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Anesthesia Guidelines for Management of COVID-19 in Adult Cardiac Catheterization Lab

Responding to airway pages/calls in Adult Cath Lab

In Adult Cardiac Cath Lab, **every STEMI cath procedure is treated as a possible COVID case undergoing aerosol generating procedures.** The rationale for this is the association between cardiac presentations and COVID, and the limitations in assessing COVID risk in patients who present for STEMI (may be incapacitated on arrival to the lab).

If airway page/call is for a **STEMI** patient:

- Don PPE including N95 mask or CAPR outside lab. Anesthesia team is responsible for bringing their own N95 mask/CAPR and face shield.
- Enter lab through hallway door. **Do NOT enter lab from control room.**
- Follow Anesthesia Intubation guidelines for COVID positive/suspected patients.
- COVID Intubation Team will respond to STEMI airways

Elective Cath Lab Procedures

Asymptomatic preprocedure testing is in place for select patients scheduled for select procedures in the Adult Cardiac Cath Lab, as approved by HICS and Surgical Services Subcommittee

- Planned general anesthesia/endotracheal intubation
- Esophageal procedures including MAC cases with a high risk of aerosolized secretions including Transesophageal echocardiography (TEE)
- Transesophageal echocardiography (TEE)
- Procedures including MAC cases with increased risk of hemodynamic or airway instability that could lead to emergent intubation or CPR (ex. high risk PCI, severe valve disease-TAVR, Mitraclip)

Asymptomatic patients with no COVID testing

For patient without test results who are asymptomatic for COVID (no fever or respiratory symptoms) presenting for urgent or emergent procedures with high risk for AGP, Adult Cardiac Cath Lab staff will proceed with airborne/contact/eye PPE and airborne cleaning procedures. **Anesthesia team should follow airborne/contact/eye PPE, use non-COVID anesthesia cart, anesthesia circuit + HMEF/Filter, follow standard staffing ratios and standard pharmacy workflows.**

COVID Workflow for Anesthesia Procedures in Adult Cardiac Cath Lab

COVID-19 Precautions for aerosol generating procedures will be used for the following patients:

- Confirmed COVID infection (positive COVID test)
- Person under investigation (PUI: COVID test has been sent, results pending)
- Potential COVID risk- patient symptomatic (testing has not been done, patient has positive signs/symptoms concerning for COVID by screening questionnaire)
- Emergent cases in which patients are unable to be assessed for symptoms and no COVID test results are available (e.g., STEMI) regardless of COVID status

Procedure Location	<ul style="list-style-type: none"> • Discuss with proceduralist team. Consider not using Cath Lab 3 due to emergency equipment stored in Cath Lab 3 • Absolutely no traffic from lab to control room. Use door to hallway to access lab
Staffing	<ul style="list-style-type: none"> • Faculty and nonfaculty providers will have no other responsibilities • Dedicated anesthesia tech to drop anesthesia equipment from hallway into lab
Pharmacy	<ul style="list-style-type: none"> • Obtain controlled medications from McKesson Acudose in lab if possible → will need to waste and witness in McKesson with another anesthesia provider at case end • If any controlled medications are obtained from Main OR pharmacy, discard after “double waste” and return yellow sheet to pharmacy in a large plastic bag.
Anesthesia Setup	<ul style="list-style-type: none"> • All nonessential equipment in anesthesia machine drawers will be removed • Workroom staff will make arterial/pressure monitoring setups and fluids as requested • Designated COVID-19 red cart or cardiac cart with extra supplies removed
Patient Transport to Lab	Follow existing cath lab workflow. Patient may be brought directly to lab by cath lab staff.
PPE	<ul style="list-style-type: none"> • N95 mask or CAPR → must be supplied by anesthesia team • Gown, gloves, face shield

<p>During Procedure</p>	<ul style="list-style-type: none"> • Minimize aerosol generating procedures (Consider monitored anesthesia care/regional techniques over general anesthesia. If GA is needed, consider rapid sequence induction, videolaryngoscopy) • If GA, consider using ICU vent with TIVA • If using anesthesia ventilator, use HMEF/Filter between ETT and elbow connector of anesthesia circuit • Limit provider handovers/breaks
<p>Extubation/Recovery</p>	<ul style="list-style-type: none"> • If MAC, transport to patient’s inpatient room • If GA, extubate with minimal people in the room, recover in lab, then transport to patient’s inpatient room • If lab is needed urgently for another procedure, discuss with PACU regarding accepting patient if isolation room is available
<p>Transport from Cath Lab</p>	<ul style="list-style-type: none"> • Anesthesia team will keep N95/CAPR and face shield on. • Doff gloves and gown, and don new glove. May don new gown or plan to change scrubs after the procedure. • Transport with ICU vent if patient is to remain intubated <p><i>Note: Cath lab staff will doff all PPE except for the person pushing the bed will keep a faceshield on.</i></p>
<p>Room Cleaning</p>	<ul style="list-style-type: none"> • If aerosol generating procedure was performed within the last 60 min, the lab must sit for 60 min after patient leaves lab. Then cath lab staff will follow normal process to clean all surfaces. Anesthesia cleaning will wait 60 min after patient leaves lab. • If NO aerosol generating procedure was performed within the last hour, cath lab staff will follow normal process for cleaning (without waiting 60 min after patient leaves lab). Anesthesia cleaning can occur without delay.
<p>Mask Decontamination</p>	<p>Follow processes for N95 mask decontamination</p>

Anesthesia Guidelines for Management of a Patient with COVID-19 (confirmed or PUI) in Radiation Oncology

Pre-procedural testing is in place for patients presenting for brachytherapy in accordance with HICS and Surgical Services Subcommittee guidelines

1. **Screening and Testing Negative** – proceed with standard precautions
2. **Screening or Testing Positive** – consider rescheduling treatment to a later date after discussion with proceduralist; if treatment cannot be delayed then proceed with COVID-19 precautions
3. **COVID-19 Precautions for aerosol generating procedures (AGP) will be used for the following patients:**

- Confirmed COVID infection (positive COVID test)
- Person under investigation (PUI: COVID test has been sent, results pending)
- Potential COVID risk- patient symptomatic (testing has not been done, patient has positive signs/symptoms concerning for COVID by screening questionnaire)
- Emergent cases in which patients are unable to be assessed for symptoms and no COVID test results are available (e.g., STEMI) regardless of COVID status

- a. Patient will be placed in exam room with surgical mask on patient
- b. **Staffing** – should be limited inside treatment room; should have a designated “clean” staff to get additional supplies
- c. **Signage** – we should have clear sign(s) alerting other staff and to limit entry
- d. **PPE** – anesthesia team will bring their N95’s and face shield; gown and gloves available in rad onc
- e. **Strongly encourage use of regional (CSE) + TIVA** if appropriate; patient will have O₂ via simple mask over their surgical mask
- f. **If general anesthesia**, use the **HMEF/Filter** at the ET tube end and be careful **NOT** contaminate the ETCO₂ line (ensure filter is between ET tube and ETCO₂ port)
 - a. **For intubation/extubation** – limit number of providers in the room to faculty and non-faculty provider
 - b. When transporting to scanner (CT/MRI) attach Ambu bag **to** the **HMEF/Filter**
- g. **Recovery** – recover patients in treatment room followed by transport to their room (if inpatient) or discharge home if appropriate, after discussions with primary team
- h. **Workroom** – contact workroom for a COVID-19 cart and follow same guidelines as MOR
- i. Once patient has left treatment room, it should remain empty with door shut for 60 minutes or until full (99%) air exchange followed by a terminal cleaning

Anesthesia Guidelines for Management of a Patient with COVID-19 (confirmed or PUI) in MRI

Pre-procedural testing is in place for patients requiring an MRI with anesthesia in accordance with HICS and Surgical Services Subcommittee guidelines

1. **Screening and Testing Negative** – proceed with standard precautions
2. **Screening or Testing Positive** – consider rescheduling imaging to a later date after discussion with ordering provider; if imaging cannot be delayed then proceed with COVID-19 precautions
3. **COVID-19 Precautions for aerosol generating procedures (AGP) will be used for the following patients:**

- Confirmed COVID infection (positive COVID test)
- Person under investigation (PUI: COVID test has been sent, results pending)
- Potential COVID risk- patient symptomatic (testing has not been done, patient has positive signs/symptoms concerning for COVID by screening questionnaire)
- Emergent cases in which patients are unable to be assessed for symptoms and no COVID test results are available (e.g., STEMI) regardless of COVID status

- a. **Patient transport** – if patient is in the ICU, anesthesia team will transport with full PPE (airborne, contact, and eye precautions) similar to MOR guidelines; if patient is coming from an inpatient unit/ED those units may transport following institutional guidelines <http://medcom.uiowa.edu/theloop/safety-personal-protective-equipment-ppe>
- b. **From ICU and intubated** – anesthesia department typically not involved
- c. **From ICU and not intubated and needs general anesthesia** - the bariatric support room (room 427) and scanner 4 are designated for COVID-19 patients
 - Enter MRI through inpatient entrance and proceed to bariatric support room
 - Intubate patient in bariatric support room limiting personnel to faculty and nonfaculty anesthesia providers
 - i. Please use the **HMEF/Filter** at the ET tube end and be careful **NOT** contaminate the ET/CO₂ line (ensure filter is between ET tube and ET/CO₂ port)
 - Transport patient to scanner
 - Extubate in bariatric support room, transport back to ICU with patient wearing O₂ simple mask over surgical mask
 - Prior to transport back to ICU, staff will doff PPE (except N95 and faceshield), hand hygiene, place new gown and gloves on for transport
 - Exit MRI through doors by bariatric support room
- d. **From ED/Inpatient Unit** – strongly encourage MAC if appropriate
 - If patient requires general, follow step 4 (above)

- If MAC, use O₂ via simple mask over patient's surgical mask
- Will need a clear disposition for the patient if they are coming from the ED (OR or inpatient unit) so that our providers know where to transport the patient; need to discuss with provider(s) ordering the MRI
 - i. If patient will need to go to the OR after imaging and will remain intubated post-op, contact respiratory therapy (pager 3921) to get an ICU vent and transport to OR on ICU ventilator
 - ii. If patient will need to go to the OR but will not require post-op ventilatory support, transport to the OR with anesthesia machine or Ambubag with filter attached to ETT tube
- **Staffing** – limited to anesthesia providers and MRI techs needed to transfer patient to scanner
- **Signage** – we should have clears sign(s) alerting other staff and to limit number of people in that area
- **PPE** – anesthesia team and MRI techs will need full PPE (airborne, contact, and eye precautions); unclear if MRI has a PPE cart
- **Workroom** – will contact workroom to have a COVID-19 red cart brought to bariatric support room and will follow same guidelines as MOR
- e. Once patient has left bariatric support room, it should remain empty with door shut for 60 minutes followed by a terminal cleaning if patient had a general anesthetic (**AGP**); if MAC, follow institutional guidelines for cleaning the area

Anesthesia Guidelines for Management of a Patient with COVID-19 (confirmed or PUI) in CT/Fluoro/IR

Pre-procedural testing is in place for patients requiring radiologic procedure with anesthesia in accordance with HICS and Surgical Services Subcommittee guidelines

- 1. Screening and Testing Negative** – proceed with standard precautions
- 2. Screening or Testing Positive** – consider rescheduling imaging/procedure to a later date after discussion with proceduralist; if imaging cannot be delayed then proceed with COVID-19 precautions
- 3. COVID-19 Precautions for aerosol generating procedures (AGP) will be used for the following patients:**

- Confirmed COVID infection (positive COVID test)
- Person under investigation (PUI: COVID test has been sent, results pending)
- Potential COVID risk- patient symptomatic (testing has not been done, patient has positive signs/symptoms concerning for COVID by screening questionnaire)
- Emergent cases in which patients are unable to be assessed for symptoms and no COVID test results are available (e.g., STEMI) regardless of COVID status

- a. Patient transport** – if patient is in the ICU, anesthesia team will transport with full PPE (airborne, contact, and eye precautions) similar to MOR guidelines; if patient is coming from an inpatient unit/ED those units may transport following institutional guidelines <http://medcom.uiowa.edu/theloop/safety-personal-protective-equipment-ppe>
- b. Designated Rooms**
 - **CT** cases will be done in **room 8**; patients will be transported into and out of the department through the main diagnostic entrance
 - **Fluoroscopy** cases will be done in **room 2**; patients will be transported into and out of the department through the main diagnostic entrance
 - **IR** cases will be done in the **North room**; patients will be transported into and out of the department via the hallway across elevator H
- c. Encourage MAC if appropriate** - use O₂ via simple mask over patient's surgical mask
- d. If general anesthesia needed** use the **HMEF/ Filter** at the ET tube end and be careful **NOT** contaminate the ETCO₂ line (ensure filter is between ET tube and ETCO₂ port)
 - **For intubation/extubation** – limit number of providers in the room to faculty and non-faculty provider
- e. Recovery** – anesthesia team will recover patient in the room and then transport back to their room
- f. Signage** – we should have clear sign(s) alerting other staff and to limit number of people in that area

- g. PPE** – anesthesia team, radiology staff (physicians, technologist, and nurses) will need full PPE (airborne, contact, and eye precautions)
- h. Workroom** – will contact workroom to have a COVID-19 red cart brought to radiology room and will follow same guidelines as MOR
- i.** Once patient has left radiology room, it should remain empty with door(s) shut for 60 minutes followed by a terminal cleaning if patient had a general anesthetic (**AGP**); if MAC, follow institutional guidelines for cleaning the area

Anesthesia Guidelines for Management of a Patient with COVID-19 (confirmed or PUI) in DHC

Pre-procedural testing is in place for patients presenting for endoscopic procedures in DHC in accordance with HICS and Surgical Services Subcommittee guidelines

1. **Screening and Testing Negative** – proceed with standard precautions
2. **Screening or Testing Positive** – consider rescheduling procedure to a later date after discussion with proceduralist; if procedure cannot be delayed then proceed with COVID-19 precautions
3. **COVID-19 Precautions for aerosol generating procedures (AGP) will be used for the following patients:**

- Confirmed COVID infection (positive COVID test)
- Person under investigation (PUI: COVID test has been sent, results pending)
- Potential COVID risk- patient symptomatic (testing has not been done, patient has positive signs/symptoms concerning for COVID by screening questionnaire)
- Emergent cases in which patients are unable to be assessed for symptoms and no COVID test results are available (e.g., STEMI) regardless of COVID status

- a. **Patient transport** – ICU patients will remain in the ICU and done at the bedside; all other patients will be transported to DHC suite following institutional guidelines <http://medcom.uiowa.edu/theloop/safety-personal-protective-equipment-ppe>
- b. **Equipment** – contact DHC clin tech/workroom to request an anesthesia machine and a COVID-19 cart to go in **Suite D for ERCPs** or **Suite H for non-ERCP procedures**
- c. **PPE** – full PPE (airborne, contact, and eye precautions) for all personnel in GI suite
- d. **Staff** – limit number of staff in the room
- e. **Signage** – clear signs to alert other staff and to limit entry into procedure suite on both doors
- f. **For upper endoscopy procedures** – discuss with plan with proceduralist based on procedure and indications (MAC or General)
- g. **For colonoscopies** – MAC with O₂ simple mask over a surgical mask is preferred
- h. **If general anesthesia needed** use the **HMEF/filter** at the ET tube end and be careful **NOT** contaminate the ET/CO₂ line (ensure filter is between ET tube and ET/CO₂ port)
 - **For intubation/extubation** – limit number of providers in the room to faculty and non-faculty provider
- i. **If general anesthesia** - all personnel except anesthesia providers should doff and leave room at end of procedure; anesthesia team will extubate and recover patient in the GI suite (D or H) and transport patient back to the room.

- j.** Once patient has left endoscopy suite, it should remain empty with doors shut for 60 minutes followed by a terminal cleaning

Anesthesia Guidelines for Management of a Patient with COVID-19 (confirmed or PUI) in Urology Suite/MFL

Pre-procedural testing is in place for patients presenting for procedures in MFL in accordance with HICS and Surgical Services Subcommittee guidelines

- 1. Screening and Testing Negative** – proceed with standard precautions
- 2. Screening or Testing Positive** – consider rescheduling procedure to a later date after discussion with surgeon; if procedure cannot be delayed then proceed with COVID-19 precautions
- 3. COVID-19 Precautions for aerosol generating procedures (AGP) will be used for the following patients:**

- Confirmed COVID infection (positive COVID test)
- Person under investigation (PUI: COVID test has been sent, results pending)
- Potential COVID risk- patient symptomatic (testing has not been done, patient has positive signs/symptoms concerning for COVID by screening questionnaire)
- Emergent cases in which patients are unable to be assessed for symptoms and no COVID test results are available (e.g., STEMI) regardless of COVID status

- a. Location** – Patient will go to the main OR and follow current departmental guidelines
 - <https://intranet.anesth.uiowa.edu/documents/default.aspx?mode=1&doc=312b417f-f485-4cbc-ad9d-39c889d65acb&guid=4A7193A3-AAFC-4D6C-8B1C-C70581FF5221>
 - <https://intranet.anesth.uiowa.edu/documents/default.aspx?mode=1&doc=ea865c04-332f-4eab-8232-34a95c346194&guid=6020BE74-A1A2-4553-AE22-6E122201CD3D>

Anesthesia Guidelines for Management of a Patient with COVID-19 (confirmed or PUI) in ECT

Pre-procedural testing is in place for patients requiring electroconvulsive therapy with anesthesia in accordance with HICS and Surgical Services Subcommittee guidelines

1. **Screening and Testing Negative** (within 48 hours of each procedure)– proceed with standard precautions
2. **Screening or Testing Positive** – consider rescheduling procedure to a later date after discussion with psychiatrist; if procedure cannot be delayed (e.g. catatonia suicidal ideation) then proceed with COVID-19 precautions
3. **Pre-ECT clinic** – on day of procedure, patients will have a repeat screening and temperature will be taken; patients will be canceled/rescheduled if febrile, have any respiratory symptoms and procedure is not urgent
 - All patients and caretakers will bring or are given a face mask to wear
 - Patients and caretakers will be spread out in waiting area to maintain social distancing
 - Patients are batched by unit when possible to minimize between-unit exposures pre-op
 - Providers will wear a surgical face mask, face shield and gloves
4. **Equipment** – PALL-25 filter placed between breathing circuit and patient’s airway to protect the anesthesia machine with ability to sample gas from machine side of the filter
 - **each patient is issued his/her own filter which is stored and reused from treatment to treatment**
5. **COVID-19 Precautions for aerosol generating procedures (AGP) will be used for the following patients:**

- Confirmed COVID infection (positive COVID test)
- Person under investigation (PUI: COVID test has been sent, results pending)
- Potential COVID risk- patient symptomatic (testing has not been done, patient has positive signs/symptoms concerning for COVID by screening questionnaire)
- Emergent cases in which patients are unable to assessed for symptoms and no COVID test results are available (e.g., STEMI) regardless of COVID status

- a. The procedure will be done at the end of the schedule to allow room to sit empty for 60 minutes followed by a terminal cleaning
- b. If more than 1 COVID+ (confirmed or PUI) patient, consider moving treatment to a negative pressure room
- c. **Patient transport** – patients are transported to ECT following existing workflows and institutional guidelines <http://medcom.uiowa.edu/theloop/safety-personal-protective-equipment-ppe>
- d. Contact Workroom to request a COVID-19 cart
- e. **PPE** - Full PPE (airborne, contact, and eye precautions) for all personnel in treatment room

- f. Staff** – limit number of staff in the room
- g. For intubation/extubation** – limit number of providers in the room to faculty and non-faculty provider
- h. Signage** – there should be a clear sign(s) alerting other staff and to limit number of people in that area
- i. Recovery** - anesthesia team will recover patient in the room and then transport back to their unit with a facemask
- j.** Once patient has left procedure room, it should remain empty with doors shut for 60 minutes followed by a terminal cleaning

Anesthesia Guidelines for Management of a Patient with COVID-19 (confirmed or PUI) in Bronchoscopy Lab

Pre-procedural testing is in place for patients presenting for bronchoscopy procedures in accordance with HICS and Surgical Services Subcommittee guidelines

- 1. Screening and Testing Negative** – proceed with standard workflow, full (airborne, contact, eye) PPE
- 2. Screening or Testing Positive** – consider rescheduling procedure to a later date after discussion with proceduralist; if procedure cannot be delayed then proceed with COVID-19 precautions
- 3. COVID-19 Precautions for aerosol generating procedures (AGP) will be used for the following patients:**

- Confirmed COVID infection (positive COVID test)
- Person under investigation (PUI: COVID test has been sent, results pending)
- Potential COVID risk- patient symptomatic (testing has not been done, patient has positive signs/symptoms concerning for COVID by screening questionnaire)
- Emergent cases in which patients are unable to be assessed for symptoms and no COVID test results are available (e.g., STEMI) regardless of COVID status

- a. Patient transport** –patients will be transported to bronchoscopy lab following institutional guidelines <http://medcom.uiowa.edu/theloop/safety-personal-protective-equipment-ppe>
- b. Equipment** – contact anesthesia workroom to request an anesthesia machine and a COVID-19 cart to go in bronchoscopy lab
- c. PPE** – full PPE (airborne, contact, and eye precautions) for all personnel in bronchoscopy lab
- d. Staff** – limit number of staff in the room
- e. Encourage MAC if appropriate**
- f. If general anesthesia needed** use the **HMEF/filter** at the ET tube end and be careful **NOT** contaminate the ETCO₂ line (ensure filter is between ET tube and ETCO₂ port)
 - **For intubation/extubation** – limit number of providers in the room
- g. Recovery** – anesthesia team will recover patient in bronchoscopy lab and then transport back to their room
- h.** Once patient has left bronchoscopy lab, it should be cleaned following institutional guidelines

Anesthesia Guidelines for Management of a Patient with COVID-19 (confirmed or PUI) in North Dodge – REI/IVF

Pre-procedural testing is in place for patients presenting for oocyte retrieval in accordance with HICS and Surgical Services Subcommittee guidelines

- 1. Screening and Testing Negative** – proceed with standard precautions
- 2. Screening and Testing Positive** – procedure will be canceled
- 3. Testing Positive AND Screening Negative** – as it may become unsafe for the patient to not perform the procedure, the retrieval process **WILL** proceed with COVID-19 precautions
- 4. COVID-19 Precautions for aerosol generating procedures (AGP) will be used for the following patients:**

- Confirmed COVID infection (positive COVID test)
- Person under investigation (PUI: COVID test has been sent, results pending)
- Potential COVID risk- patient symptomatic (testing has not been done, patient has positive signs/symptoms concerning for COVID by screening questionnaire)
- Emergent cases in which patients are unable to be assessed for symptoms and no COVID test results are available (e.g., STEMI) regardless of COVID status

- a. Patient will call from their car before entering the building and will be given a surgical mask upon entering the building
- b. Patient will wear a surgical mask at all times unless it must be removed during procedure for ventilation purposes
- c. **Staffing**
 - should be limited inside procedure room – designate a “clean” staff to get additional supplies;
 - nursing will be 1:1 with patient in the pre- and post-operative period
 - patient will be in **room 4** in the pre- and post-operative period
- d. **Signage** – we should have clear sign(s) alerting other staff and to limit entry
- e. **PPE** – anesthesia team will bring their N95’s and face shield; gown and gloves will be supplied by North Dodge-IVF
- f. **Equipment**
 - anesthesia cart should be covered in plastic with all necessary equipment for the case placed on top or in a basket
 - all nonessential equipment in anesthesia machine drawers will be removed
- g. **Pharmacy** – all controlled medications will need to be wasted with a witness at the end of the case
- h. **Recovery** – recover patients in procedure room followed by transport to their room and discharge home if appropriate

- i. Once patient has left treatment room, it should remain empty with door shut for 20 minutes or until full (99%) air exchange followed by a terminal cleaning if an AGP has occurred
- j. The procedure should be done at the end of the schedule to allow the room to sit empty for 20 minutes followed by a terminal cleaning in the event an AGP has occurred