# Coronavirus looks different in kids than in adults [1]

Largest study to date suggests infants may be vulnerable to critical illness after all -- and that children may play a 'major role' in spread of pathogen

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EXCERPTS

In the nightmare of the coronavirus pandemic that is unfolding around the world, parents have been able to take comfort in one thing — early reports that the virus mysteriously spares children even as it often causes critical illness in the elderly.

A paper released this week in the journal Pediatrics, based on 2,143 young people in China, provides the most extensive evidence on the spread of the virus in children, and there is bad news and good news.

The study provides confirmation that coronavirus infections are in fact generally less severe in kids, with more than 90 percent having mild to moderate disease or even being asymptomatic. But it contains worrisome information about one subset — infants — and suggests that children may be a critical factor in the disease's rapid spread.

The first thing to know is that children are getting infected across all age groups and genders. Among the patients studied, half were from Hubei Province, the epicenter of the outbreak, while the others were from bordering areas. They ranged in age from newborns to 18 with the median age being 7 years.

So what does coronavirus look like in children?

According to the analysis by Shanghai Children's Medical Center researchers Yuanyuan Dong, Xi Mo and co-authors, mild cases (52 percent) were marked by the typical symptoms of a cold — fever, fatigue, cough, sore throat, runny nose and sneezing. Some patients had no fever and only digestive symptoms such as nausea, vomiting, abdominal pain and diarrhea.

Those with moderate infection (39 percent) had pneumonia with frequent fever and cough, mostly dry cough, followed by a wetter cough. Some had wheezing but no obvious shortness of breath.

Severe cases were rare (5 percent) as were those who required critical care (0.4 percent.) The severe cases began with early respiratory symptoms which were sometimes accompanied by gastrointestinal issues. Around one week the children have more difficulty breathing. Those cases sometimes quickly progressed to critical illness with acute respiratory distress or failure which in turn sometimes led to other organ dysfunction — heart failure or kidney injury.

One boy, a 14-year-old, died on Feb. 7. No further details on the patient were revealed in the study.

Of special interest to pediatricians is a group of seven infants and two preschoolers in the age 1 to 5 range who progressed to critical condition (69 percent of all critically ill), as well as the 33 infants and 34 in the 1 to 5 years range who had severe illness (60 percent of all severely ill). The study suggests, the authors wrote, that "young children, particularly infants, were vulnerable."

The luckiest group — 4 percent — did not have any symptoms at all even as nasal or throat swabs showed they were positive for coronavirus infection.

"Why most of the children's COVID-19 cases were less severe than adults' case is puzzling," Dong and Mo wrote. "This may be related to both exposure and host factors."

The researchers wrote that children may have been more isolated at home after the outbreak began, and therefore had fewer opportunities to be exposed to the pathogens. They also suggested that there was something in the children's biology — a cell receptor that binds to the virus — that might be less sensitive. Another theory is that children often experience colds and other respiratory

infections in winter so they may have come into the season with higher levels of antibodies, which are protective, than adults.

The Pediatrics editors wrote they were releasing the paper early, within days of it having been peer reviewed but before official publication, due to the topic's importance. In a commentary accompanying the study, associate editors Andrea Cruz and Steve Zeichner, both physicians, say the study suggests "children may play a major role in community-based viral transmission."

The data suggests they may have more symptoms that make them contagious, like runny nose, and that they may have more gastrointestinal symptoms which raises concerns for the virus being in the feces for several weeks after infection.

"Prolonged shedding in nasal secretions and stool has substantial implications for community spread in day-care centers, schools, and in the home," Cruz, a pediatrician from the Baylor College of Medicine, and Zeichner, an immunologist from the University of Virginia, wrote.

Adam Ratner, a doctor in pediatric infectious diseases at NYU Langone Health, said the outbreak in China represents only a small percentage of those who will eventually become infected and when the group gets larger "we'll see more serious cases on the fringes."

He said the clear takeaway from the study is that coronavirus "is still something that has the ability to cause severe disease across the age spectrum." He said his hospital and his colleagues' around the United States were "taking the idea of covid-19 in children very seriously."

"We're learning more and more about this disease every day for better or for worse," he said. "It's still very early days."
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