

Update Log for: **GCH Pediatric Anesthesia Guidelines for Use During COVID-19 Outbreak**

Additions **in green**

Deletions ~~struck through~~

<b>Date of Update</b>	<b>Item Updated</b>

## **GCH Pediatric Anesthesia Guidelines for Use During COVID-19 Outbreak 9 April, 2020**

### **Goal:**

- To care for our pediatric patients during COVID-19 pandemic in a manner that maintains a safe environment for both patients and health care providers.
- This document serves to highlight special circumstances that specifically pertain to anesthetic care of children at GCH, and is a supplement to (but does not replace) the Anesthesia Department Document entitled “**Anesthesia team management of patients needing anesthesia during Covid-19 pandemic**” which goes into much more detail about many of the below topics.

### **General Points:**

- Children with COVID are more likely to have minimal symptoms or be asymptomatic than adults
- Confirmation of who is COVID positive/negative may not be clinically feasible in all settings
- SARS-CoV2 (causative agent COVID-19) is primarily transmitted via contact or large droplets with indirect evidence of airborne transmission.
- Joint guidelines from the ASA, AANA and the APSF recommend use of personal protective equipment (PPE) during all anesthesia-related care at this time:  
<https://www.asahq.org/about-asa/newsroom/news-releases/2020/03/update-the-use-of-personal-protective-equipment-by-anesthesia-professionals-during-the-covid-19-pandemic>

### **Personal Protective Equipment (PPE):**

Contact and Droplet and Aerosol protective PPE is recommended for staff present during procedures with the potential for generation of aerosols during the COVID-19 pandemic. Specifics of each type of PPE are described in the detailed department guidelines, but, briefly, this includes gowns, gloves, eye protection, face shielding, and masks that protect from airborne particles during aerosolizing procedures. Intubation/extubation, mask induction of anesthesia, and any open airway procedure are all considered aerosolizing. While current supplies of PPE are adequate, the Department of Anesthesiology has incorporated several procedures to help with conservation of PPE. These include: extended use and/or re-use of certain items, protection of n95 masks with a face shield or procedure mask, and mask reprocessing.

As more patients are tested for COVID before procedures, a negative test result may make surgical staff feel comfortable enough to stay in the room during the 10 min “settling time” without specific aerosol PPE. This is the choice of the individual surgical staff, and will be respected. At the same time, because other staff may still have concerns about whether these tests are completely reliable, it is equally respected that surgical staff without aerosol protection

may wish to leave the room for any aerosol generating procedure and for the settling time. Either option is acceptable, although the doors will remain closed (except in emergency) for the settling time regardless of who is present in the OR.

### General Anesthetic Considerations:

- For procedures done under sedation and/or regional anesthesia: have patient wear surgical mask and maintain safe distance from airway. Adjust sedation to decrease the risk of unanticipated need for immediate airway intervention.
- For procedures requiring general anesthesia, rapid sequence induction (RSI) with an endotracheal tube (ETT) is recommended. Video laryngoscopy is encouraged whenever possible to allow for an increased distance between the patient and the provider performing intubation, as well as to improve first pass success. Use of laryngeal mask airways (LMAs) is not advised to decrease the possibility of generation of aerosols.
- A calm induction may do more to limit aerosol spread than a screaming fighting child, therefore, the anesthesia team should consider generous premedication (either PO, IM or IV) as appropriate for each patient. Intranasal medications are currently discouraged.
- Consider intravenous induction rather than inhalational induction when feasible
- Parental presence for the induction of anesthesia (PPIA) is currently discouraged

### Strategy For ALL Patients (see below for specifics related to COVID+ patients)

#### Pediatric OR/Procedure Room Setup

##### A. OR setup

- Place a HEPA filter between the elbow of breathing circuit and the patient's mask. For **small pediatric patients** where the weight of the filter or amount of dead space may be problematic, the HEPA filter should be placed on the expiratory end of the breathing circuit before expired gas enters the anesthesia machine.
- In-line suction device available from Anesthesia Technician (the kind used in typical ICU patients, see video on intranet Covid folder).
- Store infrequently used medications in drawer or pyxis – only draw up what you need for the case at hand
- Gather Video-laryngoscope and blade (either Glidescope or CMAC)
- Consider use of clear plastic “drapes” for use with the patient’s mask (figure)
  - a. Bags from circuits



- b. Clear plastic drape from Bair Hugger
- Please try to have EVERYTHING in the room before patient arrives.



### Application of PPE for each case

- Gather:
  - N95 mask (or CAPR/PAPR if N95 does not fit),
  - impermeable gown (contact precaution gown),
  - two pairs of regular gloves,
  - goggles +/- face shield
  - head covering (bonnet)
- Donning:
  - Ask someone to observe you for best practice.
  - Find a “clean” location with adequate space.
  - Hair completely covered by surgical cap, recommend tying back hair.
  - Change mask to N95 if not already wearing one.
  - Apply hand-sanitizer (no jewelry or watches).
  - Put on inner gloves.
  - Put on the gown, place thumbs through the thumb holes of the gown and tie to side if can’t reach to back.
  - Place face shield over n95/P100 with or without goggles in place or CAPR/PAPR.
  - Put on a second layer of gloves.

### Induction/**Airway Management:**

- OR staff non-essential to induction vacates OR prior to induction. Any staff remaining in OR needs PPE appropriate for aerosols (unless pt has tested negative for COVID, then please see “PPE” section above)
- All doors to OR remain closed, except in event of emergency (regardless of COVID testing result)
- Consider use of clear plastic shield and/or drape with mask, especially if mask induction being performed
- Preoxygenation or mask induction



- RSI using video laryngoscope (behind shield/under plastic drape). Confirm appropriate cuff pressure to minimize aerosolization. Attach in-line suction if ETT suction likely for the case. Place laryngoscope blade into outer glove then into plastic bag/biohazard bag. Hand hygiene to inner gloves immediately.
- **Allow 10 minutes** after intubation for turnover of air in OR prior to opening OR doors and letting team into room (regardless of whether patient has been tested for COVID)



Plastic drape for induction/emergence. May also use clear plastic for emergence. Photo

#### **Intraoperative hand hygiene required at the following times:**

- Before and after removing outside pair of gloves (sanitizer).
- After contact with soiled or contaminated areas (sanitizer, glove removal, sanitizer, new gloves). If gloves are bloody or otherwise heavily soiled, remove those! Don't sanitize those!
- Before touching the anesthesia machine, anesthesia cart or its contents (sanitizer over gloves) or Pyxis. When fingerprint needed, sanitize hands before and after.
- After EVERY contact with the patient (sanitizer over gloves).

#### **End of Case/Emergence/Extubation**

- If patient to remain intubated, proceed directly to ICU making sure HEPA/HME filter is in place between ETT and Ambu Bag or clamp ETT when transitioning to Ambu Bag or ventilator.
- If planning on emergence, those staff remaining in OR require PPE appropriate for aerosols for emergence or have decided to remain in standard PPE if pt tested negative for COVID
- Options to reduce aerosolization from coughing on emergence:
  - Medications- lidocaine, opioids, dexmedetomidine
  - Deep extubation with full emergence in OR
- Consider transfer of patient to stretcher prior to emergence
- OR doors remain closed for **10 minutes** after extubation to allow OR to clear particles (regardless of pt test result for COVID).
- Apply surgical mask or NRB to pt
- Doffing for anesthesia team in OR before transporting to PACU
  - By the door in OR and drop into garbage (use a step stool if necessary).
  - Hand Hygiene to outer gloves
  - Remove gown
  - Remove outer gloves (three options):
    - With rolled up gown
    - Glove in glove technique
    - Beak method
  - Bend forward to remove face shield and clean with CaviWipe, and can replace. If the bleach or CaviWipe leaves a film on your mask, wipe this off with an alcohol swab.

- Sanitizer to inner gloves.
- Transfer to PACU, sign out patient to PACU nurse
  - use hand sanitizer, then remove gloves, wash hands (20 seconds).
- Recommended to leave n95 on face (as would be case for daily extended use).

**Cleanup:**

Anesthesia techs and EVS can come into OR at least 10 minutes following extubation and clean per protocol

**Strategy for Patients with Confirmed COVID or Under Investigation (PUIs)**

- Transport of COVID positive patients or PUI requires full PPE including N95/CAPR.
- Core team remains in contact with stretcher at all times during transport. Assign a person to remain “clean”. (This person does not contact stretcher/patients and assists with doors and elevators.)
- Intubation/extubation should occur in a negative pressure room whenever possible. GCH does not currently have a Highly Infectious Disease Unit (HIDU) and not all GCH units have negative pressure rooms.
- In the GCH surgical suite PACU room B14 and OR P2 are negative pressure rooms. Optimal location for intubation/extubation will depend on the patient’s clinical status and the availability of negative pressure rooms on patient care floors and in the OR.
- Plans for intubation/extubation should be discussed with the patient’s team prior to transport to/from the patient care unit.
- Surgical mask should be placed on non-intubated patients prior to transport
- Transport of patients on high flow nasal cannula, CPAP, and BiPAP to the OR should be avoided.
- GCH OR P2 is the designated OR for intubation of patients who are COVID positive or PUI. It should also be used for procedures where continuous generation of aerosols is likely (e.g. airway cases). Patients having an open surgical procedure should be moved to another operating room (likely P5) for surgery and back to P2 for extubation. Discuss this plan with the team ahead of time.
- Preparation of both the OR for intubation and the surgical OR should be complete before anesthesia team collects patient.
  - P5 is planned to be dedicated COVID OR in GCH (unless open airway procedure, then will use P2 for entire case).
  - Ensure regular pyxis is removed from room, and replaced with “COVID Tray” from pharmacy. Please gather any other medications or items that might be needed during the case from pyxis before patient arrival.
  - In-line suction should be used for an intubated COVID +/-PUI patient.
- Already Intubated patients should travel to the OR with a HEPA filter between the ETT and ambu bag, neo puff, or travel ventilator whenever possible. If this is not feasible, clamp ETT prior to disconnection and reconnection

- Emergence and extubation (if appropriate) should also be done in a negative pressure room, and this can be either P2 or on the patient's unit. This decision will depend on patient status, case performed, and a discussion with the patient's team.
- After leaving OR, the room needs to remain closed to any traffic for 30 minutes. After that time anesthesia techs and EVS can enter the room for cleaning. A terminal clean will be performed after a known COVID +/-PUI patient.
- Make sure to discard all medications out or in medication trays.

#### References:

1. Lu X, Zhang L, Du H, et al. SARS-CoV-2 Infection in Children. *New England Journal of Medicine*. 2020.
2. Dong Y, Mo X, Hu Y, et al. Epidemiological Characteristics of 2143 Pediatric Patients With 2019 Coronavirus Disease in China. *Pediatrics*. 2020:e20200702.
3. Consensus statement: safe airway society principles of airway management and tracheal intubation specific to the COVID-19 adult patient group. Brewster et al.
4. ASA/AANA/APSF guidelines for COVID 19 - <https://www.apsf.org/fag-on-anesthesia-machine-use-protection-and-decontamination-during-the-covid-19-pandemic/>
5. Scott Weingart. COVID19 Intubation Packs and Preoxygenation for Intubation. *EMCrit Blog*. Published on March 13, 2020. Accessed on March 18th 2020. Available at [https://emcrit.org/emcrit/covid19-intubation-packs-and-preoxygenation-for-intubation/ ]
6. Pediatric Anesthesiology Guide to COVID-19 Compiled by Jennifer Lau, MD Childrens Hospital LA, Last Edited 03.16.20 (please send edits to jenlau@chla.usc.edu)