Cardiopulmonary Resuscitation (CPR) for Persons Under Investigation or Confirmed COVID-19: Residents with Tracheostomy and/or Mechanical Ventilators

Site:	**Scope:**

• Environment
  ○ Long-term care (LTC)
  ○ Island-Wide
	• Audience: RNs, LPNs, Allied Health, Managers, Directors of Care, Physicians, Nurse Practitioners
	• Exceptions:
	  ○ *Residents without tracheostomy or mechanical ventilator should follow LTC CPR guideline*

1.0 GENERAL PRINCIPLES: CPR DURING COVID-19 in LONG-TERM CARE

- **REDUCE NEED FOR CPR, REVIEW MOST & SERIOUS ILLNESS CONVERSATIONS:**
  - Consideration for resident's goals of care should be made long before the need for CPR. Goals of care discussions should occur for all residents, particularly for residents with a high burden of chronic illness and a low likelihood of surviving critical illness.
  - The Most Responsible Provider (MRP) will engage with the resident or the substitute decision maker and/or family to review, and if requested, update the resident's Medical Orders for Scope of Treatment (MOST).
  - The discussion between MRP and resident should reflect principles highlighted in the *Serious Illness Conversation document (Click Here: Serious Illness Conversation) and clearly* present the risk and benefit of CPR in the event of the resident being a person under investigation (PUI) or COVID-19 Positive. The chosen designation should reflect a resident's expressed wish for CPR and be medically appropriate. Additional Resources for Palliative & End of Life can be located on the intranet (Click Here).
  - **CPR is not to be attempted on any resident, regardless of COVID-19 status, who has suffered an unwitnessed cardiac arrest.**

- **SIGNAGE**: Appropriate precaution signage, as per Infection Prevention and Control, should be posted clearly on the door for each suspected or confirmed COVID-19 resident. (Airborne or Droplet + Contact Precautions Signage). MOST Status should be readily accessible to the nurse to mitigate delay to initiate CPR.

- **STAFF & RESIDENT SAFETY**: The need to don appropriate personal protective equipment (PPE) will delay CPR in residents with suspected or confirmed COVID-19. Review of the processes involved, along with training and practice, will minimize these delays. To reduce the likelihood of a breach, utilize an observer to guide donning and doffing of PPE, paying special attention to doffing of PPE. Close the door to the resident room before performing CPR. Move other residents away from the area, e.g., hallways and transportation routes out of the facility.

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- **REDUCE NUMBER OF STAFF EXPOSURE TO CODE BLUE ROOM**: Keep to essential staff only to decrease or eliminate the potential exposure to staff. When emergency medical services (EMS) (i.e. paramedics) arrive, staff should remove themselves from the room. Prior to leaving, staff should ensure clinical handover to EMS, ensuring they have all relevant details regarding the resident's health history and events leading up to cardiac arrest. Clinical Nurse Leader or Charge Nurse should ensure appropriate handover to EMS in change of leadership including details regarding family notification.

2.0 Background

- Cardiopulmonary Resuscitation (CPR) is considered to be aerosol generating medical procedure (AGMP), requiring health care professionals (HCPs) to utilize appropriate PPE (i.e. airborne precautions including use of an N-95 respirator). Prior to the COVID-19 pandemic, LTC did not routinely require N-95 fit testing. Given concerns around supplies and priority settings (ICU/Acute care), LTC developed guidelines to mitigate AGMPs in LTC settings, including review of resident's MOST status.

- In LTC, CPR for residents is typically associated with low survival rates (CADTH, 2014) with a European report finding a 30-day survival rate of 1.5% (Pape et al., 2020).

- Specific to COVID-19, there is no available literature in LTC. Furthermore, the limited literature regarding the efficacy of CPR during in-hospital cardiac arrest (IHCA) of a COVID-19 infected patient demonstrates a poor overall prognosis. A retrospective case study in New York found of 31 COVID-19 patients who experienced IHCA, despite an initial survival rate of 42%, had 100% mortality (Sheth et al., 2020). Another study out of Wuhan, found of 136 COVID-19 patients with IHCA, the 30-day survival rate was 2.9% (Shao et al., 2020). It is likely the prognosis would be worse in LTC given environmental and system challenges which include: (1) confidence and fluency in performing clinical skill by front line staff, including learning a new process for donning and doffing PPE in a stressful scenario; (2) reduced frequency and exposure to performing CPR in LTC setting; (3) lack of specialized staff support on site; (4) lack of equipment (i.e. no AED on site).

- This guideline outlines actions for HCPs regarding CPR in the LTC settings in context of the COVID-19 pandemic, taking into account established CPR policies. This guideline **only** applies to those residents who are considered PUI or confirmed COVID-19 positive. Non-COVID-19 residents would receive CPR as per typical CPR guidelines in LTC (i.e. Bystander CPR).

3.0 Outcomes

- To ensure that changes to a cardiac or respiratory emergency response enhance safety and mitigate provider risks while maintaining high quality care in a LTC facility.
- To ensure these changes meet current Provincial and National guidelines with regard to suspected or confirmed COVID-19 residents.

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- To provide a framework for LTC specific emergency response guidance.
- To ensure providers don required PPE to avoid unprotected CPR when responding to a cardiac or respiratory emergency for a resident with suspected or confirmed COVID-19.

4.0 PROCEDURE FOR CPR: Resident with Tracheostomy

A. Step One: DON AGMP PPE (if not already wearing)

a. N-95 Respirator **staff should have been fit tested.*
b. Gown, Gloves and Eye Protection.

B. Step Two: ASSESSMENT FOR SIGNS OF LIFE

a. Responder 1 recognize cardiac arrest by looking for the absence of signs of life and/or the absence of normal breathing.
    i. Feel for FEMORAL/BRACHIAL pulse; Try Carotid if resident contractured.
    ii. **DO NOT place your ear and cheek close to the resident's mouth when LISTENING OR FEELING FOR BREATHING.**
    iii. **CPR SHOULD NOT be initiated in those with unwitnessed cardiac arrest.**

C. Step Three: CALL CODE BLUE PER UNIT PROCESS

a. If no signs of life, call CODE BLUE.
b. Ensure Colleague calls 911 (EMS) and ensure they are aware of tracheostomy and resident's COVID-19 status (i.e. PUI or COVID-19 positive).
c. Responder 2 to don PPE and bring in to the room O2, surgical masks and CPR board.

D. Step Four: PREPARE RESIDENT FOR CPR

a. Apply two surgical masks; one over resident's mouth AND one over tracheostomy, keeping oxygen in place (if being used).
b. Ensure mask is pressed firmly over bridge of nose.
a. Lower bed to appropriate height for person performing CPR.

E. Step Five: APPLY LOW FLOW OXYGEN THERAPY

a. Add Oxygen via Airvo 02 Inlet (* Airvo should already have been changed to a non-AGMP producing flow (15L) when resident became PUI).
b. Apply simple mask over tracheostomy if Airvo not in use. Set oxygen to 10 lpm.

F. Step Six: Initiate CPR

a. Ensure door to room is closed. Initiate **Hands-Only Compression** CPR and continue until EMS arrives. Designated Responders to rotate through hands-only CPR every 2 minutes or sooner if signs of exhaustion.
b. DO NOT USE BVM.
c. Limit number of staff in room, **ensuring all are wearing appropriate PPE**.
d. Responder 3 in AGMP PPE should be available outside the room to offer additional assistance/obtain supplies as needed. Observe donning and doffing of PPE for responders 1 and 2 and inform if proper technique breached.

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e. **One nurse (i.e. ideally CNL or Charge Nurse)** is responsible for crowd control and restricting attendance in the room **to essential staff only to perform CPR.**

5.0 PROCEDURE FOR CPR: Resident with Tracheostomy & Mechanical Ventilator

A. Step One: DON AGMP PPE (if not already wearing)

a. N-95 Respirator *staff should have been fit tested.
b. Gown, Gloves and Eye Protection.

B. Step Two: ASSESSMENT FOR SIGNS OF LIFE

a. Responder 1 recognize cardiac arrest by looking for the absence of signs of life and/or the absence of normal breathing.
    i. Feel for FEMORAL/BRACHIAL pulse; Try Carotid if resident contractured
    i. **DO NOT place your ear and cheek close to the resident's mouth when LISTENING OR FEELING FOR BREATHING .**
    ii. The ventilator will deliver breaths despite patient being unconscious or in cardiac arrest.
    iii. CPR SHOULD NOT be initiated in those with unwitnessed cardiac arrest.

C. Step Three: CALL CODE BLUE PER UNIT PROCESS

a. If no signs of life, call CODE BLUE.
b. Ensure Colleague calls 911 (EMS) and ensure they are aware of tracheostomy and resident's COVID-19 status (i.e. PUI or COVID-19 positive).
c. Responder 2 to don PPE and bring in to the room O2, surgical masks and CPR board.

D. Step Four: TURN OFF VENTILATOR

a. Turn off ventilator and **disconnect** from patient.
    - *Ventilator is a constant AGMP (exhalation port is not filtered) and should be turned off to minimize risk for staff).*

E. Step Five: PREPARE RESIDENT FOR CPR

a. Apply two surgical masks; one over resident's mouth AND one over tracheostomy.
b. Ensure mask is pressed firmly over bridge of nose.
c. Lower bed to appropriate height for person performing CPR.

F. Step Six: APPLY LOW FLOW OXYGEN THERAPY

a. Apply Oxygen via simple 02 mask at 10 lpm over tracheostomy. Ensure surgical mask is placed over the simple 02 mask to minimize exposure to staff.

G. Step Seven: Initiate CPR

a. Ensure door to room is closed. Initiate **Hands-Only Compression** CPR and continue until EMS arrives. Designated Responders to rotate through hands-only CPR every 2 minutes or sooner if signs of exhaustion.
b. DO NOT USE BVM.

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c. Limit number of staff in room, **ensuring all are wearing appropriate PPE**.
d. Responder 3 in AGMP PPE should be available outside the room to offer additional assistance/obtain supplies as needed. Observe donning and doffing of PPE for responders 1 and 2 and inform if proper technique breached.
e. **One nurse (i.e. ideally CNL or Charge Nurse)** is responsible for crowd control and restricting attendance in the room **to essential staff only to perform CPR.**

6.0 COMMUNICATING MOST AND COVID-19 STATUS TO EMS TEAM

- Another staff member (i.e. primary care nurse) should be available outside the room (wearing appropriate PPE as clinically indicated) to brief EMS when they arrive to ensure appropriate clinical and leadership hand over including:
  - Notification that the patient is on airborne isolation precautions with suspected or CONFIRMED COVID-19.
  - Relevant clinical details regarding the resident's health history and events leading up to and during the cardiac arrest.
  - Details pertinent to notification and communication with family or substitute decision maker.

Persons/Groups Consulted:
Aberdeen Hospital Respiratory Therapists, Clinical Nurse Leaders and Clinical Nurse Educators; LTC COVID-19 Practice Approval Council (including Medical Health Officer); LTC Medical Director; Department Head for Emergency and Critical Care

Related Standards

1. Island Health (2020). Cardiopulmonary Resuscitation (CPR) Long-term Care: Guidance for Persons Under Investigation (PUI) & Confirmed COVID-19
2. Island Health (2020). Code Blue Response Patients Suspected Confirmed COVID-19
3. Island Health (2020). AGMPs and PPE Requirements
4. Island Health (2017). Medical Orders for Scope of Treatment (MOST)

References

1. AMDA: The Society for Post-Acute and Long-Term Care Medicine (2020). CPR Guidance During the COVID-19 Pandemic. *Retrieved June 12, 2020 from https://paltc.org/sites/default/files/01_Intro/CPR%20Guidance%20During%20the%20COVID-19%20Pandemic.pdf*
2. Ariadne Labs (2015). Serious Illness Conversation Guide
3. CADTH. (2014). Cardiopulmonary Resuscitation for Elderly Adults in Chronic or Long-Term Care: Clinical Effectiveness and Guidelines. Retrieved September 29, 2020 from https://www.cadth.ca/cardiopulmonary-resuscitation-elderly-adults-chronic-or-long-term-care-clinical-effectiveness-and
4. Heart & Stroke (2020). Modification to Hand-Only CPR during the COVID-19 Pandemic. *Retrieved May 15, 2020 from https://www.heartandstroke.ca/articles/modification-to-hands-only-cpr-during-the-covid-19-pandemic*

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5. BC CDC & BC MOH (2020). Adult CPR protocol for suspected and confirmed cases for COVID-19
6. Northern Health (2020). CardioPulmonary Resuscitation (CPR) for residents in Long-term Care Homes (LTCH) during COVID-19
7. Pape, M et al. (2017). Low survival after out-of-hospital cardiac arrest in nursing homes despite early initiation of bystander cardiopulmonary resuscitation-a nationwide study. *European Heart Journal*, Volume *38* (1)
8. Sheth, V et al. (2020). Outcomes of in-hospital cardiac arrest in patients with COVID-19 in New York City. *Resuscitation, 155,* p.3-5.
9. Shao, F et al. (2020). In-hospital cardiac arrest outcomes among patients with COVID-19 pneumonia in Wuhan, China. *Resuscitation, 151*, p.18-23.

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