Factors Associated With COVID-19 Disease Severity in U.S. Children and Adolescents

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Little is known about the clinical factors associated with COVID-19 disease severity in children and adolescents. We conducted a retrospective cohort study across 45 US children's hospitals between April 2020 to September 2020 of pediatric patients discharged with a primary diagnosis of COVID-19. We assessed factors associated with hospitalization and factors associated with clinical severity (eg, admission to inpatient floor, admission to intensive care unit [ICU], admission to ICU with mechanical ventilation, shock, death) among those hospitalized. Among 19,976 COVID-19 encounters, 15,913 (79.7%) patients were discharged from the emergency department (ED) and 4063 (20.3%) were hospitalized. The clinical severity distribution among those hospitalized was moderate (3222, 79.3%), severe (431, 11.3%), and very severe (380, 9.4%). Factors associated with hospitalization vs discharge from the ED included private payor insurance (adjusted odds ratio [aOR],1.16; 95% CI, 1.1-1.3), obesity/type 2 diabetes mellitus (type 2 DM) (aOR, 10.4; 95% CI, 8.9-13.3), asthma (aOR, 1.4; 95% CI, 1.3-1.6), cardiovascular disease, (aOR, 5.0; 95% CI, 4.3- 5.8), immunocompromised condition (aOR, 5.9; 95% CI, 5.0-6.7), pulmonary disease (aOR, 5.3; 95% CI, 3.4-8.2), and neurologic disease (aOR, 3.2; 95% CI, 2.7-5.8). Among children and adolescents hospitalized with COVID-19, greater disease severity was associated with Black or other non-White race; age greater than 4 years; and obesity/type 2 DM, cardiovascular, neuromuscular, and pulmonary conditions. Among children and adolescents presenting to US children's hospital EDs with COVID-19, 20% were hospitalized; of these, 21% received care in the ICU. Older children and adolescents had a lower risk for hospitalization but more severe illness when hospitalized. There were differences in disease severity by race and ethnicity and the presence of selected comorbidities. These factors should be taken into consideration when prioritizing mitigation and vaccination strategies.

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