

Mount Sinai Health System

Person Under Investigation (PUI)/COVID-19 Positive

Cardiac Arrest Guide

Important Things to Consider Before ACLS

- Enter the room after donning PPE - use N95 mask, face shield or other eye protection, bouffant, gown, gloves, and other equipment as indicated.
- Minimize staff and throughput within the room. **Do not enter the room if you are not needed.**
- Use automated external compression device (LUCAS) if available.
- If patient is already intubated: perform CPR, clamp the ET tube to prevent loss of PEEP if readily available, utilize BVM with PEEP valve, while leaving the HEPA filter in line to prevent aerosolization.
- If the patient is not intubated, proceed with bag valve mask ventilation with a viral filter using the two-person ventilation technique
- The airway should be prioritized once the intubation team arrives.
- Opening of the room door should be kept to a minimum for entering personnel and hand off items.
- Review advanced directives and explore goals of care as appropriate before and during ACLS.

Team Members (up to 7 in room, all wearing PPE):

1. Cardiac Arrest Leader
2. RN N1: Medication administration
3. Licensed Provider: CPR
4. Licensed Provider: CPR (If not using LUCAS)
5. Licensed Provider: Bag mask ventilation (ventilator) (2 handed vice grip)
6. Licensed Provider: Bag mask ventilation (squeezing the bag)
7. Respiratory therapist: Only if the patient is intubated or will be intubated for management of the ventilator after the code. Use ONLY two-person bag mask ventilation technique to ensure a seal. Ventilate with a bag valve mask (BVM) with a HEPA filter. If patient is already intubated, clamp ET tube prior to disconnect from ventilator if readily available, leave HEPA filter and continuous ETCO2 in line, connect BVM with PEEP valve, release clamp and bag according to ACLS guidelines.

Team Members (2) outside room:

1. Team member: Remains outside the room in PPE. Supplies medications and hands off materials as well as observes for breach in PPE of providers inside the room. The RN will be responsible for recording in the code narrator.

ACLS Process

1. The person who identifies patient in cardiac arrest (already in the room wearing PPE)
 - a. Activate Cardiac Arrest notification
 - b. Start chest compressions

2. 2nd person to arrive:
 - a. Bring cardiac arrest cart and intubation box outside the room
 - b. Don PPE
 - c. Obtain defibrillator, defibrillator pads, and backboard
 - d. Enter room
 - e. Place backboard
 - f. Place defibrillator pads on patient and connect to defibrillator.
 - g. Check for appropriate IV/IO access (2 large bore IVs or IO)
3. 3rd person to arrive: (Designated Code Leader until relieved by Critical Care MD)
 - a. Don PPE
 - b. Assist critical care MD in setting up intubation equipment (if the patient is not already intubated) Prior to entering room, gather all needed supplies.
 - c. Brings ACLS medications into the room.
 - Consider: epinephrine x 5; bicarb X 2; calcium x 1; flushes x 10
 - Bring additional supplies including IV fluid and IV start kit into the room.
 - d. Assist with CPR, if LUCAS is not available
4. First Critical Care MD to arrive
 - a. Don PPE
 - b. Enter Room
 - c. Assess need for definitive airway. If needed, insert definitive airway. Once airway is secure, proceed to step D. If not needed, proceed to step D.
 - d. Assume Code leader role by announcing role and assigns responsibilities to team members (team members should provide a verbal response with acknowledgment of assignment).

****Follow standard ACLS protocol****

Intubating during code:

Because the most likely cause of the cardiac arrest in these patients would be a hypoxic respiratory failure, we recommend inserting an endotracheal tube as soon as possible (Follow the Mount Sinai Health System Airway Management Guide: Appendix 1).

1. Intubate using video-laryngoscope
2. Inflate the balloon prior to any ventilations.
3. Place a HEPA filter, continuous ETCO₂, and Ballard between ET tube and BVM.
4. Clamp tube prior to disconnecting BVM to place patient on ventilator to prevent loss of PEEP during transition if readily available

Note: If the patient requires ventilation during the intubation process *only use a 2 person ventilation technique* with the BVM and a HEPA filter. One person uses both hands around the mask to develop a seal with the patients face and the other person squeezes the bag. This will ensure a proper seal and minimize aerosolization.



Post-CPR:

- Doff all PPE except for N95 in room.
- Exit room -> perform hand hygiene
- Doff PPE -> perform hand hygiene
- Debrief

Appendix 1:

Mount Sinai Health System

COVID-19 Airway Management Guide (Non-Arresting Patients utilizing RSI)

Preparation:

1. Respiratory Therapy should prepare the ventilator outside of the room prior to entering the room if possible.
2. Take only the things that you need with you into the room, but make sure to take everything you need
3. Prepare medications with flushes and intubation equipment outside of the patient's room if possible
4. Suggested sedative (Etomidate/Propofol), pain management (Fentanyl/Hydromorphone), and paralytic agents (Succinylcholine 1-1.5 mg/kg/Rocuronium 1.2 mg/kg)
5. Verify intravenous access
6. See equipment checklist

7. Have a dedicated provider outside the room not in PPE to hand additional equipment and medications that may be needed and to come in to assist if needed. (If entering room, ensure to don PPE prior to entering.)

Airway Management:

We recommend starting supplemental O₂ for SPO₂ < 92% and aim for maintaining a SPO₂ of no higher than 96%. There should be a low threshold for early intubation for adult patients. (Consider discussions with pediatric critical care team for children unless patient is unstable). Patients with worsening respiratory failure should be intubated early. A short trial of High Flow Nasal Cannula (HFNC) can be used on COVID-19 patients, ideally in a negative pressure room with a surgical mask over the HFNC. If HFNC not available, non-invasive ventilation with BIPAP with a filter on the exhalation port can be considered for a short trial. (Utilize escalation of oxygen therapy to prevent baro trauma in the stable patient NC -> FM -> NRB -> HFNC -> CPAP -> BiPAP -> intubate. Be sure to include proning with the escalation.)

Personnel:

1. The provider on the team with the most intubation experience should intubate the patient.
2. The Difficult Airway Response plan should be activated in the event of a difficult airway following the standard protocol.
3. Limit people in the room during intubation
4. Designate a person outside the room to help with supplies if needed, and to monitor for breaches of PPE

Pre-intubation:

1. Ventilator should ideally be set up prior to intubation. Set up should include HEPA filter, continuous ETCO₂, and Ballard in line with the ventilator tubing.
2. Advance planning and clear communication are paramount.
3. If patient is not in a single patient room, separate from other patients by 6 feet using curtains or screens.
4. Set up and confirm ETCO₂ waveform capnography module is working.
5. Minimize personnel
6. All equipment/medications that are needed should be setup and brought into the room prior to the start of the procedure, see intubation check List
7. Don PPE (gown, gloves, N95 respirator, eye protection, ~~hair cover~~ bouffant) outside of the patient's room

Intubation:

1. Prolonged pre-oxygenation for more than 5 minutes with 100% FiO₂ non rebreather or HFNC or BIPAP/CPAP (caution: expiratory ports may aerosolize secretions, oxygen flow >5L/min is considered an aerosolization procedure.)
2. The most experienced provider should intubate; the second provider should push medications and assist as needed.
3. Goal is Rapid Sequence Intubation (RSI)
4. Can use push dose vasopressors for post intubation hypotension if needed.
5. If manual ventilation is needed, use 2 hands to provide good seal
6. Preferred use of video-laryngoscopy (using the device that the intubator is most experienced with and hand-held device if available) to increase the distance
7. Inflate cuff immediately after intubation and prior to any ventilation.
8. Attach ETT-to the pre-setup system.
9. Institute mechanical ventilation on volume control mode at 6-8eeml/kg IBW flowing the ARDS net titration.
10. Use disposable stethoscope to auscultate from the patient's side
11. Avoid awake intubation (risk of aerosolizing the virus during topicalization and coughing)
12. Avoid supraglottic airway (LMA) ventilation, unless warranted for a difficult airway

Post-intubation:

1. Connect the patient to the ventilator and secure the tube
2. If need to disconnect the patient from the ventilator, put it in standby first
3. Dispose used and all disposable items that were brought into the room in trash in the room
4. Video Laryngoscope: thoroughly wipe all surfaces with peroxide wipe prior to doffing PPE making sure to fully saturate the surface following standard droplet cleaning protocols.
5. Doff PPE, ideally in anteroom if available (can remove all pieces including N95, and wash hands) but if anteroom is not present, then doff in patient's room (at least 6 feet away from the patient), except for the N95 mask, which is removed outside of the room. Hand hygiene.
6. Wipe Video Laryngoscope again with peroxide wipe after doffing PPE. After this it is ready for next patient use and can be returned to its storage location

Suggested COVID-19 Airway "Go" Bag Contents, can be individualized for each department

1. HEPA filter
2. N95 masks x 4 (2 small, 2 regular)
3. Face shields x 2
4. Video laryngoscope, 3 blade (1 Miller, 1 Mac) x 2, 4 blade (1 Miller, 1 Mac) x 2
5. Stylet x 2 (Standard, Rigid)
6. Bougie
7. Isolation gown x 2
8. Sterile gown x 1
9. Bouffant x 2
10. Biohazard bag x 1

Intubation Check List:

- Working IV (ideally two large bore IVs)
- BVM (\pm w/ PEEP Valve) on Oxygen
- Continuous Waveform Capnography & Ballard on BVM
- Clamp for ET tube.
- Video Laryngoscope
- Backup manual Handle and blades
- ET tube the size your plan to use and 1 size smaller
- ET tube stylets (standard/rigid)
- Oral airway
- Bougie
- LMA sized for the patient
- Suction set up with yankauer
- NRB for pre-oxygenation
- Nasal Cannula for Apneic Oxygenation
- Paralytic (succinylcholine 1-1.5 mg/kg or rocuronium 1.2 mg /kg)
- Induction Agent (Suggest ketamine 1-2mg/kg or etomidate)
- Pain Management?
- Flushes
- Post intubation sedation & pain management (hydromorphone/fentanyl or midazolam/propofol) (setup on PCA or Pump)
- Orogastric tube
- Norepinephrine on pump only if needed
- IVP dose of phenylephrine pre/post