Evaluation and Risk Stratification of Children with Suspected SARS-CoV-2 Infection (COVID-19)

Urgent Care Centers across the nation frequently encounter patients 18 years of age and under who present for acute illness complaints. Currently, there are no national guidelines for evaluation and risk stratification of children with suspected SARS-CoV-2 infection. In collaboration with pediatrician leaders within the Urgent Care Association and College of Urgent Care Medicine (CUCM), the College is providing this document for information on managing those patients.

This document does not specifically cover the Multisystem Inflammatory Syndrome in Children (MIS-C), a rare but serious and potentially lethal complication of SARS-CoV-2 in children. Information on this condition can be found at the Centers for Disease Control (CDC) at: https://www.cdc.gov/mis-c/index.html

Burden of COVID-19 Among Children: according to the CDC pediatric cases of a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have been reported in children under the age of 19 years of age but relatively fewer when compared to the adult or elderly adult cohort.

- In the United States only 2% of confirmed cases of COVID-19 were among persons less than 18 years of age
- In Italy only 1.2% of cases were in children
- In China approximately 2% of cases were in children
- In Spain, 0.8% of cases were in children

Incubation Period: while data in children is limited, it is thought that the incubation period in children is similar to that in adults, which can extend to 14 days. Studies from China reported a range of 2-10 days among pediatric patients.

Clinical Presentation in Children: while illness in pediatric patients appears to be uncommon and mild, most cases will present with symptoms of an upper respiratory infection with:

- Fever
- Cough
- Rhinorrhea
- Sore throat
- Nasal congestion
- Other less common but possible signs and symptoms include diarrhea, nausea or vomiting, fatigue, headache, myalgia, shortness of breath, poor feeding or poor appetite
Outcomes in Pediatric Patients: relatively few pediatric patients with COVID-19 require hospitalization and much fewer patients than adults present with shortness of breath, cough and even with fever. While severe outcomes have been reported in children, and there have been reported COVID-19 associated deaths, complications or hospitalizations were most common in children under 1 year of age or those with underlying chronic medical conditions.

Clinical Course and Complications in Children: the largest published study of pediatric patients in China (which included over 2,000 children with COVID-19) described a range of clinical courses that ranged from asymptomatic to critical. Children who present with moderate, severe or critical illness may require transfer to an emergency room or direct admission to a hospital or intensive care unit. Levels of illness severity:

- **Asymptomatic** (no clinical signs or symptoms with a normal chest x-ray): 4%
- **Mild** (mild symptoms which included cough, fever, fatigue, myalgia): 51%
- **Moderate** (moderate symptoms of lower respiratory illness or pneumonia or a subclinical disease with an abnormal chest x-ray): 39%
- **Severe** (severe symptoms with hypoxia, central cyanosis, or dyspnea): 5%
- **Critical** (acute respiratory distress syndrome (ARDS), shock, respiratory failure, or multi-organ dysfunction): 0.6%

Testing, Laboratory Findings and Radiographic Findings:

- Testing strategies for children are the same as for adults, whether criteria for considering testing or recommended specimen type
- No laboratory findings have been identified that are specific for COVID-19. Unlike the adult population, leukocyte abnormalities have not been seen consistently in children
- There are no radiographic findings that are specific for COVID-19:
  - Children with COVID-19 may have a patchy infiltrative pattern on chest x-ray consistent with a viral pneumonia
  - CT scan findings typically showing nodular ground glass opacities. These finding are not specific for COVID-19.
  - The American College of Radiology recommends against CT scanning as a first line test for COVID-19 or for COVID-19 screening
- Some children with COVID-19 with lower respiratory infection symptoms (pneumonia) may have no radiographic abnormalities

Treatment and Prevention: according to the CDC, “currently there are no specific drugs approved by the U.S. Food and Drug Administration (FDA) for the treatment or prevention of COVID-19. Treatment remains largely supportive and includes prevention and management of complications.”¹
Special Considerations:

- Respiratory Viral Signs and Differences in Children
  - Masks are recommended for all children over the age of 2. However, using masks in children under 2 years of age increase the risk of the mask being a choking hazard.
  - Pulse oximetry readings of 92% or greater are considered normal in a child. However, accurate pulse oximetry readings require the sensor being on a warm extremity that is elevated above the heart.
  - Respiratory rates in children are different based on the age of the child (AHA/PALS):
    - Infant 0-3 months: 35-55 per minute
    - Infant 3-6 months: 30-45 per minute
    - Infant 6-12 months: 22-38 per minute
    - Toddler 1-3 years: 22-30 per minute
    - Preschooler 3-6 years: 20-24 per minute
    - School Age 6-12 years: 16-22 per minute
    - Adolescent 13-18 years: 12-20 per minute

- For patients who may benefit from bronchodilators yet don’t require inpatient hospitalization, use of metered dose inhalers (MDIs) WITH A SPACER are preferred over nebulizers for bronchodilator treatments due to the inherent risk of aerosolizing COVID-19 and increasing the risk to bystanders and family members.
  - If the patient has their own MDI and spacer at home, it is ideal to ask them to bring their medication to the visit.
  - If nebulized breathing treatments are administered, they are best administered in a negative flow treatment room. As with all procedures that may involve aerosolizing the virus, appropriate PPE is recommended.

- With social isolation and social distancing, there is a potential risk for an increase in cases of child abuse and neglect. As mandated reporters of suspect child abuse, it is vital that healthcare providers caring for children always be vigilant for children presenting with non-accidental trauma injuries. For more information, see the AAP website: [https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/resilience/Pages/Child-Abuse-and-Neglect.aspx](https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/resilience/Pages/Child-Abuse-and-Neglect.aspx)

- Management of neonates with a COVID-19 positive mother as well as a neonate with possible COVID-19 infection are complicated and changing. The best resource is the CDC for their latest recommendations on testing, timing of testing, separation of mother and baby and breastfeeding as well as other issues. For more information, see: [https://www.cdc.gov/coronavirus/2019-ncov/hcp/caring-for-newborns.html](https://www.cdc.gov/coronavirus/2019-ncov/hcp/caring-for-newborns.html)