

# Coronavirus COVID-19

BC Centre for Disease Control | BC Ministry of Health



## Infection Prevention and Control (IPAC) Protocol for Surgical Procedures During COVID-19: Pediatrics

May 21, 2020

### Guiding Principles:

Provider Safety  
Patient Safety  
PPE Conservation

### Approach to IPC Includes:

Patient COVID-19 Assessment  
Surgical Risk Assessment  
PPE Recommendation  
PPE Allocation Framework<sup>1</sup>

### Background/Current Status

Through effective public health measures the COVID-19 pandemic curve in British Columbia (B.C.) has reached its peak and is on the downward slope. As a result, B.C. is now in a position to ease restrictions on surgical services. This is to ensure that we avoid the unintended consequences of prolonged delay of access to surgical services. Likewise, other health care services will gradually be reintroduced.

The protection of health care workers will continue to be foremost as B.C. moves forward, and is in keeping with the ethical guidelines established for the management of the pandemic. Health care facilities should continue to ensure that they meet all public health and infection prevention and control (IPAC) pandemic recommendations. This applies to all staff, patients, relatives, and visitors.

**Based on the current epidemiology of COVID-19 in B.C.<sup>2</sup>, people who are scheduled for surgery and do not have risk factors for, or symptoms of COVID-19 should not be considered suspect cases.** This is based on the advice of the BC Centre for Disease Control (BCCDC), the Office of the Provincial Health Officer (PHO) and the Provincial Infection Control Network of BC (PICNet), and is key to easing restrictions on surgical services. BCCDC, PHO, and PICNet review the epidemiology on a regular basis and will amend or update this advice as required. Worldwide, the prevalence of COVID-19 is lower in children than in adults, making up less than 5% of all reported cases, even in population based studies.

<sup>1</sup> COVID-19: Emergency Prioritization in a Pandemic Personal Protective Equipment (PPE) Allocation Framework, Provincial COVID-19 Task Force, March 25, 2020: [https://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/office\\_of-the-provincial-health-officer/covid-19/ppe\\_allocation\\_framework\\_march\\_25\\_2020.pdf](https://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/office_of-the-provincial-health-officer/covid-19/ppe_allocation_framework_march_25_2020.pdf)

<sup>2</sup> Epidemiologic considerations: daily case counts; test positivity rate; incidence rate; point prevalence.



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

Most reported COVID-19 cases in children happen in the context of a household member with COVID-19.

Within the pediatrics surgical setting, children must be considered in the context of their household members. Most children who acquire COVID-19 do so from members of their household. Children are more likely than adults to have minimal symptoms or no symptoms of COVID-19. Transmission is also more likely to occur in the household setting from caregiver to child. Therefore, all pediatric patients and their caregiver/household members must be assessed for risk factors and symptoms. When deciding whether to order a COVID-19 test, consider both risk factors and symptoms and use the most up to date BCCDC testing criteria.

As such, the decision to proceed with surgical procedures and the appropriate personal protective equipment (PPE) to be used should be based on an individual COVID-19 patient and caregiver/household members risk assessment which includes: assessing risk factors, screening for symptoms, and COVID-19 testing if clinically indicated. In most cases, patients do not require a COVID-19 test who do not have risk factors for, or symptoms consistent with COVID-19.

The guidance provided here includes a patient screening tool and classification of patients based on a Patient Risk Categorization into green, yellow, and red categories. **The entire surgical team including anesthesiologist, surgeon, assistant, nurses, etc., are responsible for deciding the Patient Risk Category together.** This decision then provides appropriate direction for PPE for those providing care, those providing aftercare, and those responsible for cleaning and preparing the operating room (OR). Guidance is also included for different anesthesia approaches and for surgeries with risk of aerosolization.

Given this guidance and the current low incidence and prevalence of COVID-19 in B.C, the risk of infection or transmission to health care workers when protocols are followed is extremely low.

## Scope

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This protocol does not apply to maternity or adult patient populations. There is separate provincial guidance available regarding specific adult and obstetrical surgical protocols.

## A. Urgent/Emergent/Elective Surgical Procedures

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- Urgent or emergent surgical procedures should proceed as medically indicated, regardless of the patient's COVID-19 status, and should not be delayed for testing or test results.
- For urgent or emergent surgical procedures, patients reporting new symptoms consistent with COVID-19 should undergo pre-operative COVID-19 testing.
- Caregivers/household members of elective surgical patients should monitor their child and themselves for symptoms prior to surgery, and phone the contact provided by their local site (surgeons office, or the pre-anaesthesia clinic) if they develop any signs or symptoms consistent with COVID-19<sup>3</sup> (see Appendix 1) or have contact with any confirmed COVID-19 individuals.
- Elective surgical procedures for confirmed COVID-19 patients and those patients or caregiver/household members who have had contact with, or an exposure to, a COVID-19 patient or COVID-19 outbreak should be delayed until the patient or caregiver/household member is

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<sup>3</sup> As defined by the BCCDC. See <http://www.bccdc.ca/health-professionals/clinical-resources/covid-19-care/lab-testing> for more information.



deemed recovered and non-infectious according to the provincial protocols, or the surgical procedure becomes urgent or emergent.

- Elective surgical patients reporting new symptoms, or household members reporting new symptoms consistent with COVID-19 should be tested as per provincial testing guidelines.

## B. Pre-surgical Patient Assessment

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- For scheduled surgical procedures, the COVID-19 Surgical Patient Assessment Form (see Appendix 1) should be completed 24 to 72 hours prior to scheduled surgical procedure, by the pre-admission unit (nurse, medical office assistant or anesthesiologist) over the phone, and then repeated in person when the patient arrives at the hospital on the day of surgery<sup>4</sup>.
- For urgent or emergent surgical procedures, the COVID-19 Surgical Patient Assessment Form shall be completed upon arrival to the pre-operative area.
- There needs to be a mechanism in place within each facility or surgical unit to ensure the COVID-19 Surgical Patient Assessment Form is included in the patient chart.
- IPC risk categories have been developed to guide PPE use before, during, and after a surgical procedure:
  - i. Low or no risk (green) – a patient (or caregiver/household member) with no risk factors for COVID-19, and/or no symptoms or signs of COVID-19, and/or a negative COVID-19 RNA test where relevant
  - ii. Unknown risk (yellow) – a patient (or caregiver/household member) where the risk factors history and symptomatology are unknown, and a RNA COVID-19 test result is pending or unknown.
  - iii. Moderate to high risk (red) – a patient (or caregiver/household member) with risk factors for COVID-19, and/or symptoms or signs of COVID-19, and/or a COVID-19 RNA test result is pending or unknown, OR a lab confirmed COVID-19 RNA test.

## C. Pre-surgical Procedure Huddle

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- The pre-surgical huddle, when the full surgical team is engaged (anesthetist, surgeon, assistant, nurses, etc), is one of the strongest determinants for achieving the highest levels of safety and quality in surgical environments. All of the other usual elements of the surgical checklist should also be discussed at this time.
- The Patient Risk Category is determined based on information gathered from the COVID-19 Patient Risk Assessment Form (see Appendix 1).
- Surgical team members must agree on the Patient Risk Category (see Appendix 1).
- Recommended PPE to be used during the surgical procedure is provided in Section E: Algorithm for Management of Pediatric Surgical Patients below.
- Consider anesthesia techniques which maintain spontaneous ventilation with minimal risk of needing respiratory support which can be performed using contact and droplet precautions whenever possible. These can be facilitated with the use local or regional anesthesia techniques.

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<sup>4</sup> Every attempt should be made to assess the patient in their preferred language.



## D. Air Clearance Post AGMP

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- Airflow considerations, including appropriate times for air clearance post-AGMP, should be made for each OR suite in consultation with local IPAC, and facilities, maintenance and operations (FMO).
  - In most ORs and post-operative areas, the relative humidity (RH) is kept between 40% and 45% which aids in reducing the amount of virus or bacteria in the air.
  - Raising the RH not only causes more rapid fallout of particles below the respiratory zone, but also has been documented to be beneficial for clearing respiratory secretions and hydrating mucous membranes with associated improved outcome.
  - Increased RH decreases viral survival. The air exchange rate (or air changes per hour – ACH) is kept between 18 and 23 in most ORs (higher in positive pressure rooms).
  - Between the increased RH and the ACH, the potential for bioaerosol spread will be reduced by over 95% within 10-12 minutes following aerosol creation (extubation).
- The AGMP should be performed with the door(s) closed. Limiting the number of personnel and equipment in the room and minimizing door openings is a key element in environmental infection control. The AGMP should be performed with the door closed.



## E. Protocol for Management of Pediatric Surgical Patients

Infection Prevention & Control Risk Category*			
	Green	Yellow	Red
<b>Presence of caregiver at induction</b>	If caregiver is <b>NEGATIVE</b> on screening, institutional policies regarding parental presence at induction should be followed.	Do not allow caregiver to accompany child to procedure room, unless risk assessment favors parental presence.	Do not allow caregiver to accompany child to procedure room, unless risk assessment favors parental presence.
<b>Intubation Team</b> <b>Recommended PPE</b> <i>Limit personnel in the OR to anesthesiologist, RN +/- AA</i>	All staff in OR suite don: <ul style="list-style-type: none"> <li>Surgical mask</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>	All staff in OR suite don: <ul style="list-style-type: none"> <li>fit-tested N95 respirator</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>	All staff in OR suite don: <ul style="list-style-type: none"> <li>fit-tested N95 respirator</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>
<b>Surgical Team</b>	All staff in OR suite don: <ul style="list-style-type: none"> <li>Surgical mask</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>	All staff in OR suite don: <ul style="list-style-type: none"> <li>fit-tested N95 respirator*</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>	All staff in OR suite don: <ul style="list-style-type: none"> <li>fit-tested N95 respirator</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>
<b>Extubation Team</b> <i>Limit personnel in the OR to anesthesiologist, RN +/- AA</i>	All staff in OR suite don: <ul style="list-style-type: none"> <li>Surgical mask</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>	All staff in OR suite don: <ul style="list-style-type: none"> <li>fit-tested N95 respirator</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>	All staff in OR suite don: <ul style="list-style-type: none"> <li>fit-tested N95 respirator</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>
<b>Phase 1 Recovery</b>	<ul style="list-style-type: none"> <li>In the post-anesthesia recovery (PAR) droplet/contact precautions</li> <li>No need to delay moving patient to PAR following extubation.</li> </ul>	<ul style="list-style-type: none"> <li>In the post-anesthesia recovery (PAR) using droplet/contact precautions</li> <li>Patient may be moved to PAR after appropriate air exchanges.</li> </ul>	<ul style="list-style-type: none"> <li>Recover in the OR suite until ready to move to appropriate isolation room.</li> <li>Patient may be moved to appropriate isolation room after appropriate air exchanges.</li> </ul>
<b>Air Exchange</b>	<ul style="list-style-type: none"> <li>No need to wait to begin cleaning</li> </ul>	<ul style="list-style-type: none"> <li>No need to wait to begin cleaning</li> </ul>	<ul style="list-style-type: none"> <li>Begin cleaning and disinfection after period of appropriate air exchanges</li> </ul>
<b>Cleaning and Disinfection Staff</b>	All cleaning staff in OR don: <ul style="list-style-type: none"> <li>Surgical mask</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>	All cleaning staff in OR don: <ul style="list-style-type: none"> <li>Surgical mask</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>	All cleaning staff in OR don: <ul style="list-style-type: none"> <li>Surgical mask</li> <li>Eye protection</li> <li>Gown/Gloves</li> </ul>
<b>Disposition</b>	Return patient to appropriate inpatient unit.	Return patient to appropriate inpatient unit based on further patient risk assessment.	Return patient to appropriate COVID-19 ward if confirmed positive or isolation room if unknown.

\*At the discretion of the surgical team, surgical masks may be used in place of N95 respirators after appropriate air exchanges.





## Appendix 1: COVID-19 Surgical Patient Assessment Form - Pediatric

Health Authority LOGO

**Patient Information**

Name:  
 Date of Birth:  
 Language:  
 PHN:

**NURSE OR MEDICAL OFFICE ASSISTANT SCREEN:** **Patient** **Caregiver/Household**

Able to obtain history?  Yes  No  Yes  No

***Does the patient or caregiver/household member have a risk factor for COVID-19 exposure? In the last 14 days has the patient and caregiver/household member:***

Returned from travel outside of Canada?  Yes  No  Yes  No

Been in close contact with anyone diagnosed with lab confirmed COVID-19?  Yes  No  Yes  No

Lived or worked in a setting that is part of a COVID-19 outbreak?  Yes  No  Yes  No

Been advised to self-isolate or quarantine at home by public health?  Yes  No  Yes  No

***Does the patient or caregiver/household member have new onset COVID-19 like symptoms in the last 14 days?***

24 - 72 hrs Prior	Date/ Time: _____	Day of Surgery	Date/Time: _____
	<b>Patient</b>	<b>Crgv/Hshld</b>	<b>Patient</b>
			<b>Crgv/Hshld</b>
Fever	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Fever <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Cough	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Cough <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Shortness of breath	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Shortness of breath <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Diarrhea	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Diarrhea <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Nausea and/or vomiting	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Nausea and/or vomiting <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Headache	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Headache <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Runny nose/ nasal congestion	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Runny nose/ nasal congestion <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Sore throat or painful swallowing	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sore throat or painful swallowing <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Loss of sense of smell	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Loss of sense of smell <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Loss of appetite	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Loss of appetite <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Chills	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Chills <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Muscle aches	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Muscle aches <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Fatigue	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Fatigue <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No

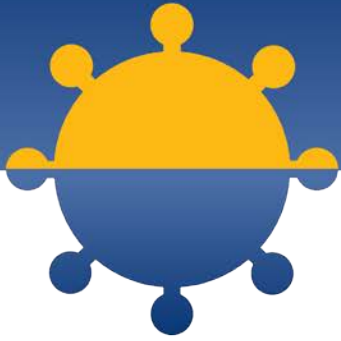
Screened by:

Signature:

Screened by:

Signature:





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## PHYSICIAN SCREEN: PATIENT

COVID-19 NP test performed  Yes  No Date: \_\_\_\_\_  
 Result:  Negative  Positive

If COVID-19 NP test has not been performed, do you recommend testing patient?  Yes  No Reason: \_\_\_\_\_

Unable to perform swab?  Yes  No Reason: \_\_\_\_\_

Type of anesthesia to be used  General  Local/Regional

Screened by: \_\_\_\_\_ Signature: \_\_\_\_\_ Date/Time: \_\_\_\_\_

## PHYSICIAN SCREEN: CAREGIVER/HOUSEHOLD MEMBER

COVID-19 NP test performed  Yes  No Date: \_\_\_\_\_  
 Result:  Negative  Positive

If COVID-19 NP test has not been performed, do you recommend testing patient?  Yes  No Reason: \_\_\_\_\_

Unable to perform swab?  Yes  No Reason: \_\_\_\_\_

Type of anesthesia to be used  General  Local/Regional

Screened by: \_\_\_\_\_ Signature: \_\_\_\_\_ Date/Time: \_\_\_\_\_

## FINAL SURGICAL TEAM ASSESSMENT:

	Patient	Crgvr/Hshld Member
COVID-19 risk factor (travel, contact, outbreak)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
COVID-19 like symptoms that cannot be explained by another medical or surgical diagnosis?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
COVID-19 test result?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> N/A



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

**PATIENT RISK CATEGORY TABLE:**

Consider consulting medical microbiologists and/or infectious disease physician for certain scenarios.

COVID-19 Risk Factor*	COVID-19 Symptoms*	COVID -19 Test Results**	Risk Category
NO	NO	NOT REQUIRED	GREEN
NO	NO	NEGATIVE	GREEN
YES	NO	NEGATIVE	GREEN
NO	UNKNOWN	NEGATIVE	GREEN
NO	YES	NEGATIVE	GREEN
YES	YES	NEGATIVE	GREEN
UNKNOWN	UNKNOWN	UNKNOWN/PENDING	YELLOW
YES	NO	UNKNOWN/PENDING	RED
NO	YES	UNKNOWN/PENDING	RED
YES	YES	UNKNOWN/PENDING	RED
-	-	PATIENT POSITIVE	RED
-	-	CRGV/HSHLD POSITIVE	RED

\* If a caregiver/household member is symptomatic or has risk factors, that household member should be tested as well.

\*\*Interpret the negative test in terms of the clinical context. If there is confirmed COVID-19 exposure within the household and a strong clinical suspicion of COVID despite negative testing, treat as RED.

**PATIENT RISK CATEGORY (CIRCLE ONE):**

GREEN	YELLOW	RED
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## Key Informants

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Members of the Provincial IPC Protocol for Surgical Procedures

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