

# Coronavirus COVID-19

BC Centre for Disease Control | BC Ministry of Health



## Infection Prevention and Control (IPC) Protocol During In-Hospital Code Blue for Adult Patients

**This guidance is intended for health-care providers in the hospital setting and is based on known evidence as of September 27, 2021.**

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Ministry of Health



BC Centre for Disease Control

**If you have fever, a new cough, or are having difficulty breathing, call 8-1-1.**



## Guiding Principles

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Provider Safety  
Patient Safety  
PPE Conservation

## Approach to IPC Includes

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Patient COVID-19 Assessment  
PPE Recommendation

## Background/Current Status

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The protection of health-care workers (HCWs) in B.C. continues to be a key consideration when developing provincial guidance. Information in this document is in keeping with the ethical guidelines established for the management of the pandemic.

In patients with circulatory arrest, *early* bystander cardiopulmonary resuscitation (CPR) improves survival and neurological outcomes. The likelihood of a patient having COVID-19 outside of designated COVID-19 units in acute care is low when patients are risk-assessed on admission to health authority facilities.

Time-motion studies by Alberta Health Services<sup>1</sup> suggest that it takes at least three minutes to don airborne personal protective equipment (PPE). Delay in commencing or stopping CPR for more than two minutes may decrease the survival rate of witnessed in-hospital cardiac arrests by at least 2%.<sup>2</sup> It is, therefore, advised to minimize any delay or interruptions to CPR.

Symptoms for which [COVID-19 testing](#) should be considered and should follow the most up-to-date British Columbia Centre for Disease Control (BCCDC) testing criteria.

## General

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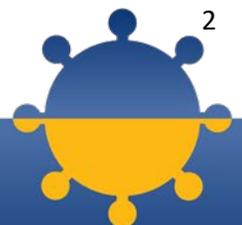
This guidance relies on health-care workers (HCWs) performing a point-of-care patient risk assessment (PCRA) for COVID-19 and classification of patients based on a patient risk categorization into low (GREEN), unknown (YELLOW), or high (RED) risk categories (see [Section H](#)). **Clinical judgement and local prevalence rates will affect risk stratification selection.** Appropriate direction is outlined for the use of PPE for those providing care.

**For the latest B.C. epidemiological information, refer to the [BCCDC website](#).**

Due to the uncertain nature of code blue situations, many patients requiring CPR will have an unknown (YELLOW) risk of COVID-19. This should not delay the initiation of life saving therapies.

Acutely ill patients have a greater likelihood of undifferentiated illness and this adds to the complexity of risk assessing the patient, especially when compared to elective procedural patients.

The risk of COVID-19 transmission to HCWs during a code blue remains low, provided that appropriate risk stratification procedures and PPE protocols are followed.



All admitted patients with suspected or confirmed COVID-19 should have an appropriate code status discussion and medical order for scope of treatment (MOST) form completed. If resuscitation (intubation or chest compression) is appropriate, the intensive care unit (ICU) team should be immediately consulted if clinical deterioration is detected. Early and uninterrupted CPR leads to better neurological outcomes in surviving patients.

This guidance references 'baseline AGMP PPE'. This refers to the [PPE recommended for use during an aerosol generating medical procedure \(AGMP\)](#) and according to local guidance, for a patient not suspected or known to have a communicable disease.

## Scope

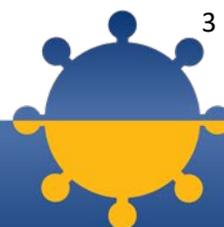
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This protocol applies to adult code blue/medical emergencies within hospitals, inpatient wards, and emergency departments.

### A. Location/Environment

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- Patients may experience a code blue/medical emergency in any part of the hospital. This includes the emergency department (ED), ICU, ward, operating room, outpatient areas, or common areas.
- Follow local guidelines related to AGMP when considering the location of the code blue to minimize the risk of disease transmission.
- As with any code blue, the environment should be optimized to provide adequate access to the patient and to enhance safety for staff. This may include moving the patient to a designated resuscitation area, if available, or to an area with adequate resources that allows for safe distances to be maintained between the patient/HCWs providing resuscitation, other patients, and HCWs not directly involved in resuscitation.
- Minimizing the amount of people present during a code blue enhances the safety and effectiveness of the care provided and limits the HCWs' potential exposure to pathogens.
- When transporting patients with **unknown** or **high** risk of COVID-19 **during** a cardiac arrest (e.g., from ambulance to resuscitation area):
  - Ensure CPR and assisted ventilations through a bag valve mask (BVM) and high-efficiency hydrophobic filter, supraglottic airway, or secured airway continues uninterrupted by HCWs wearing airborne, droplet, and contact PPE (N95 respirator, gown, gloves, and eye protection).<sup>3</sup>
  - If assisted ventilation is not being performed for short transports, cover patient's mouth with a medical mask, oxygen mask, or cloth during transport.
  - CPR should not be interrupted to transport the patient.
  - Ensure a clear path to destination.
- When transporting patients **after** cardiac arrest (e.g., from ward to critical care)
  - Doff PPE, then don new PPE prior to transfer of patient, as it is assumed to be heavily contaminated following resuscitation.
  - Ensure a clear path to destination.



## B. Patient COVID-19 Risk Assessment

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- All patients entering a hospital should be screened with an appropriate risk assessment tool, including all outpatient areas. Those screened as high risk (RED) should be immediately isolated and referred for evaluation for COVID-19.
- All patients' risk screen status should be displayed clearly on their chart and communicated with their treating team.
- All patients' COVID-19 risk status should be regularly re-evaluated, the chart updated, and the patient transferred to an appropriate area if suspected or confirmed.
- The patient's COVID-19 risk screen status should be known when commencing basic life support. However, if it is not known, this should not delay the commencement of chest compressions.

## C. Patient Assessment – Determining if a Code Blue Should Be Activated

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- Each facility should have a process for identifying the code status or advanced care directive of admitted patients. If there is uncertainty of the code status, a code blue should be activated in line with the patient assessment.
- Follow local guidelines, policies, and training when activating a code blue.
- The HCW assessing the patient should:
  - Wear PPE for the patient as outlined by local guidelines;
  - **Not** auscultate for breath sounds or listen/feel for breath sounds;
  - Palpate femoral or brachial pulse to confirm cessation of cardiac activity;
  - Communicate CODE status and COVID-19 status to code team.

## D. Initiating CPR

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- Prior to commencing chest compressions, a covering (medical mask, oxygen mask, or cloth mask) should be placed over the patient's nose and mouth, if readily available, to minimize the risk of exposure to droplets.<sup>4</sup>
- For patients who are **low** risk of COVID-19, CPR should be commenced as per local CPR guidelines.
- When responding to a code blue for patients with **unknown** or **high** risk of COVID-19:
  - a. The first person on scene should commence chest compressions (after calling for assistance) wearing their current level of PPE (e.g., the first person on scene **should not** change/don PPE prior to commencing CPR). PPE should, at minimum, include a medical mask and eye protection in clinical areas as per provincial infection prevention and control guidelines.
  - b. If there is uncertainty about the patient's COVID-19 status, the first person on scene should continue chest compressions until assistance arrives before donning additional PPE.



## E. Code Blue Team

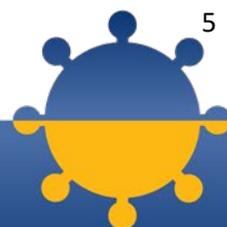
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- Minimize code blue team personnel present in the patient's room or surrounding area to decrease the risk of exposure.<sup>3</sup>
- If available, additional code blue team members should be outside the room donned in appropriate PPE in case they are required.<sup>3</sup>
- Consider **early application of mechanical CPR device** to limit staff exposure, if available.<sup>3</sup>

## F. Airway Management During a Code Blue

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- If in a shockable rhythm, early defibrillation may prevent need for airway and ventilatory support.
- To maximize first pass success, consider experience of the operator, pre-oxygenation, device, and drug selection.
- Airway management should be performed by the most experienced operator.
- Rapid sequence intubation protocols with paralytics are preferred if the patient still has muscle activity or respiratory effort.
- Video laryngoscopy (VL) is the preferred method if available and the airway operator is experienced in its use.<sup>3</sup>
- If VL (direct or indirect) is unavailable or the airway operator is not experienced in its use, conventional non-VL may be used with all other steps taken to maximize first pass success.
- Immediately post-intubation, inflate the endotracheal tube (ETT) cuff prior to delivering the first assisted breath.
- Ensure a high-efficiency hydrophobic filter is part of every ventilation circuit (BVM and ventilator).<sup>3</sup>
- Prior to disconnecting/connecting ventilator circuit, ensure ETT is clamped.
- If intubation is required for:
  - Patients with **low risk** of COVID-19 (GREEN): The treating team in the room should don baseline AGMP PPE as per institutional guidelines prior to the procedure.
  - Patients with **unknown risk** of COVID-19 (YELLOW): The treating team in the room should don airborne, droplet, and contact PPE (N95 respirator, gown, gloves, and eye protection) prior to the procedure.
  - Patients with **high risk** of COVID-19 (RED): The treating team in the room should don airborne, droplet and, contact PPE (N95 respirator, gown, gloves, and eye protection) prior to the procedure.
- If assisted ventilation via a BVM is required prior to intubation for:
  - Patients with **low risk** of COVID-19 (GREEN): The treating team in the room should don baseline AGMP PPE as per institutional guidelines prior to commencing breaths.

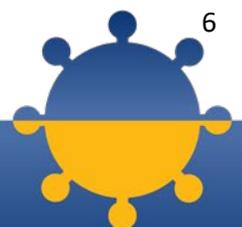


- Patients with **unknown risk** of COVID-19 (YELLOW): The treating team in the room should don airborne, droplet, and contact PPE (N95 respirator, gown, gloves, and eye protection) prior to commencing breaths.
- Patients with **high risk** of COVID-19 (RED): The treating team in the room should don airborne, droplet, and contact PPE (N95 respirator, gown, gloves, and eye protection) prior to the procedure.

## G. Exposure to Pathogens

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- If potential exposure to pathogens occurs, staff should follow local workplace health guidelines.
- If the patient is suspected or confirmed to have any communicable disease, additional precautions (including the use of PPE) must be implemented inline with the route of transmission and per local infection prevention and control guidelines.



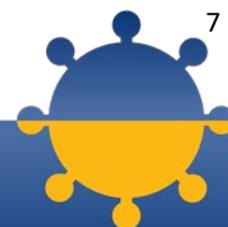
## H. Protocol for PPE in Code Blue

	Infection Prevention & Control Risk Category		
	Low Risk	Unknown Risk	High Risk
<b>First person on scene/bystanders trained in basic life support</b>	Baseline PPE as per institutional guideline*  Place covering (medical mask, oxygen mask, or cloth) over nose and mouth <sup>4</sup>	Baseline PPE as per institutional guideline*  Place covering (medical mask, oxygen mask, or cloth) over nose and mouth <sup>4</sup>	Baseline PPE as per institutional guideline*  Place covering (medical mask, oxygen mask, or cloth) over nose and mouth <sup>4</sup>
<b>Code team (at the patient's bedside/room)</b>	Baseline PPE as per institutional guideline*	Don airborne, droplet, and contact precaution PPE:* <ul style="list-style-type: none"> <li>• Fit tested N95 respirator</li> <li>• Eye protection</li> <li>• Gown/gloves</li> </ul>	Don airborne, droplet, and contact precaution PPE:* <ul style="list-style-type: none"> <li>• Fit tested N95 respirator</li> <li>• Eye protection</li> <li>• Gown/gloves</li> </ul>
<b>Intubation team recommended PPE</b>	Baseline PPE for an AGMP, as per institutional guideline*	Don airborne, droplet, and contact precaution PPE:* <ul style="list-style-type: none"> <li>• Fit tested N95 respirator</li> <li>• Eye protection</li> <li>• Gown/gloves</li> </ul>	Don airborne, droplet, and contact precaution PPE:* <ul style="list-style-type: none"> <li>• Fit tested N95 respirator</li> <li>• Eye protection</li> <li>• Gown/gloves</li> </ul>
<b>Transporting patients into and within a facility</b>	Baseline PPE as per institutional guideline*	If maintaining own airway: Don droplet and contact precaution PPE:* <ul style="list-style-type: none"> <li>• Medical mask</li> <li>• Eye protection</li> <li>• Gown/gloves</li> </ul> If intubated or BVM: Don airborne, droplet and contact precaution PPE:* <ul style="list-style-type: none"> <li>• Fit tested N95 respirator</li> <li>• Eye protection</li> <li>• Gown/gloves</li> </ul>	If maintaining own airway: Don droplet and contact precaution PPE:* <ul style="list-style-type: none"> <li>• Medical mask</li> <li>• Eye protection</li> <li>• Gown/gloves</li> </ul> If intubated or BVM: Don airborne, droplet and contact precaution PPE:* <ul style="list-style-type: none"> <li>• Fit tested N95 respirator</li> <li>• Eye protection</li> <li>• Gown/gloves</li> </ul>
<b>Cleaning and disinfection</b>	Baseline PPE as per institutional guideline*	Ensure appropriate air exchange has occurred as per local guidance if AGMP is used.^ Don droplet and contact precaution PPE: <ul style="list-style-type: none"> <li>• Medical mask</li> <li>• Eye protection</li> <li>• Gown/gloves</li> </ul>	Ensure appropriate air exchange has occurred as per local guidance if AGMP is used.^ Don droplet and contact precaution PPE: <ul style="list-style-type: none"> <li>• Medical mask</li> <li>• Eye protection</li> <li>• Gown/gloves</li> </ul>

\*If the patient is suspected or confirmed to have any communicable disease, additional precautions, including the use of PPE, must be implemented in line with the route of transmission and per local infection prevention and control guidelines.

If concern of exposure to pathogens exists, staff should follow local workplace health guidelines.

^The area should be cleaned and disinfected after the required air clearance time has passed.



## Key Informants

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To provide feedback on this document, please email [CRG@bccdc.ca](mailto:CRG@bccdc.ca) and include the document title in the subject line.

## References

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1. Shared email from Dr. Marc Joffe, Vice President and Medical Director Cancer Control, Clinical Support Services and Provincial Clinical Excellence, Alberta Health Services. June 22, 2020.
2. Bircher, N., Chan, P., Xu, Y., Faillace, R., Mancini, M., Berg, R., Allen, E., Hunt, E., Nadkarni, V., Ann Peberdy, M., Ornato, J., Braithwaite, S., Nichol, G., Warren, S., Duncan, K., LaBresh, K., Sasson, C., Knight, L., Donnino, M., Smyth, M., Eigel, B., Gent, L., Mader, T., Kern, K. and Geocadin, R., 2019. Delays in Cardiopulmonary Resuscitation, Defibrillation, and Epinephrine Administration All Decrease Survival in In-hospital Cardiac Arrest. *Anesthesiology*, 130(3), pp.414-422.
3. Heart & Stroke Training Portal [Internet]. Heart and Stroke Foundation of Canada. 2021 [cited 19 January 2021]. Available from: [https://cpr.heartandstroke.ca/s/article/COVID-19-Interim-CPR-Algorithms?language=en\\_US](https://cpr.heartandstroke.ca/s/article/COVID-19-Interim-CPR-Algorithms?language=en_US).
4. Modification to Hands-Only CPR during the COVID-19 pandemic [Internet]. Heart and Stroke Foundation of Canada. 2021 [cited 19 January 2021]. Available from: <https://www.heartandstroke.ca/articles/modification-to-hands-only-cpr-during-the-covid-19-pandemic>.

