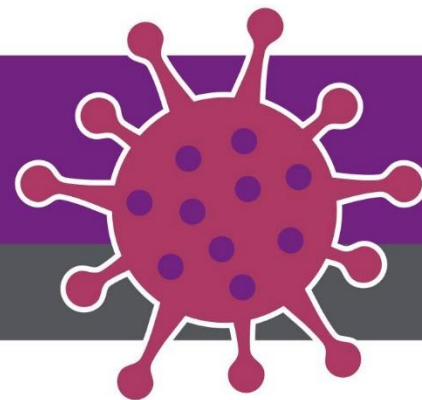


CORONAVIRUS DISEASE (COVID-19)

Operative & Other Invasive Procedures Guidance for PUI or COVID-19+ Patients



Audience: Perioperative, Anesthesia, Surgeons, & Clinicians Providing Invasive Procedures*

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UNIVERSAL: This guide should be used for all COVID patients regardless of Ministry COVID Levels

What's New: Provided cross reference links to System guides on testing of patients prior to procedures or inpatient admission as well as PPE Guidebook. Added findings from more recent investigations of outcome of those undergoing operative procedures who also had COVID-19.

Executive Summary

- All patients (elective, urgent or emergent need for operative or invasive procedure) should be screened for symptoms, recently (i.e. during the prior 10 days) testing positive for COVID-19 or close contact exposure to someone with acute COVID-19 prior to their procedure. Patients reporting symptoms, new, recent positive test or recent close contact exposure should be referred for additional evaluation.
- Operative procedures for PUI or those with acute COVID-19 should be limited to emergent or urgent needs and the patient's care team determines it is not safe to delay. Full PPE as described in the PPE guidebook for the perioperative team, surgeon and anesthesia providers, must be worn; [ppe-guide-booklet.pdf \(trinity-health.org\)](#)
- **Preoperative or Pre-Procedure Testing for SARS-CoV-2:**
 - Refer to the following related testing guides for details on preoperative or pre-procedure testing for COVID-19:
 - [pre-procedural-testing.pdf \(trinity-health.org\)](#)
 - [screening-testing.pdf \(trinity-health.org\)](#)
 - If the provider determines need for testing and the test is positive for SARS-CoV-2, elective surgical procedures should be delayed until the patient is no longer infectious, isolation precautions have been discontinued (at least 10 days) and has demonstrated recovery from COVID-19.
- **Timing of Surgery or Other Procedure Related to COVID-19**
 - The timing of surgery for a patient who has recovered from COVID-19 is a joint decision between the surgeon and anesthesia provider. Factors for the surgeon and anesthesia provider to consider include:
 - the severity of the patient's COVID-19 infection
 - Patient's co-morbidities and if ASA score is ≥ 3
 - Urgency of the elective surgery or procedure and

- Procedure planned is associated with greater vital organ stress e.g. open intrathoracic or intra-abdominal surgeries
 - Ultimately, if the patient is asymptomatic and the operative procedure is indicated, the decision to proceed remains with the surgeon and anesthesia provider.
- Recent investigations have found differences in outcomes based on timing of surgery. An investigation at one institution suggested delaying surgery after COVID-19 infection is associated with decreasing postoperative cardiovascular morbidity and should be a factor in shared decision-making between clinicians and patients. (bryant 2022). Experience among patients undergoing surgery at a multi-facility system found no significantly higher risk for patients who were fully vaccinated, or for patients who were not fully vaccinated but underwent surgery without general anesthesia. (Le ST 2022). Another population-based investigation found prior infection with SARS-CoV-2 was not associated with death, major adverse cardiovascular events, or rehospitalization following elective major noncardiac surgery. (Quinn)

Planning and Preparation for Procedures for Patients in Isolation Precautions for Acute COVID-19

Refer to PPE booklet guide for overall requirements for PPE for healthcare personnel caring for Persons Under Investigation (PUI) or COVID-19+ patients during their acute infection and who are on isolation precautions.
[ppe-guide-booklet.pdf \(trinity-health.org\)](https://www.trinity-health.org/ppe-guide-booklet.pdf)

Elements of planning and provision of surgical procedures in anticipation of PUIs or those with COVID-19 need to include, but are not limited to the following:

- Assure Surgery Services or other Clinical leadership is aware of the emergent/urgent need for a procedure for the patient
 - Leadership can support planning and management needs to assure safety of patients and personnel.
 - PPE considerations may be made during this time given the uniqueness of the procedure being undertaken.
- Screening of patients prior to/or following admission who have been identified as needing surgical procedures, for symptoms and use of testing for SARS-CoV-2, if available in a timely manner. If not available – assume the patient is a PUI.
 - Patients should receive appropriate and timely surgical care, including operative management, based on sound surgical judgment and availability of resources.
 - Consider nonoperative management whenever it is clinically appropriate for the patient.
- [Aerosol generating procedures \(AGPs\)](#) increase risk to the healthcare personnel but may not be avoidable. For patients who are or may be infected, AGPs should only be performed while wearing full PPE including gown, gloves and one of the following:
 - A surgical N95 respirator and eye protection,
 - A non-surgical N95 respirator (without an exhalation valve) and a face shield, or
 - Powered air purifying respirator (PAPR), if no N95s available.
- **Important - use of PAPRs or Elastomeric Respirators with unfiltered exhalation valves by the Surgical Team prior to and throughout the surgical procedure:**
 - Elastomeric respirators, some models of PAPRs (tight fitting) and loose fitting PAPRs (involves a loose-fitting hood or helmet worn over the head) may allow unfiltered air exhaled by the wearer to escape. Therefore, these don't provide source control of the wearer's exhalation. **To provide source control:**
 - For elastomeric respirators or tight fitting PAPRs, wear a surgical or procedure mask over the exterior of the exhalation valve
 - For loose fitting PAPR, wear a surgical or procedure mask under the PAPR hood or helmet.
 - Refer to ministry Respiratory Protection program for additional details on use of respirators by the perioperative team.
 - **Safe Use of the PAPR intraoperatively – for situation when PAPR use is approved:**
 - Determine the type of PAPR that will be worn- Review how the wearer's exhalation of respiration differs by model as part of product selection.
 - For both source control and protection of the sterile field(s):

- For loose fitting models, wear a surgical or procedure mask underneath the PAPR hood or helmet
- For tight fitting PAPRs, wear a surgical or procedure mask over the exterior of the exhalation valve
- Direct exhaust and configure room set up – Direct blower exhaust away from the sterile field & consider repositioning of the sterile field and the location of the wearer to decrease exposure to the PAPR blower
- Protect the sterile field- Consider covering areas of the sterile field that are not in immediate use to prevent settling of any contaminants
- Examples of known and possible AGPs include:
 - Intubation, extubation, bag-valve-mask ventilation, bronchoscopy, insertion of chest tubes
 - High frequency oscillating ventilation (HFOV), BiPap, high flow nasal cannula oxygen
 - Other procedures requiring instrumentation of the upper respiratory tract or chest cavity
- Presence and concentration of SARS-CoV-2 is highest in the upper respiratory tract followed by lower respiratory tract.
- There are insufficient data to recommend for/against an open versus laparoscopy approach; however, the surgical team should choose an approach that minimizes OR time and maximizes safety for both patients and healthcare staff.

Precautions for Surgical and Other Invasive Procedures for the Patient with or Suspected of Having Acute COVID-19

- Transport the patient directly to the operating room or invasive procedure room.
 - During transport have the patient wear a surgical mask and continue this for post procedure transport.
- Identify the room in which AGPs are needed
- Personnel providing care for the patient will use PPE as described in the PPE Guidebook.
 - Limit number of anesthesia personnel needed to safely perform intubation, e.g. an anesthesiologist and CRNA. All anesthesia providers need to wear a N95 or equivalent respirator and eye protection.
 - During intubation and for procedures that require instrumentation of the respiratory tract, other personnel in the operating room need to wear N95 respirator or equivalent and eye protection.
 - NOTE: for emergent surgery or procedure, e.g. emergency C-section all members of the care team inside the OR, or procedure room will wear full PPE; N95 respirator or equivalent, eye protection, gown and gloves
 - Use smoke evacuation practices to contain and evacuate all surgical smoke (plume) when needed based on ministry policy and procedure. Generation of surgical smoke is not considered an aerosol generating procedure.
 - The anesthesia providers will extubate and recover the patient in the OR, or extubate in the OR and recover the patient in either an airborne infection isolation room (AIIR) in PACU or a private room if possible.
- Surgical instruments and other reusable devices, e.g. laryngoscope blades, should be decontaminated and processed using standard practices following device manufacturer instructions for use and applicable ministry policies.
- Perform routine between case cleaning and disinfection – paying attention to surfaces that are touched with high frequency – especially those near the head of the patient where the AGP was performed.

Timing for Surgical/Invasive Procedures for Patients Who Have Recovered from COVID-19

The timing of surgery for a patient who has recovered from COVID-19 is a joint decision between the surgeon and anesthesia provider. See key factors the surgeon and anesthesia provider should consider under executive summary.

- **Note:** While relevant professional organizations recommend delaying operative procedures for at least 7 weeks after COVID-19, these are based on studies early during the course of the pandemic involving variants of SARS-CoV-2 that caused more severe illness. The most recent, common variant, Omicron, does not cause as severe infection and site of infection is more likely the upper respiratory tract. For this reason, re-evaluation based on the above mentioned factors is recommended 10-14 days after the point of recovery from acute infection.

Definitions:

***Invasive procedure:** A procedure that is performed in an aseptic surgical field and penetrates the protective surfaces of a patient's body (e.g., subcutaneous tissue, mucous membranes, cornea). An invasive procedure may fall into one or more of the following categories:

- Requires entry into or opening of a sterile body cavity (i.e., cranium, chest, abdomen, pelvis, joint spaces)
- Involves insertion of an indwelling foreign body
- Includes excision and grafting of burns that cover more than 20 percent of total body area
- Does not begin as an open procedure but has a recognized measurable risk of requiring conversion to an open procedure

References

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