

APRIL 7, 2020

Pediatric COVID-19 (novel coronavirus)

What we know so far:

COVID-19 is a novel coronavirus that causes infection across the age span. Clinical symptoms in children appear to be milder than adults and most children recover within 1-2 weeks. Early reports have shown an asymptomatic carriage rate of 5-15% in children. Fever is common in children with COVID but it is not present for all cases and is often low grade and transient. Cough, sore throat, stuffy nose, rhinorrhea and fatigue are also common. Pediatric patients with COVID-19 have also presented with gastrointestinal symptoms including abdominal discomfort, nausea, vomiting, and diarrhea.

Bloodwork is unlikely to be helpful in making the diagnosis. One report suggests that children may have a high D-Dimer and low lymphocyte levels. In the early stages, chest imaging may show an interstitial pattern (similar to common viral infections like RSV and influenza) and as the disease progresses there may be patchy shadowing and multiple ground-glass opacities. Lung consolidation is uncommon in the initial phase, but secondary bacterial pneumonia can occur and should be considered with worsening or prolonged symptoms.

The mean time of exposure to illness presentation (incubation period) is 6 days but can range from 1 to 14 days. Positive viral cultures are common from oropharyngeal, nasopharyngeal and sputum swabs during the first week of the illness. No viral isolate has been grown beyond day 8 of illness despite ongoing viral RNA shedding from the oropharynx, sputum and stool for much longer periods.

Children with pre-existing conditions who have COVID-19 infection may be at risk of intensive care unit admission.

Treatment:

There are no completed trials on the safety and efficacy of antivirals and immunomodulatory agents in patients with COVID-19. Lopinavir/ritonavir (Kaletra) and hydroxychloroquine (Plaquenil) are being investigated in clinical trials (canada-covid.idtrials.com) for the treatment of COVID-19, but should not be used outside a trial setting.

Some patients in the original cohorts in China were empirically treated with antibiotics but the rate of secondary bacterial infection appears to be low. Empiric antibiotics are not recommended unless there is clear evidence of a secondary bacterial process.

There is no evidence to suggest that ibuprofen worsens COVID-19 illness despite initial press coverage of anecdotal data. Recommendations from Health Canada and the Canadian Pediatric Society suggest that ibuprofen and acetaminophen can be used to treat discomfort in children more than 6 months of age with COVID-19.

Supportive management of complications including oxygen, intravenous hydration, high flow oxygen, non-invasive ventilator support and tracheal intubation may be required.

Quick Facts

- » In a series of 2143 pediatric patients from China:
 - ~4% were asymptomatic
 - 51% had mild illness
 - 39% had moderate illness.
 - 5% had severe illness needing admission
 - less than 1% had critical illness (needing PICU support)
 - Only 1/3 of patients in this study had a confirmatory test for COVID.
- » Adult patients present with severe/critical illness in 18.5% of cases.
- » Critical illness in children is rare:
 - 1.8% of infants
 - 0.3% of children 1-18yrs
- » There are case reports of pediatric deaths but this is extremely uncommon.
- » Clinicians need to be vigilant in using PPE and assessing children as mild symptoms could easily be overlooked by their caregivers and overlap with other common respiratory illnesses.
- » **Screening** guidelines change frequently in response to local transmission patterns. Check with your local Public Health Unit algorithm for the most up to date recommendations.

Treatment (cont'd):

Transmission of this respiratory virus occurs via the droplet and contact routes. Patients must be cared for under droplet/contact precautions using a mask with eye protection, gown and gloves. Any aerosol generating medical procedure (AGMP) risks generation of small droplet nuclei and requires the use of an N95 respirator mask in addition to eye protection, gown and gloves. AGMP should be completed in an airborne infection isolation room (AIIR, otherwise known as negative pressure room). If an AIIR is not available, a room with a closed door with limited entry is required.

AGMPs should be minimized. Delivery of nebulized medications via simple face mask (salbutamol, epinephrine) should be minimized. Every effort should be made to deliver these medications via MDI instead (not an AGMP). Other AGMPs that may be performed in the ED and would require airborne precautions include:

- » High Flow Nasal Cannula (Optiflow or Airvo)
- » Positive pressure ventilation with inadequate seal
- » Tracheal intubation and extubation
- » Tracheal suction without a closed system
- » Cardiopulmonary resuscitation (before tracheal intubation)

Tricks for staying clean

- » Practice makes perfect for donning and doffing Personal Protective Equipment (PPE) correctly. It is a good idea to have a buddy who can observe your technique and provide tips and reminders along the way. Ensure there are posters with step-by-step instructions to follow in your care area.
- » Always clean hands first. Do not put on clean PPE without clean hands or you will risk contaminating the PPE even before it is used.
- » Slow down and ensure you are paying full attention and focusing on each step. This is crucial when removing contaminated PPE as you do not want to self-contaminate.
- » Always clean hands following removal of gloves and before touching/removing any PPE on or near your face. The final step is to clean your hands again!

Criteria for contacting Pediatric Referral Centre

Consider early referral to your Pediatric Referral Centre for patients with:

- » Underlying cardiac or pulmonary diseases, neuromuscular disease or immunocompromised status
- » Rapid progression of symptoms
- » Severe respiratory distress
- » Altered level of consciousness

Discharge Resource for Families:



Aim camera at QR code or:

- English: <https://youtu.be/CcnT2q4locU>
- French: <https://youtu.be/CE-d4xxolxl>

The purpose of this document is to provide healthcare professionals with key facts and recommendations for caring for children with COVID-19 in the ED. This document uses the best available knowledge at the time of publication. However, healthcare professionals should continue to use their own judgement and take into consideration context, resources and other relevant factors. The TREKK Network is not liable for any damages, claims, liabilities, costs or obligations arising from the use of this document, including loss or damages arising from any claims made by a third party. The TREKK Network also assumes no responsibility or liability for changes made to this document without its consent.

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