Nunavut	Department of Health Government of Nunavut	NURSING POLICY, PROCEDURE AND PROTOCOLS
		Community Health Nursing

TITLE:		SECTION:	POLICY NUMBER:
Community Health Centre Protected Code Blue During the COVID-19 Pandemic		Nursing Practice	07-037-00

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APPLIES TO:
Community Health Centres

==**PLEASE NOTE: This is an emerging pandemic involving a novel virus. As new evidence is released, the information contained within this document may change.**==

1. **BACKGROUND:**

   The SARS-CoV-2 virus (COVID-19) currently causing a worldwide pandemic is transmitted primarily by droplet and contact means. Certain procedures performed during a code blue, known as 'aerosol-generating medical procedures' (AGMP), are believed to cause both a higher volume of infectious droplets as well as aerosolization of the virus, increasing risk of transmission. This protocol aims to provide specific risk reduction and infection prevention strategies to guide healthcare providers when performing resuscitation.

2. **DEFINITIONS:**

   2.1 Code Blue: Cardiopulmonary arrest.

   2.2 Aerosol: Small droplet of moisture that may carry microorganisms; may remain suspended in the air for periods of time, allowing inhalation of microorganisms.

   2.3 Aerosol-Generating Medical Procedures (AGMP): A procedure with the potential to generate a high volume of respiratory droplets and aerosols. Potential AGMP during a critical patient presentation and resuscitation within the health centre setting may include (but is not limited to):

   2.3.1 Nebulizer therapy

   2.3.2 High-flow oxygen therapy (nasal prongs at >6L/min)

   2.3.3 Open airway suctioning (including deep suctioning of nasopharynx and trachea; not including oral suctioning)

   2.3.4 Cardiopulmonary resuscitation (CPR)

       i. Cardioversion and defibrillation **in the absence of bag-valve mask ventilation (BVM)** are not AGMP

       ii. Other procedures associated with CPR including chest compressions **with** intubation and manual ventilation, are AGMP

       iii. Chest compressions alone are not considered an AGMP

   2.3.5 Bag-valve mask ventilation

   2.3.6 Endotracheal intubation and extubation

   2.3.7 Insertion of any advanced airway

2.3.8 Non-invasive ventilation (CPAP, BiPAP)

2.3.9 Needle decompression

3. KEY PRINCIPLES:

3.1 Safety and protection of healthcare providers is priority.

3.2 Additional precautionary measures should be taken when delivering care to patients with suspected respiratory infection.

3.3 During the current pandemic, assume all respiratory and cardiac arrests are COVID-19 positive.

3.4 Ethical principles surrounding resource allocation, staff training, PPE availability and conservation, prognosis, and patient wishes must be taken into consideration.

4. RECIPIENT PATIENTS:

4.1 Patients presenting to the Community Health Centre, requiring resuscitation.

5. POLICY:

5.1 The Community Health Centre must apply the risk reduction and infection prevention strategies listed in 6.0 during a code blue.

5.2 The Community Health Centre must adapt the risk reduction and infection prevention measures outlined in Appendix A: *Community Health Centre Protected Code Blue Practical Guide.*

Note: It is recognized that the resources and number of healthcare providers involved in a code blue will depend on staffing complement and availability. The roles and responsibilities outlined in Appendix A must be adapted to situation and setting, with emphasis on maintaining risk reduction and infection prevention strategies.

6.0 RISK REDUCTION & INFECTION PREVENTION STRATEGIES:

6.1 AGMP should be performed in (order of preference):

    6.1.1 Negative pressure room

    6.1.2 Isolation room with door closed, or

    6.1.3 Private room with door closed, or

    6.1.4 COVID-19 cohort area, where all healthcare providers are wearing PPE

6.2 In the absence of a negative pressure room, every effort must be made for a code blue resuscitation to be performed in the health centre isolation room with the door closed.

6.3 It is mandatory for healthcare providers to don full Personal Protective Equipment (PPE) for droplet, contact and airborne precautions during a code blue resuscitation.

6.4 An observer should be assigned with donning and doffing of PPE.

6.5 Use disposable equipment when possible.

6.6 Double glove to allow removal of highly contaminated outer gloves.

6.7 Pay attention to limit exposure of contaminated equipment that have come into direct contact with the patient's face or secretions.

6.8 Use a drop bag to isolate highly contaminated equipment after any procedures, prior to disposal/cleaning of room.

6.9 Limit the amount of equipment entering the room to items that are deemed necessary; all supplies in the room are considered contaminated.

6.10 Avoid unnecessary entry/exit of the room by healthcare providers.

6.11 Bag-valve mask ventilation (BVM) is considered a highly aerosolized procedure. If BVM must be performed, use two-person, four-handed technique.

6.12 The door to the room should remained closed as much as possible.

6.13 Utilize a telephone with speaker phone function or baby monitor to communicate with staff outside of the room. This will a) minimize door opening b) aid with documentation; and c) assist with retrieval of equipment.

6.14 The use of personal cell phones is discouraged.

Note: Contact the Regional Director and/or Regional Clinical Educator for direction on isolation room set up.

7.0 PROCEDURAL GUIDE:

Outlined below in Appendix A: Community Health Centre Protected Code Blue Practical Guide.

8.0 RELATED POLICIES, PROTOCOLS AND LEGISLATION:

Department of Health, Qikiqtani General Hospital. April 2020. *Protected Code Blue in adults at Qikiqtani General Hospital during the COVID-19 pandemic.*

Department of Health, Qikiqtani General Hospital. April 2020. *Protected Code Blue in pediatric patients at Qikiqtani General Hospital during the COVID-19 pandemic.*

Community Health Centre Policy 10-003-06   Aerosol-Generating Medical Procedures in Patients with Known or Suspected COVID-19

Community Health Nursing Policy 06-008-00:   Documentation Standards

Community Health Nursing Policy 06-008-01:   Documentation Standards

Community Health Nursing Policy 10-005-00:   Personal Protective Equipment

Department of Health Housekeeping Procedures Manual

9.0 REFERENCES:

1. Tran, K., Cimon, K., Severn, M., Pessoa-Silva, C.L., & Conly, J. (2011). Aerosol-generating procedures and risk of transmission of acute respiratory infections: A systemic review. *Canadian Agency for Drugs and Technologies in Health.* Retrieved from https://www.cadth.ca/media/pdf/M0023_Aerosol_Generating_Procedures_e.pdf

2. The Ottawa Hospital, Department of Critical Care. COVID-19 Quick reference guide. Retrieved from https://www.covidottawa.com/

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COMMUNITY HEALTH CENTRE PROTECTED CODE BLUE PRACTICAL GUIDE

1. Team Roles & Preparation

Minimize number of people inside room. Roles should be assigned. Consider staffing compliment, job descriptions, and scope of practice.

Ideal Healthcare Providers Inside Room
  a) Team Lead MD, 1st responder or most experience provider - may assist with BVM by bagging
  b) Nurse x 4 if available
Ideal Healthcare Providers Outside of the Room
  c) Nurse – backup in full airborne PPE
  d) Nurse – Runner, documenter and PPE Observer if dedicated Observer not available
  e) PPE Observer

2. Equipment Preparation

a) Cardiac monitor removed from arrest cart and brought into room
  a) Portable suction
  b) IV pump as needed
  c) Oxygen Tank
  d) Back board
  e) Preparation Isolation supply of: Airway and Breathing Kit, Circulation Kit & Medication Kit OR Arrest cart outside of the room
  f) **ARREST CART (SHOULD) REMAIN OUTSIDE ROOM DURING CODE**
     Note: Contact Clinical Nurse Educator for isolation room set up and equipment preparation.

3. Situation Specific Procedure

Healthcare provider who witnesses an adult patient experiencing cardiac arrest, or becoming unresponsive:
  a) Check for pulse for no more than 10 seconds
  b) Verify code status if possible
  c) Alert code blue to team
  d) Leave room to properly don Airborne PPE
  e) Cover nose and mouth with surgical mask, NRB mask up to 15 L/min, or piece of cloth while awaiting additional personnel
  f) Return to room, if defibrillator available, apply pads to patient. If rhythm is shockable, you may deliver a shock, as this is not considered and AGMP
  g) Start compressions as soon as 1st responder is in room in full PPE
  h) Only ventilate patient with appropriate airway adjunct and when two experienced providers are available. With viral filter attached to BVM, perform 2-Person, 4-hand BVM.
  i) Ensure door to room is closed

4. Roles & Responsibilities of Healthcare Providers Inside the Room

Team Lead:
   a) Enters room in airborne and contact PPE
   b) Assigns roles to team members
   c) Obtain clinical history; if no physician present, call regional physician on call
   d) Once airway obtained, assist with bagging patient using 2-person, 4-hand technique

First Nurse (Defibrillator/Monitor):
   e) Returns to room after donning airborne and contact PPE
   f) If cardiac monitor in room already, apply pads; follow ACLS guidelines; defibrillation in the absence of BVM is not an AGMP; therefore, may defibrillate at this point if indicated.
   g) Initiate chest compressions if indicated without airway manipulation or BVM
   h) Will switch roles with team members at each pulse check as per ACLS guidelines or physician direction, to maintain high quality CPR

Second Nurse (Circulation):
   i) Brings Circulation Kit, Medication Kit, back board and cardiac monitor
   j) Place backboard to improve compressions
   k) Apply pads to patient and deliver a shock if shockable rhythm is present (not considered an AGMP) unless this has already been done by first nurse.
   l) Obtain IV access
   m) Cycle compressions and airway with first nurse at each pulse check

Third Nurse (Airway):
   n) Brings Airway Kit & Breathing Kit
   o) If no physician, apply oxygen at 15 L/min with a Non-Rebreather Mask
   p) Insert oral airway and initiate 2-person, 4-Hand BVM; Team Lead can perform 'bagging'
   q) If physician in community, patient may be intubated at this time; chest compressions are to be paused for intubation. (Note: Community Health Centre Guideline for COVID-19 Intubation is in development).
   r) BVM increases aerosolization; use viral HEPA filter if available; use PEEP valve if available and indicated.
   s) If using PEEP valve, set at 5 cm H20 and increase as ordered to improve oxygen saturation. Avoid PEEP in hypotensive patients; consult with physician for guidance.
   t) Cycles compressions and airway

Fourth &/or Fifth Nurse:
   u) Cycles compressions and airway

5. Roles & Responsibilities of Healthcare Providers Outside the Room

Backup Nurse:
   a) To don full PPE and wait outside the room to assist if necessary
   b) May need to swap out for compressions or airway support

Runner and PPE observer:
   c) Retrieve extra equipment/meds as needed (Support staff may act as runner)
   d) PPE observer remains outside room; ensures proper donning/doffing of PPE by all individuals entering room and prevents unnecessary personnel from entering or leaving the room
   e) Documenter

6.	Running the Code Blue

	a)	The Code Blue to be directed by Physician/Physician On-Call, following standard ACLS Guidelines.
	b)	Consider inserting an advanced airway if physician available in community (or a healthcare provider who has received training for advanced airway insertion such as LMA, KingLT, or Combitube) to decrease aerosolization in comparison to BVM.
	c)	Only Rankin Inlet has a ventilator at this time; if patient is intubated or has a supraglottic airway inserted, they require manual ventilation, which is an AGMP. Currently, there is no way to close the circuit in a community health centre setting.
	d)	If unable to insert advanced airway, the patient should be ventilated with oral or nasal airway and 2-person, 4-hand BVM technique.
	e)	Consider discontinuation of resuscitation if:
		o No improvement after 1-2 cycles of CPR after definitive airway is established
		o Severe COVID-19 related hypoxia that has deteriorated despite invasive mechanical ventilation.

7.	Determining Appropriateness & Duration of Intervention

	a)	Decision to discontinue efforts is made by physician.
	b)	With patient historical factors and context of arrest in mind:
		I. Consider holding resuscitation for unwitnessed arrests in adults with suspected/confirmed COVID-19.
		II. Consider discontinuing resuscitation for adults after 1 cycle of CPR once a definitive airway is established with the following rationale:
		i. Purely hypoxic arrests should respond quickly to restoring oxygenation with a definitive airway.
		ii. Chance of survival for asystole and PEA that does not respond quickly to ACLS measures is poor.
		iii. If the patient is suffering from severe and progressive COVID-19 disease, resuscitative efforts are unlikely to change the course of this disease.
		iv. Prolonged resuscitative efforts increase ongoing risk of exposure to all healthcare providers involved in the code.

8.	Further Treatments & Investigations

	a)	Diagnostic imaging should be avoided during code blue for patients with suspected/confirmed COVID-19.
	b)	Obtaining laboratory specimens should be avoided during code blue for patients with suspected/confirmed COVID-19.
	c)	Consider empiric needle decompression of chest if pneumothorax suspected (considered to be an AGMP).
	d)	Extra equipment should not be brought into room such as portable ultrasound, EKG machine if not necessary.

9.	Documentation

	a)	Documentation is low priority, but still important.
	b)	Healthcare providers involved in the code blue can meet and reasonably recall events for documentation following the code.
	c)	Documenter, if available, should remain outside the door.
	d)	Follow Policy 06-008-00 *Documentation Standards* & 06-008-01 *Documentation Standard Guidelines* found in Government of Nunavut Community Health Nursing Manual.

e) Use of speaker function on telephone in isolation room or baby monitor, is suggested.
f)

10. Successful Code Blue During COVID-19 Pandemic
a) If patient has return of spontaneous circulation (ROSC), ongoing management must be provided while maintaining full airborne/contact/droplet precautions until patient is transferred to higher tertiary centre.
b) If ventilator available (closed circuit), patient can be removed from airborne precautions 4 hours after AGMP or resuscitation.
c) Any urgent investigations such as blood work should be carried out by those healthcare providers already in the room, whenever possible.
d) After successful code blue, ALL equipment and medication are to remain in the room for safe disposal and decontamination.
e) Garbage and linen may be removed as per isolation policy in housekeeping manual; however, equipment if possible, should stay in room until patient leaves room.
f) At least one designated RN to remain in room with patient to provide supportive care; may need to be relieved by another team member depending on transport time to higher level care centre.
g) Medevac to be arranged by regional physician; contact RCDC and/or CPHO; ensure transport team aware of precautions.
h) Disposition of patient would be decided by the regional physician on-call.
i) Documentation to be completed by Nurse who was designated to document; maintain documentation outside of room.
j) Once patient leaves, allow 4 hours to elapse before cleaning, according to housekeeping procedure (see Reference List).

11. Termination of Code Blue During COVID-19 Pandemic
a) After unsuccessful code blue, ALL equipment and medication are to remain in room for safe disposal and decontamination.
b) DO NOT extubate patient – leave ambu-bag, filter, and airway, in situ.
c) Housekeeping staff to perform a decontamination and disposal of room, 4 hours after patient removed from room.
d) Careful doffing of PPE must be done for all involved personnel, one at a time, with the designated observer ensuring proper processes followed.
e) If possible, staff involved in resuscitation/code blue should shower and change clothing.

12. Summary of Adjustments to CPR algorithms during COVID-19 pandemic
Reduce Provider exposure
a) Assume all patients are COVID-19 positive during an arrest
b) Don PPE before entering room/scene
c) Limit personnel involved
Prioritize oxygenation and ventilation strategies with lower aerosolization risk
d) Defibrillation can be performed early without airborne precautions for shockable rhythms
e) Before intubation, BVM can be used if it can be performed using 2 Person, 4 Handed approach
f) Viral HEPA Filter to be used
g) Consider passive oxygenation with a facemask as an alternative to bag mask ventilation when not immediately available

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h) Intubate early with a cuffed tube, if possible, and connect to mechanical ventilator when able (applies to Rankin Inlet only)
i) Engage the Intubator with the highest chance of first-pass success
j) Pause chest compressions to intubate
k) Consider use of video laryngoscopy or LMA, if available
Consider Rescuer Appropriateness
l) Address Goals of Care in early course of illness, when possible
m) Consider discontinuation of CPR following 1-2 cycles with adequate ventilation

Pediatric Considerations
a) Equipment: Broselow Equipment Organizer outside of room – supplies brought in as needed
b) Medication: As directed by Physician
c) Defibrillation: Energy delivery as directed by Physician, based on weight
d) Running the Code Blue: Physician, or Physician on call and according to PALS Guidelines
e) Rescuer Appropriateness: Physician to determine appropriateness and duration of resuscitation

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Community Health Centre Protected Code Blue During the COVID-19 Pandemic

Goals of Care discussion

Appropriate for CPR

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Patient Unresponsive

↓

ACTIVATE CODE BLUE

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Do not ventilate. Cover nose and mouth with mask, NRB mask at 15L/min, or with a cloth

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First responder may initiate chest compressions with contact/droplet PPE
*chest compressions **ALONE** are not considered AGMP, but responders MUST don airborne/contact/droplet PPE

Assign Roles for Code Team Inside Isolation Room (Ideal):
Team Lead
Nurse -First Responder
Nurse -Airway Management
Nurse (2) or Designate to assist with compressions

Outside Room (Ideal):
Nurse/Designate in full PPE
Nurse as runner, documenter and observer PPE

Infection Control Key
Contact and Droplet PPE
Airborne, Contact and Droplet PPE
Airway Management

Close room door during code

All PPE must be donned and doffed using spotter

Connect Cardiac Monitor if available

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VF or pVT → **SHOCK**

PEA or Asystole

↓

Code Team don full PPE (airborne/contact/droplet PPE)
Once Code Team in full PPE and door closed - assume chest compression and airway management, connect cardiac monitor. **Evacuate all providers NOT wearing FULL PPE**

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ACLS

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a) 2-person BVM with viral HEPA filter, PEEP valve if indicated (start at 5cm H2O), and use 2-person technique to maintain adequate seal
b) If physician in community and able to intubate - Rapid Sequence Intubation
c) If no physician in community - maintain airway with NPA or OPA
d) If trained practitioner in community - may consider use of KingairLT or LMA
e) Continue bagging patient with ambu bag using viral HEPA filter and PEEP valve, if indicated
f) STOP CPR during intubation

CONSIDER DISCONTINUATION OF RESUSCITATION IF:
a) Comorbidities/frailty not consistent with meaningful recovery
b) No improvement with 1-2 cycles of CPR and adequate airway management
c) PEA/Asystole
d) COVID-19 hypoxemic arrest despite adequate ventilation

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