

## **INFECTION CONTROL ADVICE:**

### **Severe Respiratory Illness from novel or emerging pathogens e.g Middle East Respiratory Syndrome Coronavirus (MERS-CoV) and Avian influenza (e.g. A/H7N9, A/H5N1)**

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The current situation necessitates that clinicians have a high index of suspicion for possible Middle East Respiratory Syndrome Coronavirus (MERS-CoV) (formerly called novel coronavirus) or Avian influenza (e.g. A/H7N9, A/H5N1) in patients presenting with acute respiratory illness.

(For HPS case management algorithms and other documentation refer to: [MERS-CoV](#) and [Avian influenza](#) webpages)

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## **1. General Information**

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This document outlines the infection prevention and control advice for healthcare workers who may be involved in receiving and caring for patients, primarily within healthcare settings, who are a **suspected or confirmed case**. If a **contact of a confirmed case** develops a respiratory illness then this guidance should be followed until results of testing are available.

The precautionary principle should be applied for novel or emerging respiratory pathogens of high consequence when the mode of transmission is incompletely determined. Droplet, contact and airborne precautions (including the use of correctly fitted FFP3 respirators) should be applied for all patients admitted with a suspected or confirmed novel or emerging respiratory pathogen (e.g. MERS-CoV or Avian Influenza).

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## **2 Patient management**

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In the absence of effective drugs or a vaccine, control of this disease relies on the appropriate management of cases, (including isolation of possible, probable or confirmed cases and their close contacts). In preparation, healthcare facilities that may receive and care for any cases should ensure that staff are:

- Familiar with all Personal Protective Equipment (PPE) required including, provision of adequate supplies, where stored and how it should be used;
- Aware of what actions to take if a case presents;
- Aware of where a case will be isolated and the need for a negative pressure room, if available;
- Familiar with FFP3 respirator use and that fit testing and checking has been undertaken before using this equipment

- Aware of how to access any national/local record sheets.

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## 2.1 Patient Placement

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### PATIENTS

#### Isolation

- Patients requiring admission should be admitted directly to a specialised **negative pressure** isolation room. If this is not possible then a single room with en-suite facilities should be used. Room doors must be kept closed.
- Display signage to control entry into the isolation room.
- All necessary procedures and investigations should be carried out within the isolation room. The minimum number of required staff should be present and they must wear PPE as described below; section 2.3. Entry and exit from the room should be minimised during care procedures.
  - Procedures that produce aerosols or respiratory secretions e.g. bronchoscopy, induced sputum, positive pressure ventilation via a face mask, intubation/extubation and airway suctioning carry an increased risk of infection transmission.
  - When a room is vacated following an aerosol generating procedure, the large particles will fall out within seconds, however, the smaller aerosol particles behave almost like a gas. Clearance of small aerosol particles is dependent on the ventilation and air change within the room. In hospitals this is usually around 12-15 air changes per hour and so after about 20 minutes, there would be less than 1 per cent of the starting level (following cessation of aerosol generation).

#### Critical care

- If on a critical care unit, the patient should be nursed in a specialised negative pressure isolation room where available, or if not available, a neutral pressure side room with a closed ventilator circuit should be used.
- All respiratory equipment must be protected by a filter with high efficiency e.g. BS EN 13328-1.
- Disposable respiratory equipment should be used wherever possible. Re-usable equipment must be decontaminated in accordance with the manufacturer's instructions.
- Ventilator circuits should not be broken unless absolutely necessary
- Ventilators must be placed on stand-by when carrying out bagging.
- Water humidification should be avoided and a heat and moisture exchange should be used if possible.
- Use only closed system suction.

#### Theatres

- Theatres must be informed in advance.
- The patient should be transferred directly to theatre and should wear a surgical mask if it can be tolerated.
- The patient should be anaesthetised and recovered in the theatre.

- Disposable anaesthetic equipment should be used wherever possible.
- Anaesthetic equipment must be protected with viral filter efficiency of 99.99%.
- Instruments and devices should be decontaminated in the normal manner.
- The theatre should not be used for 15 minutes after the patient leaves if conventionally ventilated or 5 minutes if ultraclean ventilation used.
- The theatre should be cleaned as per local policy.

### **Intra-hospital transfers to other departments**

- Must only occur if clinical need dictates and any patients transfer must be in collaboration with the Infection Prevention & Control Team (IPCT):
  - The receiving department must be informed in advance.
  - The patient must be taken straight to and from the investigation/treatment room and must not wait in any communal area.
  - The patient should wear a surgical mask if this can be tolerated to minimise the dispersal of respiratory secretions and reduce environmental contamination.
  - To allow decontamination after any procedure, ideally patients should be at the end of a clinical list (see patient care equipment and environmental control).

### **Transfer to another hospital**

- **Transfer of patients to another hospital should be avoided unless clinically necessary. Patients should not be transferred solely for the purpose of accommodation in a specialised negative pressure isolation room. If transfer is essential, the IPCT at the receiving hospital and the ambulance staff must be advised in advance of the special circumstances of the transfer.**

### **STAFF**

- Staff must comply with all infection control procedures as detailed.
- Only **essential staff** should enter the isolation room wearing personal protective clothing (see [PPE](#)).
- A record of all staff that has or had **contact with a confirmed case/ symptomatic contact of confirmed case** must be maintained. The record sheet should be placed at the door and all staff entering must complete this.
- The use of bank or agency staff should be avoided wherever possible.
- All Healthcare Workers (HCWs) should be vigilant for any respiratory symptoms during the incubation period which can be up to 14 days (for pathogen specific incubation periods please see case management algorithms in the [Avian influenza](#) and the [MERS-CoV](#) pages in HPS website) following last exposure to a case and should not come to work if they have a fever or cough (see Occupational exposure).
- Follow up of staff contacts of patients will be co-ordinated by the local Occupational Health Department.

## VISITORS

- Patient visitors should be restricted.
- Visitors entering the isolation room must wear PPE as detailed.
- Visitors must be trained in the appropriate use of protective clothing and hand hygiene.
- A log of all visitors must be kept by the person in charge.
- Follow up of community contacts of patients will be co-ordinated by the local Health Protection Team.

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## 2.2 Hand Hygiene

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- This is essential before and after all patient contact, removal of protective clothing and cleaning of the environment.
- Wash with soap and water or use alcohol based hand rub if hands are not visibly dirty or soiled
- Rings (other than a plain smooth band), wrist watches and wrist jewellery must not be worn by staff

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## 2.3 Personal Protective Equipment (PPE)

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**To be worn by ALL staff and any visitors entering the room:**

- Long-sleeved, fluid-resistant disposable gown.
- Non-sterile disposable gloves.
- An FFP3 respirator conforming to (EN149:2001): **Fit testing must be undertaken prior to using this equipment and fit checking must be performed each time an FFP3 respirator is worn.**
- Eye protection compatible with the FFP3 respirator (prescription glasses do not provide adequate protection against droplets, sprays and splashes).

**It is vital that the PPE described above is worn for all airway management, including intubation.**

**Refer to appendix 1 for instructions on the safe donning and doffing of required PPE.**

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## 2.4 Safe Management of Linen

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- Treat all linen as infectious and bag in an alginate bag then a secondary clear bag before removing from the isolation room and then place directly into the laundry hamper/bag.

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## 2.5 Safe Disposal of Waste

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- Dispose of all waste in the isolation room as healthcare waste (orange stream).

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## 2.6 Patient Care Equipment

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- Use dedicated patient care equipment in the isolation room.
- Dispose of single-use equipment as healthcare waste inside room.
- Re-useable equipment should be avoided if possible. If used, decontaminate according to manufacturer's instructions.
- Decontaminate reusable or communal equipment in accordance with [Appendix 2](#).
- Avoid the use of fans that re-circulate the air as this has the potential to turn a negative pressure room into a positive pressure room.

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## 2.7 Environmental Decontamination

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- It is possible that the virus can survive in the environment for at least 48hrs, so environmental decontamination is vital.
- Domestic staff must wear protective clothing as indicated above when entering the isolation room, and they must be made aware of the need for additional precautions and be trained accordingly.
- The isolation area should be cleaned after the rest of the ward area.
- Decontaminate the isolation room at least daily using :
  - A combined detergent disinfectant solution at a dilution of 1000 parts per million available chlorine (ppm available chlorine (av.cl.)); or
  - A detergent clean followed by disinfection (1000ppm av.cl.)
  - Frequently hand-touch surfaces require more regular decontamination
- Environmental cleaning equipment must be single use or dedicated to the affected area.
- Following transfer and/or discharge of patient(s):
  - Remove:
    - All healthcare waste and any other disposable items
    - Bedding/bed screens, treat as infectious linen
    - Patient care equipment following decontamination
  - The room/area should be decontaminated using:
    - A combined detergent disinfectant solution at a dilution (1000ppm av.cl.); **or**
    - A detergent clean followed by disinfection (1000ppm av.cl.).

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## 2.8 Managing Blood and Body Fluids Spillages

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- Disinfect all blood and body fluid spills in accordance with [Appendix 3](#).

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## 2.9 Specimens

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- All specimens must be treated as biohazard:
  - Use biohazard label
  - Mark lab Request form accordingly
  - Double bag sample

Please see lab guidance on HPS website for further details on handling and transportation of specimens see:

<https://www.hps.scot.nhs.uk/web-resources-container/mers-cov-information-for-microbiologists-and-virologists/>

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## 2.10 Care of the Deceased

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- Staff washing/preparing the body should wear disposable long-sleeved gowns and gloves. Facial protection should be worn if there is anticipated/likely splashing of blood or body fluids.
- A body bag must be used: The act of moving a recently deceased body onto a hospital trolley for transportation to the morgue might be sufficient to expel small amounts of air from the lungs and thereby present a minor risk.
- Once in the hospital mortuary the body bag can be opened for viewing only.
- If a post mortem is required then use safe working techniques (e.g. manual rather than power tools and wearing appropriate PPE).
- Mortuary staff and funeral directors must be advised of the biohazard risk.
- Embalming is not recommended because of the potential presence of virus in blood.

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## 2.11 Occupational Exposure

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- All HCWs should be vigilant for any respiratory symptoms during the incubation period which can be up to 14 days (for pathogen specific incubation periods please see case management algorithms in the [Avian influenza](#) and the [MERS-CoV](#) pages in HPS website) following last exposure to a confirmed case and should not come to work if they have a fever or cough. They should seek advice from their IPCT /occupational health department as per the local policy. Their hospital IPCT and/or local HPU will advise on where they should be medically assessed. During this period, symptomatic HCWs should avoid contact with people both in the hospital and in the general community.

## Appendix 1 - Putting on and removing Personal Protective Equipment (PPE)

### Putting on (donning) PPE

PPE should be put on before entering a side room. If full PPE is required, for example for a potentially infectious aerosol generating procedure, all staff in the room or entering within one hour of the procedure should wear the following PPE put on in the following order:

1. Gown
2. FFP3 respirator
3. Eye protection, i.e. goggles or full facial visor
4. Disposable gloves.

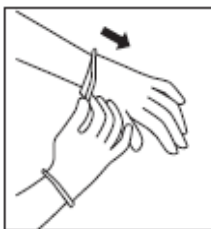
The order given above is practical but the order for putting on is less critical than the order of removal given below.

### Removal of (doffing) PPE

PPE should be removed in an order that minimises the potential for cross-contamination. Before leaving the side room gloves, gown and eye protection should be removed (in that order, where worn) and disposed of as healthcare (including clinical) waste. After leaving the area, the respirator can be removed and disposed of as healthcare (including clinical) waste. Guidance on the order of removal of PPE is as follows:

#### 1. Gloves

- Grasp the outside of the glove with the opposite gloved hand; peel off.
- Hold the removed glove in gloved hand.
- Slide the fingers of the un-gloved hand under the remaining glove at the wrist.
- Peel the second glove off over the first glove and discard appropriately.



#### 2. Gown

- Unfasten or break ties.
- Pull gown away from the neck and shoulders, touching the inside of the gown only.
- Turn the gown inside out, fold or roll into a bundle and discard.



### 3. Eye protection

- To remove, handle by headband or earpieces and discard appropriately.



### 4. Respirator

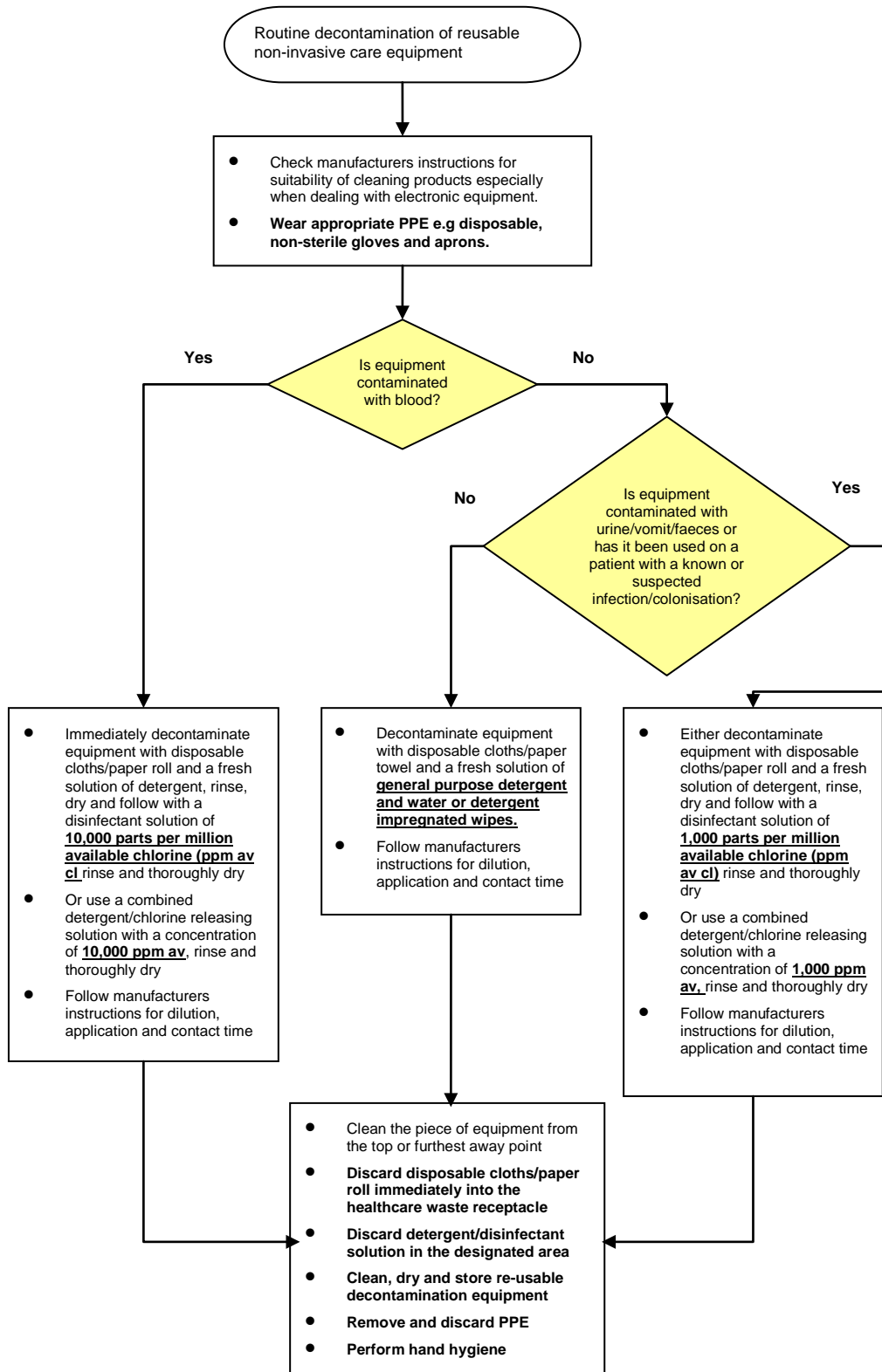
- Untie or break bottom ties, followed by top ties or elastic, and remove by handling ties only and discard appropriately.
- To minimise cross-contamination, the order outlined above should be applied even if not all items of PPE have been used.



Perform hand hygiene immediately after removing all PPE.



## Appendix 2 - Routine decontamination of reusable non-invasive patient care equipment



# Appendix 3 – Management of blood and body fluid spillages

