London Health Sciences Centre
Clinical Guideline for Protected Code Blue for the Resuscitation of Patients with Suspected or Confirmed COVID-19
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Rationale

Careful attention must be paid to the management of patients with suspected or confirmed COVID-19 during resuscitation due to the increased risk of transmission to healthcare workers (HCWs) from aerosol generating medical procedures (AGMPs). At London Health Sciences Centre (LHSC), resuscitation is performed by a team of well-equipped and trained individuals who wear appropriate personal protective equipment (PPE).
This guideline addresses resuscitation situations for patients suspected or confirmed to have COVID-19 (henceforth referred to as patients under investigation/patients confirmed (PUI/PC)). This document is intended to supplement the LHSC standard Cardiac Arrest guidelines and procedures (Current Code Blue Policy).

Protected Code Blue for COVID-19

A Code Blue in PUI/PC should be performed in an isolation room with negative pressure (when available) or private room by a competent team, with minimum number of staff and with strict adherence to infection control measures. Consideration is required in the instance that 2-4 PUI/PC are in a cohort in semi-private or ward room. To ensure that proper practices are followed, a “Protected Code Blue” will be declared for PUI/PC who require immediate attention by the acute resuscitation team.
As with other patients, the early identification of a PUI/PC with clinical deterioration is essential. The Critical Care Outreach Team (CCOT) should be activated for these situations. If a CCOT call is activated, the team will require notification of PUI/PC (“Protected Prearrest”/ “Protected CCOT Call”).

Activation Process

Identification

All code blue responses will require enhanced PPE and would be considered a “protected code blue”.

PUI/PC will be identified with the assistance of Infection Prevention & Control (IPAC) and isolation/PPE requirements will be affixed at the door and anteroom if the patient is within a negative pressure room.

Activation

In case of a cardiac arrest in a PUI/PC, the Code will be activated by calling extension 55555**.** The location of the arrest is then identified as in a standard Code Blue.

Switchboard will make an overhead announcement as per usual process and fan out BEEP notifications to the designated team members (see "Personnel") who will attend the arrest.

Preparation for Entering the Patient Room

Personal Protective Equipment (PPE)

Enhanced PPE will be available in all units.

While recognizing that resuscitation from cardiac arrest is a time-sensitive intervention, prioritizing the meticulous donning of appropriate PPE for all staff before entering a patient room is particularly crucial in a Protected Code Blue. Maintaining the safety of our staff is of the upmost importance.

All PUI/PC will be under droplet/contact precautions while admitted at LHSC. When available, these patients will be in airborne isolation rooms under negative pressure. As with standard care, strict hand hygiene practices should be followed. Additionally, the following PPE must be worn by all HCW entering a patient room for resuscitation:

- Level III gown
- Extended cuff gloves
- N95 respirator (fit tested)
- Full face shield
- Bouffant cap

Other notes regarding PPE:

- A nurse should be designated at each resuscitation to ensure appropriate donning and doffing of team member PPE and to monitor for any potential breaches/exposures (charge RN or other member of the unit caring for patient).
- Do not take any personal items into the room (stethoscope, jewellery, phone, clipboard, etc).

Preparation for Code Team Arrival

As with standard Code Blue procedure, preparing the patient for the arrival of the Code Team is expected. When a provider identifies a PUI/PC with vital signs absent, they should **not** begin resuscitation. They should exit the room and call for help from other providers on the unit. One provider should make the call to 55555 while two providers (RN/RT/MD) don droplet/contact/airborne PPE in preparation to enter patient room. A fourth provider should get the nearest arrest cart and bring it to the doorway **outside** the patient room. This provider can be responsible for handing cart items to the runner inside the room (see Personnel). Once two providers have donned full PPE, they may enter the patient room. They are to bring the Zoll defibrillator from the arrest cart. One provider in the room will begin CPR while the other attaches the Zoll leads to the patient. Oxygen by nasal prongs at a flow rate of up to 6L/min may be applied to the patient with a surgical mask over the nasal prongs. **Bag-mask ventilation (BMV) should not be performed.** Continue until Code Blue Team arrives to take over care.

Personnel

General Considerations

- Personnel in the room should be **limited** to the minimum required to safely perform the resuscitation.
- The most experienced HCWs for the tasks required who are also trained in appropriate use of necessary PPE should be involved in the resuscitation.
- While residents and fellows will likely play key roles on the Code Blue Team, medical, respiratory, and nursing students should not be involved in care or in the room as observers.
- All team members should identify themselves and their role clearly at the outset of the resuscitation.
- Any visitors/family members should be escorted out of the room during a Code Blue.

Personnel Inside the Room

a) Senior Medical Resident (SMR)*
b) Cardiac Care Unit (CCU) Resident*
c) Intensive Care Unit (ICU – University Hospital) or Critical Care Trauma Center (CCTC – Victoria Hospital) Resident and/or Fellow*
d) One or two Respiratory Therapists (RTs)
e) One or two unit nurses (likely the original RNs in the room) – to provide patient information, timekeeping, and CPR
f) One to two resuscitation nurses (CCU RN +/- CCOT RN) – to deliver medications and operate Zoll
g) Junior Medicine Resident or second ICU/CCTC Resident (optional)

*the most senior/experienced resident MD who is not required for airway management should act as Team Leader

Personnel Outside the Room

a) Two RNs -/+ additional RN or RT if available – one to draw medications and get supplies from cart, one to be runner to provide meds/supplies to team, one to chart/document
b) One nurse to assist with donning and doffing of PPE, observe for any breach in PPE, and maintain staff log of all personnel entering room
c) Security officer to control crowds and prevent entry of any non-essential personnel into area and room
d) Porter to assist with transportation of samples to lab, etc.
e) Most Responsible Physician (MRP) or delegate to provide information on chart, contact family, etc.

Equipment

General Considerations

- In preparation for any possible arrest, an oxygen flow meter and suction with a Yankauer and tubing must be set up and functional in any room with admitted PUI/PC. Suction units are also on all arrest carts.
- A non-rebreather mask with built-in viral filters must be available for immediate use in the room when FiO2 requirements are 50% or greater. These masks should also be available on arrest carts.

Equipment to Take into Patient Room

- Zoll/defibrillator
- Arrest drugs
- Intubation equipment
- Intraosseous (IO) drill and needle if IV access lost or unable to be established
- One GlideScope, C-MAC, or McGrath video-assisted laryngoscope, if available
- Transport ventilator, if available (do not bring into room until patient intubated and resuscitation successful)

Guidelines for Resuscitative Care

A Protected Code Blue has the following variations from standard resuscitative protocols (ACLS):

- The Intubation Team will be performing the intubation.

- The provider with the most airway expertise should perform the intubation to limit attempts and team exposure.
- The bag-valve mask(BVM) may be applied with a two-handed seal for oxygen delivery, but **bagging should be avoided**.
- If, in a very rare case, a patient absolutely requires BVM, use two-handed seal with viral filter and small tidal volumes.
- If safe to do so and patient not in full arrest, rapid sequence intubation (RSI) is optimal to avoid manual ventilation of the patient and aerosolization.
- In cardiac arrest, intubate patient early and hold CPR during intubation to minimize aerosolization and optimize chance of first-pass success.
- Unless contraindicated, always paralyze the patient. This reduces coughing aerosolization.
- When available and familiar to intubating staff, use video laryngoscopy for intubation.
- After intubation and confirmation of ETCO2, immediately apply viral filter between endotracheal tube and ventilator circuit/bag.

NOTE: it is anticipated that the Intubation Team would arrive to Protected Code Blue responses to perform intubation.

Considerations for Leaving the Patient Room

- Excess medications should be discarded at the end of the resuscitation.
- Staff performing procedures during the code must ensure all contaminated disposable equipment is discarded.
- Team members should begin doffing PPE inside room while communicating clearly to avoid contaminating each other.
- Nurse will ensure appropriate doffing of PPE to monitor for any possible contamination. They will also ensure any reusable contaminated equipment is collected for disinfection.
- Staff who believe they have been contaminated/exposed should attempt to decontaminate the affected area (change clothes, wash, etc), perform hand hygiene, don a surgical mask, report to their supervisor, and contact Occupational Health for further guidance and assistance.
- If resuscitation successful, at least one team member should remain in the room in PPE to monitor patient until transport.
- Environmental Services must be contacted to clean the room as per protocol.

Patient Transportation

- Patients surviving a Protected Code Blue outside of ICU/CCTC should be transported to ICU/CCTC as soon as possible.
- Any Code Team member who will continue to care for the patient during transport must first doff PPE, exit the room, and don new PPE prior to transport.
- Transport team should ideally consist of one MD, one RN, and one RT.

- In the unlikely event the patient is not intubated, continue to use oxygen mask with viral filters during transport to reduce contamination of the environment.
- Security should clear all non-essential people in the path of patient transport to ICU/CCTC. Security should have a service elevator waiting for transport team if needed to move floors.
- The elevator buttons and any other contacted surfaces must be cleaned by Environmental Services after patient has been transported.
- If resuscitation is unsuccessful, patient remains should be handled as per usual process.