

## Guidance for Code Blue Resuscitations During a Pandemic: COVID-19

In response to the COVID-19 pandemic, the CHOP Resuscitation Committee has provided the following guidance for code blue resuscitations. These changes aim to maintain our high-quality resuscitation care while optimizing and prioritizing staff safety. This guidance is in line with the American Heart Association's Scientific Statement (<https://www.ahajournals.org/doi/abs/10.1161/CIRCULATIONAHA.120.047463>) published April 9<sup>th</sup>, 2020, and pertains to all emergent code blue events across our university city campus.

### Related Policies, Procedures, and Guidance

- [PPE Recommendations](#)
- [Aerosol Generating Procedures](#)
- [Filter Placement for Potential Aerosol-generating procedures](#)
- [ALS Cart Exchange Main Campus](#)
- [Resuscitation and Emergency Services](#)

### Rationale for Alterations to Standard Code Team Algorithms:

- Resuscitations are high-risk events for healthcare providers to contract COVID-19 disease.
- Trying to obtain history to determine COVID status (e.g., most recent negative test, new symptoms, new exposure) during the initial response may be unreliable and delay life-saving care.
- Chest compressions, positive pressure ventilation, and intubation are aerosol-generating procedures (AGPs), the need / timing of which cannot be immediately anticipated during code blue events.
- Resuscitations are high-stress emergent events in which the immediate needs of the patient requiring resuscitation may result in lapses in infection-control practices.
- At the current time, known SARS-CoV-2 positive patients are housed in the Emergency Department, Pediatric Special Treatment Unit (PSTU), or Special Isolation Unit (SIU), where separate resuscitation plans / systems are in place to optimize resuscitation care and protect healthcare providers.

### Guidance for Code Blue Events

- To maximize patient and provider safety, it is reasonable to consider all individuals requiring emergent resuscitation procedures to be COVID suspected and that aerosol-generating procedures will occur.

### Recommended Strategies

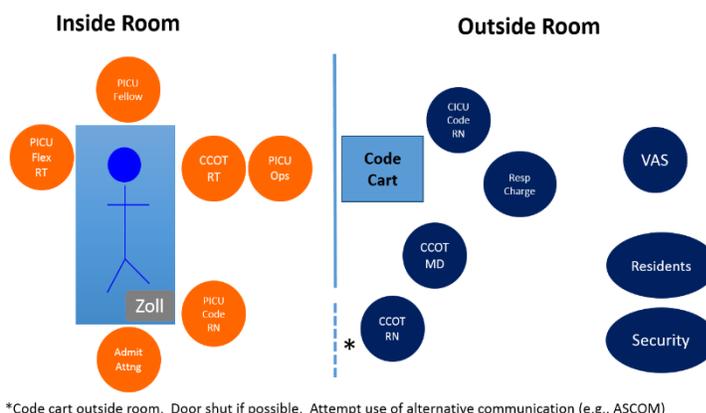
#### 1. REDUCE PROVIDER EXPOSURE

##### Code Team Members

- Don PPE for protection against AGPs before entering the room. If you do not have appropriate PPE, utilize stock in Critical Care Outreach Team (CCOT) Bioresponse Bag (see Appendix A).
- Specific roles have been identified for team members both inside and outside of the code room (Figure 1). You should review your role at the beginning of your shift to minimize confusion.
- It is a priority to limit the number of people in the room to those with defined roles. Others should only remain in the room or enter the room if requested by the Code Leader.
- Work closely with local response teams to relieve them of inside-the-room duties as appropriate once you arrive. Any local providers not in PPE for protection against AGPs should be asked to leave to don appropriate PPE before re-entering if they have an essential in-room role, especially if AGPs are occurring (i.e., CPR). Otherwise, they can assist the resuscitation from outside the room via communication through the CCOT MD (outside room lead).
- Keep the door to the room closed if possible. Establish cell phone (preferred) or ASCOM contact between the Relay MD and Code Leader. Brief openings to maintain effective communication is reasonable *unless patient is definitively known to be COVID positive*.

- At the end of the resuscitation, doff PPE per expanded precautions protocol. If transporting a patient to the ICU from another area, doffing should occur in the destination room.

| Inside Room<br>(PPE per hospital protocol with assumption that AGPs are occurring) |                                  |                 |  |
|--|----------------------------------|-----------------|--|
| Role   | Job Title                        | Number          | Description  |
| 1. Leader  | Admit Attending                  | 70032           | Physician lead   |
| 2. Airway  | Admit Fellow OR<br>Triage Fellow | 10006,<br>70106 | Basic and advanced airway management (e.g., intubation)  |
| 3. Airway Assist   | PICU Flex RT                     | 19033           | Primary airway assistant   |
| 4. Medications   | PICU Code RN                     | 70003           | Medication administration, defibrillation  |
| 5. Compressor #1   | CCOT RT                          | 75705           | Compressions, airway assist #2   |
| 6. Documenter / Compressor #2  | PICU Operations RN               | 71667           | If ongoing compressions, add one additional provider from outside room   |
| Outside Room   |                                  |                 |  |
| Role   | Job Title                        | Number          | Description  |
| 1. RN Relay  | CCOT RN                          | 75704           | Control room access. Monitor PPE. Should have "inside room" PPE donned. Relay information / supplies to team inside. |
| 2. Code Cart   | CICU Code RN                     | 70004           | Drawing up medications.  |
| 3. MD Relay  | CCOT MD or MD/NP designee        | 75703           | Lead for outside room coordination. Partner with RN Relay and Safety Monitor.  |
| 4. RT Assist   | Resp Charge Therapist            | 10504           | Provide primary assist to inside room respiratory needs.   |
| 5. Order Entry   | Residents                        | varying         | Outside room to help with order entry.   |
| 6. Vascular access assist  | VAS Charge RN                    | 74390           | If necessary, enter room to help with vascular access (don PPE prior to entry).                                      |
| 7. Medications   | Pharmacy                         | varying         | Assist CICU Charge RN with medications   |



**Figure 1:** Recommended code team response plan for out of the ICU Code Blue Events

### Local Response Teams

- Local teams are encouraged to develop a response plan to limit provider exposure during the initial moments of resuscitation prior to code team arrival. This will vary between units based on local needs and resources.
- Consider twice daily huddles to review your local emergency response plan. Discussion should include who is appropriately N95 fit tested and who has an existing N95 on their person. CCOT will be reviewing each unit response plan, including location of expanded PPE bag, during their daily walk-rounds with the in-patient charge RNs.
- If possible, additional people who are fit-tested should be fit-tested on the type of N95 in the unit code cart expanded PPE bag (see below).
- Consider proactively assigning the following roles:
  - **Crowd control:**
    - If immediate life-saving intervention is required (i.e., opening the airway, initiation of CPR), the **initial resuscitation should be limited to no more than 3 people** and any additional providers who enter the room should be donned in PPE for protection against AGPs before entering the room. **CPR can be initiated by as few as 1 person, allowing any additional providers to don PPE for AGP protection before entering.**
    - When possible, teams who provided the initial immediate life-saving intervention should be rotated out when appropriately donned clinicians are ready to enter.
    - The focus should remain on limiting the initial resuscitation to only those with defined roles.
    - When the Code Team arrives, they will request that the initial team transition care and continue to assist from outside the room. This is in order to limit the number of providers in the room and to protect the first-line responders.
  - **PPE point person:**
    - Bring expanded PPE bag (ideally located on code cart) for local clinical team use during the initial resuscitation prior to code team arrival.
    - **CODE CART SHOULD REMAIN OUTSIDE THE ROOM.**
    - Active clinical inpatient units and outpatient clinics should maintain 4 N-95 masks (regular size) and eye protection (goggles) for local team use. For replenishment, call Supply Chain.
    - Bags containing expanded PPE should be considered in the same way the defibrillators and suction devices are maintained on the unit carts (i.e., removed from cart prior to sending back to Central Supply and placed on new cart).
  - **Local "First Responder" roles:** Identified each shift, preferably out of a pool of properly fit-tested providers who may already have their own personal N95. Such an approach will limit

exposures, role confusion, and PPE burn. Consider one RN, one RT, and one provider. Of note, senior medical residents will have N-95s on their person in order to respond to all Code Blue events outside of the ICUs and can be leveraged for this role.

## 2. Prioritize oxygenation and ventilation strategies with lower aerosolization risk

- Use a high-efficiency particulate air (HEPA) filter, if available, for all ventilation. A mapelson circuit with a HEPA filter is contained in the CCOT bioresponse bag for out of ICU responses (Appendix A).
- During bag-mask ventilation, the provider should focus on maintaining a tight seal to limit aerosolization of particles.
- When advanced airway providers are available, intubate early with a cuffed tube, if possible, and connect to mechanical ventilator, when able. Limit disconnections.
- Intubation should be performed by the personnel with the highest chance of first-pass success. To optimize first-pass success, if chest compressions are ongoing, pause chest compressions to intubate.
- Consider the use of video laryngoscopy, if available, to reduce the exposure to aerosolized particles. Equipment for video laryngoscopy is contained in the CCOT bioresponse bag (Appendix A).
- If intubation is delayed, consider placement of a supraglottic airway.

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Individual intensive care units have developed unit-specific response plans based upon this general guidance. Unit specific questions should be directed to:

Pediatric Intensive Care Unit (PICU): Heather Wolfe ([Wolfeh@email.chop.edu](mailto:Wolfeh@email.chop.edu)), Ryan Morgan ([morganr1@email.chop.edu](mailto:morganr1@email.chop.edu)), Lori Boyle ([boylel@email.chop.edu](mailto:boylel@email.chop.edu)), or Kelly Morris ([morriske@email.chop.edu](mailto:morriske@email.chop.edu))

Neonatal Intensive Care Unit (NICU): Anne Ades ([ades@email.chop.edu](mailto:ades@email.chop.edu)) or Lauren Heimell ([heimell@email.chop.edu](mailto:heimell@email.chop.edu))

Cardiac Intensive Care Unit (CICU): Joshua Blinder ([blinderj@email.chop.edu](mailto:blinderj@email.chop.edu)) or Annemarie D'Amato ([damatoa@email.chop.edu](mailto:damatoa@email.chop.edu))

Emergency Department (ED): Sage Myers ([myerss@email.chop.edu](mailto:myerss@email.chop.edu)) or Mary Kate Abbadessa ([abbadessa@email.chop.edu](mailto:abbadessa@email.chop.edu))

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Hospital code team and Resuscitation Committee questions can be directed to:

Robert Sutton ([suttonr@email.chop.edu](mailto:suttonr@email.chop.edu))  
 Kelly Morris ([morriske@email.chop.edu](mailto:morriske@email.chop.edu))  
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## APPENDIX A

### Critical Care Outreach Team Bioresponse Bag Contents

- 6 N95 masks (3M Aura 1870+)
- 6 Goggles (Honeywell UVEX)
- 4 medium glove sets, 4 large glove sets
- Flow-inflating bag with HEPA filter attached
- 4 Gowns (cross-body respiratory bag)
- Video laryngoscope Pocket Monitor with 4 Blades (Miller 1, Miller 2, Mac 3, Mac 4)

