



Society for Cardiothoracic Surgery



## **This SCTS / ACTACC / SCPS document is guidance to UK cardiac and thoracic teams for procedures on patients with COVID 19.**

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### **Principles**

This document will set out general principles which can be adapted for local use.

Only essential and lifesaving surgery where there is no other viable option should be performed on a suspected or confirmed COVID-19 patient. The decision to operate should be a multi-disciplinary decision involving at the very least the surgeon and the anaesthetist.

Patients should be appraised of the added risk associated with the acute viral infection as part of the consent process, and their views should be documented on any advance directives, long term ITU care and end of life care.

The pathway focusses on staff and patient safety at all steps. Appropriate PPE must be available for all staff.

Staffing should be kept to a minimum

The viral status of patients will often be unknown. High-risk procedures for virus transmission are those generating an aerosol. Other transmission is mostly from contact and transfer to mucosal membranes

Booking of patients is by normal routes, clearly highlighting COVID-19 status on this and telephoning or bleeping theatre coordinator to alert staff

### **Before patient arrival**

The theatre is a designated theatre.

The scrub room and anaesthetic rooms are 'clean' zone. Investigations, including angiograms, must be available within the theatre. Clean runner can scroll through investigations for viewing

Dirty and clean buffer zones will be delineated on floor of theatre

Team briefing – introductions including names written on white board, identification of aerosol generating procedures (AGPs) as part of extended COVID-19 checklist (see below)

Anaesthetic and surgical equipment present and checked including presence of high efficiency viral filter at both limbs of breathing system and at patient end. Expected drugs are drawn up and checked. Expected equipment needed is within dirty zone. Handheld ultrasound should be used preferentially within dirty zone (on order).

Minimum Perfusion equipment disposables within dirty zone. Access to additional equipment provided by clean runner.

Disposable anaesthetic equipment should be used wherever possible.

An experienced anaesthetist should anaesthetise the patient. Consider the method of anaesthesia most appropriate – rapid sequence Induction may be lower risk

Signs to be placed on entry and exit. Doors not being used as an identified entry or exit point will be shut with tape.

## **Staff**

**Exact staffing will vary depending upon case – roles and required PPE should be identified at team brief**

Dirty Zone: scrub nurse, surgeon, assistant, scrub runner, anaesthetist 1, anaesthetist 2 (if indicated), anaesthetic ODP, Perfusionist (if required)

Clean buffer Zone: clean anaesthetic ODP, clean surgical runner and Perfusionist (if required).

Clean zone: surgical and anaesthetic runners within scrub room and anaesthetic room. Second perfusionist required in at least one of the clean zones.

No staff should enter or exit theatre until the case is completed. If additional staff are needed, they should not enter the theatre until they are in appropriate PPE for the area, they are working in. This will be displayed on wall in donning area to reflect current PHE guidance. The designated entry and entry point for staff is via the donning and doffing area.

All staff present should be recorded upon theatre recording system to allow contact tracing

**Donning** of appropriate PPE by trained staff using best practice of a checklist and buddy in designated area

**Only when team is ready the patient is sent for** – porters are notified this is a COVID 19 positive / suspected patient

## **Patient arrival and checklists**

The patient will arrive and be held before theatre doors. The 1<sup>st</sup> stage of WHO checklist will be performed.

The patient will then enter theatre through the designated entry door with a surgical facemask on, over a Hudson mask oxygen delivery system if this is required.

The patient will position themselves on the operating table with assistance from theatre team if required by walking from clean zone into dirty zone. The bed will remain within theatre and be positioned within the dirty zone on far wall.

If a patient is unable to walk the bed will enter the dirty zone, the patient will transfer, and the bed will locate in the extended dirty area on far wall. Consider at briefing number of staff needed within dirty zone to transfer safely and ensure they have the correct PPE.

Notes, consent, WHO checklist and care plan stay outside dirty zone

## **Induction of Anaesthesia**

Induction of anaesthesia should be in line with published guidelines which can be accessed using the following link:

***Induction - <https://icmanaesthesiaCOVID-19.org/airway-management>***

Emergency airway management checklist should be performed (See below)

The patient should be anaesthetised in theatre if possible, with only essential anaesthetic support staff present.

For intubation and set-up, the anaesthetist and anaesthetic practitioner should have full PPE, namely FFP3 mask and goggles, or a hood, with long-sleeve gowns and gloves. Extubation requires similar precautions

Induction of anaesthesia and securing of the airway will be performed by a skilled operator using best local practice, which should include double gloving and being as distant from the airway as possible at all times. Avoid mask ventilation as this is considered an AGP. Induction can be performed using waters or circle systems, with a HMEF as close to the patient as possible. Once circuit has been secured vigilance should be made not to disconnect as this will be an AGP. Ares vulnerable to disconnection should be taped.

Where a double lumen tube is inserted it is vital that the access to the non-ventilated lung is occluded.

Visual guides to correct set up or circuit are in theatre and should form part of briefing. This should include closed suction system.

Equipment will be placed into designated receiver

Air handling in theatre (25 ACH) should remove aerosol contamination in 10 minutes therefore if the patient is stable there should be a 10 minute delay until scrub staff present and start prepping.

WHO checklist should be completed before surgery starts and is checked by clean and dirty staff working together

## **Surgery**

All theatre staff should wear FFP3 masks, with gowns, gloves and eye protection during skin preparation and draping of the patient.

Once the patient is intubated and draped, the risk of transmission should be very low, but theatre staff are recommended to maintain PPE as above. Blood is not regarded as being of any higher risk to staff than normal, since viraemia is very uncommon in COVID-19 infection

Specimens should be double bagged and labelled high risk (category B biohazard)

Equipment and drugs brought into the dirty zone should be done using trays to avoid contact between clean and dirty staff and areas. There are separate anaesthesia and surgical in and out trays.

Single use and disposable kit should be used where possible

## **Planned extubation in theatre**

If the patient is being extubated, they should be transferred onto their bed under anaesthesia.

Extubation is a high-risk period as the patient is likely to cough and should be carried out in dirty zone.

Recovery should occur in theatre within the dirty zone

Two staff should stay in PPE until the patient has recovered and left theatre with an additional runner in attendance within the clean zone

When patient is ready to return to ward ensure porters are aware this is a COVID positive/suspected patient

## **Doffing**

Staff to doff into appropriate biohazard bags, keeping FFP3 mask and hoods on

Staff leave by designated exit and when out of theatre can remove FFP3 masks, hood will be removed with help of buddy on exit and left by exit door of theatre.

The theatre should be cleaned and disinfected after use, using a chlorine, or chlorine dioxide, based disinfectant e.g. Tristel Fuse. Pay particular attention to high touch areas of the anaesthetic machine and surrounding area.

The cardiopulmonary machines have varying surfaces which must be cleaned with the appropriate agents.

The corridor areas outside of the theatre within 4 metres should also be cleaned. No equipment should be stored in this area.

### **Decontamination and gas flow**

The default state for theatre is to have positive pressure ventilation OFF.

The theatre is left to stand after vacation for 20 mins then terminally cleaned. Positive pressure airflow is then turned back on for 20 mins to allow a change of air.

There is no requirement to have a quarantine zone around theatre when this occurs

Environmental decontamination of equipment will follow guidelines from trust

### **Death in theatre**

Leave airway and heat and moisture exchanging filters (HMEF) in place

Body handlers adopt PPE for AGP, body placed in body bag, exterior and trolley decontaminated before leaving dirty zone

### **Other issues:**

#### **Blood sampling eg ABGs and blood**

Bagged samples are passed outside dirty zone to clean runner using no touch tray technique and taken to ABG machine. User wearing appropriate PPE samples blood and discards sample immediately. Clean runner brings back to runner in dirty zone and then to anaesthetist/perfusionist who can review the results.

Transfusion products will come from porter, to clean runner, to staff within dirty zone to then be checked, the box should stay outside the dirty zone.

#### **Emergency cases**

Time sensitive cases will be potentially challenging but appropriate PPE and processes **must** be followed to ensure staff safety and that of the patient

#### **Non-technical skills & welfare**

Communicating in PPE is significantly more difficult. This should be considered and reinforced at the brief.

Perfusionists should understand any specific surgical requirements of particular cases and confirm all instructions through a closed loop approach (repeat instructions back).

These cases are likely to be long and emotionally demanding. Staff should be given appropriate time to recover and recharge before their next duties. Urgent further cases may be best performed by a new team if possible

Staff should consider their hydration and use of toilet for comfort before starting

## **Documentation**

Anaesthesia documentation should be where possible performed by a scribe (clean ODP) who is in the clean zone and positioned to see machine and monitor and will record appropriate entries. This will be augmented by verbal instructions eg drugs. Anaesthesia records within the dirty zone should not leave this area and will need to be destroyed.

Electronic perfusion records should be used and/or a clean scribe to record perfusion parameters and cardioplegia delivery etc.

## **References**

<https://www.asahq.org/about-asa/governance-and-committees/asa-committees/committee-on-occupational-health/coronavirus>

[https://bjanaesthesia.org/article/S0007-0912\(20\)30098-2/fulltext](https://bjanaesthesia.org/article/S0007-0912(20)30098-2/fulltext)

[https://www.journalofhospitalinfection.com/article/S0195-6701\(06\)00385-9/fulltext](https://www.journalofhospitalinfection.com/article/S0195-6701(06)00385-9/fulltext)

<https://www.nature.com/articles/s41598-019-57216-x>

Induction - <https://icmanaesthesiaCOVID-19.org/airway-management>

## Team Brief for COVID-19 Suspected or Confirmed Patient requiring surgery v1 16/03

### 1. Team Member Introductions

- a. Names and designation on white board (ensure radiology staff present as required)

### 2. Patient Details.

Confirm:

- a. Patient Name, Age and Co-morbidities
- b. Patient Allergies
- c. Confirm if patient is COVID-19 suspected or confirmed
- d. Current location of patient
- e. Presenting problem and Planned surgery
- f. Any concerns including any perceived airway difficulties, appropriate intubation and extubation plan

### 3. Personnel

Confirm:

- a. Staff members to remain in dirty area (2m of Aerosol Generating Procedures)
  - i. Should be in full PPE (FFP3 Mask or Hood, vizor, gown, double gloves)
- b. Staff members in buffered area (outside dirty zone but within theatre)
  - i. Should be in gown, gloves, facemask with vizor
- c. Staff members in clean area (anaesthetic room and scrub prep area)
  - i. Should be in vizor and gloves
- d. Porters and security notified of COVID-19 patient and plan for transfer

### 4. Equipment/disposables

- a. Theatre environment
  - i. Signs on doors: Entry, exit, theatre changing room
  - ii. Clean and dirty zones delineated
  - iii. Donning and doffing plan / areas discussed
  - iv. Theatre positive pressure air flow turned off
- b. Surgical equipment
  - i. Confirm required sets / trays available and checked
  - ii. Cannula and Perfusion equipment available
  - iii. consider what can be outside theatre available quickly if needed i.e. IABP
  - iv. Suction diathermy
  - v. Any special equipment e.g. cell saver, etc.
- c. Anaesthetic Equipment
  - i. Airway equipment checked and ready
  - ii. IV fluids – what fluids are required, warmer warming device setup, rapid infuser if required.
  - iii. Monitoring – ECG, BP, Sats, ETCO<sub>2</sub>. Arterial line or CVP required? – USS available? Temperature monitoring.
  - iv. Infusion pumps – checked, charged, plugged in and drugs ready
  - v. Any special equipment eg Oxford HELP Pillow, extra airway equipment

### 5. Anaesthetic Drugs

- a. Induction agents
- b. Opioids
- c. Muscle Relaxants
- d. Vasoactive drugs

- e. Atropine/glycopyrrolate
- f. Antibiotics
- g. Tranexamic acid
- h. Magnesium Sulphate, Calcium Chloride
- i. Analgesia
- j. Antiemetics
- k. Any other special drug requirements?

**6. Patient arrival, transfer and WHO checklists**

- a. Can patient mobilise and self-transfer?
- b. Pat slide and slide sheet available
- c. Staff to transfer: Anaesthetist x2, ODP, 1 x other (in full PPE)
- d. Plan for patient arrival, transit in theatre and positioning of bed/trolley
- e. Location of notes on arrival
- f. Plan for WHO checklist maintaining clean / dirty line (documentation held by clean staff)

**7. Plan for recovery and post-operative destination**

- a. Staff required to transfer patient to bed (full PPE required)
- b. Staff remaining (Anaesthetist, ODP and runner)
- c. Post op ward destination confirmed
- d. Staff required for transfer to ward

**8. Any other issues or concerns**