FACULTY OF MEDICINE
DEPARTMENT OF ANESTHESIOLOGY

CONSIDERATIONS FOR PEDITARIC AIRWAY MANAGEMENT RELATED TO COVID-19

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This document provides recommendations for managing the pediatric airway during the COVID-19 pandemic. Recommendations are taken from the most recent Pediatric Difficult intubation Collaborative (PeDI-C) and adjusted according to the practices adopted by AUBMC:

- Children infected with SARS-COV-2 could shed virus asymptomatically, even in stools and infect others. In the Chinese experience, asymptomatic transmission of the virus from children to HCW emerged as a significant risk.

For ALL kids

Premedication for routine procedures to decrease anxiety, even in the kids with negative PCR (20% False negative rate):

- Oral Midazolam (0.5-1mg/kg up to 20mg)
- IV Midazolam (0.05-0.1 mg/kg) and titrated as needed
- IM midazolam (0.1-0.2mg/kg) in the uncooperative child (fast onset and adequate sedation.

For the asymptomatic child or confirmed negative PCR

- At AUBMC we are wearing PPE (impermeable blue gown, N95, face mask, eye shield and gloves, for all intubations/extubations)
- Recommendation against parent presence during induction to minimize exposure and conserve PPE.
- IV induction is preferred over inhalational induction (risk of aerosolization and exposure to respiratory droplets). However, clinicians should assess the child disposition for IV placement as struggling to place a catheter might result in more respiratory droplets shedding if the child is crying.
- If mask induction is to be performed, ensure adequate seal and use low flows.
- RSI recommended, or modified RSI with gentle positive pressure ventilation with the goal of using just enough tidal volume to achieve chest rise while maintaining a tight seal (as some children might not tolerate periods of apnea and might develop hypoxemia).
- Recommended use of muscle relaxants.
- Use of video laryngoscopy for all intubations as performed by the most experienced laryngoscopist.
- Use of a cuffed tube with an intubating stylet in smaller kids.

- 2nd generation Supraglottic airway device (LMA supreme, iGel, ProSeal) with a good seal is acceptable in some cases (simulated cough in a manikin model showed minimal aerosol dispersion).
- In-line close suction system preferred.
- O2 mask preferred over nasal cannula.
- A high quality viral filter should be placed between the breathing circuit and the patient's airway and another one at the expiratory limb.
- If high suspicion/confirmed/high aerosol generating procedures, recommended to keep full PPE throughout the procedure given the risk of accidental circuit disconnection/extubation/unquantified aerosolization.
- Recommended transparent barrier over the airway device, or wet towels/gauzes.
- Extubation:
  - Consider deep extubation, TIVA/precedex/remifentanil.
  - Risk of laryngospasm, have a backup airway equipment ready for use (airway, tube and laryngoscope) if needed, not to delay reintubation.
  - Use a transparent barrier with negative suction (the hoods we are building).

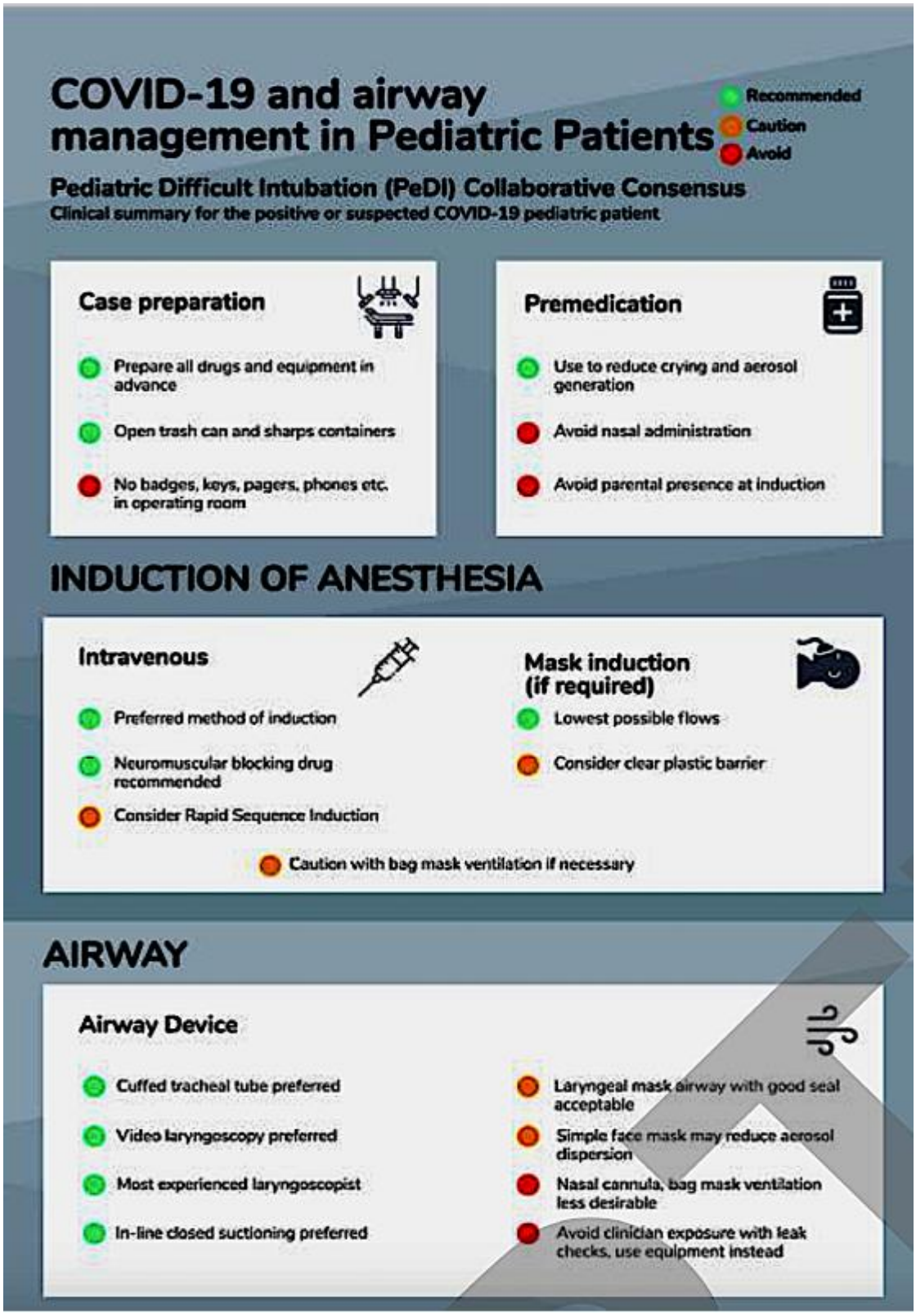
*** All other room precautions adopted routinely at AUBMC shall also be applied to the child going to the OR, like minimizing personnel during intubation/extubation, wait at least 4min after intubation/extubation before the rest of the personnel can enter the room, 12min turnover time between cases.*

For the symptomatic or confirmed COVID patient

- Tracheal intubation of the patient with COVID-19 is a high-risk procedure for staff, irrespective of the clinical severity of disease. In severe COVID-19 it is also a high-risk procedure for the child.
- All personnel shall wear full PPE (Tyvec suit, blue impermeable gown, N95, face mask, eye shield and double gloves). Touch as little as possible in the room to avoid fomites.
- Limit number of staff present at tracheal intubation: one attending, one resident and one therapist. A runner should be outside the room. All other staff shall stay outside the room.
- Recommendations against parent present induction BUT if they need to be present, one parent accompanies the child in suitable PPE and shall leave the room before airway management as this is an aerosol generating procedure (AGP) requiring 'airborne' PPE precautions.
- Intubate in a negative pressure room (currently OR 10), preferably under the hood.
- Know and communicate the plan before entering the room; use a checklist to achieve this.
- Prepare and check weight/size appropriate equipment and drugs outside the room.
- The best skilled airway manager present should manage the airway to maximise the first pass success.

- Be safe, accurate and swift. Aim to succeed at the first attempt because multiple attempts increase risk to sick patients and staff. Do not rush but make each attempt the best it can be.
- Pre-oxygenation for 3–5 minutes with a well-fitting mask using low flows (< 5L/min). Use a circuit that is age appropriate with filters on the inspiratory and expiratory limbs, and a filter between the mask and the circuit.
- Use RSI with muscle relaxants (rocuronium 1-1.2 mg/kg, or succinylcholine 1-2 mg/kg) to ensure full neuromuscular blockade before airway instrumentation.
- Videolaryngoscopy for tracheal intubation.
- Consider 2-person, 2-handed mask ventilation **if needed** to improve seal, **low flow/low pressure technique.**
- Use age appropriate cuffed tube with intubating stylet in smaller kids, **DO NOT** start ventilating before inflating cuff and noting the length at the lip.
- Confirm tracheal intubation by capnography – check peak airway pressures and tidal volumes along with chest rise for adequate tube depth – above carina (can also use US if familiar with).
- A second generation supraglottic airway device is acceptable for airway rescue if needed in the setting of a difficult airway, also to improve seal.
- Consider passing a nasogastric tube to aid gastric decompression which may make lung ventilation more difficult.
- Avoid circuit disconnection - push twist all connections. Clamp the tube during disconnections, and stop the gas flow.
- Consider deep extubation, under the hood with minimal personnel presence (refer to above), or consider transfer intubated to the COVID ICU depending on the case.
- COVID positive patients shall be recovered in the operating room followed by a direct transfer to the COVID unit, bypassing the recovery room.

*** All other room precautions adopted at AUBMC for the adult COVID positive patient shall also be applied to the child going to the OR.*


COVID-19 and airway management in Pediatric Patients
Recommended
Caution
Avoid
Pediatric Difficult Intubation (PeDI) Collaborative Consensus
Clinical summary for the positive or suspected COVID-19 pediatric patient
Case preparation
Prepare all drugs and equipment in advance
Open trash can and sharps containers
No badges, keys, pagers, phones etc. in operating room
Premedication
Use to reduce crying and aerosol generation
Avoid nasal administration
Avoid parental presence at induction
INDUCTION OF ANESTHESIA
Intravenous
Preferred method of induction
Neuromuscular blocking drug recommended
Consider Rapid Sequence Induction
Mask induction (if required)
Lowest possible flows
Consider clear plastic barrier
Caution with bag mask ventilation if necessary
AIRWAY
Airway Device
Cuffed tracheal tube preferred
Video laryngoscopy preferred
Most experienced laryngoscopist
In-line closed suctioning preferred
Laryngeal mask airway with good seal acceptable
Simple face mask may reduce aerosol dispersion
Nasal cannula, bag mask ventilation less desirable
Avoid clinician exposure with leak checks, use equipment instead

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