

**Risk Factors for Severe COVID-19 in children: Retrospective cohort study**

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**Background & Objectives:**

- Clinical characteristics of COVID-19 in children & overall milder illness has been described in literature
- But children can present with a wide spectrum- asymptomatic to severe illness, organ dysfunction & hyperinflammatory syndromes
- **The study evaluated risk factors for severe disease in children with COVID-19**

**Methods:** Retrospective chart review of SARS-CoV-2 positive patients < 21 years of age in a tertiary referral hospital network in Colorado. ( March 19- July 2020). Total 454 positive patients were analyzed. Odds of severe outcomes, defined as 1. Hospital admission, 2. Need for critical care 3. Need for respiratory support were analyzed. Asymptomatic patients were excluded. Simple logistic regression was used for admission, critical care & respiratory support whereas multivariable logistic regression was used for demographic, comorbidity & symptoms predictors of outcomes.

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## Risk Factors for Severe COVID-19 in children: When to be cautious

**Results:**

- No sex/race/ethnicity associated with need for admission
- Infants & young adults more likely to require admission
- Any comorbid condition increased odds of admission ( OR 2.73, P=0.0003)
- Preexisting pulmonary, GI, endocrine, neurologic, psychiatric, immunocompromised conditions, preterm birth- increased risk of admission
- Specific disorders-asthma, OSA, Obesity, diabetes-significant association with risk of admission
- Respiratory support & critical care- young infants, obesity, asthma
- High CRP- increased odds of requirement of critical care
- Multivariable analysis- risk of admission- Age 0-3 months or >20 years, immunocompromised state, GI disease, history of preterm birth, asthma & diabetes
- GI disease( most had stomas) & asthma- associated with requirement of respiratory support
- Fever, shortness of breath & vomiting at presentation- significantly associated with admission & respiratory support.

**Conclusions:** Extremes of age, comorbid conditions & elevated CRP were predictors of severe disease in this large cohort of children. Study findings can inform pediatric providers & public health officials to tailor clinical management, pandemic planning, and resource allocation.

**Key message:** Age, comorbidities & elevated CRP are risk factors for severe COVID-19 in children. Counselling of families with comorbid children should include increased risk of severe illness.

### EXPERT COMMENT

"This large retrospective chart review of children with COVID-19 elucidated specific risk factors for severe illness. Children with comorbidities require vigilance for deterioration although management remains as per the severity classification. Such children may require admission even in mild illness with perceived risk of inadequate homecare."

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With warm regards,

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GEN. 2021 - 22**Reference**

Graff K, Smith C, Silveira L, Jung S, Curran-Hays S, Jarjour J et al. Risk Factors for Severe COVID-19 in Children. Pediatric Infectious Disease Journal. 2021;40(4):e137-e145.