



## **Perioperative Anesthetic Management of Suspected (PUI) or Confirmed cases of COVID-19 (MSH/MSW/MSM/MSQ) (3.26.20)**

This guideline is to serve as a reference for the care of patients with suspected or confirmed COVID-19 requiring emergent procedures. Due to the rapidly evolving nature of COVID-19 it is subject to change as we learn more from our public health colleagues.

### **General Principles:**

- Protect our staff while providing best practice medical care for our patients.
- Minimize the number of people in the room.
- Minimize the number of times the door is opened.
- Do not bring unnecessary items that could be contaminated into the room. This includes medical supplies, medication, bags, personal items such as cell phones unless they are essential for communication. Items removed from the room must be disinfected.
- Communicate with one another, take it slow, be safe.

### **Scheduling Cases**

- All elective procedures will be delayed and only urgent and emergent procedures can be scheduled for suspected (PUI) or confirmed cases of COVID-19.
- If a case can be deferred for at least 7 days from diagnosis, that option should be pursued.
- Cases are to be discussed between attending surgeon, anesthesiology coordinator and peri-op leadership prior to booking.
- PUI and confirmed cases are to be scheduled as the last case of the day.
- Only essential personnel should be included in the case. Individuals who are normally tasked with procedures during routine cases may be asked to perform other tasks (e.g., disinfection) in order to limit staff and conserve personal protective equipment (PPE).
- For inpatients, any procedure that can be performed at the bedside (e.g., endoscopy and/or bronchoscopy) should be performed at the bedside
- The operating room location will be designated in advance by the anesthesiology coordinator and nursing supervisor with the following preferences: [Subject to change at any time]
  - MSM- Room 3
  - MSW- Room 21
  - MSH-
    1. Bronchoscopy suite for endoscopy and bronchoscopy
    2. Other procedure locations to be determined by OR leadership in consultation with Infection Prevention depending on the case and the room and procedural requirements.
- Additional hospital locations will be added as the document evolves.

## Operating Room Setup:

### Nursing Setup

1. Put the isolation cart/PPE and a large garbage can in front of the room. Place “Special Droplet Precautions and Contact Precautions” signs on ALL of the doors (hallway, cluster, clean/dirty utility...).
2. Inform all necessary team members about the precautions. surgical team members including support staff.
3. Remove all unnecessary equipment and supplies from the room
4. If cabinets are stationery remove all supplies. If unable to remove supplies, seal all the cabinet doors.
5. Be prepared for the case. Please huddle with the attending surgeon prior to the case to review the operative plan, required instrumentation and supplies, and timing. The Attending Surgeon and Attending Anesthesiologist should be present. A runner should be made available who can provide support to both Anesthesiology and the Surgical Team.
6. In the event of a category 1 procedure, please consult Infection Prevention regarding supply management.

### Anesthesiology Setup

1. Anesthesia cart is to be removed and placed outside of the operating room
2. All other cabinets and anesthesia machine drawers should be taped shut
3. Minimize unnecessary equipment in the room.
  - Determine equipment needs for possible intubation, central line, arterial line, vasopressor infusions or other procedure from pre-operative consult and exam
4. Set up your OWN room and follow this checklist
  - Checkout machine and apply filters (see image below)
  - Mayo stand and/or *small* OR table for equipment as cart is out of room
  - Manual bag valve mask device (Ambu) with HEPA filter
  - Monitors: Standard ASA monitors, pressure cables and additional monitoring as required by patient and procedure.
  - Airway setup: ETT (1-2 sizes), Glidescope console (screen/camera), Glidescope stylet, glidescope handle, oral airways, eye tape, clear tape, umbilical tie, 10 cc syringe.
  - Suction setup: Empty plastic water bottle to store used Yankaur suction tip. Check suction, although oral suction should be avoided if possible. DO NOT store used suction apparatus open to environment. Either discard immediately or store Yankauer (suction tip) in empty plastic water bottle with cap secured.
  - Medications:
    - Induction, maintenance and emergence
    - Controlled
    - Emergency
  - Equipment:
    - Infusions, arterial line setup, second IV setup, extra tubing for infusions, extra infusion pump as needed
    - Ultrasound if needed

### Staffing Roles and Responsibilities:

1. Minimize the number of providers in the room to those essential to the case and the care of the patient.
2. Try to communicate via text paging system, cell phone, Vocera, or other device to minimize the number of times the door needs to be opened.
3. Nursing staffing: A circulator and surgical tech are required. A runner will be assigned to be outside of the OR to assist the surgical team and anesthesiology team in getting additional supplies.
4. Anesthesiology staffing: Two providers should be assigned to a case. The most experienced should be tasked with airway management. It is preferred that the attending anesthesiologist manage the case as a solo provider. If a second provider is required that individual can remain in the room or be available on standby. **If on standby, the individual should be donned in a gown and gloves and can wait to don the respirator and eye protection if required to enter the room to assist or relieve.**

### Personal Protective Equipment (PPE):

1. **If an aerosolizing procedure is anticipated, PPE must be donned outside of the room and prior to the patient arriving. Donning and Doffing recommendations below. (Appendix)**
2. **Special droplet precautions and contact precautions (see signs below): Gowns, Gloves, Eye Protection are required. For aerosolizing procedures, N95 respirators should be worn. Limited reuse and Extended Use recommendations apply to both N95 respirators and face shields.**
3. **Reminder for intubation: always double glove and remove outer layer after airway manipulation prior to touching the machine. Always use hand hygiene when gloves are removed and prior to putting on new gloves.**

### Transport to the OR:

**Please note: Any ICU patient requiring urgent surgery should be intubated in the ICU by the COVID ICU/airway team preferably in an airborne isolation room prior to transport to the operating room.**

**The OR anesthesiology team will then meet the patient in PPE to assist in transport and airway management**

**The HEPA filter should remain attached to the endotracheal tube at all times. Any ventilation devices must be attached proximal to the HEPA filter.**

1. Just the required staff from the OR team (anesthesiologist, surgeon, +/- respiratory) goes to the ICU or unit to transport the patient directly into the designated OR room. Only those absolutely needed for transport should go.
2. After donning PPE outside the patient room, enter the room to prepare the patient. A surgical mask is placed on the patient. If the patient is receiving supplemental oxygen, place the mask over the device. **If the patient is intubated do not break the connection between the HEPA filter and the ETT.**
3. There is no requirement to change PPE as individuals involved in the preparation are involved in the transport and providing direct care.

4. Take care to minimize contamination of doors and elevator buttons. An individual not providing patient care can help press buttons and allow for smooth transport. That individual does not need PPE but can wear a surgical mask as per the MSHS masking policy and should stay 6 feet or more away from the patient.
5. Once patient is transferred on the OR bed, the bed can stay in the room. If the bed needs to be removed from the room due to space constraints, it should be disinfected once in the room and then once in the hallway. In order to conserve PPE, an individual already dedicated to the room should perform this function. Linen can go into regular linen. Any hospital-approved germicidal wipe can be used. Please adhere to the contact time on the canister.

**The process below is for all other PUI or confirmed COVID-19 patients who may need intubation in the OR.**

### **Anesthetic Management**

**Regional anesthesia (peripheral nerve or neuraxial blockade) with minimal sedation when appropriate is the preferred anesthetic technique for COVID positive patients.**

**Patient should wear a surgical mask over the supplemental oxygen source at all times.**

**If general anesthesia is required, please perform the following steps:**

### **Induction and Maintenance**

- All personnel not immediately required should be in appropriate PPE outside the room during airway manipulation. Once the airway is secured, they can enter the OR and proceed.
- Glove as described above: 2 pairs of gloves with the intent of remove the outer pair of gloves, performing hand hygiene, and replacing outer gloves after each airway manipulation.
- Take care to not contaminate surrounding clinical care area with contaminated equipment (i.e. immediately throw away oral airway or laryngoscope instead of placing on pillow next to patient)
- Preoxygenation with 100% FiO<sub>2</sub> is critical as COVID patients do not tolerate apnea. Tight seal to avoid exposure.
- RSI without mask ventilation
- Video laryngoscopy preferred
- Avoid manipulating the airway and mouth – suctioning, temp probes in the mouth, OG tubes.
- Consider early glycopyrrolate use as an anti-sialogogue
- Immediately after the airway is secured, remove the outer gloves before touching other pieces of equipment such as the manual bag/APL valve etc.
- If you need further assistance, the secondary anesthesia provider should finish donning PPE, gather all the needed equipment and go inside to help. (see staffing section above)
- If just equipment is needed, it may be passed from the outside with gloves. Full PPE only needed during intubation/extubation
- Consider ARDS net protocol with low tidal volumes 6-8 mL/kg and PEEP

- Avoid forced air warming. Use blankets to warm patient.
- Consider avoiding steroids and NSAIDs in COVID-19 patients
- Plan an anesthetic that minimizes bucking and coughing and provides for a smooth emergence

### **Extubation**

- Extubation is an aerosol-generating procedure
- Only those individuals tasked with airway management should remain within 6 feet of the patient.
- Give antiemetic prophylaxis and full paralytic reversal
- Sit patient upright facing away from you for extubation
- Immediately after extubation, place anesthesia machine mask with oxygen flowing on patient with good seal until coughing subsides. Use a surgical mask for the patient. This mask should be over (not under) any supplemental oxygen device.
- **If patient remains intubated**, place patient on an anesthetic infusion (e.g. propofol) as tolerated and administer muscle relaxant so they do not cough or self-extubate during transport.

### **Recovery:**

- Recovery should be in the OR if the patient is not being immediately transported back to a unit.
- Options:
  - Transport directly to ICU with ventilator. Bedside handoff can occur as per usual protocol.
  - Recover in OR then transfer to original inpatient unit. Patient should not leave OR until coughing or the need for suctioning has subsided.
  - For outpatient procedures (rare, i.e. missed abortion), patient should still recover in the OR and then can be transported to the airborne isolation room in the PACU. Ambulatory procedures should be delayed until patient has been cleared from COVID-19 status by NYC DOHMH or Infection Prevention.

### **Transport of patient post procedure**

- Just prior to leaving the room with the patient the anesthesia team will remove and discard disposables (circuit, suction, meds, sharps and all single use equipment). Discard as normally discarded no additional labeling is required.
- The primary anesthesiologist caring for the patient will remain donned completely throughout the transport and only doff following the steps below after transporting the patient.
- One member of the team will be “clean” and gloved. This person will be responsible to do all of the touching including doors, elevator buttons etc. They will not make contact with the patient stretcher.

### **After patient handoff**

- Doff all PPE except N-95 mask and face shield prior to exiting the room.
- Exit the room while wearing the face shield and N-95 respirator.
- Perform hand hygiene
- Put on a clean pair of gloves
- Remove face shield from the back of the head.

- Use a hydrogen peroxide wipe to disinfect the face shield (wipe inside to outside) and leave alone for 1 minute. You may wipe down the shield with an alcohol wipe to remove any residue.
- Place clean and dry face shield in dedicated paper bag with your name on it.
- Remove gloves. Perform hand hygiene
- Remove the N-95 respirator from the back of your head and place it in a paper bag with your name on it in between patient encounters.

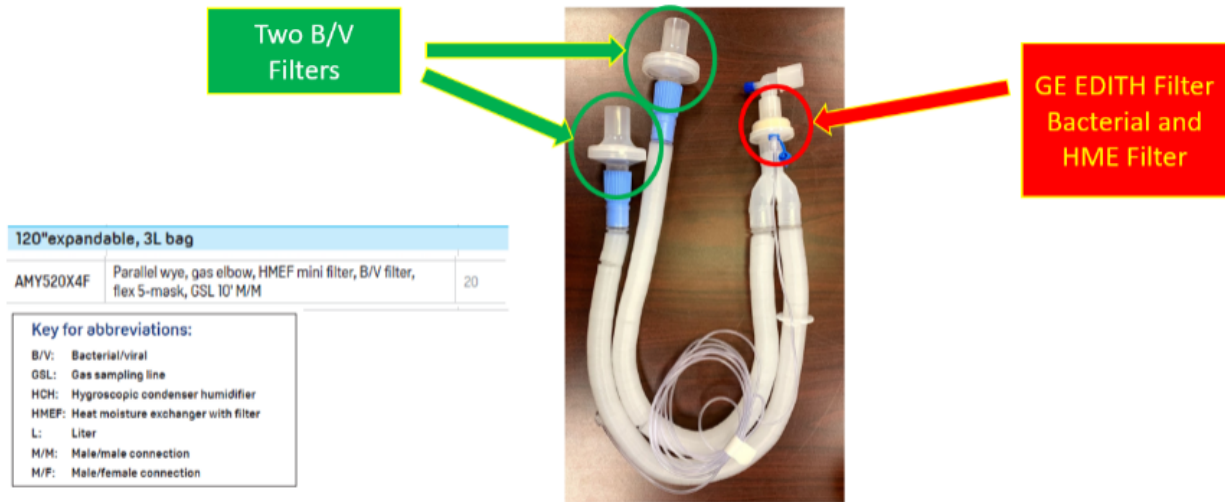
\* If the N95 respirator has maintained its fit and function, continue to use that N-95 mask. Discard the N-95 respirator if heavily soiled, wet, or misshapen. Place in box for reprocessing at end of shift.

### **Post-Procedure**

1. Instruments are managed as they would be during a routine. There are no special precautions required for instruments.
2. PPE should be doffed in the room and discarded in the trash with the exception of the face shield and the N95 respirator (see doffing and face shield disinfection instructions below). These items should be doffed outside of the room and should be maintained for limited reuse or recycled.
3. Nothing should be removed from the room until disinfected. Precautions signs should remain in place and traffic should be minimized until disinfection has been completed.
4. If the ventilator circuit was broken or an extubation occurred, please wait 30 minutes prior to entering the room after the patient has left. At that time there has been 99.9% air exchange and individuals can enter the room to turn over the room wearing gowns, gloves, and surgical masks.
5. Terminal cleaning should occur and ATP testing and terminal UV disinfection is recommended.

## Appendix

Anesthesia Circuit from Vyair – Ref# AMY520X4F



**A HEPA filter MUST be attached between the elbow and the endotracheal tube. The included green labelled filter in the diagram above only protect the machine from contamination and the red highlighted HME filter does NOT filter COVID.**

All of the hospital-approved germicidal wipes have activity against COVID-19. Disinfection protocols have not changed.



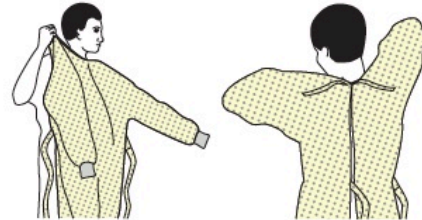


## SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

### 1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



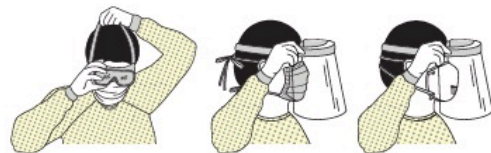
### 2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



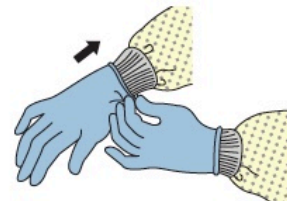
### 3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit



### 4. GLOVES

- Extend to cover wrist of isolation gown



## USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene



## HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 2

Here is another way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator after leaving the patient room and closing the door. Remove PPE in the following sequence:

### 1. GOWN AND GLOVES

- Gown front and sleeves and the outside of gloves are contaminated!
- If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands
- While removing the gown, fold or roll the gown inside-out into a bundle
- As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into a waste container



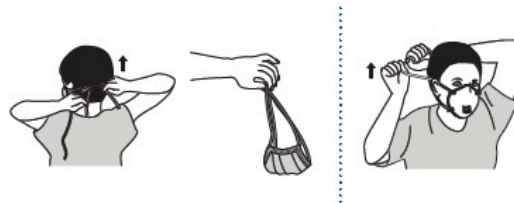
### 2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band and without touching the front of the goggles or face shield
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

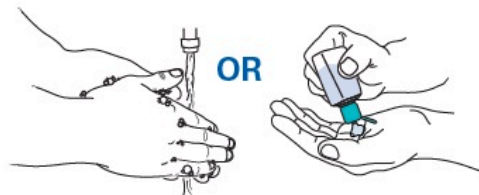


### 3. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



### 4. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



**PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS  
BECOME CONTAMINATED AND IMMEDIATELY AFTER  
REMOVING ALL PPE**





# Special Droplet Precautions



**Visitor Restriction.**  
**ALL visitors must check in at nursing desk before entering.**

**Las visitas deben anunciarse en el mostrador de enfermería antes de entrar a esta habitación.**



**Clean hands when entering and exiting the room**

Límpiese las manos al entrar y salir del cuarto



**Put on a surgical mask prior to entering for usual care**

Colóquese una máscara quirúrgica antes de entrar

OR



**Put on a fitted N-95 mask prior to entering for aerosolizing procedures**

Colóquese una máscara N-95 a medida antes de entrar



**Put on a face shield prior to entering**

Colóquese una máscara quirúrgica antes de entrar



**Disinfect shared patient equipment**

Desinfecte equipo que se comparta entre pacientes



**Keep the door closed**

Mantenga la puerta cerrada





# Contact Precautions



**Visitors must report to the nurses' station  
before entering this room.**

Las visitas deben anunciarse en el mostrador de enfermería  
antes de entrar a esta habitación.



**Clean hands when entering  
and exiting the room**

Límpiese las manos al entrar y salir del cuarto



**Put on a gown  
and gloves**

Póngase una bata  
y guantes



**Disinfect shared patient  
equipment**

Desinfecte equipo que se  
comparta entre pacientes

