

COVID PEDIATRIC CONSIDERATIONS April 3rd, 2020 by Sarah Reid

- Decreased pediatric ED volumes nationally and internationally – $\geq 50\%$ decrease
 - Decreased low acuity visits, fear/anxiety, less viral burden (no daycare/school, physical distancing, better handwashing, seasonal decrease in RSV/Flu), less trauma
- Pediatric disease severity low
 - Possible reasons: lack of ACE2 receptor, decreased immune response leading to cytokine storm/ARDS
 - Some case reports of deaths more recently, also hearing about some PICU admissions of teens with ARDS in UK/US – stay tuned
 - No reports of increased disease burden in children at risk (chronic lung disease, immunocompromised, neurodevelopmental issues)
- No evidence or reports that COVID-19 causes bronchiolitis, croup or asthma exacerbations
 - Overall approach is to maintain standard of care while minimizing nebulized treatments
- **Bronchiolitis**
 - Supportive care as usual
 - Minimize the use of Epi nebs as the clinical effect is transient and does not impact the course of the disease
 - Nasal suctioning is not considered an Aerosol Generating Medical Procedure (AGMP)
 - Home if sats are $\geq 90\%$ and distress is mild and feeding is going well, otherwise admit
 - Admitted children are tested for respiratory viruses and COVID
- **Croup**
 - Dex for mild symptoms
 - Dex and observation for moderate symptoms (2-4 hours until Dex kicks in)
 - Dex and Epi neb for severe (stridor- often biphasic, indrawing, agitation)
 - Need airborne precautions if giving Epi neb (AGMP)
 - No evidence for Epi IM, and probably would not work as well as vasoconstriction achieved by delivering Epi directly to airway via neb
 - Better to use the usual treatment with Epi nebs repeated as needed and up your PPE to airborne precautions (in a negative pressure room if possible)
 - Peds EDs in Canada exploring use of Epi MDI (not studied, special release)
 - Update (post taping) from Health Canada is that it is considered a “natural product” and thus will not be made available

- **Asthma**
 - MDIs should be used for most asthma patients - mild, moderate and severe - as we know that MDIs work just as well as nebs
 - If the patient needs supplemental O2 – can use O2 via NP + MDIs
 - If you need to increase resp support, can consider giving nebulized Ventolin and Atrovent with airborne precautions
 - NB: usually use NIV for asthma if necessary – intubation very rare
 - No data on COVID and severe asthma despite having reached out to our national networks

- **Ventilatory support**
 - Most children needing ventilatory support at this time will likely not require it for COVID but rather for some other reason - standard respiratory illnesses, sepsis, trauma (since COVID does not appear to cause severe disease in most kids)
 - Still need to assume child is COVID + and use airborne precautions
 - Recommendation of early intubation not straightforward in children so there are currently no guidelines for kids like there are for adults
 - Balance of protecting staff by avoiding AGMPs such as CPAP vs not causing patient harm by inappropriate intubation of a child with bronchiolitis or asthma
 - HFNC is considered more safe than CPAP (with respect to aerosolization) and is a reasonable first choice
 - If CPAP offered, it should be done by non-vented facemask with a tight seal
 - Hepa filter attached to exhalation port for transport of the patient within the hospital to minimize airborne spread
 - Airborne precautions must be maintained for both invasive and non-invasive ventilation
 - Children that are intubated often require suctioning and bagging and it is difficult to maintain a closed circuit

- **Our experience with resuscitation**
 - Performed in negative pressure re-purposed as a resuscitation room
 - Resuscitation equipment is kept in anteroom with IV and airway equipment available in separate bags for each weight range
 - Nurse in full PPE in anteroom passes in additional equipment and medications
 - Using speaker phone (and white board) to communicate between isolation room and anteroom
 - Nurse designated as Safety Officer to ensure everyone in correct PPE/crowd control
 - Intubation by most experienced operator; Anesthesia has taken on this role
 - Minimize PPV by oxygenating with non-rebreather mask rather than bagging, if possible
 - Rapid sequence intubation with paralysis
 - Everyone in full airborne PPE

- Clean team in full PPE comes to transport patient to PICU

- **Other issues:**
 - Remember to screen parents for symptoms and contacts too
 - Data from Wuhan suggests that 30% of peds COVID cases have GI symptoms, so need to remember this diagnosis in the setting of diarrhea and vomiting (more recent studies seem to suggest GI symptoms in about 10%)
 - CPS has published a statement on use of NSAIDs in COVID and have endorsed the use of both ibuprofen and acetaminophen for fever in these patients
 - There is a bit of a debate about need for throat exam – many practitioners have decided to forego if it is unlikely to provide much further info and potentially increases risk of exposure
 - Early study of 9 neonates from Wuhan suggested no vertical transmission to babies born to COVID+ moms, but a more recent study published in JAMA Peds looked at 33 neonates born to COVID+ moms and 3 had symptomatic infection, no deaths

References:

<https://dontforgetthebubbles.com/evidence-summary-paediatric-covid-19-literature/>

https://trekk.ca/system/assets/assets/attachments/467/original/2020-04-01_COVID_Quick_Facts_v_1.1.pdf?1585776103

<https://www.cps.ca/en/documents/position/can-nsaids-be-used-in-children-when-covid-19-is-suspected>

Chen H, Guo J, Wang C, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: A retrospective review of medical records. *Lancet* 2020;319(10226):809-15.

Zeng L, Xia S, Yuan W et al. Neonatal Early-Onset Infection With SARS-CoV-2 in 33 Neonates Born to Mothers With COVID-19 in Wuhan, China. *JAMA Pediatr*. Published online March 26, 2020. doi:10.1001/jamapediatrics.2020.0878