COVID-19 Surgical Operational Guidelines

April 23, 2020

As part of routine practices, all team members should be applying Standard Precautions. Team members should always deliberately assess potential risks of exposure to infectious material before engaging in activities and procedures in healthcare delivery. Based on their risk assessment at the point of care, safe work practices including administrative controls, engineering controls that reduce the production or release of infectious material, and personal protective equipment (PPE) should be applied to the activity according to CDC guidelines and standards of practice.

To reduce SARS-CoV-2 exposure during the COVID-19 pandemic, CDC recommends that facilities:

- cancel or postpone elective surgery and procedures
- consider nonoperative approaches when feasible
- minimize the use of procedures or techniques that might produce infectious aerosols when feasible
- minimize the number of people in the operating or procedure room to reduce exposures

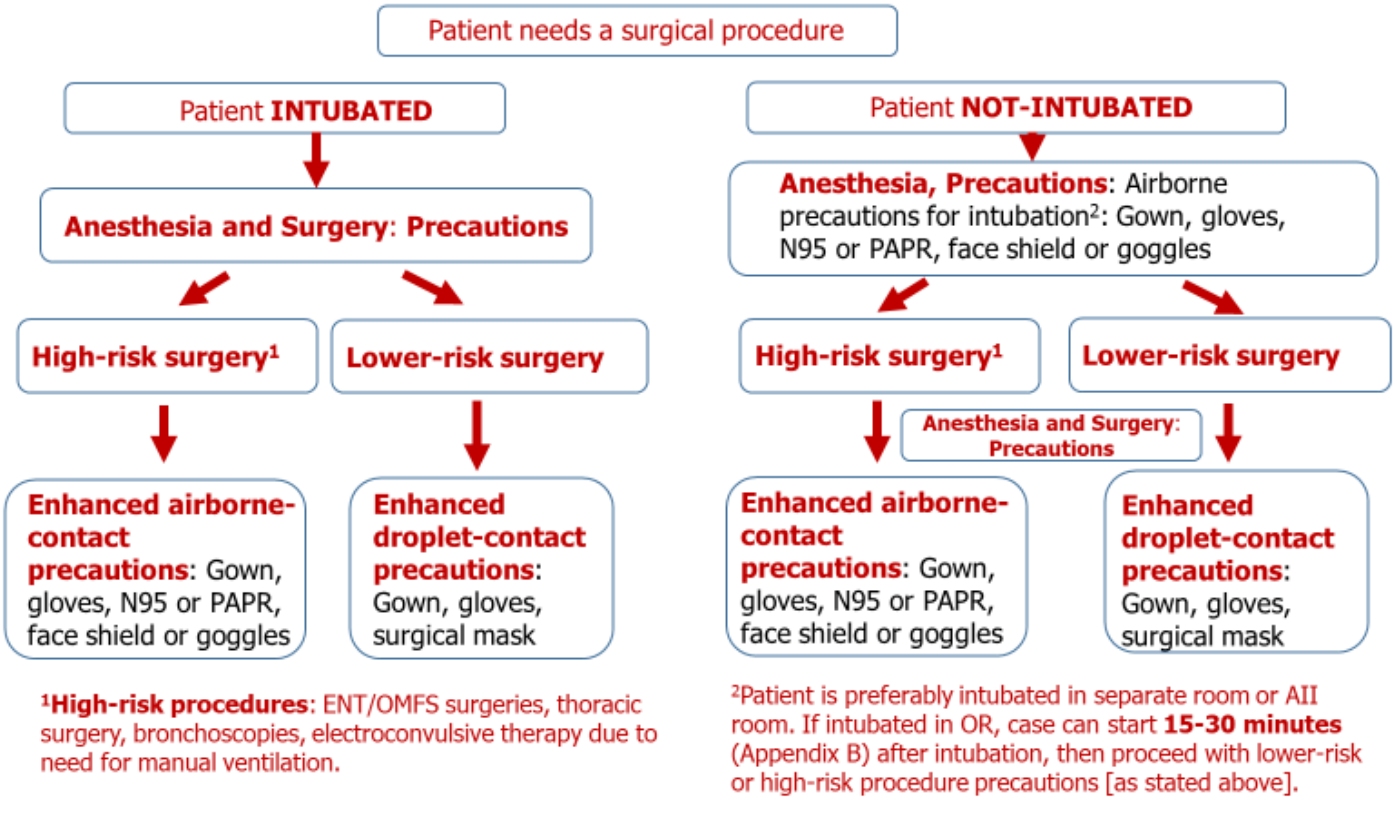
If surgery or procedures cannot be postponed, team members caring for patients with suspected or confirmed COVID-19 should adhere to all infection control procedures. This includes using all recommended PPE: an N95 or equivalent during aerosol generating procedures (AGP) (Appendix A) or surgical mask, eye protection, gloves, and a gown. As part of routine practice, use appropriate engineering controls for source control (e.g., smoke evacuation devices).

In the context of COVID-19, some infected individuals might not be identified based on clinical signs and symptoms and therefore IU Health has identified 2 approaches to minimizing the risk for COVID transmission; 1) Testing approach (less PPE use, testing may disruption patient flow) 2) non-testing approach (more PPE use, little to no disruption to patient flow.

This document is intended to provide health care workers with information on how to operationalize COVID screening, testing, patient care, and discharge education for surgical patients. The most recent document may be found on the internal IU Health COVID-19 Resource Portal under Patient Care information.

Option 1: Non-testing approach

- **Enhanced airborne precautions** will be used during the intubation and during surgeries at a high risk for aerosol generation of respiratory pathogens (Appendix A). PPE used: gowns, gloves N95 or equivalent, face shield or goggles (Appendix B)
- **Enhanced droplet precautions** will be used during surgeries that are a low risk for aerosol generation of respiratory pathogens (Appendix A) PPE used: gowns, gloves surgical mask, face shield or goggles (Appendix B)
- Patient is preferably intubated in a separate room or AII room. If intubated in the OR, case can start 15-30 minutes after intubation using **enhanced droplet precautions**. (Appendix C)



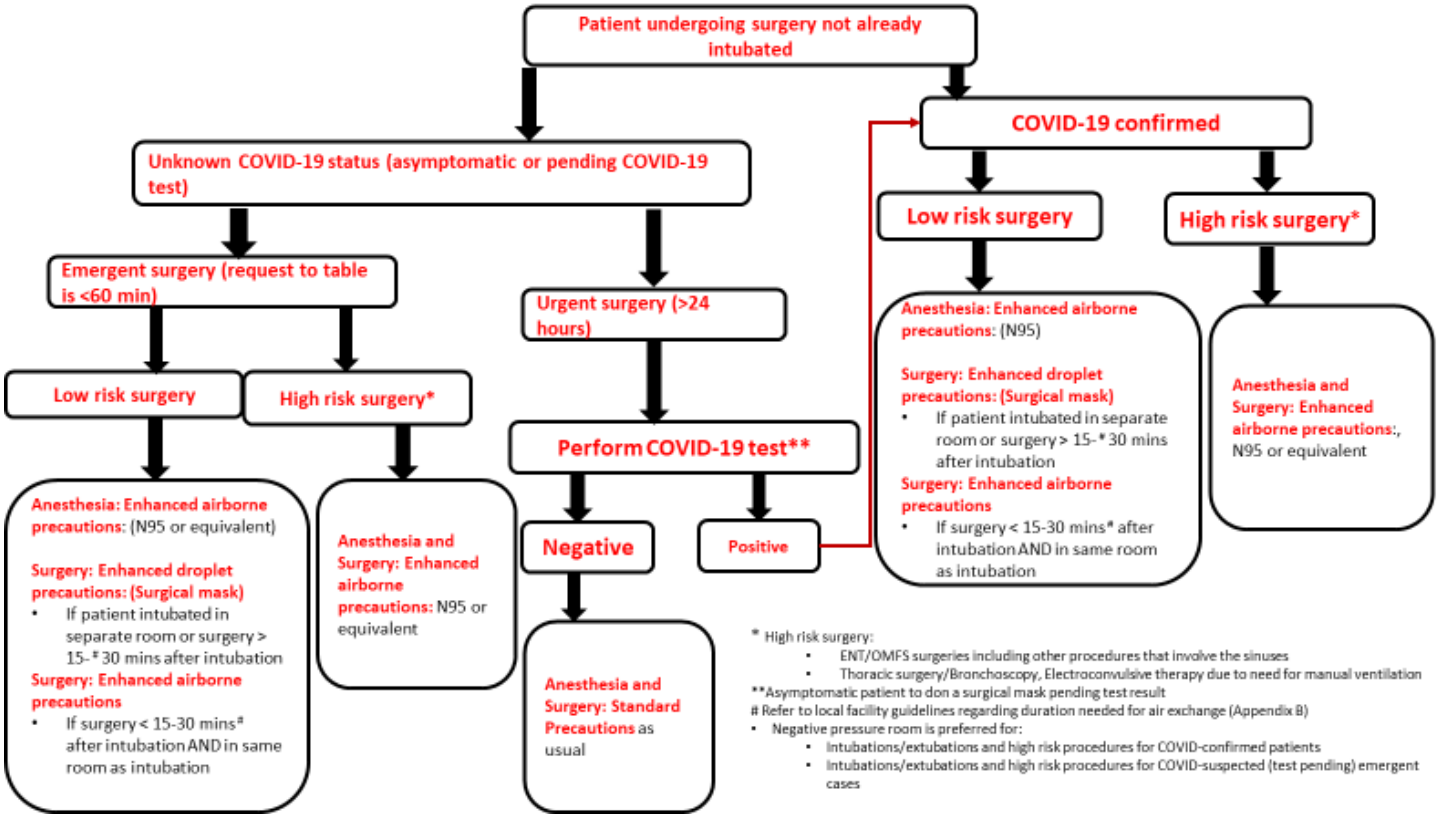
[1]**High-risk procedures**: ENT/OMFS surgeries, thoracic surgery, bronchoscopies, electroconvulsive therapy due to need for manual ventilation.

[2]Patient is preferably intubated in separate room or AII room. If intubated in OR, case can start **15-30 minutes** (Appendix B) after intubation, then proceed with lower-risk or high-risk procedure precautions [as stated above].

Option 2: Testing approach (3 Scenarios)

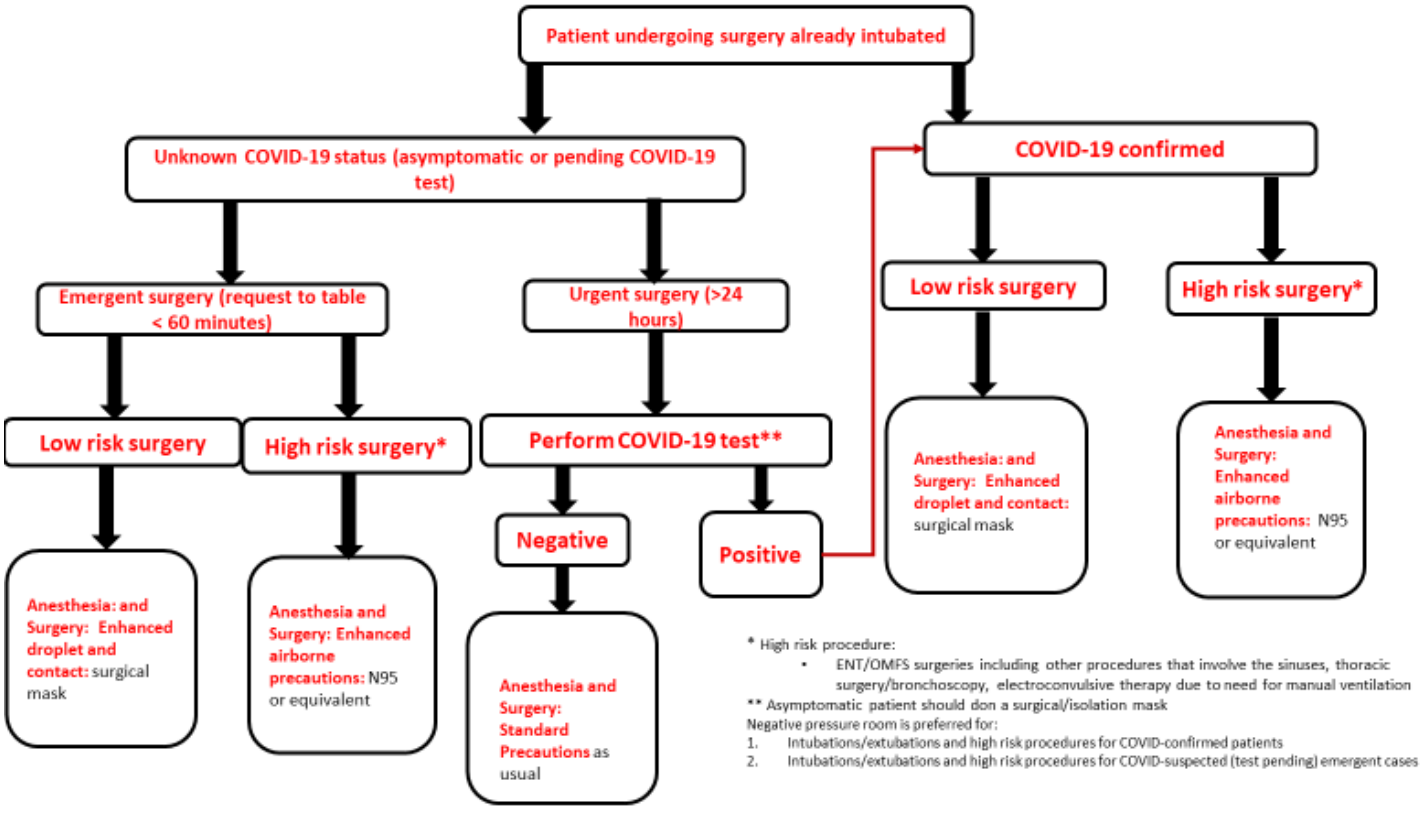
Scenario 1: Patient arriving not intubated:

- **Enhanced airborne precautions** will be used during the **intubation** of all COVID+ and emergent unknown COVID-19 status AND during **surgeries** for these patients that are a **high risk** for aerosol generation of respiratory pathogens (Appendix A). PPE used: gowns, gloves N95 or equivalent, face shield or goggles (Appendix B)
- **Enhanced droplet precautions** will be used for all COVID+ and emergent unknown COVID-19 status during surgeries that are a **low risk** for aerosol generation of respiratory pathogens AND for the surgery team not present in the room during intubation (Appendix A) PPE used: gowns, gloves surgical mask, face shield or goggles (Appendix B)
- **Standard precautions** will be used when a patient with a negative COVID-19 test undergoes any type of surgery or intubation.
- Patients with COVID+ test or unknown COVID-19 status are preferably **intubated in a separate room** or an AII room. **If intubated in the OR,** cases can start 15-30 minutes after intubation using **enhanced droplet precautions** if undergoing a low risk procedure or using **enhanced airborne precautions** if undergoing a high-risk procedure. (Appendix C)



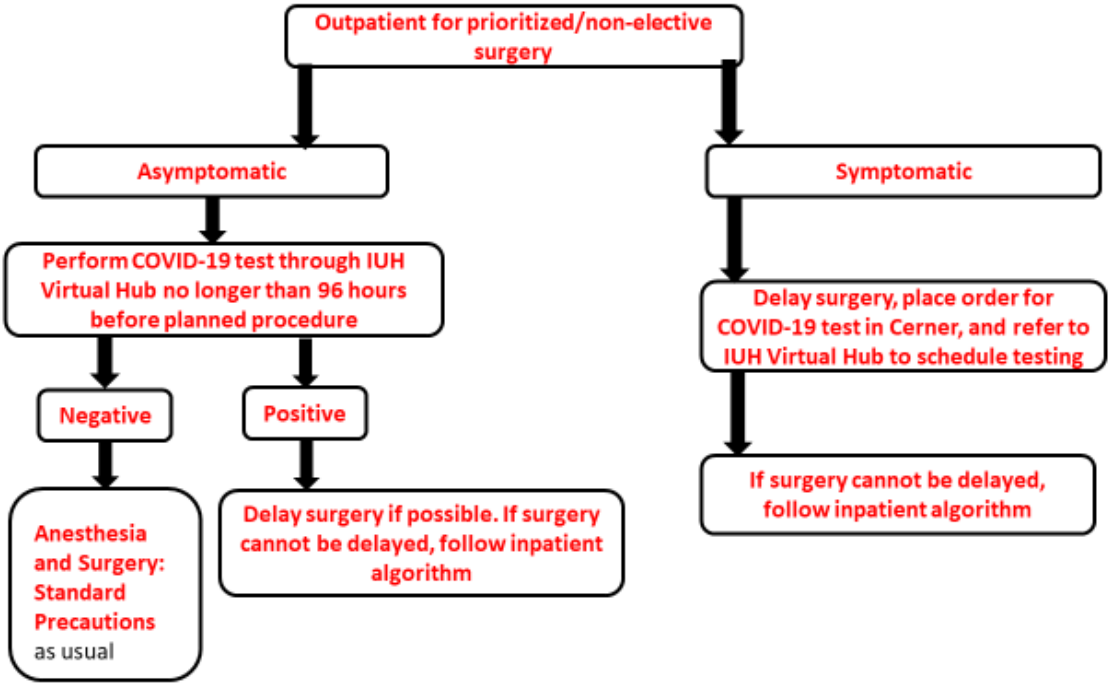
Scenario 2: Patient arriving intubated:

- **Enhanced airborne precautions** will be used for all COVID+ and emergent unknown COVID-19 status surgeries that are a high risk for aerosol generation of respiratory pathogens (Appendix A). PPE used: gowns, gloves N95 or equivalent, face shield or goggles (Appendix B)
- **Enhanced droplet precautions** will be used for all COVID+ and emergent unknown COVID-19 status during surgeries that are a low risk for aerosol generation of respiratory pathogens (Appendix A) PPE used: gowns, gloves surgical mask, face shield or goggles (Appendix B)
- **Standard precautions** will be used when a patient with a negative COVID-19 test undergoes any surgery.



Scenario 3: Outpatient prioritized/non-elective surgical procedures

- **Enhanced airborne precautions** will be used during the **intubation** of all COVID+ and emergent unknown COVID-19 status AND during **surgeries** for these patients that are a high risk for aerosol generation of respiratory pathogens (Appendix A). PPE used: gowns, gloves N95 or equivalent, face shield or goggles (Appendix B)
- **Enhanced droplet precautions** will be used for all COVID+ and emergent unknown COVID-19 status during **surgeries** that are a low risk for aerosol generation of respiratory pathogens AND for the surgery team not present in the room during intubation (Appendix A) PPE used: gowns, gloves surgical mask, face shield or goggles (Appendix B)
- **Standard precautions** will be used when a patient with negative COVID-19 test undergoes any type of surgery or intubation.



Testing Procedures
Guidelines for team members for testing patients for COVID-19 may be found on the COVID-19 Resource Page. **Please refer to the most up to date guidelines on the COVID-19 Resource Page as they are frequently updated base on testing availability or new evidence. (insert link)**

Key points:

- Submit ONE SAMPLE for COVID-19 and RVP PCR tests if both tests are ordered.
- Affix COVID-19 Specimen Label to each specimen submitted for COVID-19 testing
- Specimens for other types of testing cannot be included within the same biohazard bag as specimens for COVID-19 testing.
- The specimen container must be checked to ensure that it does not leak. Specimen leakage or container breakage, such as during the process of pneumatic tube transportation, constitute criteria for specimen rejection.
- The container must be placed within a biohazard bag that is sealed.

Sending Specimens

- Academic Health Center: tube specimens to the Division of Clinical Microbiology (tube station number: 952). If the tube system is not available, follow your facility's tube system downtime process.
- Other IU Health Hospitals: Deliver specimens and paper test requisition to your local laboratory to be sent to IUHPL Molecular Pathology. It is acceptable to use the pneumatic tube system to deliver specimens to each local laboratory.
- Primary sites will be responsible for ensuring that nurses are competent to complete COVID-19 testing with patients (will need to be competent in nasopharyngeal and oropharyngeal swabs).
- Educational resources for nasopharyngeal and throat swabs can be accessed on Lippincott
- Obtaining a COVID-19 swab is not considered to be an aerosol generating procedure and does not require enhanced airborne isolation precautions (e.g. use of N-95 and negative airflow is not required).
- Nurses completing COVID-19 swabs with patients should don the appropriate PPE: gown, gloves, surgical mask, face shield.

Patient Education and Discharge Planning
Surgical patient who have a negative COVID-19 test do not require any additional education or discharge planning. Unit guidelines for discharge planning and education should be followed.
For patients who are COVID+, the educational documents can be found on Krames

Appendix A: IU Health aerosol generating procedure list and guiding principles (updated 4.10.2020)

1. **Indications for N95 use for <u>ALL patients</u> are reserved for the below listed aerosol generating procedures unless patient is asymptomatic and COVID-19 negative test within the last 96 hours:**
   - Intubation
   - Bronchoscopy
   - ENT/OMS surgical procedures including other procedures that involve the sinuses
   - Thoracic surgery
   - Cardiopulmonary Resuscitation (CPR)
2. **Indications for N95 use and negative airflow room for SUSPECTED or CONFIRMED COVID-19 are reserved for the below listed aerosol generating procedures:**
   - Intubation
   - Extubation
   - Bronchoscopy
   - Thoracic surgery
   - ENT/OMS surgical procedures including other procedures that involve the sinuses
   - Cardiopulmonary Resuscitation (CPR)
   - Non-invasive positive pressure ventilation (BIPAP, CPAP)
   - High Frequency Oscillatory Ventilation
   - Open airway suction
   - Tracheostomy Care in non-intubated patients
   - Nebulizer therapy (continuous and Breath Activated M
   - Sputum induction
   - Laser plume
   - Autopsy
   - Manual ventilation BEFORE intubation
   - Cesarean section (Since emergent intubation may be required and is not always anticipated)
3. **Scenarios NOT considered aerosol-generating and therefore will not be done in negative pressure and will not need N95 mask use:**
   - Optiflow/Vapotherm
   - Non-rebreather
   - Oxygenation with a Mask - Venti-mask/facemask
   - Chest Physiotherapy
   - High flow O2
   - Manual ventilation AFTER intubation
   - Closed suctioning after intubation
   - Manipulation of oxygen mask
   - Defibrillation
   - Insertion of NG/OG tube
   - NP and OP swabs
   - EGD/Colonoscopy

- TEE
- Vaginal delivery
- Bowel surgery
- Laparoscopy
- Cautery smoke in non-ENT, non-lung procedures
- All other surgical procedures not listed in #1 or #2

Aerosol Generating Procedures (AGPs): Guiding Principles

- COVID-19 is likely a large droplet-spreading infection with the potential for contact transmission akin to other coronaviruses
  - the exception would be when an aerosol is produced by means of a procedure
- Aerosol-generating means that a procedure can create **small droplet nuclei (<5 mcm)** where infectious virus can be carried in appreciable quantities to establish an infection in a host who is wearing a normal surgical mask
  - **Not all procedures that "generate an aerosol" also generate droplet nuclei capable of infecting people without an N95**
  - in general, procedures that generate a high velocity against the ***respiratory epithelium*** can potentially generate droplet nuclei
- Decisions to add more procedures to the list of AGPs is not benign ○ Utilizes additional valuable resources
  - Heightens the stress around these procedures
  - Raises new questions and forces development of new policy regarding breaching in PPE for these procedures
  - Amplifies concerns about related procedures lending to more requests
  - Amplifies requests for additional PPE (double masks, double gloves) over time
- Decisions on appropriate PPE should be based on evidence and not on fear
  - Evidence should not be national guidelines
  - Evidence on living models should be prioritized over experimental systems without live subjects
  - Requests for additional procedures to be added to the list should be initiated by the requesting service with provided acceptable evidence that should be reviewed by ID/IP
- Decisions on AGPs should have a "kill switch" based on the shifting epidemiology of the disease
  - This should be determined by IP, but criteria may include decreasing prevalence, a viable vaccine, new evidence to suggest absences of aerosol transmission, lack of PPE forcing a triage process
- Groups outside of IP may influence the ultimate decision on PPE through system, local supply, workarounds, etc., but IP should hold the "true north" of approved procedures
- There is uncertainty in the literature as to whether N95s add additional benefit over surgical masks for the prevention of acquisition of droplet nuclei-carried infections (Radonovich, et al. JAMA. 2019, Loeb, et al. JAMA, 2009)

Appendix B: Isolation precautions for COVID-19

Enhanced Precautions

Isolation Sign	PPE to wear	Recommended surgical settings
No sign (standard precautions)	Defer to normal care standard	Negative asymptomatic patient
	Surgical mask Eye protection Gown Gloves	Anesthesia: • Already intubated prior to OR entry and low Risk procedure Surgical Team: • Low risk Surgery after time elapse post intubation
	N95 respirator or equivalent Eye protection Gown Gloves	Anesthesia: • Low risk surgery (not intubated) • High risk surgery weather intubated or not prior to surgery (COVID positive or asymptomatic and unknown) Surgical Team: • COVID confirmed high risk surgery weather intubated or not prior to OR

Appendix C: CDC table for airborne contaminant removal

Purpose: Use this table to guide the length of time needed to clear a room of airborne particles after aerosol generating procedures. All facilities should use 99% efficiency at a minimum.

Table 1. Air changes/hour (ACH) and time required for airborne-contaminant removal by efficiency

The number of air changes per hour and time and efficiency.

ACH § ¶	Time (mins.) required for removal 99% efficiency	Time (mins.) required for removal 99.9% efficiency
2	138	207
4	69	104
6+	46	69
8	35	52
10+	28	41
12+	23	35
15+	18	28
20	14	21
50	6	8

CDC Centers for Disease Control and Prevention

Appendix D: COVID Testing Guide

Type of Test	When will this be done	Isolation Type	Process	Repeat Testing
Inpatient COVID Testing for suspected patients	Testing for inpatients who exhibit COVID signs/symptoms or are clinical warranted At provider's discretion	Enhanced Precautions-contact and droplet If approved aerosolization procedure: enhanced precautions airborne and contact.	**For pending testing**, patients are considered under investigation (PUI) Contact, droplet, and eye protection should be worn when caring for this patient **If test is positive** Leave patient in contact, droplet, and eye protection until criteria is met in the previous slide for removal from isolation **If test is negative** Patient can be removed from isolation if alternative etiology is identified Repeat testing can be considered if high clinical suspicion for infection remains, but the chances of repeat positives after a negative is very low (<5%). Repeating tests three times is currently not recommended.	**Testing to remove from isolation** can be done if: At least 7 days have passed since the onset of symptoms Patient has been afebrile for 72 hours Patient is overall improving as dictated by the primary physician IF ALL THE ABOVE CRITERIA ARE MET Send two COVID PCRs (should be 24 hours apart. If both negative, can DC isolation If either positive, repeat two PCRs (24h apart) after 3 days
Outpatient Testing and Lab Surveillance Screening for COVID-19	Testing for outpatients who exhibit COVID signs/symptoms or are clinical warranted At provider's discretion In general, only test if results would change decisions about care <u>Might consider in the following groups:</u> Patients in congregant living Patients from a high-risk group Patients living with someone who is high risk Dialysis patients Patients unable to self-quarantine Patients whose jobs require clearance prior to return to work Patients with upcoming admission to hospital, SAR, LTAC, or congregant living	Healthcare workers at testing centers will wear surgical masks, eye protection, gowns, and gloves for specimen collection (enhanced droplet isolation)	**After the test is collected** the patient will receive information about appropriate quarantine procedures **The patient will be notified** about results by the ordering physician (HCWs will be notified by the RN in the hub) If positive, the patient will be guided through quarantine procedures If negative, the patient will be instructed how to decide when to return to work	Repeated testing in outpatient settings is not recommended. If it has been 7 days since symptoms have started AND the patient has not had fever in at least 72 hours AND has improving respiratory symptoms, the patient is presumed to be non-infectious, but should wear a mask for a total of 14 days after symptom onset and throughout the duration of their cough.

	Asymptomatic patients if results would change management			
Pre-op Lab Surveillance Screening for COVID-19	COVID screening may be considered prior to surgeries and procedures Tests should be reviewed by surgery prior to their date of surgery In all cases to be done in the OR, preop screening should be done prior to the procedure In inpatients, screening occurs by placing a Cerner order This should be done prior to the procedure being done In outpatients, a Cerner order should be placed, and the patient needs to schedule a Virtual Visit to get testing done This should be planned at least 24-96 hours prior to the procedure. Surgeries on positive COVID patients should be delayed if possible.	Healthcare workers at testing centers will wear surgical masks, eye protection, gowns, and gloves for specimen collection (enhanced droplet isolation) Collection of COVID-19 specimen for preoperative screening in **asymptomatic** patients does not require extra PPE. The patient should wear an isolation mask until the test result returns	If the test is positive, consideration should be made for rescheduling surgery. If it cannot be and the procedure is… High risk (ENT/OMFS, Sinus, Thoracic, Bronch, ECT) Anesthesia and surgical team should wear N95s for the intubation and the procedure Low risk (others) Anesthesia should wear an N95 for intubations. The surgical team should wear regular surgical masks, but delay entering the room until 15-30 minutes after intubation. Emergent procedures should be treated empirically like they are positive (as above) If the test is negative, the procedure (high risk or low risk can occur as normal with only surgical masks)	Repeat testing is not currently indicated unless surgery is delayed. If this is the case, repeat testing should be performed 48-96h prior to the new OR date. If patient is admitted after the procedure, repeat testing is not required for future procedures unless the clinical status of the patient changes. This decision should be guided by the primary team.