VIEWPOINT

Coronavirus Disease 2019 and Children
What Pediatric Health Care Clinicians Need to Know

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Introduction

The emergence of a coronavirus illness not previously seen in humans, now called coronavirus disease 2019 (COVID-19), has captured the attention of the US and the world. The virus was first identified in Wuhan, China, after an outbreak of pneumonia of unknown cause was identified in December 2019, with most early cases reporting exposure to a live animal market. On December 31, 2019, China reported the outbreak to the World Health Organization, and shortly thereafter, the responsible pathogen was identified as a novel coronavirus, which is called SARS-CoV-2 because of its sequence similarity to the virus causing severe acute respiratory syndrome (SARS). The situation of COVID-19 is evolving rapidly with increasing numbers of cases and involved countries. On January 30, 2020, the World Health Organization declared the novel coronavirus outbreak a public health emergency of international concern, and on March 11, 2020, the outbreak was declared a pandemic. As of March 25, 2020, more than 425 000 cases have been confirmed globally in 170 countries and regions, including more than 55 000 cases in the United States.[1]

Background

Coronaviruses cause a wide range of illness, ranging from the common cold to severe, fatal illness. Three coronaviruses causing severe illness in humans have emerged in the past 20 years: the virus causing SARS, which emerged in China in 2002; the virus causing Middle East respiratory syndrome (MERS), which emerged in the Arabian peninsula in 2012; and the virus causing COVID-19.[2] Common manifestations of COVID-19 in adults include fever, cough, myalgia, shortness of breath, headache, and diarrhea. Based on data from more than 72 000 patients from China, most (81%) were mildly affected, 14% had severe manifestations (eg, with dyspnea or blood oxygen saturation ≤93%), and 5% were critically ill (eg, with respiratory failure or septic shock).[3] Risk factors for severe illness were older age and underlying illnesses. The case fatality rate in China was 2.3%,[3] although this number might be an overestimate because mild or asymptomatic cases might have been missed. Transmission of COVID-19 is thought to be primarily through respiratory droplets formed when a person with an infection coughs or sneezes, which can be inhaled by contacts within close range (within 6 ft), who then become infected. Other types of transmission (eg, transmission from fomites, fecal-oral transmission) might be possible. The median incubation period is 5 days (range, 2-14 days). At this time, care of patients with severe illness is supportive, since US Food and Drug Administration–approved therapeutics are not available. Although vaccine development is ongoing, it is expected that a vaccine will not be ready for wide distribution for at least a year.[4]

What Is Known About COVID-19 in Children?

Children are typically more susceptible to influenza complications, yet so far, they have experienced lower-than-expected rates of COVID-19 disease, and deaths in children appear to be rare. In more than 72 000 total cases from China, 1.2% were in patients aged 10 to 19 years, and even fewer (0.9%) were in patients younger than 10 years.[3] Only 1 death in this study was in the adolescent age range, and no children in the age range of 0 to 10 years died. In a separate analysis of 2143 confirmed and suspected pediatric cases from China, infants were at the highest risk of severe disease (10.6%), compared with older children (4.1% for those aged 11 to 15 years; 3.0% in those 16 years and older).[5]

Among children who become ill, manifestations of COVID-19 appear to be similar to those in adults. Among 28 pediatric patients reported by Shen and Yang,[6] age ranged from 1 month to 16 years. Several patients were asymptomatic at diagnosis and identified as part of contact investigations. Several patients had fever, fatigue, dry cough, and other respiratory symptoms; gastrointestinal manifestations were infrequent.

Transmission is likely the same as that seen in adults. Thus far, no convincing evidence of intrauterine transmission has been identified, but only a small number of pregnancies have been described.[2] Whether COVID-19 can be transmitted through breastfeeding is unknown, to our knowledge. Among 6 mothers whose breastmilk samples were tested for SARS-CoV-2, all specimens were negative.[2]

Despite the low frequency of illness and death from COVID-19 in children in China, there are reasons to remain vigilant about infection in children. The lower-than-expected rates of children affected by COVID-19 in China might be because of decreased exposure to the virus, decreased infection with the virus because of immunity to other coronaviruses, or decreased likelihood of illness, even when infected with the virus. If children are infected but asymptomatic, they could serve as a source of transmission to adults. At least 1 child with no symptoms but with a high SARS-CoV-2 viral load has been reported,[7] suggesting that transmission from children who are asymptomatic is possible.

How US children experience COVID-19 remains to be detailed, although no intensive care unit admissions or deaths were reported among persons younger than 19 years among 4226 patients with COVID-19 in the US through March 16, 2020.[8] In a small study from China, 7 of 20 pediatric patients who were ill with COVID-19 had

a prior history of a congenital or acquired disease,[9] leading the authors to suggest the children with underlying illness might be more susceptible. About 10% of children in the US have asthma; many children live with other pulmonary, cardiac, neuromuscular, or genetic diseases that affect their ability to handle respiratory disease, and other children are immunosuppressed because of illness or its treatment. It is possible that these children will experience COVID-19 differently than counterparts of the same ages who are healthy.

Considerations for Pediatric Health Care Clinicians

Pediatric health care clinicians can help to prepare their offices, facilities, and communities for increased COVID-19 disease. Special accommodations should be made to isolate children who are potentially ill with COVID-19 from those who are well in the waiting room, especially focusing on minimizing exposures for those with special health care needs. In communities with widespread transmission, limiting healthy children from visiting the health care system for nonurgent reasons (eg, nonurgent surgeries) might be warranted, while continuing to see newborns and infants for preventive care and younger children who need vaccines. This action will necessitate robust telephone triage and expansion of existing telehealth visits. Differentiating potential COVID-19 illness from other illnesses, such as influenza, will be difficult until testing for COVID-19 becomes more broadly available. In communities with widespread transmission, community mitigation interventions, such as school closures, cancellation of mass gatherings, and closure of public places are appropriate.[10] If these measures are required, pediatricians need to advocate to alleviate unintended consequences or inadvertent expansion of health disparities on children, such as by finding ways to maintain nutrition for those who depend on school lunches and provide online mental health services for stress management for families whose routines might be severely interrupted for an extended period of time.

Conclusions

In conclusion, COVID-19 is an emerging illness that is rapidly spreading through the US and the world. Early data suggest that the effects on children are less severe than those on adults, yet many questions remain, especially regarding the effects on children with special health care needs. Surveillance of COVID-19 in the pediatric population, including seroprevalence studies, is needed to better understand its influence on US children. Clinicians need to work with school and community leaders to implement interventions that slow disease spread and prevent severe illness and death, while ensuring that unintended consequences of these interventions on children are minimized.

ARTICLE INFORMATION

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