoV) which affects the respiratory system. Most of the patients develop severe acute respiratory illness with symptoms of fever, cough and shortness of breath[4]. About 3-4 out of every 10 patients reported with MERS have died. Preventing transmission of MERS-CoV in hospitals requires the application of infection control procedures and protocols including environmental and engineering controls, administrative controls, safer work practices, personal protective equipment (PPE) and preventive measures by general public.

What is MERS?

Middle East Respiratory Syndrome (MERS) is a respiratory illness caused by a virus called Middle East Respiratory Syndrome Coronavirus, or MERS-CoV, which was first reported in 2012 in Saudi Arabia.

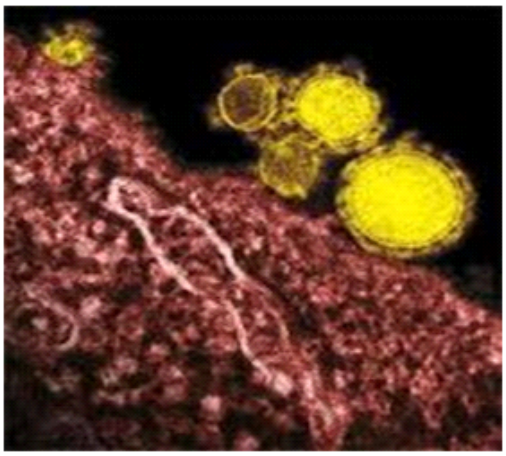

Fig.: MERS CoV

Source of MERS-CoV

Source of virus is camel and people who are infected with the contact of camels. Initially it was found in Arab country.

Symptoms of MERS

Infected persons exhibit severe acute respiratory illness with the early symptoms of chills, body aches, sore throat, diarrhea, headache, nausea and runny nose, followed by cough, fever, shortness of breath[4].

Mode of spread

Virus spread from respiratory secretions from infected person through coughing.

People who are travelers from Arab countries, who had close contact with a confirmed cases of MERS, health care personnel's without following precautions, care givers and who are in contact with camels are at risk.

Risk group

Patients with diabetes, chronic lung disease, heart condition, elderly persons, and immunosuppressive patients with cancer are more susceptible to get MERS – CoV infections.

Confirmed cases and deaths

As per WHO report 1236 cases have been confirmed with 445 deaths and fatality rate was 36%.

Protection measures according to CDC

CDC advises to protect people themselves from respiratory illnesses by taking following preventive actions:

Wash hands often with soap and water for 20 seconds or use an alcohol-based hand sanitizer.

Cover nose and mouth while coughing or sneezing.

Avoid touching your eyes, nose and mouth with unwashed hands.

Avoid personal contact, such as kissing or sharing cups or eating utensils, with sick people.

Clean and disinfect frequently touched surfaces and objects by infected person.

While caring for or living with a person confirmed with or being evaluated for MERS, follow CDC Guidelines for preventing MERS-CoV from Spreading in Homes and Communities.

Vaccine

Currently there is no vaccine to protect against MERS. The U.S. National Institutes of Health is exploring the possibility of developing vaccine.

Treatments

There is no specific antiviral treatment. Individuals can only take symptomatic treatment. For severe cases, currently treatment is given to support the functions of vital organ.

Recommendations for health care professionals to prevent spread of infection

1. Minimize Chance for Exposures

Before Arrival of Patient

- Instruct patients and persons who accompany them to call or inform HCP when scheduling appointments if they have symptoms of any respiratory infection (e.g., cough, runny nose, fever) and to take appropriate preventive actions (e.g., wear a facemask upon entry to contain cough, follow triage procedure).

Upon Arrival and During the Visit

- Take steps to ensure all persons with symptoms of a respiratory infection, adhere to respiratory hygiene hand hygiene and triage procedures throughout the duration of the visit.
- Instruct how to use facemasks or tissues to cover nose and mouth while coughing or sneezing and to dispose of tissues and contaminated items in waste receptacles and also when to perform hand hygiene.
- Provide adequate space and encourage persons with respiratory infections to sit as far away from others as possible.
- Immediately isolate those identified as at risk for having MERS-CoV infection
- Implement Respiratory Hygiene and Cough Etiquette (i.e., placing a facemask over the patient's nose and mouth)

remove PPE: first gloves; then goggles or face shield; then gown; then respirator.

Remove PPE at doorway then remove respirator after leaving patient's room.

Give careful attention to prevent contamination of clothing and skin during the process of removing PPE.

Perform hand hygiene immediately before putting on and after removing all PPE.

Patient Placement

Place a patient who might be infected with MERS-CoV in an Airborne Infection Isolation Room (AIIR) that constructed and maintained in accordance with current guidelines.

- o AIIRs are single patient rooms with a minimum of 6 air changes per hour (12 air changes per hour are recommended for new construction or renovation).
- o Air from these rooms should be exhausted directly to the outside or be filtered through a high-efficiency particulate air (HEPA) filter before recirculation.
- o Room doors should be kept closed after entering or leaving the room and minimize entry and exit.
- o Maintain proper negative-pressure function of these rooms.
- o If an AIIR is not available, the patient should be transferred as soon as is feasible to a facility where an AIIR is available.
- o For pending transfer cases, place a facemask on the patient and isolate in an examination room with the door closed.

and isolate those at risk for MERS-CoV infection in an Airborne Infection Isolation Room (AIIR)

- Provide supplies to perform hand hygiene to all patients upon arrival to facility at entrances of facility, waiting rooms, at patient check-in and throughout the entire duration of the visit to the healthcare setting[2].

2. Ensure Adherence to Standard, Contact and Airborne Precautions by HCP (Health Care Practitioners)

Health care personnels should adhere to following standards with suspected cases of MERS-CoV

Hand Hygiene

- Perform hand hygiene before and after contact of all patients with potentially infectious material and before putting on and removal of PPE, including gloves.
- Performe hand washing with soap and water or using alcohol-based hand rubs.
- Ensure that all facilities and supplies for performing hand hygiene are readily available to all personnel.

Personal Protective Equipment

Workers must receive training on and demonstrate an understanding of when to use, how to use and dispose PPE. Reusable PPE must be properly cleaned, decontaminated and maintained after and between uses.

Gloves

Put on clean, non-sterile gloves before entry into the patient room or care area.

Remove and discard gloves immediately after leaving the patient area.

Gowns

Wear a clean disposable gown before entering into the patient area, then remove and discard the gown immediately after leaving the patient room or care area.

Respiratory Protection

Use a respirator that is NIOSH-certified disposable N95 filtering facepiece respirator before entry to the patient area.

Remove respirator after removing other personal protective equipments.

Reusable respirators must be cleaned and disinfected according to manufacturer's instructions prior to re-use.

Disposable respirators should be removed and discarded after leaving the patient area.

Eye Protection

Use a disposable face shield for eye protection upon entry to the patient room or care area.

Remove and discard eye protection immediately after leaving the patient's room or care area.

Reusable eye protection (e.g., goggles) must be cleaned and disinfected according to manufacturer's reprocessing instructions.

Using More than one Kind of Personal Protective Equipment (PPE)

Use different types of PPE together to prevent multiple routes of transmission.

Follow the sequence while wearing: first gown; then respirator; then goggles or face shield; then gloves.

Following are the sequence to

the health care setup.

Exposed visitors (e.g., contact with symptomatic MERS-CoV patient prior to admission) should be advised to report any signs and symptoms of acute illness to their health care provider's for a period of at least 14 days after the last known exposure to the sick patient.

4. Implement Engineering Controls

Install and maintain appropriate air handling system with directions of filtration and air exchange rate.

Provide closed suction system for incubated patient.

Ensure proper engineering measures to reduce exposure to other patient from infected persons.

Provide physical barriers and curtains for patients shared areas.

5. Monitor and Manage Ill and Exposed Healthcare Personnel

Monitor health care givers for 14 days after last known case and report immediately for any signs and symptoms of respiratory illness**.**

Suspected care givers with respiratory symptoms should stop their works immediately, report to the concerned person and ensure proper medical treatment.

Health care personnel's should be aware of sick leave policies and have access to medical consultation as well as treatment.

6. Train and Educate Healthcare Personnel

Provide education as well as training to all care givers regarding prevention of infection using respiratory protection device.

Provide training on proper use and removal of PPE.

Attention to prevent contamination of skin, cloth and environment while removing PPE.

7. Implement Environmental Infection Control

Ensure proper management of medical waste, food service and laundry.

Disinfect frequently touched surfaces and patient areas with standard disinfection procedure.

8. Establish Reporting within Hospitals and to Public Health Authorities

Implement those policies that will alert key health professionals as well as, epidemiology, occupational health , clinical laboratory about suspected MARS patients.

Notify the suspected and confirmed cases to concerned health authorities.

Only authorized and responsible person has to communicate with public health officials and dissiminate the information to other health professionals.

Conclusion

MERS is an acute respiratory infection spread from infected camels and patients with risk of spreading from travelers from

Arab countries needs special attention and preparedness at national and International level to combat the disease and health care personnel need to be prepared and train on prevention of disease with personal protective measures with adequate knowledge.

Reference

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