Management of a COVID-19 patient in Interventional Radiology

Objective: Managing a COVID-19 patient in the IR setting at GSTT to minimise infection risks to staff. To be used in conjunction with **ACTION CARDS 2J – Inpatient Transfer to Interventional Radiology, 8a – 8g Personal Protective Equipment, and 19a Theatres and Critical Care**

Action card 2J: Inpatient patient transfer to Interventional Radiology Transfer for Confirmed or Suspected COVID-19

Prior to transfer:

- In the event of a patient who has undergone initial assessment in ED or by their clinical team requiring a procedure in Interventional Radiology and has confirmed COVID-19, notify the IR Clinical Co-ordinator on Bleep 0744 at ST Thomas', or Bleep 3182 Guy's, during working hours (Mon – Fri 8am – 6pm), outside of these times contact the on-call Interventional Registrar via switchboard.
- Confirm the intervention/procedure is required and clinically indicated.
- SNP team will identify a bed in an isolation area if patient in ED.
- The patient will be moved by ED or Ward nursing staff and/or medical staff depending on clinical condition.
- Patient to be consented in the ward/ED by the medical team treating them with guidance from the IR team (IR team can complete 2nd stage consent).
- Only consent form and pre-operative checklist documentation to accompany patient, but must be kept in donning room only.
- Room 15 is to be used for all cases at St Thomas' and Room 12 for all cases at Guys.
- If possible: Patient to be transferred on an IR transfer trolley and not a bed (trolley available in IR).
- Transfer of patient must only occur when staff required to perform procedure **NOTIFIED**, request **ACCEPTED** and time window for intervention/procedure **CONFIRMED**

During procedure:

- Proceed straight to Interventional Room to minimise exposure. Lock procedure room door. All patient checks to be done in the room.
- 1 IR Consultant +/- IR SPR, 1 Radiographer, 1 Scrub Nurse and 1 Circulating nurse in the procedure room and 1 circulating nurse outside of room, 1 Anaesthetist and 1 Anaesthetic Nurse may be required for certain procedures. All staff involved in the procedure to wear PPE as per action card 8a for aerosol generating procedures. PPE Including FFP3 Face mask (either self-fitted 3M 8833 mask or previously fitted FFP3 mask). Staff should be donned ready for patient arrival in the donning room and PPE must be worn for the duration of patient contact.

Management of a COVID-19 patient in Interventional Radiology

- Follow separate individual IR site procedure pack noting donning and doffing room arrangements.
- Don lead and full PPE and wait in the donning room until instructed to enter procedure room by Anaesthetist, if patient being intubated. For patients undergoing LA or Conscious Sedation, enter the procedure room when patient arrives.
- Try and minimise number of entries to room; ensure you take in any necessary assessment and sampling equipment. Note that stethoscopes, computers, pens, paper, otoscopes and ophthalmoscopes are **NOT** permitted in the patient room. For all cases a trolley should be prepared before the patient arrives with the necessary equipment. (1 circulating nurse outside of room) to leave any extra requested equipment outside the room
- Order all required tests on EPR before entering the room.
- Personal Protective Equipment to be worn: See Action card 8a. Buddy should supervise donning.
- All samples should be collected using buddy system. Transport by hand only and inform porters and lab staff the samples are for confirmed Covid-19. See Action card 10a or 10b.
- Clean all POCT machines used in confirmed Covid19 case with Green Clinell wipe.
- Waste: see Action card 5

Post Procedure:

- Escalate critically ill patients to EW6 ICU team. PPE must be worn at all times.
- Patient and staff remain in the procedure room until patient fully recovered and ready for transfer to ward.
- IR nurse to transfer patient to designated inpatient ward to handover with porter. For transfer to ITU, Anaesthetist and IR Nurse to handover to ITU transfer team in procedure room.
- Persons involved in patient transfer and intervention/ procedure follow PPE doffing procedure (See action card 8a).
- All staff in procedure room will follow action card 8a for doffing in designated room.
- Clean room as per standard clean with Green Clinell wipes.

Intubation Management of a COVID-19 patient in Interventional Radiology

St Thomas' Interventional Radiology Site Pathway

Only **Room 15** to be used for IR procedures in suspected/confirmed COVID-19 patients

STEP 1 - preparation in Anaesthetic Room (donning room) prior to patient arrival

- Prepare Intubation and Emergency Drugs
- BOX of additional medication (to prevent re-entering donning room during procedure)
- Check Equipment on metal Intubation Trolley (prior transfer to Hot Room 15)

STEP 2 - Trained staff present to check the correct donning of PPE

- Put on full X-ray lead protective gown and thyroid shield under PPE
- PPE donning (➔PPE Poster – What to Wear V2) – supply of all size gloves and FFP3 masks to be available

STEP 3 - Intubation in Hot Room 15 (➔ACTION CARD 19a)

- Transfer patient to IR on trolley and move to table once intubated (allows the best intubation position)
- Resuscitation Trolley present in Hot Room during IR procedure (to minimize door opening)
- If patient intubated on arrival – keep on transfer (Oxylog Ventilator) to reduce tubing reconnections

STEP 4 - Transfer of patient from IR table/reconnection to transfer monitoring/doffing of PPE

- Check Oxygen Supply for Transfer / Batteries / Transfer Emergency Bag
- Handover to Transfer Anesthetist/ICU if not managing patient further or Recover in hot room with IR Nurse
- PPE doffing in sluice room (opposite Room 15) supported by buddy

Intubation Management of a COVID-19 patient in Interventional Radiology

Objective: Preparation of equipment and staff for intubation of a suspected COVID-19 patient. To be used in conjunction with **Action Cards 8a- 8g PPE**

Pre Intubation (in clean room)

1. Assemble team in clean room

- Three hot-room team roles: intubator, airway assistant, drug administration/monitoring
- Clean-room team roles: runner/donning buddy

2. Prepare for intubation

- Request COVID airway supplies trolley
- Check *intubation equipment list*
- Lay out airway equipment and rescue devices on a metal trolley

3. Remove personal items e.g. mobile phone, ID badge, keys from pockets

4. Don and check PPE equipment

5. Move to hot room

- Take ONLY the metal trolley into the hot room
- Any additional equipment will be handed through by the runner

NB: All equipment will be provided by ODP/Anaesthetic Nurse

Intubation Equipment List

Equipment:

Appropriately sized tracheal tube with subglottic suction
Airtraq and screen or I-view videolaryngoscope
Marker pen
Direct laryngoscope
Bougie
Stylet
Inline suction system
Tracheal tube clamp
Mainstream capnograph
HME filters at both patient and machine ends of circuit
DO NOT USE side-stream gas analyser
DO NOT USE High Flow Nasal Oxygenation
If intubating with access to an anaesthetic machine and breathing circuit DO NOT use a Waters Circuit
If intubating without access to an anaesthetic machine and breathing circuit a Waters Circuit will be necessary

Drugs:

Induction drugs for RSI
Emergency drugs e.g. vasopressors
Maintenance drugs and equipment

Intubation Management of a COVID-19 patient in Interventional Radiology

Objective: Intubation of a suspected COVID-19 patient minimising risk to staff. Only essential staff should enter the room with the patient. To be used in conjunction with **Action Cards 8a – 8g PPE**

1. **Receive patient on trolley**
   - Check HME filters attached to both ends of breathing circuit
   - Check patient positioning for intubation
   - Check landmarks for front of neck airway and mark cricothyroid membrane
2. **Check IV access adequate and functional**
3. **Pre-oxygenate for at least 5 minutes with tight seal on mask**
   - Consider 5cmH_2O PEEP
4. **Give RSI drugs**
   - if hypoxia low pressure/low volume mask ventilation (two handed technique)
5. **Turn oxygen off before removing mask**
   - Perform *Plan A: Primary intubation*
6. **If intubation successful:**
   - Perform *post-intubation actions*
7. **If laryngoscopy difficult:**
   - Insert iGel and ventilate
   - Perform *Plan B: Secondary Intubation*
   - If successful perform *post-intubation actions*
8. **If cannot ventilate via iGel:**
   - Perform *Plan C: Mask ventilation*
9. **If cannot mask ventilate:**
   - Perform *Plan D: Front of neck airway*
   - Perform *post-intubation actions*

Airway Plans

Plan A: Primary Intubation
- Laryngoscopy with Airtraq and screen or I-view videolaryngoscope
- Direct laryngoscopy only if essential

Plan B: Secondary Intubation
- Request Ambu-scope and Aintree Intubating Catheter from theatres:
- Load Aintree Intubating Catheter on to Ambu-scope
- Insert Aintree Intubating Catheter via iGel using Ambu-scope
- Remove Ambu-scope and iGel; leave Aintree Intubating Catheter in trachea
- Intubate over Aintree **Intubating** Catheter
- Remove Aintree Intubating Catheter

Plan C: Mask Ventilation
- Low pressure/low volume mask ventilation
- Two-handed technique to maintain seal

Plan D: Front of Neck Airway
- Scalpel (size 10 blade)
- Bougie
- Size 6.0 tracheal tube

Post-intubation Actions

- Connect breathing circuit HME, inline suction, and mainstream capnograph
- Inflate cuff BEFORE ventilation
- Turn oxygen on
- Confirm capnography
- Secure tracheal tube with tie
- Check tracheal tube cuff pressure; must be at least 5cmH_2O above inspiratory pressure to minimise leak
- If the circuit must be disconnected, stop ventilator, occlude the tracheal tube with a clamp before detaching, and leave the filter on the patient side. **Restart ventilation and move clamp once reconnected**
- Clean anaesthetic machine and breathing circuit with 'Clinell' wipe
- Clean patient's face, neck, hair, and hands with soap and water
- DO NOT LEAVE THEATRE until 15 minutes have elapsed post-intubation

Management of a COVID-19 patient in Interventional Radiology

Action card 8d: Aerosol-generating procedures (AGP)

The PHE-agreed list of AGPs in UK practice is:

- Intubation, extubation and related procedures such as manual ventilation and open suctioning
- Tracheotomy/tracheostomy procedures (insertion/open suctioning/removal)
- Certain oropharyngeal and nasopharyngeal procedures/investigations[1]
- Bronchoscopy
- Upper GI endoscopy
- Surgery and post-mortem procedures involving high-speed devices
- Some dental procedures (e.g. high speed drilling)
- Non-Invasive Ventilation (NIV) such as Bi-level Positive Airway Pressure (BiPAP) & Continuous Positive Airway Pressure ventilation (CPAP)
- High-Frequency Oscillating Ventilation (HFOV)
- High Flow Nasal Oxygen (HFNO), also called High Flow Nasal Cannula
- Induction of sputum
- Certain locally agreed physiotherapy & speech and language procedures (see next slide)

1. Nasoendoscopy & laryngopharyngoscopy, extraction/SR of teeth, intra-oral biopsies, incision and drainage of a dental abscess, use of power tools, fenestrated microsuction

Management of a COVID-19 patient in Interventional Radiology

Aerosol Generating Procedures in Interventional and Diagnostic Radiology

Tables and figures

Table 1. Aerosol Generating Procedures Commonly Performed in IR Suites

Any procedure involving a patient who:	Any procedure that may induce coughing:
• requires intubation/extubation • is receiving a form of ventilatory support associated with the risk of mechanical dispersal of aerosols* • requires active airway suctioning (i.e. tracheostomy patient) *Note: Any patient undergoing sedation may require airway rescue, which would require utilization of aerosol precautions.	• Lung biopsy • Lung ablation • Thoracentesis • Pleural drains • Chest tube for pneumothorax • Bronchial artery embolization • Bronchial stenting • Nasogastric Tube (NG tube) or Orogastric tube (OG tube) placement • Any procedure that requires NG tube placement: • Gastrostomy • Gastro-jejunostomy tube placement • Jejunostomy • GI stent placement

Extubation Management of a COVID-19 patient in Interventional Radiology

Objective: Extubation of suspected Covid-19 patient whilst minimising aerosolisation of virus particles. Only those essential to care should be present. PPE required as per **action cards 8a – 8g**

Extubation

In Hot Room

1. **Check whether to extubate on IR table, IR transfer trolley or bed** (see location risk assessment)
2. **Prepare patient for extubation**
   - Position table/bed so that all staff are behind patient
   - Administer sugammadex
   - Begin pre-oxygenation
3. **Prepare equipment** (see minimum equipment list)
4. **Clear airway of secretions**
   - Careful oral suction with Yankaeur sucker or
   - Tracheal suction with inline suction system
5. **Perform final pre-extubation checks**
   - Check train-of-four >0.9 and establish self ventilation
   - Check EtO2 >0.9
   - Fully open APL value
6. **Stop anaesthetic agent(s)**
7. **Untie tube tie and maintain control of tracheal tube**
8. **Prepare team for extubation process**
   - Check patient can obey commands
   - Deflate cuff at the point of extubation then remove tube onto inco-pad
   - Apply anaesthetic facemask immediately
   - Apply Hudson mask AND surgical mask once airway confirmed and coughing subsided
9. **Observe patient for at least five minutes prior to transfer to recovery nurse care**

Location Risk Assessment

Consideration must be given to extubation on IR table/ IR trolley or bed

- If extubating on IR Table then a transfer post-extubation will be required. Take care to maintain distance from the airway when this happens. It may be appropriate to keep the patient sitting upright on the IR table for a longer period than normal to ensure the airway is clear and there will be no further coughing.
- If extubating on bed then a transfer prior to extubation will be required. If the patient is already self-ventilating then it will not be possible to clamp the tube and disconnect the breathing circuit during the transfer. Extra care MUST be taken to avoid accidental disconnection or extubation during the transfer.

Minimum Equipment List

- Oropharyngeal airway
- Anaesthetic face mask
- Hudson Mask
- Surgical facemask
- iGel
- Yankaeur sicker
- Syringe to deflate tube cuff
- Intubation equipment for emergency use

Management of a COVID-19 patient in Interventional Radiology

CRITICAL CARE PERSONAL PROTECTIVE EQUIPMENT (PPE) with FFP3

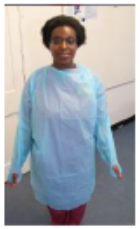
Action card 8a

Also for use for aerosol generating procedures (AGP)

How to put on (donning) PPE

Step 1

- Gather PPE required: thumb-looped or surgical gown, FFP-3 face mask, eye protection (face shield or goggles) & gloves
- Plan where to put on & take off PPE
- **Ensure you have a buddy**, know how to deal with waste & manage a spill



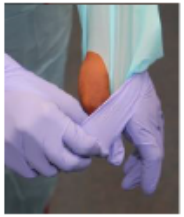
Step 2
Put on long sleeve gown

Step 3a
Put on FFP-3 face mask. Wear arms of spectacles **over** mask strap.

Step 3b

- Mold the mask over nose
- Lower strap to nape of neck. Upper strap to crown of head
- Perform a personal fit check

Step 4
Put on face shield



Step 5
Put on gloves

- Ensure no skin shows

Buddy should check PPE is properly fitted before you see the patient

How to take off (doffing) PPE

Should always be supervised by a buddy outside the room/bay

Step 1
Remove gloves & gown

- Peel off gown & gloves together, & roll inside out
- Dispose of safely

Step 2
Perform hand-hygiene with alcohol gel

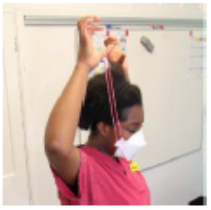
Leave patient isolation room or cohort bay & close door

In isolation room lobby or ward area outside cohort bay

Step 3

- Remove face shield from behind. Lift up and over head
- Dispose safely (or re-use after cleaning with green Clinell wipe)

Step 4
Perform hand-hygiene with alcohol gel



Step 5

- If spectacles worn, buddy should remove **before** mask removal
- Remove mask from behind with both hands & dispose safely

Step 6

- Perform hand-hygiene with alcohol gel
- If exiting a lobby, repeat hand hygiene again

Management of a COVID-19 patient in Interventional Radiology

Objective: How to doff safely in Interventional Radiology at St Thomas'

- *Remove **long sleeved apron/gown** and **outer gloves**. Dispose of these **inside Room 15** (leaving one pair of gloves on, mask and visor)*
- *Leave Room 15 through the double doors – **DO NOT TOUCH ANYTHING** (door to be held open by **CLEAN** nurse/radiographer)*
- *Clean and dry the soles of your shoes on the inco pads outside the double doors (one wet with difficil-s one dry)*
- ***Alcohol gel gloves** using the dispenser outside Room 15 (**CLEAN** nurse/radiographer to assist with this)*
- *Enter sluice (door stop used to keep the door open)*
- *Remove your **visor** and **hat** at the same time whilst leaning over the sink*
- *Put your **hat** in the bin and **visor** in the designated dirty tray*
- ***Alcohol gel gloves***
- *Remove **glasses** (lead or standard) and put them in the designated dirty tray*
- *Clean visor and glasses with green clinell wipe and place in the designated drying tray*
- ***Alcohol gel gloves***
- *Using green clinell wipes, clean your **lead coat** (your dOFFing 'buddy' or **CLEAN** nurse/radiographer will help clean the back of the leads if available) or use the silver trolley provided to lay lead coat on and clean front and back*
- *Remove your **gloves** and put them in the bin, then thoroughly wash your hands*
- *Hang up your cleaned **lead coat** on the empty rack opposite the sluice*
- *Return to sluice, put on **new gloves** and **apron** and use difficil-s and green clinell wipes to clean the top of your shoes*
- ***Alcohol gel gloves***
- *Remove your **mask** straight into the bin (if you need your glasses to see you can put them back on at this stage)*
- *Remove your **gloves** and put them in the bin, then **WASH YOUR HANDS***
- *Return visor and lead glasses to donning room (Anaesthetic Room 15)*
- ***Moisturise!!!***