

PEDIATRICS COVID19 Protocols

DIVISION

Pediatric ED, Pediatric ICU, Pediatric Anesthesia, Pediatric Otolaryngology

WORKING document name

Respiratory assistance for Suspect or COVID + patient including Code Indigo

FINAL document name

PEDS ED, ICU, Anesthesia, OTL COVID19 Respiratory assistance and Code Indigo for Suspect or COVID + patient

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This protocol provides information about

Presentation	Transport	Unit	Discharge
X	X	X	

Flowchart for Suspect or Confirmed COVID Patients in the ED- In Respiratory Failure/Arrest V2

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For ALL cases, the following respiratory supports can be used for transfer of a patient:

Intubated attached to closed system (Resuscitator Bag, Mask, viral HME filter + flusso valve with inline suction and ETCO2 connector)

OR

O2 Low Flow Nasal Prongs with a procedure mask on top or O2 by face mask

OR

CPAP (Flow inflating Bag, Mask (fixed on face with straps), viral HME filter,) with plastic tent

What is acceptable for suspected/confirmed COVID patients who require resuscitative manoeuvres in ED

1. No O2 needed or O2 by nasal prongs or O2 by face mask- place a procedure mask on patient and family members when outside of room and parents to perform hand hygiene upon room exit
2. High Flow Nasal cannula– this is considered AGMP- can be maintained on this until transfer out of ED- upon transfer to decrease to low flow NP and place procedure mask on patient over NP
3. **When transfer occurs**
 - a. Disinfect bed (head/foot of bed and side rails) as well as any other equipment needed for transport with disinfectant wipe before leaving the room
 - b. Patient should have stretcher changed for clean stretcher if possible and to be covered with a clean bed sheet for transport if possible.
4. CPAP or High Flow O2 by Mask: Use **flow inflating Bag** with a full seal and viral HME filter- 2 handed technique OR with elastic bands as per RT.
 - a. Flow inflating bag must be used when patient is breathing spontaneously.
 - b. If patient has HHFNC() or CPAP placed in a neutral pressure room, plastic tent should be placed covering patient and as much of bed/crib . If in negative pressure room plastic tent ONLY for transport
 - c. For transfer on CPAP, Plastic tent should be placed covering patient and as much of bed/crib as possible during transport
5. **When transfer occurs**- ideal to intubate or low flow NP for patient or O2 by face mask –can also use CPAP with plastic tent covering patient as per recommendations as above- can maintain seal as above with elastic bands (see picture below) on mask and a flow inflating bag, elastics are preferable to hand held technique to decrease chance of dislodging and getting a leak with mask.

NOTE: Elastic bands found in RT airway cart



HME filter VE mask holding Mask holding with elastic straps plastic tent

6. **If Patient is in respiratory arrest/ severe failure** in ED: Bag mask with 2-person 2 hand technique with a VE-grip to improve seal with resuscitation bag, viral HME filter recommended until other airway maneuvers available to the team and expedite intubation
7. **Intubated Patient** to be transferred by bagging using a flow inflating bag OR Self inflating bag attached to viral HME filter, with in line suction, ETCO2 and flusso valve



After ANY AGMP in a negative pressure room (RED ZONE RM 1), team and patient can leave safely immediately

After ANY AGMP in a neutral pressure room (RED ZONE RM 2), team can leave immediately as long as team plans an expeditious coordinated exit with a clear zone in hallway to decrease droplet spread, otherwise wait 35 minutes after last AGMP

After ANY AGMP in a neutral pressure room (RED ZONE RM 3-6), team can leave immediately as long as team plans an expeditious coordinated exit with a clear zone in hallway to decrease droplet spread, otherwise wait 70 minutes after last AGMP

In a room with 12 exchanges/minute (Red Rm 1-2) housekeeping can clean room with no N95 35 minutes after last AGMP

In a room with 6 exchanges/minute (Red Rm 3-6) housekeeping can clean room with no N95 70 minutes after last AGMP

What to try to Avoid:

- Avoid Bag-Mask ventilation if possible; **if needed**, using a flow inflating (can be used at any time and **MUST** be used for a patient who is breathing spontaneously) or self-inflating bag with low tidal volume using **2-person, 2-handed** mask ventilation with a "VE"-grip to improve seal or elastics to hold mask in place
- Please note if patient is in respiratory failure OR intubation is delayed with a paralysed patient OR if intubation requires several attempts: Bag-Mask ventilation is appropriate using **2-person, 2-handed** mask ventilation with a "VE"-grip to improve seal
- All Bag-ETT ventilation once intubated can be done using the flow-inflating bags or self inflating bags (dependant on comfort of team member) attached with an ETCO2 connector, viral filter, flusso valve and in-line suction
- **Avoid Aerosol-generating medical procedures (AGMP)**, such as ~~high-flow nasal oxygen, non-invasive ventilation (CPAP, BIPAP)~~, bronchoscopy and open tracheal suction

Preparation:

- **Limit staff in room** during tracheal intubation to: team leader, intubator (most experienced person), RT and nurse to administer drugs/monitor patient. Other team members to remain outside of room: gate keeper, runner, medication nurse, recorder, RT assistant, consultants, other MDs as needed. (NOTE: if a second person is required for IV assistance or patient monitoring a second nurse should enter room)
- **Wear full PPE (face shield, N95 mask, impermeable gown and gloves) at all times:** for those implicated directly in airway management single glove and if gloves become soiled doff gloves, wash hands and redon gloves OR consider double gloving. Defog goggles/eye wear if possible in advance of donning PPE.
- **Preoxygenation:** Nasal Prong using 100% oxygen for 3-5 minutes with patient *spontaneously breathing*.
- Add viral HME filter between mask and bag.

RT Preparation before entering room:

- Call RTIC 23816 ask which RT can come to be “clean” RT outside the room. (If nobody is available, see if you can ask whoever is around you, if someone can be assigned to get you anything else you may need)
- Refer to recommended list of items to bring into room found on top of the airway and crash cart.
- Place the items into the bag. These items will need to be discarded if they are removed from the bag to be used.
- Take the videolaryngoscope cable and blade size needed, and leave everything else outside the room.
- Have the appropriate size LMA ready outside of the room.
- Add HME with filter between mask and bag upon entering the room.

For RT: use the stand-alone CMAC of the unit, hand deliver the CMAC blade to MDR after use and request immediate cleaning. In the case where all the blades are used from both the stand alone CMAC and the CMAC blades of the difficult airway cart, then consider using the Glidescope from ED.

Gate Keeper:

Role can be allocated to Assistant Nurse Manager OR any medical personnel who has the capability

Role: Don/Doff coaching, Ensure upon entering label with name and role, ensure only Needed personnel enters

Outside staff:
Nurse runner, Nurse recorder
Nurses to calculate Medications
RT assistant, Clerk
PAB, MD consultants, **Gate keeper**

Inside staff:
RT, Team leader
Most Capable person to intubate (MD, RT)
Bedside nurse+/- 2nd nurse / (or PAB if nurse not available)

Prepare medications (for ANY age):
Ketamine 2mg/kg
OR
Propofol 2mg/kg (consider pre bolus of 10cc/kg NS if in shock)
+
Rocuronium 1 mg/kg (preferred Medication)
OR
Succinyl choline 2mg/kg (consider < 1year old)
+
Consider Atropine (children < 1yo)

Inside team should be wearing FULL PPE
Impermeable gown (Blue)
N95 mask
Face shield
(Long hair tied back)
Gloves
No visible skin should be exposed on arms/hands/face

Outside team should hand inside team all medications
CMAC should be brought into room
Intubation to occur with a cuffed tube

RSI:
DO NOT BAG WITH TRUE RSI
Meds to be given sequentially with NO flush between
Flush after all meds given
Wait 30-60 seconds for paralysis to occur

Videolaryngoscopy (CMAC) as first attempt if available
Stylet: for all patients
Continuous waveform capnography before, during and after tracheal intubation.
Use cuffed ETT for all patients, inflate the tracheal tube cuff to seal the airway using MLT, attach the filter line microstream ETCO2 connector and HME viral with filter, flusso valve and in line suction to the bag before starting ventilation.
Have the appropriate size LMA ready **outside** of the room.

Plan B: If airway difficulty occurs the subsequent plan should be communicated If anticipate the need to use

Please note with Regards to BVM:

- Avoid BVM if possible; **if needed** then use low tidal volume using **2-person, 2-handed** mask ventilation with a "VE"-grip to improve seal and **flow inflating bag** or self-inflating bag with viral filter
- Please note if patient is in respiratory failure or intubation is delayed with a paralysed patient or if intubation requires several attempts, BVM is appropriate using **2-person, 2-handed** mask ventilation with a "VE"-grip to improve using self-inflating or flow inflating bag mask with viral HME filter

Prepare sedation medication for transport
Ensure sedation for intubated patients

1. **Morphine 20 micrograms/kg/hour**
2. **Midazolam 1 microgram/kg/min**
3. **Rocuronium 1mg/kg bolus and**
4. **Prepare a second 1mg/kg Rocuronium for transport**

Checklist for Code Indigo

Personnel	Site/PPE	Action
Pre triage nurse	Yellow gown, gloves, procedure mask with visor	☐ Patient identified as severe upper airway obstruction ☐ Call Category 1 to RED ROOM If patient critically ill, pre triage nurse to doff procedure mask with visor and don N95 with face shield if possible ☐ Remain with patient until 1 st HCW fully donned ☐ Can place patient on monitors and NP O2 ☐ Pre triage nurse to leave room when donned personnel arrives ☐ Pre-triage nurse to doff PPE prior to exiting room (more than 2 meters away from patient; except if wearing N95 should be doffed outside room)
Primary Nurse (inside room) Team Leader (inside room) RT (inside room)	All team members to Don: impermeable Gown, gloves, N95 masks, face shield, label with name and role	☐ Enter room, place monitors ☐ Identify situation and likely management plan ☐ Bring in likely necessary equipment based on size of patient
RT (outside room)		☐ To bring down difficult airway cart ☐ Hand equipment to airway team as needed
Anesthesia (outside room) OTL (outside room)	Depending on case- with discussion between inside and outside teams: - Surgical case: OTL to don and enter - Non surgical case: anesthesia to don and enter - If Anesthesia tech is first to arrive- can don or not depending on RT needs NOTE- OTL and Anesthesia teams for Code Indigo must don as Level 3 OR surgical don if they will enter the room	☐ If surgical case if NOT donned, OTL to call OR for arrangements ☐ If surgical case and IS donned, OTL to doff arrange OR and meet team and patient in OR ☐ If Anesthesia needs to go to OR, to arrange with anesthesia tech to call OR
Airway Team (Anesthesia/OTL) + ED team leader (TL)	Depending on case	☐ ED Team Lead to hand off airway management plan to OTL and Anesthesia ☐ Medications to ALWAYS go through team leader (ensure patient safety) ☐ If medications are not typical to ED use, anesthesia may supply own WITH acknowledgement of TL to complete effective communication

Special Considerations- For RT Consideration

Possible Extubation Techniques PICU:

- **Limit staff present:** max 2 people at bedside.
- Consider extubation while patient is spontaneously breathing yet in deep sedation (to reduce coughing)
- Consider use of adjunctive medications (Lidocaine 1mg/kg intravenous prior to extubation, prophylactic use of anti-emetics, dexmedetomidine 0.5-1mcg/kg load to prevent delirium and agitation)
- Switch from ETT to LMA before waking and then remove LMA when awake

Patient with Tracheostomy (Special Considerations)

- Exchange tracheostomy tube to cuffed version (limit risk of contamination)
- Apply filters to hospital ventilators as described above (limit risk of contamination)

**** In the event where HFNC, CPAP or BiPAP cannot be avoided:**

These should be started in negative pressure rooms,

Bag/mask CPAP or ventilation:

ADD HME with filter between mask and self-inflating resuscitator or flow inflating bag.

Must be 2 persons for bagging to assure mask has no leak, 1 person bags and 1 person uses 2 hand technique to hold mask to face.

- WIPE down the mask and place it in a bag once patient is intubated.

CPAP NICU:

BCPAP (with filter RT020 on expiratory line before bubbler) 15-22, filter, 15-15, white connector with Tygon goes into CPAP level tube. Change it q12 hours.

Set ups with filters done and placed in NICU storage room

Consider adding a chin strap to reduce aerosols from mouth.



CPAP PICU

Full or complete face masks only. Add blue swivel (if not possible, tape all leaks), and add the Disposable Exhalation Port (DEP) with filter. Change filter every 12 hours (or more often if PEEP starts increasing).

Try to avoid aerosols from getting out into the air when removing mask by stopping the CPAP/BiPAP flow just before removing mask. Be sure you are ready to remove mask immediately after stopping flow!

If no full face masks fits patient, do not change to nasal mask,



Speak to physician as this increases risk of aerosols escaping through mouth.

Patients from home on CPAP/BiPAP/Tracheostomy tubes once in ED

Use our equipment and masks only. Ask the parents to return their equipment home (unless we have used all our equipment, then change the circuit only, and wipe down ventilator)

Place on full face mask and DEP with filter (see picture above)

For tracheostomy tubes, change to cuffed tracheostomy tube and change their whisper valve to DEP with filter (see picture above)

Follow COVID transfer from ED checklist (if need CPAP/BiPAP then change to mask with elastic and viral HME filter, and flow inflating bag)

Hi-Flow FNC:

Use Airvo2 as first line, then RT330 circuit with junior2 prongs.

Avoid using the old prongs as they accumulate water more easily (those we usually set up in NICU).

Transporting intubated patients internally:

THE TRAUMA ELEVATOR WILL BE USED FOR TRANSPORT OF ALL SUSPECT OR CONFIRMED COVID CASES

so do not use this elevator unless transporting a suspect or confirmed COVID case

Bag patient with Flusso valve, HME filter, EtCO2 connector and in-line suction in place for transport to CT scan or PICU. Keep patient on transport ventilator from CT scan to PICU.

There is a transport ventilator in CT scan. There will be 2 bags with appropriate size flowsensor and circuit where the UBEC is.

The transport ventilator in the ED is to be used for NON-COVID suspected cases.

Do not bring transport bag, and just take what you need in case of accidental extubation in the bag you brought inside the room.

Avoid all disconnections as much as possible (having the Flusso valve helps).

Cleaning

Follow current cleaning procedures for ventilators and equipment. Keep in mind that every surface that was in the room must be wiped down. Once inside the room, and a second time when doffed dirty gloves and re-wiped with clean gloves.

Proper removal of the plastic requires grabbing the point where the elastic is holding the plastic to the pole, and slowly turning the plastic within itself assuring the contaminated part on the inside rolls within itself. Slowly continue rolling until completely removed from patient, then discard plastic.

EXCEPTIONAL CIRCUMSTANCES

In the event that there are no longer Flusso Valves available for you- ETT to be clamped at any point when tube is disconnected from a closed circuit.