Infection prevention and control advice for acute care settings:

Acute respiratory illness from novel or emerging pathogens (coronavirus (COVID-19), Middle East Respiratory Syndrome Coronavirus (MERS-CoV), 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 coronavirus (COVID-19), 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: coronavirus (COVID-19), MERS-CoV and Avian influenza webpages).

These infectious agents are currently classified as High Consequence Infectious Diseases (HCID) spread by respiratory droplets in addition to contact routes and require airborne precautions.

1. General Information

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

The precautionary principle should be applied for all novel or emerging respiratory pathogens of high consequence when the mode of transmission is incompletely determined. 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. coronavirus (COVID-19), MERS-CoV or Avian Influenza.

2. Patient management

In the absence of effective drugs or a vaccine, control of these relies on the appropriate management of cases, (including isolation of possible, or confirmed cases and their close contacts). In preparation, acute healthcare facilities that may receive and care for possible/confirmed 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;¹
- Aware of what actions to take if a case presents;

¹ Personal Protective Equipment (PPE) requirements, provisions relating to the use of hazardous materials and occupational health requirements, alongside wider infection control and health and safety obligations, are not addressed within this guidance document and must be considered and addressed by individual organisations in accordance with legislation/regulations, principally: The Health and Safety at Work Act 1974 (‘HSWA’), Sections 2 and 3; The Control of Substances Hazardous to Health (COSHH) Regulations 2002; The Management of Health and Safety at Work Regulations 1999; Personal Protective Equipment at Work Regulations 1992; and Provision and Use of Work Equipment Regulations 1998.
• Aware of where a case will be isolated and the need for a negative pressure isolation 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.

2.1 Patient Placement

Patients

Isolation

Patients requiring admission should be admitted directly to a **negative pressure** isolation room. If this is not possible then a single room with en-suite facilities should be used. Room door(s) 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 in **section 2.3**. Entry and exit from the room should be minimised during care procedures, specifically when these care procedures that produce aerosols or respiratory secretions i.e.

- Intubation, extubation and related procedures e.g. manual ventilation and open suctioning;
- Tracheotomy/tracheostomy procedures (insertion/open suctioning/removal);
- Bronchoscopy;
- Surgery and post mortem procedures involving high-speed devices;
- Some dental procedures (e.g. high-speed drilling);
- Non-invasive ventilation (NIV) e.g. Bi-level Positive Airway Pressure Ventilation (BiPAP) and Continuous Positive Airway Pressure Ventilation (CPAP);
- High Frequency Oscillatory Ventilation (HFOV);
- Induction of sputum.

When a room is vacated by healthcare staff 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. A single air change is estimated to remove 63% of airborne contaminants; after 5 air changes, less than 1% of airborne contamination is thought to remain. In an isolation room with 10-12 air changes per hour (ACH) a minimum of 20 minutes is considered pragmatic; in a side room with 6 ACH this would be approximately one hour.

**Critical care**

- If on a critical care unit, the patient should be nursed in a negative pressure isolation room where available; 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. The filter must be disposed of after use.
• 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 of any patient transfer.
• 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
• Any patients transfer must be in collaboration with the Infection Prevention and 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 fluid resistant surgical mask if this can be tolerated to minimise the dispersal of respiratory secretions and reduce environmental contamination.
  • During patient transfer between departments, there should be a process to ensure that no individuals not wearing PPE are in the vicinity of the patient
  • To allow decontamination after any procedure, these patients should ideally be at the end of a clinical list (see patient care equipment and environmental control).

Transfer to another hospital
• If transfer to another hospital is required, the IPCT at the receiving hospital and the ambulance staff must be advised in advance of the circumstances of the transfer.
Staff

Staff must comply with all infection control procedures as set out in this guidance.

Only essential staff should enter the isolation room, wearing personal protective equipment (see section 2.3).

A record of all staff that has or had contact with a confirmed case or symptomatic contact of a confirmed case must be maintained.

The use of bank or agency staff should be avoided wherever possible.

In general, all healthcare staff should be vigilant for respiratory symptoms specifically during the incubation period which can be up to 14 days (for pathogen specific incubation periods and respiratory symptoms please see case management algorithms in the coronavirus (COVID-19), Avian influenza and MERS-CoV webpages on the HPS website). Refer also to section 2.11 on occupational exposure).

Risk assessment follow up of healthcare staff returning from affected areas or staff contacts of patients will be co-ordinated by the local Health Protection Team or Occupational Health Department as per local policy.

Visitors

Visitors should be restricted to essential visitors only; such as parents of paediatric patients or an affected patient’s partner/main carer. Local risk assessment and practical management should be considered, ensuring a pragmatic and proportionate response, including the consideration of whether there is a requirement for visitors to wear PPE including RPE. These visitors must not visit any other care areas or facilities.

A log of all visitors should be kept.

Any follow up of family/community contacts of patients will be co-ordinated by the local Health Protection Team.

2.2 Hand Hygiene

This is essential before and after all patient contact, removal of protective clothing and cleaning of equipment and the environment.

Wash with soap and water, or use alcohol-based hand rub if hands are not visibly dirty or soiled

2.3 Personal Protective Equipment (PPE)

To be worn by ALL staff entering the room of a suspected/confirmed case:

Long-sleeved, fluid-resistant, disposable surgical gown.

Two pairs of disposable gloves, outer pair may need to be sterile depending on task.

A FFP3 respirator conforming to (EN149:2001): Fit testing must be undertaken prior to using this equipment and fit checking must be performed each time a FFP3 respirator is worn.

Eye/face protection compatible with the FFP3 respirator (prescription glasses do not provide adequate protection against droplets, sprays and splashes).
Refer to Appendix 1 for instructions on the safe donning and doffing of required PPE.

2.4 Safe Management of Linen
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.

2.5 Safe Disposal of Waste
Dispose of all waste in the isolation room as healthcare waste (orange or yellow stream) as per ward/unit current practice.

2.6 Patient Care Equipment
Dispose of single-use equipment as healthcare waste inside the room.
Use dedicated patient care equipment in the isolation room.
Re-useable equipment should be avoided if possible. If used, decontaminate in accordance with Appendix 2.
Do not use fans that re-circulate the air, and have the potential to turn a negative pressure room into a positive pressure room.

2.7 Environmental Decontamination
It is possible that these viruses can survive in the environment for at least 48 hours, so environmental decontamination is vital.

If domestic staff are required to clean the isolation room before it is vacated by the patient, they must wear PPE as indicated above, prior to entering the isolation room. They must also be familiar with the required environmental decontamination processes and have been trained in these accordingly.
Domestic staff should be advised to clean the isolation room(s) after the rest of the ward areas have been cleaned
Ideally, isolation room cleaning should be undertaken by clinical staff who are also providing care to the patient in the room.
Decontaminate the isolation room(s) at least daily using and following an AGP or other potential contamination:

- 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.)
  - Decontaminate hand-touch surfaces throughout the unit/ward and anteroom or lobby more frequently (at least twice daily).

Environmental cleaning equipment must be single use or dedicated to the isolation room.
Following transfer (recovery) and/or discharge of the patient, follow the guidance above on air changes required prior to entering the room (guidance applies whether an AGP was carried out in the room or not.

- Before entering the room, perform hand hygiene then put on a disposable plastic apron and gloves.
- Collect all cleaning equipment and healthcare waste bags before entering the room.
- The person responsible for undertaking the cleaning with detergent and disinfectant should be familiar with these processes and procedures:
  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.).

Any cloths and mop heads used must be disposed of as single use items.

2.8 Managing Blood and Body Fluids Spillages
Disinfect all blood and body fluid spills in accordance with Appendix 3.

2.9 Specimens
All specimens must be treated as biohazard:
  - Use biohazard label
  - Mark lab Request form accordingly
  - Double bag samples in the isolation room while wearing full PPE

Please see laboratory guidance on HPS website for further details on handling and transportation of specimens.

2.10 Care of the Deceased
Guidance can be found in appendix 12 of the NIPCM
Staff washing/preparing the body should wear disposable long-sleeved gown and gloves. Eye/face protection should be worn if it there is anticipated/likely splashing of blood or body fluids.

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.
A body bag should be used for transferring the body and those handling the body at this point should wear full PPE.

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.

2.11 Occupational Exposure

All HCWs should be vigilant for 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, MERS-CoV and for coronavirus (COVID-19) on a precautionary basis the same period of 14 days is currently being recommended) 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 HPT/occupational health department as per the local policy. The hospital occupational health and/or local HPT 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.
# 3 Version History

<table>
<thead>
<tr>
<th>Version</th>
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| V7.4    | 29/01/20   | **Section2.1**  
Patients/Isolation  
3rd bullet, 2nd sub-bullet. Last sentence amended to read:  
‘In an isolation room with 10-12 air changes per hour (ACH) a minimum of 20 minutes is considered pragmatic; in a side room with 6 ACH this would be approximately one hour.’ |
| V7.4    | 29/01/20   | **Appendix 4**  
Category A Waste flowchart added showing procedure for handing waste from dealing with patients who present with HCID. Includes contact details for NSS Waste Contingency Service |
| V7.5    | 31/01/20   | **PPE:** highlight that two pairs of gloves are required and update of appendix 1 to reflect this  
Waste: waste no longer requires to be treated as category A waste  
Linen: to be treated as ‘infectious linen’ rather than category A waste  
Care of the deceased: changed to reflect that embalming is permitted and link to appendix 13 of the NIPCM |
| V7.6    |             | HPS review and amends due to changes to PHE guidance                                                                                             |
| V7.7    | 07/02/20   | Amendments made following consultation with ICMs across Scotland                                                                               |
| V7.8    | 13/02/20   | Amendments made following consultation with ICMs across Scotland                                                                               |
Appendix 1 - Putting on and removing Personal Protective Equipment (PPE)

Putting on (donning) PPE

PPE should be put on before entering the room. This is also required during an aerosol generating procedure, all staff in the room or entering the room following the procedure (within one hour if in a side room, or twenty minutes if in an isolation room) should wear the following PPE put on in the following order:

1. Inner pair of non-sterile, disposable gloves
2. Disposable, fluid-resistant gown
3. FFP3 respirator (perform a fit check)
4. Eye/face protection i.e. goggles or full facial visor
5. Outer pair of non-sterile or sterile depending on task, disposable gloves worn over gown cuffs

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. Either in the anti-room/lobby or if unavailable before leaving the room gloves, gown and eye protection should be removed (in that order) and disposed of as healthcare waste. After leaving the area, the respirator can be removed and disposed of as healthcare waste. Guidance on the order of removal of PPE is as follows:

**Outer gloves**

- Remove outer gloves without touching the inner 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.

**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.
Inner 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.

Eye protection

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

Respirator

- **Remove after leaving clinical area**
- Stand up straight and bring the bottom strap or elastic up to meet the top strap or elastic
- Avoid bending your neck
- Lift both straps over the top of the head, allow the respirator to fall away from the face 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

- Check manufacturer’s instructions for suitability of cleaning products especially when dealing with electronic equipment.
- Wear appropriate PPE e.g. disposable, non-sterile gloves and aprons.

Is equipment contaminated with blood?

No

Is equipment contaminated with urine/vomit/faeces or has it been used on a patient with a known or suspected infection?

No

Decontamate equipment with disposable cloths/paper towel and a fresh solution of general-purpose detergent and water or detergent impregnated wipes.
- Rinse and thoroughly dry.
- Disinfect specific items of non-invasive, reusable, communal care equipment if recommended by the manufacturer e.g. 70% isopropyl alcohol on stethoscopes

Yes

- Immediately decontaminate equipment with disposable cloths/paper roll and a fresh solution of 1,000 parts per million available chlorine (ppm av cl)* rinse and thoroughly dry
- Or use a combined detergent/chlorine releasing solution with a concentration of 10,000 ppm av cl*, rinse and thoroughly dry
- If the item cannot withstand chlorine releasing agents consult the manufacturer’s instructions for a suitable alternative to use following or combined with detergent cleaning.

Yes

- Immediately decontaminate equipment with disposable cloths/paper roll and a fresh solution of 10,000 parts per million available chlorine (ppm av cl)* rinse and thoroughly dry
- Or use a combined detergent/chlorine releasing solution with a concentration of 10,000 ppm av cl*, rinse and thoroughly dry
- If the item cannot withstand chlorine releasing agents consult the manufacturer’s instructions for a suitable alternative to use following or combined with detergent cleaning.

Follow manufacturer’s instructions for dilution, application and contact time.
- Clean the piece of equipment from the top or furthest away point
- Discard disposable cloths/paper roll immediately into the healthcare waste receptacle
- Discard detergent/disinfectant solution in the designated area
- Clean, dry and store re-usable decontamination equipment
- Remove and discard PPE
- Perform hand hygiene

* Scottish National Blood Transfusion service and Scottish Ambulance Service use products different from those stated in the National Infection Prevention and Control Manual
Appendix 3 – Management of blood and body fluid spillages

- Wear appropriate personal protective equipment (PPE) e.g. non-sterile disposable gloves/aprons

Is the spillage on soft furnishing?

Is it a spill of blood or body fluid as specified in Box 1?

- Spill contains ONLY urine/faeces/vomit/sputum
  - Do not use a chlorine releasing agent directly on a urine spill
  - Soak up spillages/gross contamination using disposable paper towels
  - If a urine spillage a gelling agent can be used.
  - Decontaminate area with a solution of 1,000 parts per million available chlorine (ppm av cl) solution or use a combined detergent/chlorine releasing solution with a concentration of 1,000 ppm av
  - Follow manufacturer’s instructions on contact time
  - Apply chlorine releasing granules directly to the spill.
  - If granules not available place disposable paper towels over spillage to absorb and contain it applying solution of 10,000 parts per million available chlorine (ppm av cl) to the towels
  - Follow manufacturer’s instructions on contact time or leave for 3 minutes
  - Discard the gross contamination into a healthcare waste bag
  - All NHSScotland settings must use granules, or equivalent product e.g spill kit.

- Wash area with disposable paper towels and a solution of general purpose detergent and warm water
- Dry area or allow to air dry
- Discard paper towels and disposable PPE into a healthcare waste bag
- Perform hand hygiene

Box 1
- Cerebrospinal fluid
- Peritoneal fluid
- Pleural fluid
- Synovial fluid
- Amniotic fluid
- Semen
- Vaginal secretions
- Breast Milk
- Any other body fluid with visible blood

Discuss with IPCT and consider:
- If furnishing heavily contaminated, you may have to discard it.
- If the furnishing can withstand a chlorine releasing solution, then follow appropriate procedure for the type of spill.
- If it is safe to clean with detergent alone then follow appropriate procedure.
- If it is not safe to clean with detergent, then the item should be discarded.