Barts Health NHS Trust

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COVID screening

Background and justification

- It is anticipated that undertaking cardiac and thoracic surgery in patients with active COVID-19 infection will increase the patients' mortality, morbidity and length of hospital & ITU stay.
- Screening patients for proven or suspected COVID infection prior to surgery seeks to identify those patients for whom deferral of surgery should be considered – by identifying those cases with possible or proven COVID infection for whom the risk of proceeding with surgery is deemed to be greater than the risk of deferring surgery.
- Screening patients for proven or suspected COVID infection is via a stepwise approach including symptoms, then (if asymptomatic) a combination of blood tests (LDH, lymphocyte count and ferritin), a COVID PCR on a combined nose & throat swab, and then a CT scan.
- If any of these factors suggest the possibility of COVID infection, an MDT discussion is convened to determine whether to proceed to surgery or to defer surgery.
- Some patients may have conditions that require urgent surgery irrespective of their COVID status.
- The recent change in guidance from Public Health England (PHE, update 03/04/2020, https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/covid-19-personal-protective-equipment-ppe) regarding Personal Protective Equipment, considers every patient (and potentially every staff member) as possibly having COVID infection. These changes have been welcomed and adopted by St Bartholomew's Hospital. As a result, all staff in the Operating Room and in ITUs are advised to wear Aerosol-Protection PPE. This means that all staff potentially exposed to infectious aerosols are optimally protected for all cases, including those cases that have COVID but who are negative on all the screening processes, or urgent cases where screening cannot precede surgery.
- Performing a COVID PCR on a sample from deep within the respiratory tract is understood to have both a high sensitivity and high negative-predictive value. All cardiac and thoracic surgical cases should have a tracheal aspirate sampled either during surgery or, if not possible during surgery, on arrival in ITU. This sample should be sent for COVID PCR, and the result used to determine the most appropriate location for the patient to be managed (e.g. within a COVID-positive or a COVID-negative ITU or ward)

- This strategy aims to cohort patients within the St Bartholomew's site as best as is currently possible to facilitate ongoing care of cardiology and cardiac / thoracic surgery patients across London – PLECS (Pan London Emergency Cardiac Surgery)

- For patients who have tested COVID-positive pre-operatively, a repeat swab to check for persistence of clearance is currently NOT recommended. In some individuals viral RNA can be detected in nose/throat swabs for several weeks following resolution of symptoms. The PCR test cannot differentiate between living or dead virus, and cannot accurately quantify the amount of viral RNA detected. At present, PHE advises the combination of both a time-based and symptom-based approach to determining de-isolation and return to work, and it is proposed the same approach is adopted for determining timing of surgery. In time, serology testing may have a role in refining these decisions.

Screening recommendations for different routes into SBH surgery

Emergency surgical cases

- The emergency nature of the case (e.g. dissections, airway) means that there is insufficient time to undertake COVID screening. As per all patients, emergency cases are treated as potentially COVID-positive. Emergency cases should be given priority for a side room on 1C, until the result of COVID PCR from tracheal aspirate is known.

General cancer surgery (e.g. breast, ocular, endocrine and brachytherapy)

- Patients coming **from home** or as an **inter-hospital transfer** for urgent **general cancer surgery** (breast, ocular, endocrine and brachytherapy) are screened on the basis of symptoms. If patients have symptoms, then an MDT decides whether to proceed with or to defer surgery, as it may be prudent to defer surgery in symptomatic patients for 14 days, as would be the case for patients with an influenza-like illness.
- With respect to PPE and theatre logistics, all breast, ocular, endocrine and brachytherapy is undertaken assuming that the patient might have COVID.

Cardiology cases that require general anaesthetic

- Patients coming **from home** or as an **inter-hospital transfer** for urgent **cardiology procedures (including those where a general anaesthetic is required / is likely)** are screened on the basis of symptoms. If patients have symptoms, then an MDT decides whether to proceed with or to defer the procedure, as it may be prudent to defer the

procedure in symptomatic patients for 14 days, as would be the case for patients with an influenza-like illness.

- With respect to PPE and cath lab logistics, all procedures are undertaken assuming that the patient might have COVID.

Cardiac and thoracic surgery – coming in from home

- Patients coming **from home** for urgent **cardiac and thoracic surgery** will be phoned prior to come into hospital and, using the COVID screening questionnaire (see 'Useful Documents' section) asked if they have any symptoms that might indicate COVID infection.
- If the questionnaire suggests a possibility of COVID infection, then an MDT decides whether to proceed with or to defer the procedure, as it may be prudent to defer the procedure in symptomatic patients for 14 days, as would be the case for patients with an influenza-like illness. In patients due to have thoracic surgery it may be prudent to defer for a longer period, e.g. 30 days, as the impact of undertaken thoracic surgery on a patient who has not fully-recovered from COVID infection may be significant. The duration of deferral should be made on a case-by-case basis weighing the risk of operation against the risk of deferral.
- If the questionnaire does not suggest the possibility of COVID infection then the patient will be admitted into a side room 2 days before surgery. On Day 0 the patient is assessed for symptoms (as per COVID screening questionnaire), blood tests (LDH, lymphocyte count and ferritin) and a combined throat & nose swab for COVID PCR.
- If all of the above are negative / normal then a CT chest is undertaken on Day 1
- If all of the screening is negative / normal then the operation goes ahead on Day 2.
- As per all cases, the operation and the patient's recovery are undertaken assuming that the patient might have COVID.
- If any of the COVID screening suggests the possibility of COVID (e.g. symptoms on arrival, abnormal bloods or abnormal CT), or if the COVID swab is positive then an MDT decides whether to proceed with or to defer the procedure.

Cardiac and thoracic surgery – inter-hospital transfers

- The team looking after the patient in the referring hospital will be asked to undertake the same screening process as if the patient were coming in to SBH from home i.e. a combination of:
    - the COVID screening questionnaire (see 'Useful Documents' section)

  - blood tests (WCC, LDH and Ferritin)
  - a combined throat & nose swab for COVID PCR
  - If all of the above are negative / normal then a CT chest is also undertaken

- **<u>The patient will NOT be accepted for transfer unless the screening above has been completed, or unless emergency surgery is deemed required.</u>**
- If any of the COVID screening suggests the possibility of COVID (e.g. symptoms on arrival, abnormal bloods or abnormal CT), or if the COVID swab is positive then an MDT decides whether to proceed with or to defer the procedure. For cardiac surgery deferral by 14 days should be considered, and for thoracic surgery deferral by 30 days should be considered.
- The duration of deferral should be made on a case-by-case basis weighing the risk of operation against the risk of deferral.

Cardiac and thoracic surgery – in-house urgent cases

- Proceed as if the patient had come in to SBH from home i.e. a combination of:
  - the COVID screening questionnaire (see 'Useful Documents' section)
  - blood tests (WCC, LDH and Ferritin)
  - a combined throat & nose swab for COVID PCR
  - If all of the above are negative / normal then a CT chest is also undertaken

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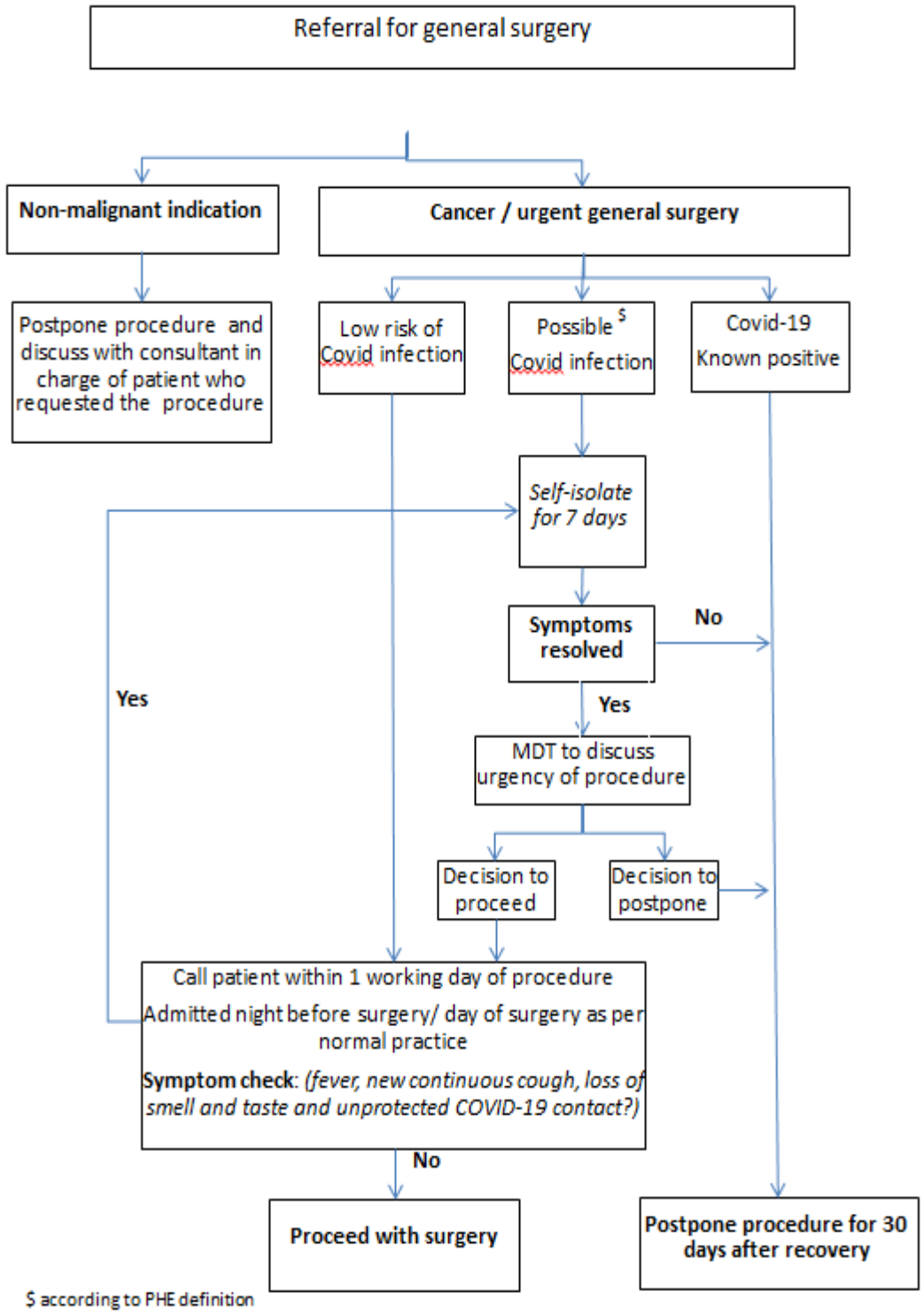
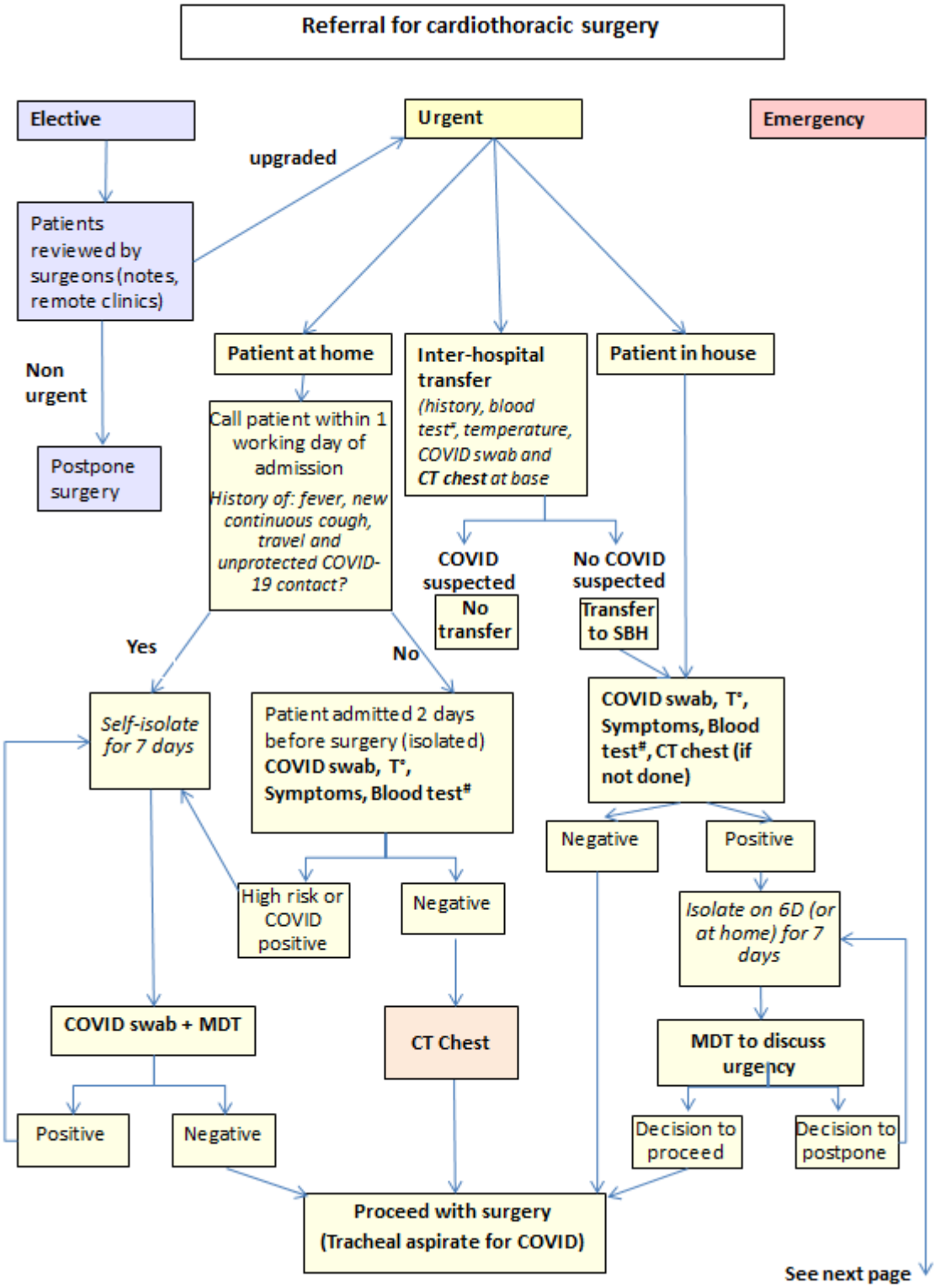
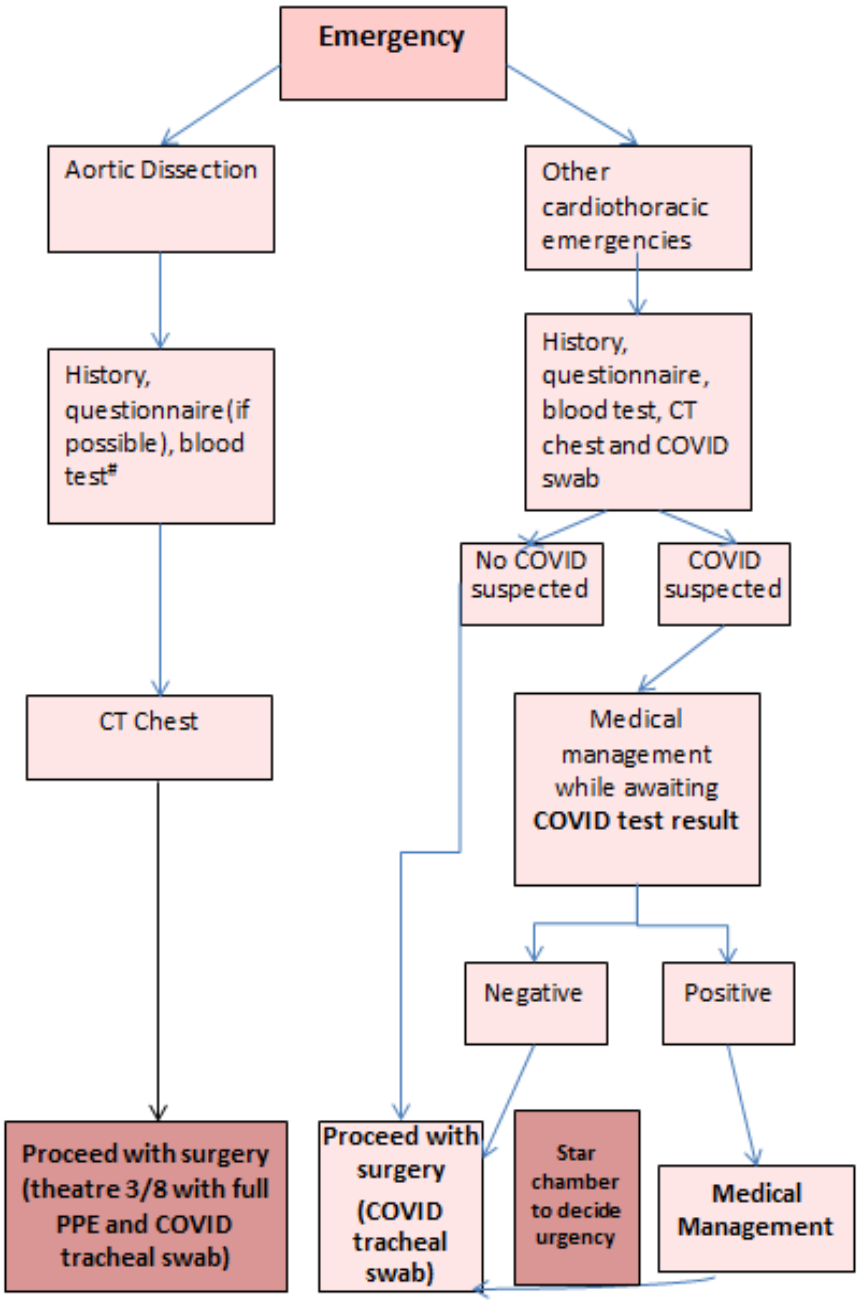
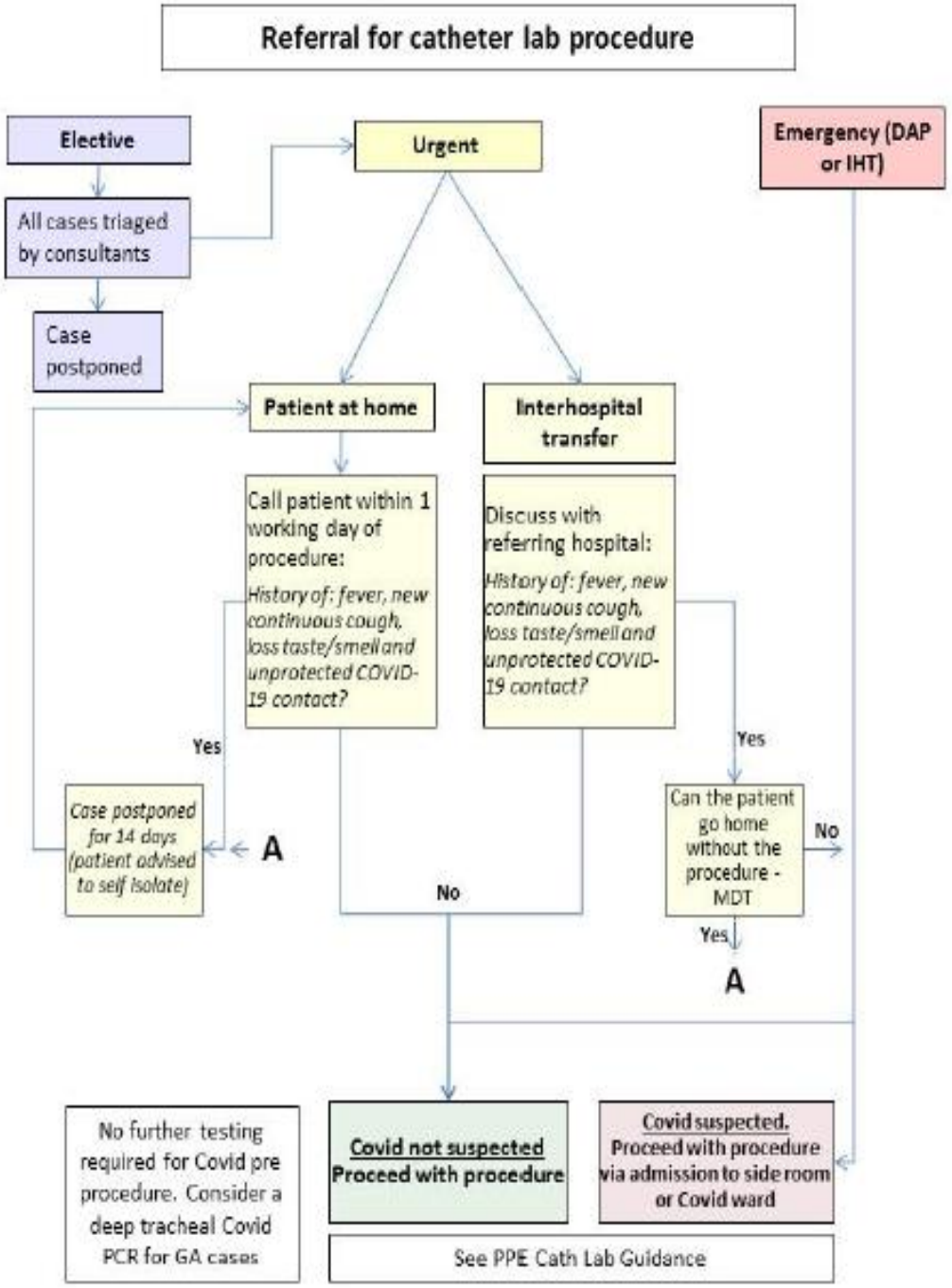
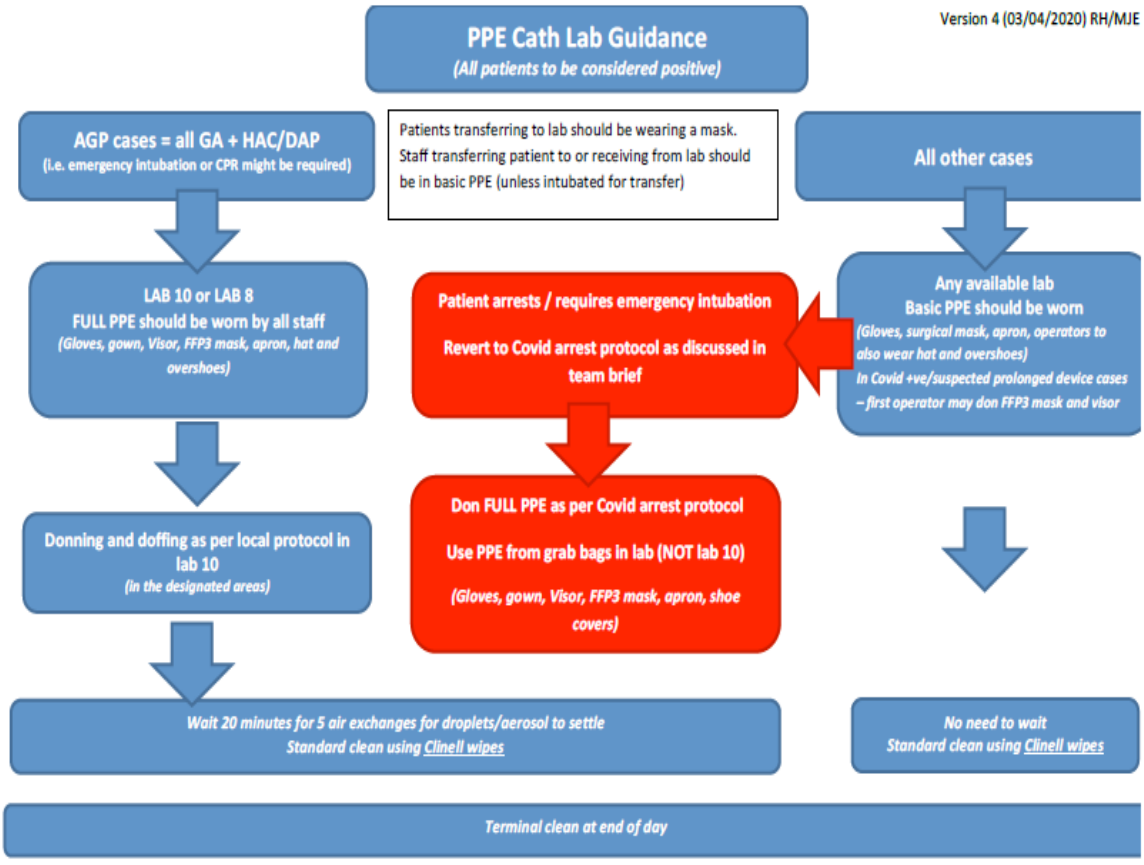
Referral and patient screening flowcharts




Referral for cardiothoracic surgery
Elective
Urgent
Emergency
upgraded
Patients reviewed by surgeons (notes, remote clinics)
Non urgent
Postpone surgery
Patient at home
Call patient within 1 working day of admission
History of: fever, new continuous cough, travel and unprotected COVID-19 contact?
Yes
No
Self-isolate for 7 days
COVID swab + MDT
Positive
Negative
Inter-hospital transfer
(history, blood test#, temperature, COVID swab and CT chest at base
COVID suspected
No transfer
No COVID suspected
Transfer to SBH
Patient admitted 2 days before surgery (isolated)
COVID swab, T°, Symptoms, Blood test#
High risk or COVID positive
Negative
CT Chest
Patient in house
COVID swab, T°, Symptoms, Blood test#, CT chest (if not done)
Negative
Positive
Isolate on 6D (or at home) for 7 days
MDT to discuss urgency
Decision to proceed
Decision to postpone
Proceed with surgery
(Tracheal aspirate for COVID)
See next page


Emergency
Aortic Dissection
Other cardiothoracic emergencies
History, questionnaire (if possible), blood test#
History, questionnaire, blood test, CT chest and COVID swab
No COVID suspected
COVID suspected
CT Chest
Medical management while awaiting COVID test result
Negative
Positive
Proceed with surgery (theatre 3/8 with full PPE and COVID tracheal swab)
Proceed with surgery (COVID tracheal swab)
Star chamber to decide urgency
Medical Management


Referral for catheter lab procedure
Elective
Urgent
Emergency (DAP or IHT)
All cases triaged by consultants
Case postponed
Patient at home
Interhospital transfer
Call patient within 1 working day of procedure:
History of: fever, new continuous cough, loss taste/smell and unprotected COVID-19 contact?
Discuss with referring hospital:
History of: fever, new continuous cough, loss taste/smell and unprotected COVID-19 contact?
Yes
Case postponed for 14 days (patient advised to self isolate)
A
Yes
Can the patient go home without the procedure - MDT
No
Yes
A
No
No further testing required for Covid pre procedure. Consider a deep tracheal Covid PCR for GA cases
Covid not suspected
Proceed with procedure
Covid suspected.
Proceed with procedure via admission to side room or Covid ward
See PPE Cath Lab Guidance



Please be advised, these guidelines use the most recent advice from WHO and NHS England and are specific to Barts Cath labs where we perform high risk procedures, PPE guidance may vary across other sites and wards

Theatres SOP

Summary of key aspects of Theatre SOP

- All cases undertaken as if the patient undergoing the procedure is COVID positive
- All intubation +/- extubation undertaken in theatre
- All staff in the operating room wear Aerosol-protection PPE
- All staff in theatres, but not in the operating room, wear a surgical mask and eye protection (and an apron and gloves for patient contact e.g. for transfers of a non-intubated patient)
- Non-intubated patients transferring in and/or out of theatre wear a surgical mask
- All staff in ITU wear Aerosol-protection PPE
- All staff delivering care to ward-based patients wear Droplet-protection PPE
- **Postoperative care:**
    - Known COVID-19 positive patients should be transferred post-operatively to the 6th floor
    - All other patients (even if they have been screened and deemed low risk for COVID) will be treated as 'suspected COVID' until the result of the tracheal aspirate is known
    - Thoracic patients will be nursed in side rooms on the 4th floor
    - For practical purposes it will not be possible to nurse all post-operative cardiac patients in side rooms on 1C. Side rooms should be prioritised for those patients who have undergone emergency surgery (as these patients have not undergone full screening) and those patients who on pre-operative clinical / radiological screening had features suggestive of COVID. 'COVID-suspect' cases should be cohorted in one of the big bays in 1C

PPE

- The recent change in guidance from Public Health England (PHE, update 03/04/2020, https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/covid-19-personal-protective-equipment-ppe) regarding Personal Protective Equipment, considers every patient (and potentially every staff member) as possibly having COVID infection.
- These changes have been welcomed and adopted by SBH. As a result, all staff in the operating room, cath labs and in ITUs are advised to wear Aerosol-Protection PPE. This means that all staff potentially exposed to infectious aerosols are optimally protected for all

cases, including those cases that have COVID but who are negative on all the screening processes, or urgent cases where screening cannot precede surgery

- See PPE donning & doffing guide in the 'Useful Documents' section. This includes both a pictorial description and step-by-step checklist of donning & doffing Aerosol-protection PPE for both scrubbed / sterile and non-scrubbed theatre staff
- All staff in theatres, but not in the operating room, wear a surgical mask and eye protection (and an apron and gloves for patient contact e.g. for transfers of a non-intubated patient)
- Staff who are in theatres, but who are not entering the operating room while a case is in progress should wear a surgical mask, and not FFP3 masks, as these are in limited supply

Theatre logistics

- Designate team – limit staff to a minimum:

Anaesthetic team	**Surgical team**	**Perfusion if needed**
Anaesthetist 1 (airway)	*Surgeon 1*	*Perfusionist 1 inside*
Anaesthetist 2 (drugs)	*Surgeon 2 / SCP*	Perfusionist 2 outside
Inside ODP	*Scrub nurse*	
Outside ODP	*Inside runner/circulator*	
	Outside runner/HCA	

Staff in italics indicates those who should wear aerosol-protection PPE

- Identify which theatres will be used for general, thoracic and cardiac cases.
    - Empty as much as possible out of these theatres to facilitate terminal cleaning at the end of each day
    - Consider using other theatres to store equipment
    - COVID alert signs on every entrance to theatre and anaesthetic room
- Designate a doffing area in theatre, as far away as possible from patient and close to exit doors
    - Put up the doffing poster and checklist
- Check theatre ventilation working (and leave on)
- Anaesthetic rooms: as patients will be intubated & extubated in theatre, anaesthetic rooms to be used as 'clean rooms' for donning PPE, preparation of drugs etc
    - Put up the donning poster and checklist
- Communication between inside-theatre and outside-theatre teams
    - Consider using signs, or DECT phones

    - A member of the outside-theatre team in the anaesthetic room
- Perfusion equipment
    - Consider having the bypass machine primed, and left outside of theatre pre-op
    - Wait 15 minutes following intubation before bringing the bypass machine into theatre, to allow aerosols to disperse, as this makes cleaning of the bypass machine post-op easier
    - Try and keep the bypass machine 2m away from the patient's airway, to limit contamination of the bypass machine with droplets

.

Transfers to & from theatre

Theatre locations

- Identify which theatres will be used for general, thoracic and cardiac cases.
- All cases are to be considered as 'COVID cases'
- Try as far as is practicable to minimise footfall outside of theatres during cases (as air from inside theatre is vented out into the corridors outside theatre)

Booking a patient for theatre

- All cases discussed with theatre coordinator
- All cases discussed with duty anaesthetist / SPOC anaesthetist out of hours

Transferring a patient to theatre

Non-ICU patient:

- Patient should wear a surgical mask
- Transfer team should consist of
    - HCA/nurse (for bed/chair)
    - 2 outside runners or any free team members (one in front to help with doors/touch buttons; one at the back to clean all touched surfaces)
- Transfer team should wear Droplet-protection PPE (apron, gloves, surgical mask & eye-protection), as a non-ventilated patient will not be generating aerosols
- Patient's paper notes / folder / drug chart should be placed inside a plastic bag
- Patient's bed remains inside theatre

- Print additional clean wristband from theatre office once patient in theatres; leave in anaesthetic room for blood transfusion checks
- Anaesthetic team should enter the theatre first

ICU patient:

- As per ICU transfer of COVID patient to CT/cath lab SOP
- Transfer team to wear Aerosol-protection PPE
- Receiving anaesthetic team should be in theatre in aerosol-PPE ready to receive the patient
- Patient's paper notes / folder / drug chart should be placed inside a plastic bag
- Patient's bed remains inside theatre
- Print additional clean wristband from theatre office once patient in theatres; leave in anaesthetic room for blood transfusion checks
- Endotracheal tube clamped whilst transferring from transfer ventilator to theatre ventilator
- Consider taping all ventilator connections to avoid possible aerosol generation in the event of accidental disconnection

Transfer out of theatre suite

Non-ICU patient:

- Patient should wear a surgical mask
- Ward nurse & transfer team should wear Droplet-protection PPE to collect patient in theatre, as a non-ventilated patient will not be generating aerosols
    - apron, gloves, surgical mask & eye-protection
- Patient's paper notes / folder / drug chart should be placed inside a plastic bag

ICU patient:

- As per ICU transfer of COVID patient to CT/cath lab SOP
- Transfer team to wear Aerosol-protection PPE
- Receiving ITU team should be in theatre in aerosol-PPE ready to receive the patient

For all cases

- Leave each theatre empty for 15 minutes following the departure of the patient, to allow sufficient time for any aerosols to be dispersed and diluted
- After 15 minutes has passed, staff may enter the empty theatre wearing Droplet-protection PPE (to prepare the theatre for the next case and to undertake cleaning)
- At the end of the list, the theatre should undergo a terminal clean

Patient transfer locations

Postoperative care:

- Known COVID-19 positive patients should be transferred post-operatively to the 6th floor.
- All other patients (even if they have been screened and deemed low risk for COVID) will be treated as 'suspected COVID' until the result of the tracheal aspirate is known
- Thoracic patients will be nursed in side rooms on the 4th floor
- For practical purposes it will not be possible to nurse all post-operative cardiac patients in a side rooms on 1C. Side rooms should be prioritised for those patients who have undergone emergency surgery (as these patients have not undergone full screening) and those patients who on pre-operative clinical / radiological screening had features suggestive of COVID. 'COVID-suspect' cases should be cohorted in one of the big bays in 1C

Intubation & Extubation

Intubation

- See checklist SOP for intubation of COVID patients
- ODP check anaesthetic machine and cover with big plastic drape
- If needed, cover TOE machine with plastic drape
- COVID intubation checklist on anaesthetic machine
- ODP prepare COVID airway trolley and video laryngoscope (covered with plastic drape)
- If patient to be extubated immediately after procedure – prepare plastic drape with cut out attached to mask (see picture attached – made from C-Arm cover or any other see through plastic)
- Anaesthetist prepare all anaesthetic drugs and emergency drugs required including flush
- Prepare all cannulation gear
- Leave clean drug trolley and emergency airway equipment in anaesthetic room

- Double lumen tubes: discuss with surgeon. Single lumen if possible. Vivasight if DLT required, full PPE for everyone until lung collapsed

Extubation

Patients remaining intubated:

- Transfer to ICU as per ICU transfer of COVID patient to CT/cath lab SOP
- Doffing of PPE on ICU doffing area; change scrubs afterwards

Patients to be extubated:

- Transfer patient onto bed under deep anaesthesia
- Only inside runner, anaesthetist and inside ODP remain inside theatre (all in aerosol-protection PPE)
    - Other staff should doff PPE and exit theatre **BEFORE** extubation
    - Outside ODP and runner in anaesthetic room
- Have waste bin ready
- Have visor for patient ready
- Place nasal specs on patient
- Plastic bag with cut out for mask (protects from patient coughing on extubation). Hold over patient's face
- Loosen tube tape
- When patient extubatable remove ETT carefully underneath plastic bag and immediately place in the bin
- Put surgical mask over nasal specs, or if Hudson mask required apply face visor to patient
- Transfer patient to recovery. Recovery team should wear droplet-protection PPE as a non-ventilated patient will not be generating aerosols
        - apron, gloves, surgical mask & eye-protection
- Anaesthetic chart / drug chart into plastic bag, used pen into waste bin
- Theatre team, wearing Droplet-protection PPE, can enter theatre 15 minutes after extubation, to allow time for adequate dispersal of aerosols

Cleaning & Ventilation

Theatre ventilation

- Leave theatre ventilation on (as per Public Health England recommendation)
    - Switching off theatre ventilation leaves stagnant air in the theatre and does not allow rapid dispersion of aerosols
- As air from inside theatre is vented out into the corridor, minimise staff footfall outside theatre as much as possible.
    - By the time the air has reached the corridor it has been sufficiently dispersed and diluted so as not to pose a risk to staff who are passing-by
- Theatre ventilation validated November 2019, with each theatre achieving at least 20 air changes per hour
- PHE recommendation is after 5 air changes (so after 15 minutes) any aerosols generated by an aerosol-generatng procedure (AGP), such as intubation or extubation, will have been sufficiently diluted and dissipated so as to not pose any infection risk
- Staff remaining in the operating room during a case may be exposed to aerosols due to inadvertent AGPs, e.g. endotracheal tube disconnection, therefore staff remaining in the operating room during a case should wear aerosol-protective PPE
- Staff members popping briefly in to theatre during a case e.g. the outside runner passing an item to the inside runner do **NOT** need to wear aerosol-protection PPE but should instead wear a surgical face mask, plastic apron and eye protection
- Staff members entering theatre after a case (after extubation or after transfer of a patient from the theatre ventilator to the transport ventilator) should wait for 15 minutes before entering, and can enter the theatre wearing droplet-protection PPE

Cleaning theatre after procedure

1. Wait for 15 minutes after extubation, or after transfer of a patient from the theatre ventilator to the transport ventilator
2. Don droplet-protection PPE (surgical mask/gloves/apron/eye protection)
3. All disposable gear into clinical waste bin
4. Remove plastic cover from anaesthetic machine and video laryngoscope
5. Clean all surfaces as per infection control guidelines
    a. Use chlor-clean tablets (1 tablet into 1L water if no blood spillage)

   b. use Green or Red Clinell wipes, particularly paying attention to hand contact points on the anaesthetic machine / TOE machine

6. Infectious waste bags used in the theatre need to be double bagged into another clean infectious waste bag with the help of the outside runner (using inverted clean bag technique)
7. Doffing of droplet-protection PPE in theatre (follow doffing SOP)
   a. Remove gloves, then apron
   b. Remove & clean eye-protection
   c. Remove surgical mask
8. Leave theatre to air for 15 minutes
9. Book a terminal clean for each theatre used at the end of each day
   a. via Skanska Hard FM 08003891022

Useful documents

SBH PPE Guidance

Coronavirus: Personal Protective Equipment (PPE) guidance
Issued Thursday 2 April 2020

· For direct patient contact within 2 metres of **any patient** in all inpatient areas, radiology, ED, acute assessment units, maternity, radiotherapy and outpatients: staff should wear an apron, gloves and surgical (not a filtering face piece respirator) face mask, and eye protection. Whilst gloves and apron are single-use, the same surgical mask and eye protection should be used for the whole session.

· Staff without direct patient contact in these areas should wear a single surgical mask for the whole session, taking care not to touch it. Eye protection is only necessary if there is a risk of contamination of the eyes by splashes, droplets, blood or body fluids.

· In ED resuscitation areas, ITU/HDU, wards with non-invasive ventilation, main theatres and endoscopy for respiratory, upper GI and ENT procedures: all staff should wear a filtering face piece (FFP3) respirator, eye protection, apron, gown and gloves. Whilst gloves and apron are single-use, the same filtering face piece respirator mask, eye protection and gown should be used for the whole session by staff members who are not directly involved in the aerosol generating procedure. Gowns also remain single use for scrubbing surgeons.

· In maternity theatres: filtering face piece (FFP3) respirators are not required unless aerosol generating procedures (AGPs) are being performed.

· Current practice for PPE for staff members directly involved in aerosol generating procedures (AGPs) should continue (single use gloves, gown, filtering face piece respirator and eye protection).

· Filtering face piece respirators are not required for taking of nasopharyngeal swabs. Surgical masks should be used with eye protection, gloves and apron.

· Sessional PPE should be worn correctly and should not be taken off for the whole session unless damaged or soiled. Care should be taken not to touch sessional items with ones hands, and hand hygiene should be performed if touched by mistake. A session refers to a period of time staff a performing duties in a specific setting e.g. ongoing care for inpatients, and ends when the setting is left.

· Surgical facemasks should be worn ensuring no gaps between the face and the mask, with the wire moulded around the nose. The mask should be removed from the back (without touching the front of the mask), directly into a bin. Hand hygiene should be performed after a mask is removed.

· Please do not wear PPE outside these clinical indications / areas - doing so will not confer any additional protection, is not a good use of a valuable resource, and leads to confusion in others about what they should and should not be wearing. We all need to show professionalism and leadership in this matter.

· Please remember that careful and regular handwashing, and correct doffing of PPE, are absolutely vital. Handwashing is the most effective protection for staff and the most easily and simply implemented - this is the responsibility of every one of us.

COVID symptom screening questionnaire

PATIENT QUESTIONNAIRE FOR COVID-19

Patient name: _____
Hospital no.: _____
DOB: _____

Questions:

1. Have you got a cough, high temperature or shortness of breath now, or at any time in the last week?

2. Have you lost your sense of taste or of smell?

3. Does anybody in your household have a cough, high temperature, shortness of breath or confirmed COVID-19 diagnosis?

   If so, who? _____

PERSON COMPLETING THE FORM

Name: _____
Date: _____
Signature: _____

Any "YES" answer to the above questions, please escalate to the surgical team

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COVID team brief

COVID Team Brief

- **In addition to usual team brief -**

Do not send before team brief

Do not start scrubbing/opening kits before team brief

Whole team needs to attend brief

□ staff limited to minimum necessary for this procedure	□yes	□no
□ theatre ventilation working	□yes	□no
□ COVID signs on all doors	□yes	□no
□ COVID PPE trolley in anaesthetic room, fully stocked	□yes	□no
□ Donning checklist in anaesthetic room	□yes	□no
□ Doffing area set up in theatre, with checklist, hand sanitiser and waste bin	□yes	□no
□ Intubation checklist on anaesthetic machine	□yes	□no
□ white boards to communicate with outside runner/ODP	□yes	□no
□ all surgical equipment available	□yes	□no
□ double orange bags on waste bins	□yes	□no
□ 1 waste bin placed next to anaesthetic machine	□yes	□no
□ all surgical equipment available	□yes	□no
□ all anaesthetic equipment available, incl videolaryngoscope	□yes	□no
□ anaesthetic machine and videolaryngoscope covered	□yes	□no
□ if difficult airway anticipated discuss plan	□yes	□no
□ staff allocated to help with patient transfer	□yes	□no
Rest of team brief checklist as usual, bloods etc.	**□yes**	

Donning preparation & procedures list

AEROSOL PPE – DONNING

Stuff to have in donning area
PPE
Long-sleeved gowns, gloves, FFP3 or FFP2 masks, eye protection
Alcohol hand rub
Water to drink
Stickers and pens – to write name / role
Standard waste bin
Donning picture poster
Donning checklist poster
List of phone numbers to call in case of questions / supply issues

Pre-donning checklist
Ensure you are hydrated
Ensure you have been to the toilet
Tie hair back
Remove jewellery & lanyard
Check PPE in the correct size is available
- Long sleeved gown
- Gloves
- FFP3 or FFP2 mask
- Eye protection
- Alcohol hand rub

Find a buddy to help you don

Donning checklist
Clean hands

Put on the long-sleeved fluid repellent disposable gown -
- fasten neck ties and waist ties.

Put on the respirator (FFP3 or FFP2)
- Position the upper straps on the crown of your head, above the ears
- Position the lower strap at the nape of the neck
- With both hands mould the nose piece from the bridge of the nose firmly pressing down both sides of the nose with your fingers until you have a good facial fit.

Perform a fit check
- Cover the front of the respirator with both hands, being careful not to disturb the position of the respirator on the face.

- For an unvalved product – exhale sharply

- For a valved product – inhale sharply

- If air flows around the nose, readjust the nosepiece; if air flows around the edges of the respirator, readjust the headbands.

- A successful fit check is when there is no air leaking from the edges of the respirator. Always perform a fit check before entering the work area

- If a successful fit check cannot be achieved, remove and refit the respirator

https://www.wyccn.org/uploads/6/5/1/9/65199375/how_to_put_on_and_fit_check_an_ffp3_respirator_2013.pdf

Put on Eye protection
adjust the headband to fit (if relevant)

Put on Gloves
Select according to hand size.
Ensure cuff of gown is covered by the cuff of the glove.

Do a buddy check
Before you enter the clinical area ask your buddy to check your PPE is complete and correctly fitted

AEROSOL PPE DONNING - FOR STERILE SCRUB TEAM

Who: anyone who is going to be scrubbed and sterile in theatre e.g. scrub nurse, inside runner, inside ODP, anaesthetists, surgeons, surgical care practitioner

Stuff to have in donning area
PPE
Long-sleeved gowns, gloves, FFP3 or FFP2 masks, eye protection
Alcohol hand rub
Water to drink
Stickers and pens – to write name / role
Standard waste bin
Donning picture poster
Donning checklist poster
List of phone numbers to call in case of questions / supply issues

Pre-donning checklist
ensure you are hydrated
ensure you have been to the toilet
tie hair back
remove jewellery & lanyard
leave phones in anaesthetic room (outside runner will answer calls and pass messages through to the inside team)
check PPE in the correct size is available
Long sleeved gown
Gloves
FFP3 or FFP2 mask
Eye protection

Alcohol hand rub
Find a buddy to help you don

Donning checklist
Put on the respirator (FFP3 or FFP2)
Position the upper straps on the crown of your head, above the ears
Position the lower strap at the nape of the neck
With both hands mould the nose piece from the bridge of the nose firmly pressing down both sides of the nose with your fingers until you have a good facial fit.

Perform a fit check–

Put on loops (if required)

Put on Eye protection
ideally full face visor (and MUST be a full face visor if wearing an unshrouded vented mask)
adjust the headband to fit

Consider donning a waterproof apron in case of any leak through the surgical gown

Leave Donning area and proceed to the scrub room

Scrub as normal

COVID-19

Public Health England

Putting on (donning) personal protective equipment (PPE) for aerosol generating procedures (AGPs)

Use safe work practices to protect yourself and limit the spread of infection

- keep hands away from face and PPE being worn
- change gloves when torn or heavily contaminated
- limit surfaces touched in the patient environment
- regularly perform hand hygiene
- always clean hands after removing gloves

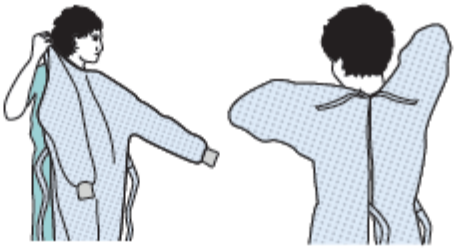
Pre-donning instructions

- ensure healthcare worker hydrated
- tie hair back
- remove jewellery
- check PPE in the correct size is available

Putting on personal protective equipment (PPE). The order for putting on is gown, respirator, eye protection and gloves. This is undertaken outside the patient's room.

Perform hand hygiene before putting on PPE

1 **Put on the long-sleeved fluid repellent disposable gown** - fasten neck ties and waist ties.



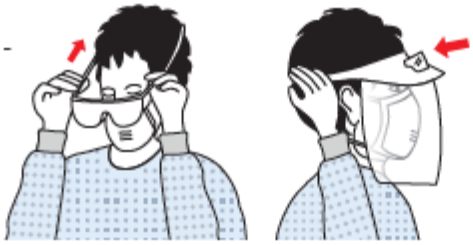
2 **Respirator.**

Note: this must be the respirator that you have been fit tested to use. Where goggles or safety spectacles are to be worn with the respirator, these must be worn during the fit test to ensure compatibility

Position the upper straps on the crown of your head, above the ears and the lower strap at the nape of the neck. Ensure that the respirator is flat against your cheeks. With both hands mould the nose piece from the bridge of the nose firmly pressing down both sides of the nose with your fingers until you have a good facial fit. If a good fit cannot be achieved **DO NOT PROCEED**

Perform a fit check. The technique for this will differ between different makes of respirator. Instructions for the correct technique are provided by manufacturers and should be followed for fit checking

3 **Eye protection** - Place over face and eyes and adjust the headband to fit



4 **Gloves** - select according to hand size. Ensure cuff of gown covered is covered by the cuff of the glove.

Doffing preparation & procedures list

AEROSOL PPE – DOFFING

Stuff to have in doffing area

Main doffing area

- Alcohol hand rub
- Clinical waste bin
- Visor cleaning - bucket of activated chlorine
- Doffing picture poster
- Doffing checklist poster
- Who & how to contact in case of questions / supply issues

Area for doffing masks and personal eye-protection

- Clinical waste bin
- Alcohol hand rub, or a sink with soap
- Goggles & wrap-around glasses cleaning
  - Yellow Clinell wipes & red/white cylinders of 70% alcohol wipes
- Doffing picture poster
- Doffing checklist poster
- Bucket of water for rinsing visors
- Drying area for visors
- Signs to exit / toilets / rest area
- Who & how to contact in case of questions / supply issues

Pre-doffing checklist

Ensure doffing areas have necessary equipment

Seek out a buddy to assist you with doffing

Remember: respirators and personal goggles / glasses must be removed outside the 'COVID area'

Doffing checklist

Remove gloves (the outsides of the gloves are contaminated)

- 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 remaining glove off over the first glove and discard into the yellow clinical waste bin

Clean hands with alcohol gel

Remove gown (the front of the gown and sleeves will be contaminated)

- Unfasten neck then waist ties
- Pull gown away from the neck and shoulders, touching the inside of the gown only using a peeling motion
- Turn the gown inside out, fold or roll into a bundle and discard into a yellow clinical waste bin

Remove Eye protection - the outside will be contaminated

If wearing a visor

the visor cleaning chlorine tub(s) should be in the main doffing area
use both hands to handle the retraining straps by pulling away from behind
place the visor in the chorine bath

If wearing your own pair of goggles or wrap-around glasses
Keep these on and remove in the respirator removal area

Leave the main doffing area / COVID area, and move to a safe area (e.g., outside the isolation room)

Remove Eye protection - the outside will be contaminated
If wearing your own pair of goggles or wrap-around glasses
Hold the strap on the back of the head, or the arms of the glasses as they pass over your ears
Pull the eyewear forwards, away from your face

Clean your own eye protection
Wipe with yellow Clinell wipe
Dry with paper towel
Wipe with 70% alcohol wipe (red cylinder dispenser)

Clean hands with alcohol hand rub

Remove respirator (the front of the respirator will be contaminated)
lean forward slightly
reach to the back of the head with both hands to find the bottom retaining strap and bring it up to the top strap
lift straps over the top of the head
let the respirator fall away from your face and place in bin

Clean hands with alcohol hand rub, or with soap and water

AEROSOL PPE DOFFING - FOR SCRUB TEAM

As per standard doffing protocol

DROPLET PPE DONNING

DROPLET PPE DOFFING

Step 1: remove gloves

1st glove: using 'dirty' gloved finger pinch the outside of the opposite glove & pull off

Keep hold of the removed glove

2nd glove: place clean, ungloved finger under wrist of remaining glove & pull off

Discard

Step 2: Clean your hands

Step 3: Remove apron

Release neck first then waist

Fold apron in on itself

Discard

Step 4: clean your hands

Step 5: Remove eye protection

Hold the strap on the back of the head, or the arms over the ears

Pull the eyewear forwards, away from your face

Step 6: Clean eye protection

If using goggles or wrap-around glasses:

Wipe with yellow Clinell wipe

Dry with paper towel

Wipe with 70% alcohol wipe (red cylinder dispenser)

Put eye protection in your pocket, and take with you

Step 6: Clean eye protection

If using a visor

Put visor into a bucket of chlorine disinfectant (e.g. ChlorClean)

The visor will need to be removed, dried and moved to a clean area by another member of the team

Step 7: Clean your hands

Step 8: Remove facemask

Untie, break or remove the **bottom** tie

Untie, break or remove the **upper** tie

Life the facemask forwards, away from your face

Discard

Step 9: Clean your hands

COVID-19

Public Health England

Removal of (doffing) personal protective equipment (PPE) for aerosol generating procedures (AGPs)

PPE should be removed in an order that minimises the potential for cross contamination. Unless there is a dedicated isolation room with ante room, PPE is to be removed in as systematic way before leaving the patient's room i.e. gloves, then gown and then eye protection.

The FFP3 respirator must always be removed outside the patient's room.

Where possible (dedicated isolation room with ante room) the process should be supervised by a buddy at a distance of 2 metres to reduce the risk of the healthcare worker removing PPE and inadvertently contaminating themselves while doffing.

The FFP3 respirator should be removed in the anteroom/lobby. In the absence of an anteroom/lobby, remove FFP3 respirator in a safe area (e.g., outside the isolation room).

All PPE must be disposed of as healthcare (including clinical) waste.

The order of removal of PPE is as follows:

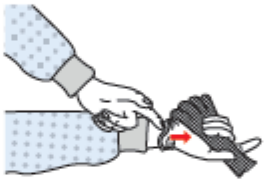
1 Gloves – the outsides of the gloves are contaminated

Firstly:

- grasp the outside of the glove with the opposite gloved hand; peel off
- hold the removed glove in gloved hand

Then:

- slide the fingers of the un-gloved hand under the remaining glove at the wrist
- peel the remaining glove off over the first glove and discard



Clean hands with alcohol gel

2 Gown – the front of the gown and sleeves will be contaminated

Unfasten neck then waist ties

Pull gown away from the neck and shoulders, touching the inside of the gown only using a peeling motion as the outside of the gown will be contaminated

Turn the gown inside out, fold or roll into a bundle and discard into a lined waste bin

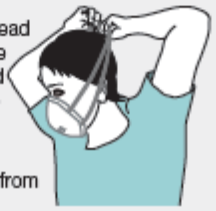
3 Eye protection (preferably a full-face visor) - the outside will be contaminated

To remove, use both hands to handle the retraining straps by pulling away from behind and discard.

4 Respirator – In the absence of an anteroom/lobby remove FFP3 respirators in a safe area (e.g., outside the isolation room). Clean hands with alcohol hand rub.

Do not touch the front of the respirator as it will be contaminated

- lean forward slightly
- reach to the back of the head with both hands to find the bottom retaining strap and bring it up to the top strap
- lift straps over the top of the head
- let the respirator fall away from your face and place in bin



5 Wash hands with soap and water

SBH intubation of suspected or confirmed COVID-19 patients SOP

PREPARE

Team: (Minimise staff exposure)

1- Doctor 1 – Airway/ Intubation
2- Doctor 2 – Drugs/ Haemodynamic monitoring
3- Nurse or ODA – Assistant
4- Runner (anteroom/outside)

Drugs: (All intubations are RSI)

- Fentanyl/Midazolam/Propofol
- Rocuronium 1-1.5 mg/kg (intubating conditions 40-60 seconds)
- Metaraminol
- Consider low dose Adrenaline e.g. 5-10mcg/ml in a labelled 20mls syringe

Room: (Communicate and confirm room preparations with nurse via phone in room prior to entering)

-Wall mounted oxygen
-Wall mounted suction with yankauer and suction catheter
-Complete circuit attached to ventilator with in-line suction and ETCO2 cable (connected to module in monitor) (Avoid humidified circuits)
-Complete Waters/Mapelson C circuit attached to oxygen with filter HME, second ETCO2 cable (not connected to module)
-Clinical waste bags and tags
-Drug infusions post intubation (sedation, analgesia, vasopressors)
-IV fluids attached to patient
-Clamps for circuit

Equipment: (Minimise contamination)
On silver trolley-
Challenge/response checklist:

Challenge:	Response:
C-Mac with plastic cover sheet and D blade and switches on	Present
Selected SIZE ETT tube with cuff tested	Present
Back-up ETT one size smaller	Present
Mac 4 Laryngoscope (disposable) bulb checked	Present
20ml Syringe	Present
ETT Tube tie	Present
15Fr Gum elastic Bougie or Stylet	Present
Size 4 or 5 iGEL	Present
Gel/lubricant	Present
Oropharyngeal airway	Present
? Anticipated difficult airway- consider adjuncts that may be required in room	Required/ Not Required
? High risk of cardiac arrest- consider bringing in defibrillator pads and arrest drugs	Required/ Not Required
Resus trolley located and available if required	Confirmed
Difficult airway trolley located and available if required	Confirmed

Barts Heart Centre COVID Intubating SOP V3

SET

Maximise anticipation and communication:

-Brief roles, most experienced airway practitioner to intubate
-Discuss Plan A/B/C and indications for operator switch
-Discuss with runner signals for help required or cardiac arrest
-Establish PPE 'Donning' partner
-Remove all lanyards, ID badges, stethoscopes, pens, bleeps and mobile phones

Intubating team: Don PPE (surgical hat, surgical gown, elasticated gloves x2, plastic gown, visor, FFP3 Mask)
Runner: Don surgical mask
Confirm PPE and enter room with metal intubating trolley, drugs and C-mac.

INTUBATION

Minimise aerosolization, avoid any ventilation through face mask if possible:

- Ensure ventilator set up correctly with in-line suction and end-tidal capnography in circuit
- Optimise patient position for greatest chance of first pass intubation
- Supraglottic device as 1st rescue oxygenation

- Complete ICS Intubation Checklist
- Induction with patient on standard non-rebreathe mask or NIV mask (try to avoid holding facemask and waters circuit if at all possible)
- Verbalise Rocuronium time and allow 40-60 seconds apnoea (try to avoid using facemask and waters circuit if at all possible, if rapid desaturation consider inserting iGEL and waters circuit (semi-closed circuit) during this time.
- C-Mac video laryngoscope for first view, low threshold for bougie to maximise first pass chances
- Hold laryngoscope view until cuff inflated to ensure no cuff herniation
- Connect ETT straight to ventilator circuit (avoid connecting waters circuit and hand ventilating if possible). Do NOT start ventilation until circuit connected.
- Confirm ETCO2, ensure equal bilateral chest raise, do not auscultate
- Secure ETT, clamp ETT if any circuit break required

Barts Heart Centre SOP: Intra-hospital Transfer of suspected or confirmed intubated COVID patients

General Principles Transfers:

- Transfer of any intubated patient suspected or confirmed to have COVID should be treated as an aerosol generating procedure (AGP) due to the risk of ventilator circuit break
- Transferring staff should therefore be in appropriate PPE before and during transfer. Suggestion- surgical hat, surgical gown, visor, FFP3 mask, double gloves.
- Transfer team: Principle- minimal staff exposure
- Suggestion: Airway trained senior doctor, ITU nurse and one other person (runner, bed steer). These numbers will have to be increased with additional equipment requirements (ie perfusionist for ECMO, additional nurses for ITU ventilator, nitric oxide, IABP etc).

PREPARE:

Airway and ventilator:

In full AGP PPE clamp ETT and switch off ventilator before any disconnection of circuit.

- If appropriate transfer onto Oxylog or Hamilton ventilators for transfers rather than ITU ventilator (principle: reduce risk of disconnection during transfer, reduce staff requirements)
- Set up and test Oxylog/Hamilton prior to connection. Do not switch Oxylog/Hamilton on until connected to ETT and circuit checked for breaks.
- Confirm adequate ventilation
- Check all circuit connections are tight. **Suggestion- tape connections to prevent easy accidental disconnection**
- Suction to reduce any risk of secretions prior to transfer
- Ensure portable suction with sufficient charge
- Ensure adequate muscle relaxant in emergency drugs, **Suggestion- paralyse all intubated patients for transfer once adequately sedated unless strong clinical reason not to**

Haemodynamics:

- Ensure all parameters required for safe monitoring are displayed on transfer monitor
- Ensure sufficient infusions of vasopressors and inotropes. Bring syringes of metaraminol, dilute adrenalin and any other emergency drugs that may be required

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- If anticipated unstable transfer, consider application of defibrillator pads and bringing portable defibrillator on transfer

Equipment:

- Ensure supraglottic rescue device for accidental extubation
- Ensure Waters/Mapleson C circuit with HME and ETCO2
- Rescue ventilation in extubated patients should be through a supraglottic device- avoid face mask ventilation if at all possible
- Bring COVID intubating grab bag
- Bring COVID emergency PPE grab bag
- Bring emergency drugs
- Ensure adequate oxygen and reserves
- Ensure adequate charge on battery powered devices
- Ensure adequate sedation
- Ensure clamps present for ETT prior to any disconnection
- All clinical notes/patient possessions/drug charts to be brought in sealed plastic bag

SET:

Team brief-

Is destination aware of patient and COVID status?

Discuss team roles- head end, airway, bed steer, runner. Roles on moving patient off/on bed.

Discuss scenarios- circuit disconnection, cardiac arrest

Discuss route- inform porters so other transfers can be halted in same areas

Allocate role to clean bed frame prior to leaving ITU and clean doors/lift buttons during transfer

If transfer equipment has to be placed on patient bed place in clear plastic bag if possible

Anaesthetic trolley

Plastic bag with cut out attached to mask (made from C-Arm cover or any other see through plastic)