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COVID 19: Considerations for Optimum Surgeon Protection

Before, During, and After Operation

There are presently increasing amounts of information concerning protecting the health care worker, including in the operation room. This section brings together the latest information, data, and recommendations for personnel in the operating room, as well as how to minimize risk of COVID infection afterwards. In this section, the following issues are addressed.

1. **Use of Personal Protective Equipment** (in the operating room, including appropriate donning/doffing of the PPE)
2. **Intubation Risks**
3. **Specific Operative Risk Issues**
4. **After operation/leaving the OR, and leaving the facility**

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1. **Use of Personal Protective Equipment**
   - Use of **personal protective equipment** is recommended by the Centers for Disease Control for every operative procedure performed on a patient with confirmed COVID-19 infection or a patient where there is suspicion for infection.
   - **N95 respirators** or respirators that offer a higher level of protection should be used when performing or present for an aerosol-generating procedure (e.g. OR patient intubation) in COVID-19 or suspected infected patient.
   - Disposable respirators and facemasks should be removed and **discarded appropriately** in accordance with local policy.
   - Perform **hand hygiene** after discarding the respirator or facemask.
   - **CDC videos** for donning and doffing personal protective N-95 masks (donning and doffing). The full video can be found at this CDC website.
   - Additional PPE **resources** are available in the ACS Bulletin COVID-19 Newsletters (https://www.facs.org/covid-19/ppe).
   - **Fit testing** is paramount to ensure proper mask fit.
   - There is a distinct possibility that personal protective equipment, including acceptable masks (such as the N95 mask) may be in **short supply**. Healthcare institutions are encouraged to develop protocols for preserving supplies of masks and protective equipment. The CDC has outlined strategies for **optimizing the supply of facemasks**.
   - Two facilities have shared with the ACS details about donning/doffing and use of PPEs.
     - The **Medical University of South Carolina** developed donning and doffing checklists.
     - The below illustration provides a schematic for use of personal protective equipment from the **University of Kansas**

THE UNIVERSITY OF KANSAS HEALTH SYSTEM

3/25/2020

PPE Recommendations *Updated 3/25/2020*

Patient Care for Patients Not Suspected for COVID-19	Patient Care for Patients Suspected or Positive for COVID-19	Aerosol Generating Procedures[1] on Patients Susptected or Positive for COVID 19 AND Airway Procedures on All Patients
WHEN: • Patient has no COVID symptoms • Closer than 6 feet from patient for more than 1 minute **WHERE:** • Ambulatory Clinics • Emergency Department • Acute Care Units • Intensive Care Units • Procedural Areas **PPE Required:** • Surgical/ear loop mask	**WHEN:** • Patient has COVID symptoms OR has a COVID test pending or with positive result **WHERE:** • Ambulatory Clinics • Emergency Department • Acute Care Units • Intensive Care Units • Procedural Areas **PPE Required:** • Eye protection/face shield • Surgical/ear loop mask • Gown • Gloves	**WHEN:** • Aerosol generating procedures[1] are being performed **WHERE:** • Ambulatory Clinics • Emergency Department • Acute Care Units • Intensive Care Units • Procedural Areas **PPE Required:** • PAPR OR N95 Respirator + Face Shield/Eye Protection • Gown • Gloves

Note for all categories shown: Hand hygiene required upon entry and exit, regardless of whether the patient is under isolation, or PPE are worn.

[1] **Aerosol Generating Procedures Include:** laryngoscopy/intubation, non-invasive ventilation, CPR, bronchoscopy, open suction, nasotracheal suction, nebulizer treatments

PPE for Specimen Collection: Nasopharyngeal swabs often generate a strong cough reflex. Standard/Contact/Droplet precautions are recommended.

2. Intubation Risks

- **Aerosolization and droplet transmission** of the COVID-19 virus are important hazards for surgical personnel.
- Aerosolization and droplet transmission hazard increases with procedures such as endotracheal intubation, tracheostomy, gastrointestinal endoscopy and during the evacuation of pneumoperitoneum and aspiration of body fluids during laparoscopic procedures.
- Surgeons and personnel not needed for intubation should remain **outside the operating room until anesthesia induction and intubation are completed** for patients with or suspected of having COVID-19 infection.
- Negative pressure operating rooms and/or anterooms when available are recommended. A review article that presented data on the use and effectiveness of negative pressure operating rooms is referenced here: Chow TT, Yang XY. Ventilation performance in operating theatres against airborne infection: review of research activities and practical guidance. *Journal of Hospital Infection.* 2004;56(2):85-92.
- A recent study in the New England Journal of Medicine shows how long COVID-19 might remain infectious on **different surfaces** (e.g. cardboard 1 day, plastic 3-4 days).
- Appropriate PPEs need to be used per local policy - this article provides a useful discussion of overarching management in the OR of a COVID-19 infected patient, and also the intra-operative protocol used in Singapore.

3. Specific Operative Risk Issues

- Have **minimum number of personnel** in the operating room, including during intubation, as well as throughout. No visitors or observers.
- Use **smoke evacuator** when electrocautery is used.

- Consider **avoiding laparoscopy** (ACS Bulletin COVID-19 Newsletter, SAGES recommendations, published studies).
- **Tracheostomy** considerations are important because of the high risk for aerosolization. A guide for tracheostomy is available here.
- **More operative issues** including triaging may be found in the FACS COVID website section and newsletter.

4a. After operation/Recovery

- If transport of a patient with or suspected to have COVID-19 infection to an outside recovery area or intensive care unit is necessary, handoff to aa **minimum number of transport personnel** who are waiting outside the operating room should be considered. Personnel should wear **personal protective equipment** as recommended by the CDC. Personal protective equipment should be **not be the same as worn during the procedure**.
- Recommendations for surgeon protection before and after separating from a patient with or suspected of having COVID-19 infection vary from institution to institution. We reached out to surgeons at four academic medical centers to obtain their perspectives on behavior following separation from the patient. Selections from these perspectives are presented here
    - Remove clothes worn from home and keep in garment bag.
    - Wear scrub clothes after arrival at hospital
    - After separating from the patient remove scrub clothes; consider showering before changing into a clean scrub suit or home clothes
    - **Wash hands** frequently and maintain safe social distancing

4b. Going home – what should be done to keep your family safe

- Healthcare institutions and systems may make hotel accommodations available for healthcare workers who **cannot or prefer not to go home** following patient care activities.
- Be alert to the fact that viral contamination of surfaces is a known means of transmission of infection.
- Keep hand **sanitizer and/or disposable gloves** for use of ATM, vending machines, gasoline pumps, and transfer of items at the time of purchases.
- Clean your **cell phone** frequently before, during, and after patient care activities. Cell phones may be kept in a Ziploc bag during work activities. The phone can be used while in the bag
- Consider removing clothes and washing them **upon arrival home**.
- Consider reducing physical contact with family members and **wash hands frequently**.
- Clean hard surfaces at home with an **effective disinfectant solution** (e.g. 60% alcohol).
- Of note is a video developed by a physician at Weill-Cornell Medical Center with practical information for frontline health care workers.

Disclaimer

These guidelines are meant to serve patients based on estimates of risk for *average* patients (in terms of clinical condition, patient health, hospital resource availability) associated with each strategy.

- These should not be considered rigid guidelines, and are not intended to supplant clinical judgement or the development of consensus regarding institutional approaches to treatment. There is a great deal of uncertainty around this evolving pandemic and information may change rapidly.
- It is possible that the strategies outlined in this document could be replaced as our understanding of unique challenges that COVID-19 poses within each country, state, and healthcare environment evolves.