Infection Prevention and Control (IPC) Protocol for Adult Surgical Procedures During the COVID-19 Pandemic

Updated: May 25, 2021

This guidance is intended for health-care providers. It is based on known evidence as of March 16, 2021.

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Guiding Principles

- Provider safety
- Patient safety

Approach to IPC Includes

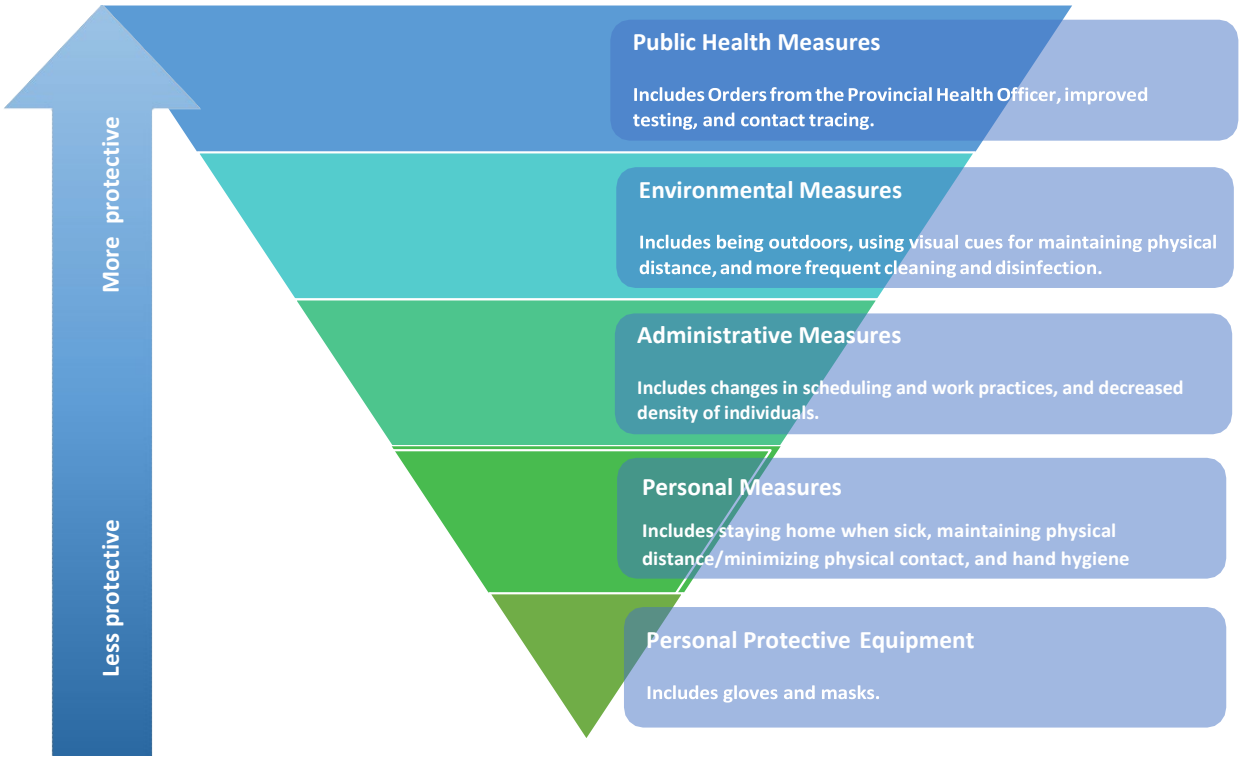
- Patient COVID-19 assessment
- Surgical risk assessment
- Personal protective equipment (PPE) recommendation

Background/Current Status

The protection of both patients and health-care workers (HCW) is the basis of ethical guidelines established for the management of the COVID-19 pandemic. Health-care facilities must continue to ensure that they meet all current public health and infection prevention and control (IPC) recommendations. This applies to all staff, patients, families and visitors.

The guidance in this document is intended as the **minimum requirement** for facilities performing surgical procedures during the COVID-19 pandemic. This guidance is meant to be implemented as part of the hierarchy of controls (see figure 1) to reduce the risk of COVID-19 in health-care facilities. Health authorities, under the guidance of public health, may choose to implement additional controls in select hospitals (e.g., management of surgical volumes, and testing of certain high-risk patient populations) based on local or regional COVID-19 epidemiology. When COVID-19 prevalence is low, universal testing offers limited additional value, with downsides including the detection of false positives and recovered COVID-19 positive patients with inactive virus.

Figure 1: Hierarchy for Infection Prevention and Exposure Control Measures for Communicable Disease



How to proceed with an elective, urgent or emergent surgical procedure, including the selection of appropriate personal protective equipment (PPE), should be based on a patient's COVID-19 risk assessment which includes:

- Assessing for risk factors;
- Screening for symptoms; and
- COVID-19 testing if clinically indicated.

Careful, consistent application of risk assessment is vital to ensure HCW and patient safety. Patients who are not aware of contact with COVID-19 cases and/or symptoms and those who are in the pre-symptomatic phase of infection represent a potential risk to themselves, HCWs and other patients. It is for this reason that strict adherence to pandemic precautions and the guidance in this document be maintained for every patient interaction.

This guidance includes a patient risk assessment screening tool that separates patients into different risk categories of green, yellow or red based on level of risk.

The entire surgical team including anesthesiologist, surgeon, assistant, nurse, etc. is responsible for deciding the patient risk category together.

Risk categorization provides direction for:

- PPE for those providing care, those providing aftercare and those responsible for cleaning and preparing the operating room;
- Different anesthesia approaches;
- Management of surgeries with high risk of aerosolization; and
- Patient disposition.

Experience from earlier versions of this guidance have shown:

- Timing of pre-admission patient risk assessment for elective surgical patients will vary depending on availability and turn-around time of local COVID-19 testing;
- For urgent or emergent surgical patients admitted to hospital, risk assessment is best done early in the patient's admission to best plan for disposition and the need for testing; and
- Patient risk assessment is susceptible to variability in checklist information. Hospitals are encouraged to rigorously apply and monitor the patient risk assessment process.

Scope

This protocol applies to all adults undergoing a surgical procedure in B.C. facilities during the COVID-19 pandemic. An individual patient risk assessment is universal and should be applied to every surgical patient, when possible. See the provincial point-of-care risk assessment for more information.

Obstetric and pediatric populations have additional considerations and hospitals should also refer to these guidance documents for specific recommendations:

- IPC protocol for pediatric surgical procedures during COVID-19
- IPC protocol for obstetrical procedures during COVID-19.

When to Proceed with Surgery in Patients with Confirmed, Suspected or Recovered COVID-19

The decision to proceed with elective, urgent or emergent surgical procedures in a patient with confirmed, suspected or recovered COVID-19 infection requires consideration of the following factors:

- Potential for COVID-19 transmission to HCWs and other patients;
- Increased risk of patient morbidity and mortality in the context of active or recent infection;
- The risk associated with delaying surgery; and
- Options for alternative anesthesia (e.g., local/regional vs general).

At this time, published evidence does not have definitive recommendations on the most appropriate timing for surgeries for each patient. As mentioned above, various factors must be considered in surgery planning and the health-care team should make the decision together. For example, in a patient with a resectable malignancy who has symptomatic COVID-19 infection, the health-care team may decide to delay surgery only until the patient's respiratory symptoms

have improved. In these cases, discussion with perioperative colleagues, medical microbiology, infectious disease and public health may help with a decision regarding timing of surgery.

When Does Perioperative Morbidity and Mortality Decrease in a Patient with COVID-19?

Multiple studies have confirmed that patients undergoing major surgery with concurrent COVID-19 infection have a higher risk of respiratory complications and a higher associated perioperative mortality within the first six weeks of diagnosis.[1,2,3] Increased risk has been demonstrated in both emergency and elective surgical patients, with risk returning to baseline when surgery is delayed for ≥ seven weeks.

Based on the trials performed to date, **elective** surgical procedures should be delayed for a minimum of seven weeks post diagnosis **and** the patient should be symptom free. The decision to proceed with **urgent** surgery in a patient with concurrent or recent COVID-19 infection must be based on each patient's pre-operative risk assessment and current health status, while factoring in surgical invasiveness, patient co-morbidities and the risk/benefit of further delaying surgery.

When is a Patient with COVID -19 No Longer Infectious?

Prior to surgery (regardless of urgency), the infectivity of a patient who has been diagnosed with COVID-19 should be determined. Refer to the BCCDC's Interim Guidance: Public Health Management of Cases and Contacts Associated with Novel Coronavirus (COVID-19) in the Community for information about COVID-19 incubation and communicability period. Live viral shedding may occur for longer in those with COVID-19 illness of greater severity and those who are immunocompromised.

Recovered patients can continue to have non-replicating COVID-19 RNA detected in their upper respiratory specimens for up to 12 weeks. It is important to not rely on re-testing when determining infective status.

For further information on discontinuation of isolation and other disease transmission-based precautions, see the provincial guidance on discontinuing additional precautions related to COVID-19 for admitted patients in acute care.

Management of Patients Recovered from COVID-19 Infection

Recovered patients can continue to have non-replicating COVID-19 RNA detected in their upper respiratory specimens for up to 12 weeks. Hence, the B.C. Centre for Disease Control (BCCDC) no longer recommends a test-based strategy, as it results in unnecessarily prolonged isolation of patients who are non-infectious despite detectable COVID-19 RNA.

Patients can persistently test positive for SARS-CoV-2 PCR – this is sometimes called a "residual positive." According to the SIREN study,[4] the rate of reinfection is approximately 0.67% with a median duration of 160 days from the primary infection. Local epidemiological data has shown that reinfection can occur as early as 60 days. During this period, the primary infection conveys relative immunity such that the risk of reinfection is low. After this period, however, the risk of reinfection increases.

When risk assessing a patient recovered from COVID-19, consider the following:

- Severity of the primary infection;
- Risk of delaying surgical intervention to the patient;
- Perioperative morbidity associated with recent COVID-19 infection; and,
- Risk of reinfection.

From **20 to 60 days post-positive COVID-19 test**, the likelihood of reinfection is low. Testing should not be performed and surgery can proceed on an asymptomatic, recovered patient.

After **60 days post-positive COVID-19 test**, the patient should be treated as the guidance in this algorithm (see Appendix 1) and health authority protocols.

Should Testing for COVID-19 be Performed for Asymptomatic Patients Prior to Elective Surgery?

Case reports and recommendations in favour of universal testing for asymptomatic patients prior to elective surgery are increasing. Patients presenting in the asymptomatic or pre-symptomatic phase of infection are an exposure risk for HCWs and other patients, particularly when patients are admitted to hospital post-operatively. The ability to identify asymptomatic or pre-symptomatic COVID-19 pre-surgical patients with testing allows health-care teams to delay a surgery and avoid this risk. However, there is a possibility of the detection of false positives and recovered COVID-19 positives with inactive virus.

The risks of testing asymptomatic patients may be outweighed by the benefits when population prevalence is high. There is evidence to suggest that in high prevalence areas, pre-operative testing of patients undergoing major surgery reduces the risk of pulmonary complications and mortality in some patient populations (COVIDSurg Collaborative).[2] Therefore, the addition of pre-operative testing to symptom-based screening may be of value in certain patient populations in areas where COVID-19 transmission risk is high.

Patient populations and the needs of each facility are unique, therefore, pre-operative universal testing will vary across health authorities or facilities. When prevalence is high in a given area[ǂ], there is an opportunity for local multi-disciplinary discussion (facilitated through the emergency operations centre or as recommended by public health officials such as the local medical health officer) that considers all of the administrative, environmental and public health measures to reduce transmission risk. In addition to the individual patient risk assessment already in place, this includes pre-operative testing of asymptomatic individuals undergoing high-risk procedures.

[ǂ] *Data is limited and each metric has unique limitations. Recent experience in Fraser Health provides one definition of what triggered testing-based screening for "high prevalence." Testing-based screening was initiated and continued when the testing positivity rate exceeded 5% and there were two or more COVID-19 outbreaks within an acute care facility in the health authority.*

Guidance for Testing Patients Pre-operatively for COVID-19

With all of the above considerations in mind, the health-care team should conduct a careful review of each patient's medical history and their risk factors. Testing is not meant to replace clinician assessment, and providers should continue using their clinical judgement in determining whether a COVID-19 test is required.

However, the following pre-operative patients should be tested:

1) Patients with any sign or symptom consistent with COVID-19 infection (any symptom on the list in Appendix 1), even if that symptom can be explained by their surgical diagnosis; **or**

2) Asymptomatic patients/residents from units or facilities with an active COVID-19 outbreak (or units/facilities with enhanced surveillance); **or**

3) Asymptomatic patients who have been instructed by public health to self-isolate as a result of close contact with a positive COVID-19 case or someone with symptoms consistent with COVID-19; or

4) Asymptomatic patients who reside in an area with a high prevalence of COVID-19. The purpose of test-based screening is to decrease perioperative morbidity and mortality and decrease the risk of transmission within the acute care facility.

The health-care team should consider the addition of test-based screening when the following criteria are met: test positivity rate exceeds 5% for a sustained period of time, incidence rate is greater than 10.1/100,000, and two or more COVID-19 acute care outbreaks.

The final decision to proceed with test-based screening should be based on local criteria that meet the needs of patient care, providers, IPC and public health.

COVID-19 Immunization

The continued roll-out of B.C.'s COVID-19 immunization plan is likely to have a pivotal effect on the pre-surgical patient assessment. However, more evidence is needed on the impact vaccines have on a patient's risk of transmission, perioperative risk and long-term immunity prior to implementing any change in practice. Therefore, all patients, regardless of immunization status, should continue to be screened based on the current patient risk assessment.

Implementation of Risk Factor Assessment and Symptom Screening

Pre-operative risk factor and symptom screening should occur for every surgical patient (see Appendix 1). There needs to be a mechanism in place within each facility or surgical unit to ensure the COVID-19 Surgical Patient Assessment form (see below) is included in the patient chart. IPC risk categories have been developed to guide PPE use before, during and after a surgical procedure (see Patient Risk Category table). Risk categories are designated as green (low risk), yellow (unknown or moderate risk), and red (highest risk) – please see section D for more information.

A. Urgent and Emergent Surgical Procedures

Do not delay necessary urgent or emergent surgical procedures for COVID-19 testing or test results. Patients should be screened when the patient is admitted to hospital, and again upon arrival to the pre-operative area.

The decision to test should be based on the risk factor assessment and symptom screening and proceed based on the four scenarios described in the earlier section - Guidance for which patients should be tested for COVID-19 pre-operatively.

B. Elective Surgical Procedures

Elective surgical patients should self-monitor for symptoms prior to surgery as per the BCCDC's symptoms of COVID-19 webpage. Elective surgical patients who develop new symptoms or worsening chronic symptoms consistent with COVID-19 up to 14 days before surgery **must** get a COVID-19 test and phone their surgeon's office.

Any elective surgical patient who has been told to self-isolate by public health because of contact with a confirmed COVID-19 case (e.g., household contact or part of cluster investigation) must inform their surgeon immediately. Following contact with a COVID-19 case, the patient should be tested.

Patients should be screened 24 to 72 hours prior to scheduled surgical procedure, by the pre-admission unit (nurse, medical office assistant or anesthesiologist) over the phone, and screened again in person when the patient arrives at the hospital on the day of surgery[i]. It is prudent to time the first risk assessment early enough to allow for COVID-19 testing and result, if required. This may vary from community to community.

C. Pre-Surgical Procedure Huddle

Patient risk assessment and risk categorization should be reviewed and agreed upon by the surgical team (Appendix 1). Recommended PPE to be used during the surgical procedure is provided in section D: protocol for management of surgical patients — adults below.

Consider alternatives to general anesthesia when possible. Procedures performed under local or regional anesthesia, including spinal and epidural, can be performed using contact and droplet precautions for all risk category patients. For yellow and red risk category patients, the risk of conversion to general anesthesia must be discussed at the huddle to help guide appropriate PPE under section D (in the event of an unanticipated aerosol generating medical procedures [AGMP]).

[i] Every attempt should be made to assess the patient in their preferred language.

D. Protocol for Management of Surgical Patients – Adult

Infection Prevention & Control Risk Category			
	Green	**Yellow**	**Red**
Intubation & Extubation Team *Limit personnel in the operating room (OR) to anesthesiologist, registered nurse +/- anesthesia assistant*	All staff in OR suite don: • Surgical mask • Eye protection • Gown/gloves	All staff in OR suite don: • Fit-tested N95 respirator* • Eye protection • Gown/gloves	All staff in OR suite don: • Fit-tested N95 respirator* • Eye protection • Gown/gloves
Surgical Team	All staff in OR suite don: • Surgical mask • Eye protection • Gown/gloves	All staff in OR suite don: • Fit-tested N95 respirator* • Eye protection • Gown/gloves	All staff in OR suite don: • Fit-tested N95 respirator* • Eye protection • Gown/gloves
Phase 1 Recovery	• No need to delay moving patient to recovery area following extubation. • Follow routine institutional practices (Surgical mask, eye protection, gloves)	• Patient may be moved to recovery area after appropriate air exchanges. • Use droplet/ contact precautions (surgical mask, eye protection, gown/gloves)	• Patient may be moved to appropriate isolation room after appropriate air exchanges. • In the isolation room use droplet/contact precautions, or airborne precautions if an AGMP is performed
Air Exchange	• Cleaning and disinfecting may begin immediately • No minimum air exchanges required	• Cleaning and disinfecting may begin immediately • No minimum air exchanges required	• Begin cleaning and disinfection after period of appropriate air exchanges
Cleaning and Disinfection Staff	All cleaning staff in OR don: • Surgical mask • Eye protection • Gown/gloves	All cleaning staff in OR don: • Surgical mask • Eye protection • Gown/gloves	All cleaning staff in OR don: • Surgical mask • Eye protection • Gown/gloves
Disposition	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 after an AGMP is performed (see section D). Any member of the surgical team may choose to wear an N95 respirator. Individual decisions shall be respected by the surgical team but need not change the patient risk category.

Appendix 1: COVID-19 Surgical Patient Assessment Form - Adult

Health Authority LOGO

Patient Information

Name:
Date of Birth:
Language:
PHN:

Nurse or medical assistant screen:

Able to obtain patient history?	□ Yes □ No	If no, go to "final team assessment"

Does the patient have a risk factor for COVID-19 exposure? In the last 14 days has the patient:

Returned from travel outside of Canada?	□ Yes □ No	When? Date: _____
Been in close contact with anyone diagnosed with lab confirmed or suspected COVID-19?	□ Yes □ No	When? Date: _____
Lived or worked in a setting that is part of a COVID-19 outbreak?	□ Yes □ No	When? Date: _____
Been advised to self-isolate or quarantine at home by public health?	□ Yes □ No	Contact info: _____
Previous COVID-19 test(s) performed? (If multiple, note positives and/or last performed)	□ Yes □ No	Date: _____ Result: □ Negative □ Positive

Does the patient have any of the following symptoms? (new onset within the last 14 days, or worsening of chronic symptoms)?[ii]

24 to 72 hours prior – Date/Time: _____		Day of surgery – Date/Time: _____	
Fever or chills	□ Yes □ No	Fever or chills	□ Yes □ No
Cough	□ Yes □ No	Cough	□ Yes □ No
Loss of sense of smell or taste	□ Yes □ No	Loss of sense of smell or taste	□ Yes □ No
Difficulty breathing	□ Yes □ No	Difficulty breathing	□ Yes □ No
Sore throat	□ Yes □ No	Sore throat	□ Yes □ No
Loss of appetite	□ Yes □ No	Loss of appetite	□ Yes □ No
Extreme fatigue or tiredness	□ Yes □ No	Extreme fatigue or tiredness	□ Yes □ No
Headache	□ Yes □ No	Headache	□ Yes □ No
Body ache	□ Yes □ No	Body ache	□ Yes □ No
Nausea or vomiting or diarrhea	□ Yes □ No	Nausea or vomiting or diarrhea	□ Yes □ No
Screened by:		**Screened by:**	

[ii] BCCDC: Viral Testing, January 5, 2021

Signature: **Signature:**

Final surgical team assessment:

COVID-19 risk factor (travel, contact, outbreak)?	□ Yes □ No □ Unknown
COVID-19 like symptoms?	□ Yes □ No □ Unknown
COVID-19 test result?	□ Positive □ Negative □ Pending □ N/A

Patient Risk Category Table:

Step one			Step two (If COVID-19 PCR results available)*	
Must have this information prior to surgery		COVID-19 risk category	COVID -19 test results	COVID-19 risk category
From COVID-19 outbreak unit/facility or instructed to self-isolate by public health	COVID-19 symptoms			
No	No	Green	Negative	Green
No	Yes/unknown	Yellow		Green
Yes	No	Yellow		Yellow
Yes	Yes/unknown	Yellow		Yellow
Unknown	Unknown	Yellow		Yellow
			Positive	Red

*Risk categorization of patients with COVID-19 tests pending should proceed based on step one information above. A negative test may facilitate downgrading a "yellow" risk patient from step one to a "green" risk in step two when test results become available.

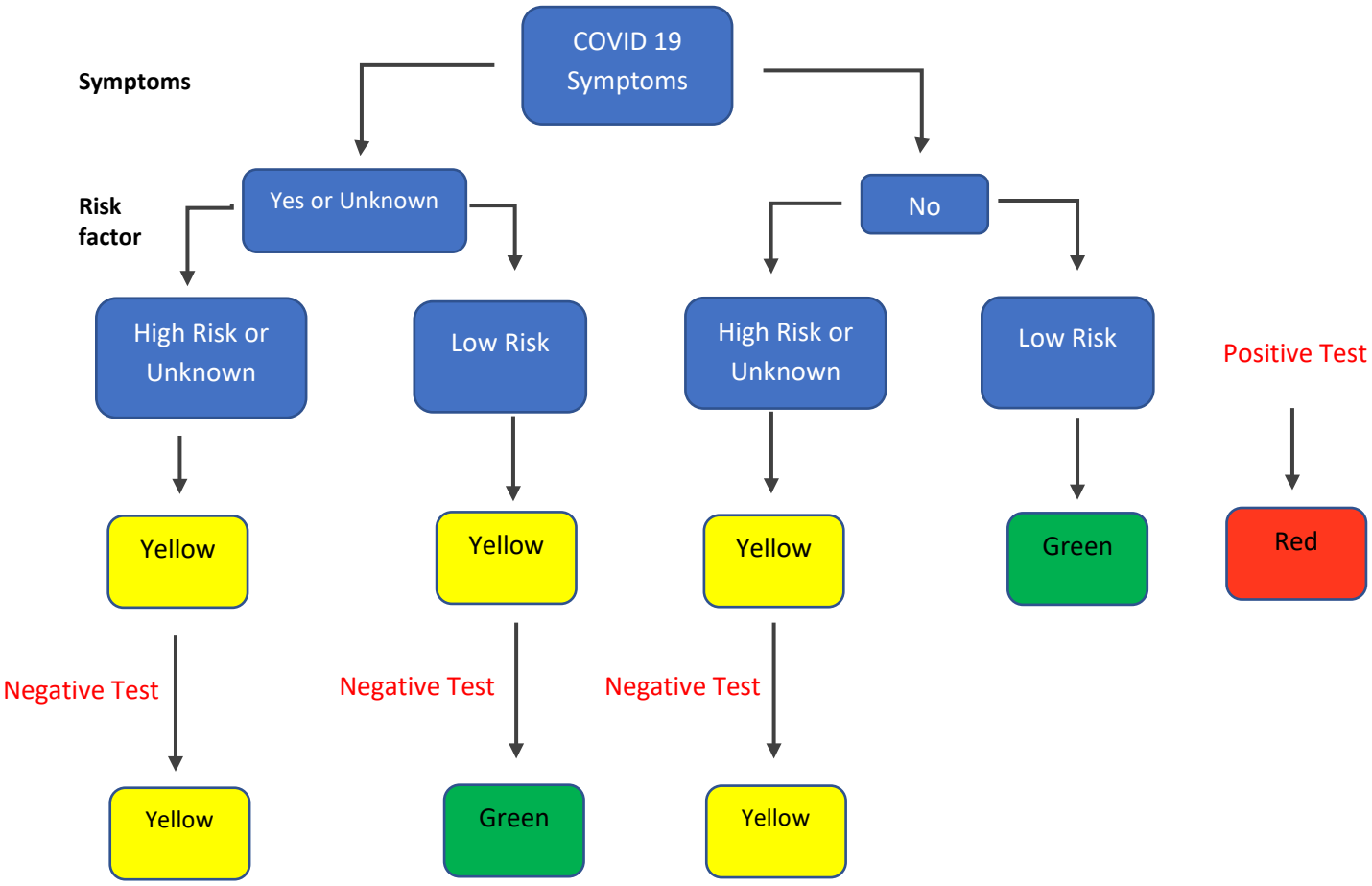
PATIENT RISK CATEGORY (CIRCLE ONE):

Green	Yellow	Red

Physician Signature: _____ **Date:** _____

(Surgeon or Anesthesiologist)

Alternative Diagram for COVID-19 Surgical Patient Assessment



* High risk is defined as from COVID-19 outbreak unit/facility or instructed to self-isolate by public health

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BCCDC – B.C. Centre for Disease Control
BCCH – B.C. Children's Hospital
FHA – Fraser Health
FNHA – First Nations Health Authority
IHA – Interior Health
LGH – Lions Gate Hospital
MOH – Ministry of Health
NHA – Northern Health
PICNet – Provincial Infection Control Network of British Columbia
PHC – Providence Health Care
PHSA – Provincial Health Service Authority
RSEC – Rehabilitation Sciences Student Executive Committee
VCH – Vancouver Coastal Health
VIHA – Vancouver Island Health Authority

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