

MERS-COV Standard Operating Procedure

ACTIONS:	Initial Assessment in A&E	Responsible Individual
Case Definition: 1, 2 or 3 Countries include Bahrain Jordan Iraq Iran Kingdom of Saudi Arabia Kuwait Oman Qatar United Arab Emirates Yemen South Korea	1. Any person with severe acute respiratory infection requiring admission to hospital with: - Symptoms of fever >38°C (or history of fever) and cough plus evidence of pulmonary parenchymal disease (e.g. clinical or radiological evidence of pneumonia or Acute Respiratory Distress Syndrome (ARDS)) AND AT LEAST ONE OF: - History of travel to, or residence in an area where infection with MERS-CoV could have been acquired in the 14 days before symptom onset (incubation period) OR - Close face to face contact (>15minutes) during the 14 days before onset of illness with a confirmed case of MERS-CoV infection while the case was symptomatic (CONTACT DEFINITION includes health or social care worker who provided direct clinical or personal care or examination of a symptomatic confirmed case of MERS-CoV, or was within 2metres of a symptomatic case or has had direct contact caring, regardless of use of PPE OR - An ICU healthcare worker caring for patients with severe acute respiratory infection, regardless of travel or PPE use. OR - Part of a cluster of two or more epidemiologically linked cases within a two-week period requiring ICU admission, regardless of history or travel. 2. Acute influenza-like-illness symptoms (sudden onset of respiratory infection with measured fever of $\geq 38\text{ }^{\circ}\text{C}$ and cough) PLUS - contact with camels, camel environments or consumption of camel products (e.g. raw camel milk, camel urine). - or contact with a hospital in an affected country in the 14 days prior to onset. 3. Acute respiratory illness (ARI) plus contact with a confirmed case of MERS-CoV in the 14 days prior to onset. (ARI = sudden onset of respiratory infection with at least one of: shortness of breath, cough or sore throat).	Senior Clinician in conjunction with Duty Consultant Microbiologist

ACTIONS:	Patient management - suspected/confirmed MERS-CoV	Responsible Individual
Immediate Isolation DOOR CLOSED	WHERE: A&E Assessment: CRH – Minors HRI – Cubicle 5 WARD Admission: CRH – Respiratory ward – 5's - into negative pressure HRI – TRANSFER TO CRH Respiratory ward Paediatrics: CRH paediatric ward - 3's - into negative pressure (27 & 34) ITU: negative-pressure where available, side room with door closed if not. ISOLATION STANDARDS TO BE FOLLOWED - Isolation room door closed at all times with HIGH LEVEL Isolation – 2 signage displayed. - Check the room pressure – this MUST be in NEGATIVE pressure - If negative pressure isolation not available then a single room with en-suite facilities must be used. - In A&E/ICU a dedicated commode or bedpan to be provided - Facilities need to be available for safe removal of PPE outside the isolation room to prevent cross-contamination of other areas: preferably a dedicated ante-room otherwise a large trolley. - Only essential staff should enter the isolation room and single use equipment where possible (see the following sections for details) - Timed record of entry and exit sheet to be made available	Staff in charge
Designate Staff	Restrict the number of staff in contact with the patient where possible. Identify a doctor and a nurse to care for the patient per shift and a runner (this person stays outside the room). Timed record must be maintained of all staff involved in the assessment, care and management of the patient. The record sheet should be placed outside the door and all staff entering and leaving must record the times of entry/exit (pg 9) The use of bank or agency staff should be avoided wherever possible.	Staff in Charge

ACTIONS:	Personal protective equipment for MERS-CoV	Responsible Individual
Provide PPE & ensure staff know how to don and doff PPE	WHAT PPE is to be available: • Long sleeved thumb loop gowns (staff to wear scrubs, not own clothes/uniform underneath) • Non-sterile examination gloves • Eye protection – (prescription glasses are not adequate to protect eyes) • FFP3 masks and/or positive pressure hood (hood available from A&E) plus filters – FFP3 masks must only be used by staff who have been fit tested by a fit tester to use that mask and the hood by staff who have been shown how to use the hood by a competent user In addition ensure hand hygiene facilities (hand wash basin/alcohol hand rub) are available. Hand hygiene remains essential before and after all patient contact, removal of PPE and decontamination of the environment. WHO needs to wear PPE: PPE must be worn by ALL staff and visitors entering the room of a patient with suspected/confirmed MERS-CoV. In WHAT order is PPE to be donned & doffed: Prior to entry to the isolation room apply PPE in the following order: Gown > FFP3 Mask/HOOD > eye protection > Gloves Before leaving the isolation room remove PPE in the following order and decontaminate hands: Gloves > gown > eye protection (unless part of the hood) After leaving the isolation room • Remove mask/hood and place on the trolley situated outside the room. • Decontaminate hands again and apply clean apron and disposable gloves • Decontaminate the reusable mask thoroughly; using TRISTEL (leave filters in place). • Decontaminate trolley with Tristel. WHEN do HOOD and FFP3 filters need changing • Leave FFP3 mask filters on the mask and discard into infectious waste when the case is no longer infectious or has been discharged. • Change the HOOD filter each shift – these are stored in each A&E	All staff

ACTIONS:	SAMPLE COLLECTING & COMMS FOR MERS-CoV	Responsible Individual
COLLECT Diagnostic Samples	The on call microbiologist should be consulted prior to sending the required samples - A minimum of 1 sputum specimen plus 2 duplicate sets of Nose and Throat swabs in viral transport media and an acute serum sample must be collected. - Viral transport medium is stores in ALL specimens generated from a suspected/confirmed case must be treated as biohazard i.e. Hazard Level 3 which requires that the specimens, requests and specimen bags must have an infection risk label attached (available from MERS box in A&E and IPC cupboards both sides). - Double bag the samples. Transport diagnostic samples to the laboratory - Laboratory staff must be notified in advance by telephone (via switchboard) that samples are being sent from a patient with suspected MERS-CoV - Samples must not be sent via the pneumatic air tube system. - They must be transported contained within a hard, sealed container (whether already on CRH site or transported from HRI) directly to the laboratory and handed to a member of the laboratory staff. Communication of Results Results should be available within 24 hours and will be communicated by the microbiologist to the clinical team managing the patient.	Senior Clinician in conjunction with Duty Microbiologist Clinical staff to notify lab. Portering staff to transport specimens Duty Microbiologist
MANAGE INFORMATION AS REQUIRED	The duty/on call microbiologist will notify the Public Health on-call regarding a presumptive case. All communications (internal/external) to be directed to the duty Microbiologist in the first instance	Duty Microbiologist

ACTIONS:	GENERAL IPC CONTROL MEASURES REQUIRED	Responsible Individual
Cleaning	MERS-CoV is mainly transmitted by large respiratory droplets and direct/indirect contact with infectious secretions. It has been detected in the environment for up to 5 days so environmental decontamination and correct disposal of waste/linen is vital. - To minimise the exposure of staff to the infection, domestic staff & housekeepers should not be cleaning a suspected/confirmed MERS CoV isolation room. Instead this would be completed by the designated staff - Tristel should be used for all cleaning and dedicated/disposable equipment used. All equipment must be decontaminated with Tristel after use. - Daily cleaning should be carried out with more frequent cleaning of commonly used hand-touched surfaces or after environmental contamination. - Once a room has been vacated by the patient, it should be left for at least 20 minutes prior to any cleaning activities taking place within it in order to allow any respiratory droplets to settle. - The domestic team can then clean the room with Tristel, followed by HPV clean (if possible) is advised. Respiratory precautions will no longer be required.	Designated nurses while infectious Domestic supervisor
Waste & Linen disposal	All waste and linen generated must be treated as infectious and disposed as per clinical waste/infected linen CHFT policy (orange bin for waste/red alginate bag for linen) A lidded orange waste bin must also be placed outside the patient's room to dispose of wipes used to clean respiratory equipment.	All staff
Disposal of body fluids	MERS-CoV has been detected in blood, faeces, urine and in the environment. Body fluids should be disposed of within the isolation room, hence the requirement for Ensuite facilities. Until this is achieved (e.g. in A&E) then pulp products should be used for bladder and bowel management in conjunction with a dedicated commode/bedpan. - Vernagel is to be used to solidify the body fluids - The pulp product containing the solidified body fluid are then disposed of into an orange bag and 'swan necked' to prevent leakage, then placed in a second orange bag (again swan necked)	

ACTIONS:	IPC CONTROL MEASURES FOR EQUIPMENT	Responsible Individual
Disposable /dedicated equipment	Re-useable equipment should be avoided if possible. If used, it should be disinfected in line with the manufacturer's instructions and Trust policy • Use dedicated equipment in the isolation room. Disposable crockery and cutlery may be used in the patient's room to minimise the equipment which need to be decontaminated • Dispose of single use equipment into the infectious waste stream (orange bin) • Ventilators should be protected with a high efficiency filter, eg BS EN 13328-1 • Closed system suction must be used where possible	All staff
Disinfect Mobile Equipment	Equipment and devices that cannot be left in the isolation room, such as portable X-ray machines MUST be disinfected: • The use of mobile healthcare equipment should be restricted to essential functions to minimise the range of equipment taken into and later removed from the room • The operator of the device must be trained and supervised in infection control procedures, including use of required PPE if not one of the designated staff members (e.g. radiographer) • The operator should wear PPE as described, when in the isolation room. • Any equipment taken in to the room which must be subsequently removed, needs to be disinfected with Tristel. This is done immediately outside and needs to be complete, including wheels where applicable • Any additional items such as a digital detector or a cassette must also be disinfected, regardless of whether there has been direct contact with the patient or not. This is due to the risk of environmental contamination of the equipment within the isolation room	

ACTIONS:	IPC CONTROL MEASURES misc....	Responsible Individual
MERS-CoV POLICY	For Ward, Theatre, ICU & Medical procedure management, refer to the full CHFT MERS-CoV policy	All staff
Manage transfer to other depts	Where possible, all procedures and investigations should be carried out in the single room with a minimal number of staff present. Only if clinical need dictates, and in consultation with the infection control team, should a patient suspected/confirmed as MERS-CoV be transferred to other departments. To transfer the patient: - The patient should wear a 'surgical' mask - this will prevent large droplets being expelled into the environment by the wearer (exception only if oxygen MASK in situ as this will have the same effect) - The department receiving the patient must be informed in advance of the patient's arrival and remove unnecessary equipment from the treatment/procedure room - During patient transfer all members of staff within 2metres of the patient must wear full PPE. - The patient must be taken straight to and from the investigation/treatment room, and must not wait in a communal area - The treatment/procedure room and all equipment should be disinfected after use with Tristel - Where delay does not risk patient safety, the procedure should be done at the end of a list.	All staff
Ensure visitors are managed	Visiting should be avoided (where possible) until MERS CoV results are available - If positive – advice from Public Health England (PHE) is essential prior to agreeing to allow visitors to enter the room, and the potential visitor warned of the significant risks in doing so. - If entering the room, PPE as page 4 is required – fit testing would be required - A record must be maintained of all visitors entering the isolation room, include on the Timed record of entry and exit	All staff

ACTIONS:	IPC CONTROL MEASURES misc....	Responsible Individual
Manage care after death	Respiratory protection for staff is no longer required following death after a period of 20mins where the risk of airborne particles is gone. • Leave all lines/drains and tubes insitu. • Wearing gown and gloves, place the body in a body bag. • Immediately prior to leaving the isolation room, the outer surface of the body bag should be disinfected with Tristel by designated staff wearing gown and gloves. • The trolley (and wheels) requires decontamination with Tristel following delivery to the mortuary • For detailed mortuary guidance – please refer to CHFT MERS Co-V policy.	All staff
Manage contacts	• A record must be maintained of all staff entering the isolation room on the Timed record of entry and exit • To ensure a coordinated approach, PHE must be contacted and will be involved with the follow up of both staff and visitor contacts up to 14 days following exposure, and any new febrile or respiratory illness investigated urgently. Staff contact follow up will be undertaken in conjunction with CHFT Occupational Health Department (OHD).	PHE & OHD
Formal notification	Formal notification needs to be completed by the clinical team managing the patient A surveillance form must be completed for all suspected or confirmed cases and their contacts: forms are accessible via the following link: https://www.gov.uk/government/publications/mers-cov-epidemiological-protocols-to-assess-cases-and-their-close-contacts-in-the-uk	Clinical team Microbiologist

Timed record of entry and exit

MRN No:

Clinical area & room no:

Date:

Staff / Visitor Name	Designation	Time of entry	Time of Exit

Investigation and public health management of possible cases of Middle East respiratory syndrome coronavirus (MERS-CoV) (v31 – August 2018)

Possible case definitions (either 1, 2 or 3)

- 1 Any person with severe acute respiratory infection requiring admission to hospital with symptoms of fever ($\geq 38^{\circ}\text{C}$) or history of fever, and cough plus evidence of pulmonary parenchymal disease (eg clinical or radiological evidence of pneumonia or acute respiratory distress syndrome (ARDS))¹
AND AT LEAST ONE OF:
 - history of travel to, or residence in an area where infection with MERS-CoV could have been acquired² in the 14 days before symptom onset
 - close contact³ during the 14 days before onset of illness with a symptomatic confirmed case of MERS-CoV infection
 - person is a healthcare worker based in ICU caring for patients with severe acute respiratory infection, regardless of travel or PPE use
 - part of a cluster of two or more epidemiologically linked cases within a two-week period requiring ICU admission, regardless of history of travel
- 2 Acute influenza-like-illness symptoms (ILI), **plus** contact with camels, camel environments or consumption of camel products (e.g. raw camel milk, camel urine) **or** contact with a hospital, in an affected country² in the 14 days prior to onset.
ILI is defined as sudden onset of respiratory infection with measured fever of $\geq 38^{\circ}\text{C}$ and cough.
- 3 Acute respiratory illness (ARI) **plus** contact with a confirmed case of MERS-CoV in the 14 days prior to onset.
ARI is defined as sudden onset of respiratory infection with at least one of: shortness of breath, cough or sore throat.

¹ Clinicians should additionally be alert to the possibility of atypical presentations in patients who are immunocompromised, atypical presentations may include absence of fever.
² Bahrain, Jordan, Iraq, Iran, Kingdom of Saudi Arabia, Kuwait, Oman, Qatar, United Arab Emirates, Yemen – see map and [Risk Assessment](#)
³ For close contact definition, see page 2.
⁴ For IPC precautions see Page 2.
⁵ See laboratory guidance for further information.
⁶ A presumptive positive case will trigger an IMT.

Local clinician/microbiologist:

- ensure appropriate samples are taken and contact the nearest MERS-CoV testing laboratory
- ensure full PPE is worn (correctly fitted respirator [FFP3], gown, gloves and eye protection) & patient managed as per [MERS-CoV infection control advice](#)⁴
- notify local [PHE health protection team \(HPT\)](#)
- consider testing for Legionnaire's disease

PHE Health Protection:

- Inform PHE Colindale by email at respiratory.lead@phe.gov.uk and enter case details on HPZone (Infection and unlisted managed context: MERS-CoV)
- collect possible case dataset ([Form 1](#)) – email to PHE Colindale (respiratory.lead@phe.gov.uk)
- if a cluster is suspected, establish if there is an epidemiological link between cases

TESTING LABORATORY RESULT **POSITIVE** FOR MERS-COV
(PRESUMPTIVE POSITIVE)^{5,6}

TESTING LABORATORY RESULT **NEGATIVE** FOR MERS-COV⁵

Clinician/microbiologist: ensure full PPE is worn (see [infection control advice](#))
MERS-CoV testing laboratory: Inform local HPT, the referring laboratory and PHE reference laboratory (RVU) and send residual material urgently to PHE reference laboratory (RVU) for confirmatory testing – see [laboratory guidance](#)
PHE HPT: Telephone PHE Colindale immediately or contact the duty doctor if out of hours. Start to identify and collate [list of close contacts](#)³ – email to PHE Colindale

REFERENCE
LABORATORY
RESULT **NEGATIVE**
FOR MERS-COV

**DISCARD as
MERS-CoV**

REFERENCE LABORATORY RESULT **POSITIVE** FOR MERS-COV = **CONFIRMED CASE (SEE PAGE 2)**

Investigation and public health management of possible cases of Middle East respiratory syndrome coronavirus (v31 – August 2018)

CONFIRMED CASE ACTIONS

Clinician/microbiologist: collect appropriate baseline samples and send to PHE reference laboratory (RVU) – see [laboratory guidance](#).

PHE HPT : complete confirmed case initial form ([Form 1a](#)) – email to respiratory.lead@phe.gov.uk

ADDITIONALLY FOLLOW PHE [MERS-CoV CLOSE CONTACT ALGORITHM](#)

FOLLOW UP

Clinician/ microbiologist: ensure appropriate sequential follow-up samples are taken after discussion with the PHE Colindale incident management team. See [laboratory guidance](#)

PHE HPT: complete confirmed case follow-up [Form 1b](#) **14-21 days since Form 1a completed** – email to respiratory.lead@phe.gov.uk

Important Notes

CLOSE CONTACT: Close contact is defined as:

- prolonged face-to-face contact (>15 minutes) with a **symptomatic confirmed** case in a household or other closed setting OR
- healthcare or social care worker who provided direct clinical or personal care or examination of a **symptomatic confirmed** case, or within close vicinity of an aerosol generating procedure AND who was not wearing full PPE at the time ([infection control advice](#)).
- **all persons** meeting the close contact definition should be notified to the local HPT regardless of decision to test or test results.
- the HPT to discuss with the National infections service

IPC Precautions: It is recommended that patient assessment and collection of clinical specimens for MERS-CoV testing is undertaken in settings where appropriate [Infection Prevention and Control \(IPC\) measures](#) can be implemented. This may not be feasible in primary care settings, in which case an appropriate local secondary care service should be contacted to discuss if patient referral is appropriate and to ensure IPC measures can be implemented.

Co-infection: MERS-CoV co-infection with other respiratory pathogens has been reported previously – therefore any patient meeting the possible case definition should be tested for MERS-CoV infection regardless of other infections being identified

