

CODE BLUE GUIDING PRINCIPLES during COVID-19 Pandemic

Key changes and rationale:

- With this update of the Code Blue Guiding Principles, chest compressions in the absence of an airway intervention are not considered to be an aerosol generating medical procedure (AGMP). There is some debate about what procedures have the potential to be AGMPs and the evidence around chest compressions being AGMPs is very weak. In a meta-analysis authored by Tran et al (2012), pooled estimates of 3 observational studies did not find that chest compressions represented an AGMP. More recently, Couper et al. (2020) said that very little evidence exists that either chest compressions or defibrillation are AGMPs. Ng et al reported that none of 41 health care workers (HCW) participating in an intubation developed COVID-19, 85% of them wearing a medical mask. The infection prevention and control guidelines for many provinces (BC, AB, SK, MB, ON) explicitly state that chest compressions alone are not an AGMP. Compression-only cardiopulmonary resuscitation is thought to be a low-risk procedure and can be safely initiated with the patient's mouth and nose covered.
 - A medical mask must be placed over the patient's mouth and nose before starting chest compressions.
 - The minimum PPE for the initial responders is eye protection and a medical mask to initiate chest compressions. Additional PPE requirements are based on [Nova Scotia Health COVID-19 Protocols for a Safe Recovery](#) and a [Point of Care Risk Assessment](#).
- The PPE for AGMPs is more extensive than for non-AGMPs and, therefore, likely to result in a delay in initiating life saving measures such as chest compressions.

Purpose

During the COVID-19 pandemic, we are committing to balance the risk to healthcare teams with provision of timely interventions during resuscitative measures. These guiding principles are based on the following parameters:

- Early initiation of CPR can lead to decreased mortality and morbidity.
- Airway management, including bag-valve mask ventilation (BVM) and intubation, is considered an aerosol generating medical procedure (AGMP).

The goals of this document are:

1. Minimize the risk to healthcare workers, physicians, and patients and provide timely, safe, evidence informed interventions.

Standards of Care related to Resuscitation:

1. Teams should strive to have early goals of care discussion with patients and families at admission to hospital.
Rationale: The healthcare team is to inform patients and families about the risks and benefits of CPR in the event of a cardiac or respiratory arrest. The patient's choice regarding resuscitation must be clearly documented in the patient's chart.
2. All patients must have a [COVID-19 Risk Assessment](#) completed at initial point of contact and updated with patient's status changes.
Rationale: Early identification mitigates risk to those within the healthcare environment, including healthcare professionals, patients, and the public, and allows for procedure preparation and early patient intervention.
3. Utilize an evidence informed approach to early identification of patients who are at risk of acute deterioration.

Rationale: 80% of in-hospital cardiac arrest patients have abnormal vital signs documented in the 8 hours preceding the event (Heart and Stroke, 2015). Utilizing an early warning signs tool, such as MEWS (Modified Early Warning Signs, [MEWS Scoring System](#)), minimizes the probability of respiratory and cardiac arrest.

4. Patients with COVID-19 (known or a high clinical suspicion) who have a deteriorating health status should receive immediate intervention by healthcare teams.

Rationale: Patients with COVID-19 can deteriorate very rapidly.

5. Patients with COVID-19 should be moved to a negative pressure room at the earliest opportunity when airway interventions are anticipated. Inpatients will not be moved to a negative pressure room in the middle of a Code Blue.

Rationale: [Airway Management Guidelines for Patients with Known or Suspected COVID-19 Infection](#) and [COVID-19: Aerosol Generating Medical Procedures \(AGMP\) in Healthcare Settings](#).

6. Performing CPR and advanced resuscitation interventions requires a point of care risk assessment to determine risk of contact with body fluids to assist in decisions regarding appropriate PPE, regardless of COVID-19 status.

Rationale: Personal Protective Equipment is required to protect healthcare teams as per Infection Prevention and Control standards ([Point of Care Risk Assessment](#)).

7. All team members must ensure documentation is completed in consultation with the team during the code – using the site or zone-specific resuscitation form. (Ex [Cardiopulmonary Resuscitation Record](#))
– Patient charts must be available and near the bedside during the CODE Blue

Guiding Principles for Health Care Teams during Code Blue:

1. NS Health COVID Network and Code Blue Working Group is regularly reviewing local COVID-19 epidemiology and current evidence to ensure alignment with the Guiding Principles.
2. Clinicians must use the [COVID-19 Risk Assessment](#) and [Point of Care Risk Assessment](#) to determine appropriate precautions including PPE.
3. Airborne precautions are required for airway management (including BVM and intubation) according to the tier level identified in [Nova Scotia Health COVID-19 Protocols for a Safe Recovery](#).
4. Site leadership must review the Code Blue Guiding Principles document and prepare a site-specific protocol based on APPENDIX A, taking into consideration local roles and resources. It is recommended teams simulate their Code Blue responses.
5. A medical mask must be placed on the patient before starting chest compressions, covering the nose and mouth (nasal prongs should be applied under the patient's mask).
6. The minimum PPE for the first responder is eye protection and a medical mask to initiate chest compression. Additional PPE requirements are based on [Nova Scotia Health COVID-19 Protocols for a Safe Recovery](#) and a [Point of Care Risk Assessment](#)
7. Team debriefings should occur following each Code Blue.

Code Blue Additional Considerations:

- Have a mechanism to initiate a Code Blue as per site specific protocol.
- Team must don appropriate PPE before entering room.
- **Minimize** the number of responders in the patient's room.

- **Minimize** the equipment that enters the room: defibrillator, patient’s chart, backboard, airway kit, and necessary drugs.
- If the room has a door, it must remain closed at all times. If there are other patients/family/support persons in the room, evacuate if possible.
- Inpatients will NOT be moved to a negative pressure room in the middle of a Code Blue.
- The Code Blue team members should carry appropriately fitted N95 masks with them to a code, to ensure they have ready access to their type of fitted N95.
- If any member of the healthcare team breaches PPE integrity (e.g.: mask/visor falls), they will doff PPE (using proper hand hygiene), leave the room, and don correct PPE prior to reentering; use the “buddy” system.
- Even in full PPE, contamination of your hospital attire is possible; all team members included in the Code Blue need to assess if they potentially contaminated their attire and consider the need to shower and change scrubs.

Airway Considerations

- Refer to the [Airway Management Guidelines for Patients with Known or Suspected COVID-19 Infection](#) and [COVID-19: Aerosol Generating Medical Procedures \(AGMP\) in Healthcare Settings](#)
- The most skilled airway management provider should be the lead for airway management. If BVM is used, utilize a two-handed BVM ventilation technique, with gentle BVM once a good seal is obtained.
- Chest compressions should be discontinued during tracheal intubation, if performed, and only resumed once the tube’s cuff is inflated.
- Secure an ETT with a commercial securing device.
- Minimize disconnections of ETT.
- Ensure a viral filter is used.

Equipment Considerations

- Readily accessible procedure/surgical masks to apply to patient
- Additions to crash cart during COVID-19 pandemic:
 - 6 N95 masks (2 of each variety)
 - 5 Gowns (level 3 or 4)
 - 5 Face-shields
 - Disposable stop clock
 - Bag mask valve with HME filter attached

Overall Code Blue Goals in patient with COVID-19 or patient presenting with a very high clinical suspicion of COVID-19:

- Recommend assessing efforts and consideration of termination if no return of spontaneous circulation (ROSC) after 10 minutes or 3 rounds of CPR

Appendix A

Recommended Protocol for Code Blue:

Initial response:

1st responder (local healthcare team member):

- Call Code Blue as per site protocol.
- Don eye protection and medical mask if not already wearing Universal Pandemic Precautions
- **Place a medical mask on the patient (nasal prongs should be applied under the patient's mask).**
- Initiate chest compressions and defibrillation as appropriate
- 1st responder should be excused once additional Code Blue resources arrive. The 1st responder, may not be wearing a gown, assess level of contamination and change scrubs, or shower and change scrubs.
- Ensure documentation is completed in consultation with the team during the code – using the site or zone-specific resuscitation form. May take patients chart into room.

Gatekeeper:

- Ensure door is shut (if there is a door) and minimize opening of door once airway management strategies underway, for a patient requiring airborne precautions.
- Inform team members of PPE requirements as they arrive.
- Ensure appropriate PPE is being worn, and act as buddy for donning and doffing.
- **Minimize people in the room (maximum 7).**
- The Gatekeeper is NOT the runner.
- Ensure documentation is completed in consultation with the team during the code – using the site or zone-specific resuscitation form. May take patients chart into room.

Additional Responders:

- Before airway management (including BVM and intubation) airborne PPE is donned according to the [Nova Scotia Health COVID-19 Protocols for a Safe Recovery](#).
- Ensure documentation is completed in consultation with the team during the code – using the site or zone-specific resuscitation form. May take patients chart into room.

Upon resolution of the code:

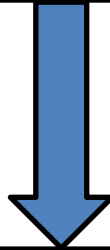
- Preparation for transfer to ICU
 - Transferring team members doff resuscitation PPE and apply clean PPE according to [COVID-19 Risk Assessment](#) and [Point of Care Risk Assessment](#).
 - Have a “clean” team member, remain clean throughout the transport (do not touch equipment or patient). This team member can open doors, push elevator buttons, etc.

Call security and supervisor as per site protocols (relay patient COVID-19 status) to facilitate transport including elevator procedures and public / traffic control.

- Debrief with team members.
- All team members need to assess if they potentially contaminated their attire and consider the need to shower and change scrubs.
- If Airborne precautions were implemented during the Code Blue, required time post AGMP to clear airborne particles must be observed prior to entering the room without a N95 mask and/or for use by another patient. Refer to [Airborne Precautions - Policy - NSHA IPC-RP-025](#).

All Code Blue

Medical Mask on Patient
(nasal prongs should be applied under the patient's mask)
Minimum Requirement for PPE:
Eye protection & medical mask
CPR & Defib as appropriate
Document during Code Blue – **patients chart at bedside**



Airborne precautions
are required for
airway management
(including BVM and intubation)
according to the Tier level
identified in the
[Nova Scotia Health COVID-19
Protocols for a Safe Recovery](#)

MEMO: Removal of Mini Resuscitation Bags November 16, 2021
[Code Blue - Removal of Mini Resuscitation Bags Medication Update](#)

Mini resuscitation bags are currently stocked on nursing units that have staff who respond to Code Blue calls. This was operationalized to prevent wastage of drugs taken into suspected or known COVID-19 rooms.

After consultation with the Central Zone Resuscitation Committee, mini resuscitation bags will be removed from nursing units **November 16, 2021**. This does not impact intubation kits or regular resuscitation drug trays.

After November 16, if responding to a Code Blue for a suspected or known COVID-19 patient, regular resuscitation drug trays will be used and may be taken into a patient's room.

Return of Resuscitation Drug Tray to Pharmacy After Suspected or Known COVID-19 Exposure

The resuscitation drug tray must be placed in a plastic bag inside the contaminated room and sealed. When the bag is removed from the contaminated room it should be placed in a second bag and sealed (i.e., double-bagged). Place a sticker on the outer bag indicating the floor returning it and that it is a potential or known COVID-19 exposure item.

During pharmacy hours

A porter will transport the double-bagged item(s) from the clinical area to Pharmacy. Per IPAC recommendations, porters must wear gloves to handle the double-bagged item(s). The porter will inform pharmacy when they deliver the double-bagged item(s) that it is from a suspected or known COVID-19 patient code blue.

Outside Pharmacy hours

The clinical area will keep double-bagged item(s) in a designated place until pharmacy is open.

Return of Non-COVID-19 Exposed Resuscitation Drug Tray to Pharmacy

Per usual procedure. Do not bag and seal these trays. Bagging the tray indicates to pharmacy that there has been a suspected or known COVID-19 exposure and necessitates drug wastage and full tray decontamination.

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[Code Blue/Pink - Policy - NSHA CL-EM-010](#) – effective date TBD

[Code Blue/Pink Management - Care Directive - NSHA CD-CL-005](#) – Effective date TBD