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We urgently need guidelines for managing COVID-19 in children with comorbidities

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None

ABBREVIATIONS

COVID-19, coronavirus disease 19; SARS-CoV-2, severe acute respiratory syndrome coronavirus

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Dear Editor,

I read with great interest the systematic review by Ludvigsson on the coronavirus disease 2019 (COVID-19) (1). The author needs to be complimented for a well-timed, rigorous and rapid synthesis of the evidence from the rather scant data available on how the virus affects children. The review, which focused on all papers published up to 19 March, drew important conclusions that have significant practical implications for those involved in providing acute care for children suffering from this disease. Some of the noteworthy conclusions from the review included the observation that, in the early data, which was mainly from China, children only accounted for 1-5% of cases. The low rate of progression to severe or critical conditions requiring intensive care was noted. The author also reported that the overall mortality rate was low, at about 0.18% compared to 4.3% in adults (1, 2). The author also suggested possible explanations for the differences in the disease profiles of children and adults. For example he stated that repeated exposure to viral infections improved the children's response to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes COVID-19. He also suggested that children could get relative protection because they had less mature angiotensin-converting enzyme 2, which the SARS-CoV-2 protein appears to bind for pathogenic effects (3).

While most of the conclusions drawn from this review are reassuring, there is also some cause for concern. An increased risk of critical disease and mortality has been observed in infants and young children, which could be partly related to their less efficient immune response to infection. In one of the largest studies of 2143 children with COVID-19, the proportion of severe and critical cases was 10.6%, 7.3%, 4.2%, 4.1% and 3.0% for the age groups of <1, 1-5, 6-10, 11-15 and >15 years, respectively. This suggested that young children, particularly infants, were more likely to progress to severe disease than older ones (4). In another study of 25 hospitalised children with COVID-19, 40% of the children were less than three years of age and had more critical forms of the illness than older children (5).

Furthermore, most of the deaths and critical disease reported in children have occurred in those with underlying comorbidities, in common with the high case fatality rates noted in adults with associated comorbidities. In another study, three of the 171 children with COVID-19 required intensive care support and invasive mechanical ventilation. All three had pre-existing conditions, such as hydronephrosis, leukaemia and intussusception (6). In another report on the characteristics of eight children with severe COVID-19, two of the three children who remained critically ill, and continued to require intensive care at the time of reporting, had pre-existing comorbidities. These included acute lymphoblastic leukaemia and lacrimal sac dredge. The other five did not have any comorbidities and recovered from their severe illness (7). Thus, while the spectrum of underlying conditions may differ, the vulnerability to succumb to COVID-19 appears similar in high-risk paediatric and adult patient populations.

Several co-morbid conditions in adults, such as cardiovascular disease, diabetes, chronic pulmonary disease, hypertension and cancers, have been seen to increase the case fatality rates during the pandemic. We expect this infection to increase in children as the pandemic continues to spread and special management of children with pre-existing chronic conditions will be necessary in order to minimise their risk of progression to critical disease or death. These conditions include diabetes, adrenal insufficiency, chronic renal failure, chronic pulmonary disorders, cancers, immune deficiencies and chronic neurological disorders. For example, some inpatients with COVID-19 and pre-existing diabetes are at risk of developing diabetic ketoacidosis due to rapid changes in their condition and they need individualised and specific management strategies (8).

Quite understandably, guidelines for high-risk adult populations with COVID-19 have rapidly emerged in the literature (9), but similar guidelines are unavailable for children, probably due to

lack of adequate and specific data. There is an urgent need for a task force to be set up, led by paediatric infectious disease specialists and intensivists, with members from other paediatric subspecialties. Their role would be to develop and quickly disseminate guidelines on managing children with COVID-19, with a particular emphasis on high-risk paediatric populations. Such guidelines would benefit those involved in the care of these children. The task force could take their cue from colleagues working in adult medicine, who have been able to produce and disseminate authentic COVID-19 information at a rate of around 10 papers per day since November 2019. The speed of that response has only been exceeded by the virus itself.

As the pandemic continues to spread, all those working in paediatrics can only hope that a greater emphasis is put on researching how this devastating disease affects children. That knowledge can then be used provide the guidelines that we so urgently need to be able to provide the best care we can for our vulnerable patients.

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- Accepted Article
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