Frequently Asked Questions related to Personal Protective Equipment In Operating Rooms and Surgical Services

These guidelines do not replace clinical judgement based on point of care risk assessments. Staff should make their best clinical decisions on the proper type of PPE to use in various situations.

Note: The answers in this document are based on the current evidence available and are subject to revision as further evidence emerges.

Suspected or confirmed COVID-19 positive patients

1. As the percentage of the population with asymptomatic COVID-19 increases, at what point do we treat all AGMP procedures assuming the patient is COVID-19 positive?

These guidelines apply to staff working in the Operating Room (OR) with patients with suspected or confirmed COVID-19 who require urgent/emergent surgery. As the number of patients with suspected or confirmed COVID-19 increases, we expect these measures to be used more widely. Alberta Health decides the threshold of community transmission at which we would consider “everyone” exposed (and, therefore, a suspect case).

2. What criteria are used to determine a “suspected COVID-19 positive” patient? Should every emergency case be considered COVID-19 positive until proven negative?

The "suspected COVID" definition has been established by AHS and is subject to change. The most up to date criteria can be found here and should be checked periodically for changes. Symptomatic patients may be tested; however, PPE and other IPC recommendations are the same for suspected and confirmed COVID-19.

3. Is there any value in swabbing urgent cases (e.g. E3 day facial fractures, head and neck cancers) or suspected COVID-19 positive patients 24 to 72 hours before surgery to determine the level of Personal Protective Equipment (PPE) required?

No. NP swab results may be falsely negative. PPE is based on the pre-operative risk assessment (i.e. COVID-19 screening criteria). These screening criteria include clinical symptoms and risk exposure criteria.

4. Why are there inconsistent recommendations from the CDC, WHO, PHAC, and NHS, and what recommendations should be followed?

Evidence is emerging rapidly on the pandemic; these recommendations are based on current recommendations from the WHO and PHAC and are subject to revision as further evidence emerges.
5. What precautions should clinicians not involved in a case employ to limit their exposure if a COVID-19 suspected or positive case is being treated elsewhere in the OR suite?

Staff not working in the COVID-19 OR should not enter the COVID-19 OR and should otherwise follow routine practices for IPC.

6. Is there any consideration to implementing the guidelines other hospital systems have implemented?

A number of different sets of guidelines from various sources were reviewed in the development of the AHS recommendations.

Pre-operative/procedure considerations

7. There are three types of patients coming into the hospital with emergencies that may not be related to COVID-19 (e.g. appendicitis or cholecystitis):
   - No cold symptoms but COVID-19 positive
   - Symptomatic with cold symptoms and COVID-19 positive
   - Symptomatic with cold symptoms and awaiting test results (presumed COVID-19 positive)

Are these patients treated similarly for surgical procedures?

Yes, all three should be treated similarly with COVID-19 appropriate PPE.

8. Are procedures that aerosolize blood or tissue considered an AGMP for the purpose of PPE use? Is chest tube insertion an AGMP?

No. AGMPs specific to the respiratory tract are relevant for COVID-19 and PPE use. Chest tube insertion, for example, is not an AGMP.

9. If healthcare workers are experiencing symptoms, how and when can they get tested for COVID-19?

Current information on COVID-19, including work restriction and testing for staff, can be found [here](#).

10. What information do I need to provide to the OR when I book a suspected or confirmed COVID-19 case for a surgery?

The need for isolation precautions in the surgical suite should be communicated via the surgeon at the time of surgical booking and noted on the OR schedule. The patient’s isolation status may also be communicated via the nursing unit.

11. How should students and interns be managed for a suspected or confirmed COVID-19 case?

Only required staff should be present in the COVID19-OR during the surgical procedure. Discussion should occur prior to the case to determine if students and interns are required to be present.
12. There is concern about ensuring the appropriate use of N95 masks to maintain a sufficient supply, are there risks to the availability of other PPE such as gowns, surgical masks, face shields, or gloves?

All PPE supply levels are being monitored through the Zone Emergency Operational Centres and the Provincial ECC to maintain sufficient supply; any updates on PPE supply and usage will be made by the provincial ECC.

13. Are there extra precautions that staff who are pregnant or immunocompromised should be taking?

Staff and students (including those who are pregnant, immunocompromised, or have underlying medical conditions) do not need to be restricted from providing care to patients who are under investigation for COVID-19, or who have probable or confirmed COVID-19, so long as the staff member or student is able to demonstrate proper use and fit of personal protective equipment, including donning and doffing procedures, and can competently adhere to the IPC recommendations for COVID-19.

14. Can verbal consent for procedures be obtained instead of written consent to reduce the need for signatures from patients?

This question is being considered at the Provincial level and information will be shared as available.

**Patient transportation to the OR**

15. Will suspected or confirmed COVID-19 positive patients be transported directly to the OR rather than wait in a holding area? Does there need to be a protocol for transporting them from their unit to the OR and what PPE should be used for this transport?

Yes, the patient should bypass the holding area and be transported directly into the designated COVID-19 OR. A team member or Protective Services member should clear the path for a suspected or confirmed COVID-19 patient traveling between the bed space and the OR. The patient may be transported to and from the OR by patient porter services.

Staff & physicians should wear appropriate PPE for any interaction with a COVID-19 or suspected COVID-19 patient, including transport to OR from an inpatient room or other walled bed space:

- Non-ventilated patient: gloves, gown, surgical mask, eye/face protection.
- Ventilated patient: gloves, gown, N95 mask, eye/face protection.

Note: Mechanical ventilation is a closed system and thus not considered to be an AGMP. However, accidental disconnections may occur during transport, so an N95 mask should be worn by those within a 2m radius of the patient.

- During transport:
  - Non-ventilated patient should wear a surgical mask.
  - Ventilated patient does not require a mask.
Anesthesia induction

16. For intubation during induction or any other Aerosol Generating Medical Procedure (AGMP), why is there no recommendation for completing procedures in a negative pressure environment (AlIIR), as advised in the Centers for Disease Control document?

The OR theatre should maintain a positive pressure airflow and at least 15 air exchanges per hour. The risk of a surgical site infection due to disruption of laminar air flow due to negative pressure is far greater than the risk of infection due to aerosolized respiratory droplets during AGMPs.

17. Why is there no "settle time" recommendation following intubation before other Operating Room (OR) staff can enter the room?

SARS-Coronavirus-2, the virus that causes COVID-19, is transmitted by respiratory droplets, and direct and indirect contact. It is not an airborne infection, and thus no settle time is recommended. There is no requirement for settle time following AGMPs. In addition, because all members of the surgical team will be wearing N95 masks throughout the case, the risk to staff is further mitigated.

18. What is the protocol for patients undergoing intubation and extubation who are suspected or confirmed COVID-19 positive? Should only the anesthetist and an assistant be in the room during this time, or will the scrub nurse also be in the room but well away from the intubation?

During induction the Anesthetist and an induction helper (Respiratory Therapist or Nurse), and if possible a “clean” helper, should be the only personnel in the room. Each site should have a detailed airway management algorithm for the COVID-19 patient.

19. Is an N95 respirator still required once the patient is intubated?

Yes. If there were no accidental extubations or airway disconnections, then regular PPE for contact and droplet precautions would be safe. However, due to the extensive process to don an N95 mask, N95 masks should be worn during the entire procedure by all OR team members due to the risk of an unanticipated AGMP (for e.g. anesthesia circuit disconnect or CPR) occurring during the surgical procedure.

20. Should we use intubation tents like some hospitals in other provinces or countries are using, to try to contain aerosolization of COVID-19?

At this time the evidence suggests tents may not be safe as they may increase the viral load to which workers are exposed and, if not cleaned properly, would be a vector for spread to other patients or personnel. We do not want to reject innovation, but urge innovations to be assessed and evaluated before advocating widespread use.
Surgical Procedures

21. What is the difference between an AGMP and droplets expelled when someone coughs or sneezes? Are the PPE guidelines different for these situations?

Coughing and sneezing produces respiratory droplets (> 5μm) which fall to the ground quickly and, therefore, are transmitted over limited distance (up to 2m, usually less than 1m). AGMPs may produce aerosolized respiratory droplets that are ≤5 μm, however, these are typically contained within the 2m radius (i.e. do not travel long distances for prolonged periods of time).

For pathogens transmitted by respiratory droplets, use gloves, gown, head covering*, procedure mask, and eye/face protection.

For certain respiratory pathogens, during AGMPs, it is recommended to use an N95 mask instead of a procedure mask, in addition to all the other PPE. In the OR setting, N95 masks should be worn during the entire procedure by all OR team members due to the risk of an unanticipated AGMP occurring during the surgical procedure. If there were no accidental extubations or airway disconnections, then regular PPE for contact and droplet precautions would be safe. However, due to the extensive process to don an N95 mask, N95 masks should be worn during the entire procedure by all OR team members due to the risk of an unanticipated AGMP (for e.g. anesthesia circuit disconnect or CPR) occurring during the surgical procedure.

*NOTE: hair coverings are not required specific to COVID-19 or Contact/Droplet Precautions. Hair covers are designed to confine shedding of the health care provider's hair and should be used in accordance with existing OR practices.

22. Do all staff need to wear N95 respirators in the OR for a suspected or confirmed COVID-19 positive patient?

Yes, they should due to the risk of an unanticipated AGMP occurring during the case.

23. There are various levels of risk depending on a given procedure. Assuming a healthy patient with no risk factors:

- What is the risk and recommendations for a thorough exam of the nose, oral cavity, and throat, including nasal endoscopy, in the clinic setting?
- What is the risk and recommendations for an operative procedure involving jet ventilation of the upper airway, or powered instrumentation of the nose or airway with the surgeon and staff being directly exposed to aerosolized smoke and secretions?
- What is the risk and recommendation if there is a long procedure with a tracheostomy, open oral cavity with sawing of bone, and significant amounts of aerosolization?

These risks are currently unknown, but we recommend postponing all non-urgent examinations and procedures of this kind, and wearing appropriate COVID-19 OR PPE if such a procedure is required in a patient with suspected or confirmed COVID-19 infection.
24. In a COVID-19 positive situation, when is it appropriate to use a powered air purifying respirator (PAPR)?

Based on current evidence, there are differing opinions about the use of PAPRs.

25. What is the appropriate PPE for AGMP and non-AGMP for suspected or confirmed COVID-19 positive patients in the OR? Will a list of AGMP be posted in the ORs or be made part of the Safe Surgical Checklist?

All team members working in the COVID-19 OR should wear the following regardless of whether the case includes a known AGMP or not, due to the risk of an unanticipated AGMP occurring:
- Gloves, surgical gown, N95 mask, eye/face protection, head covering (as per routine OR practices)
- When doffing PPE, the surgical head covering should be doffed as well as it often comes off when doffing the mask.

The surgical team should use the opportunity during the Safe Surgical Checklist steps to review the particular risks associated with the patient and procedure including any known or potential AGMPs.

26. Can Bair Huggers (or other forced air warming devices) be used with suspected or COVID-19 positive patients?

Yes. Bair huggers do not usually create aerosols from the respiratory tract and are therefore safe to use.

27. Should masks (N95 or regular surgical) be changed during the course of longer cases to maintain their effectiveness?

No. Your N95 should be put on at the start of the case and not adjusted or removed until either you or the patient have left the OR. There is currently no set time limit for the effectiveness of a mask. If the mask is touched or becomes wet or soiled, completely doff all PPE and re-don with clean PPE.

28. Is a laparoscopic procedure considered to be an AGMP? Is there a risk for infection associated with blood or fluid from the peritoneal cavity?

Currently, laparoscopic surgery is not considered an AGMP. All team members working in the COVID-19 OR should wear the following regardless of whether the case is laparoscopic or not due to the risk of an unanticipated AGMP occurring:
- Gloves, surgical gown, N95 mask, eye/face protection, head covering

29. Are there extra precautions or PPE required for staff in the OR during Craniofacial, OMFS, OHNS, Dentistry, or ENT procedures?

This is currently under review. Until a decision is made, all team members should wear the following during these procedures regardless of the patient’s COVID-19 status due to the potential risk inherent in the procedure:
- Gloves, surgical gown, N95 mask, eye/face protection, head covering
30. **Is there a COVID-19 designated OR at the site where I work?**

Yes, every surgical suite with more than one OR will have one or more designated COVID-19 Operating Rooms (COVID19-OR) with designated lead staff and a lead surgeon from each subspecialty service. All procedures performed on COVID-19 positive or COVID-19 suspected patients should be carried out in a designated COVID19-OR. Sites with only one theatre will not have a designated COVID-19 OR.

31. **Are there any specific procedures for specimen handling from a patient who is suspected or confirmed COVID-19 positive?**

Yes. Please ensure specimens are appropriately labeled and contained if COVID-19 is suspected or confirmed.

32. **Who can surgeons and anesthetists contact in the event they have questions regarding certain cases?**

Contact your local site leadership.

33. **What is the procedure in the event of a death in the OR of a patient who is suspected or confirmed COVID-19 positive?**

Normal procedures should be followed for the transport of remains containing potentially infectious agents.

34. **What is the guidance for paper charts or forms being brought into the OR during a suspected or confirmed COVID-19 positive case? Is the physical chart (with consent) to be left outside? If so, how should the briefing and timeout be performed, and should charting be completed after the case? How should charts and forms that were used in the COVID-OR be cleaned and stored?**

It is recommended that only the most essential paperwork be brought into the COVID19-OR. The laminated checklist should remain in the OR and be cleaned between cases. Further guidance on this question will be shared as it is available.

35. **Are there recommendations on limiting the number of frozen sections requested to only those that will change the course of a patient’s treatment or surgery performed?**

Yes, frozen section should only be used when absolutely necessary to guide intra-operative management.

36. **Is there specific guidance for PPE use when a C-section is being performed on a patient who is suspected or confirmed COVID-19 positive?**

All members of the OR team should wear PPE including an N95 mask due to the possibility of an unanticipated AGMP occurring during the case, even for elective C-sections under spinal anesthetic.
For a STAT GA C-section the entire OR team should be in PPE with N95 masks prior to RSI as the patient is prepped and draped prior to induction. For the laboring patient requesting an epidural, contact/droplet precautions should be donned.

37. How should we handle blood products in the COVID-19 ORs?
   - Do not bring the blood product coolers into the COVID-19 OR theatres. Runner hands in only the products to be infused.
   - Blood products should be checked as per usual policy and process.
   - If, for any reason, a cooler is brought into the theater, the cooler and coolant rings may be wiped with the standard Accel or Kim wipes.
   - Return unused blood product to the Blood Bank.
   - **DO NOT** wipe products (due to gas permeability) – the lab would have to discard products that had been wiped with cleaning products.
   - **DO NOT** discard any unused blood product (transmission is considered low risk; do not want to waste valuable blood product).

Recovery of the patient

38. In the operating room, when a recovery room nurse is caring for an already extubated suspected or confirmed COVID-19 positive patient, should they be wearing PPE with an N95 masks or PPE with a procedure mask?

   In this situation they should be wearing PPE with gown, gloves, procedure mask and eye protection. An N95 mask may be worn if there is the risk of a potential AGMP occurring.

39. What is the recommended process for safest transport of COVID-19 suspected or positive patients to the inpatient unit and to the ICU?

   - Transport to inpatient unit: Patient will be transported by patient transport services from the dedicated COVID OR directly back their inpatient room.
   - Transport to ICU: It is preferred that clean PPE is worn for transport from the OR to the ICU. This can be achieved by the COVID OR team doffing and donning clean PPE, or by use of a separate clean team to transport the patient. If neither of these options are possible then the anesthesiologist and RT from the operating room may transport the patient to the ICU and remain in their existing PPE. A clean nurse should accompany the transport team to clear a path and open doors/elevators. All individuals on transport should wear PPE for an AGMP (including an N95) as there is a possibility of a circuit disconnect. Ensure a tight connection between all elements of the circuit to reduce the risk of disconnection. Once hand over is complete members of the team can complete the doffing procedure.

PPE, donning and doffing

40. What are the correct donning and doffing procedures for PPE?

   Guidance on the correct steps of PPE donning & doffing.
41. Is the use of coveralls or neck protection recommended for surgical staff during a suspected or confirmed COVID-19 case?

Not at present due to the high risk of self-contamination during doffing. All staff working in a COVID19-OR should wear a surgical gown, properly tied at the neck and back, eye protection, an N95 mask to cover the lower face, and a face shield.

42. Are there recommendations on surgical staff taking a shower post-doffing of PPE?

No, not currently. The use of a doffing observer is recommended as the risk of self-contamination seems to be greatest during doffing. Ensure that hand hygiene is performed between each step of PPE removal as indicated in the AHS doffing guidelines. In addition, if there has been any concern for additional contamination of face and neck, additional washing should be considered.

43. Can I bring my own personal PPE equipment to use in the OR?

No, only AHS provided PPE may be used.

44. Are there recommendations for special footwear to be worn for a suspected or confirmed COVID-19 positive case?

Disposable boots should not be worn. Only shoes that can be wiped should be worn.

Cleaning post-procedure

45. What happens to the OR after a known COVID-19 patient undergoes surgery? Is it cleaned and kept empty for a few hours before the next case?

The usual environmental cleaning processes between cases should be followed by Environmental Services or OR service workers, and extra time is not required between cases (see question 2). Computer touch screens & keyboards in the OR theatre should be cleaned between cases. This is currently the responsibility of the end user (i.e., not Environmental Services or OR service workers).

46. Are there different PPE recommendations for environmental services staff to follow when cleaning the OR after a suspected or confirmed COVID-19 case?

No. Rooms should be cleaned after the patient leaves by staff wearing PPE including surgical mask, gown, and face shield.