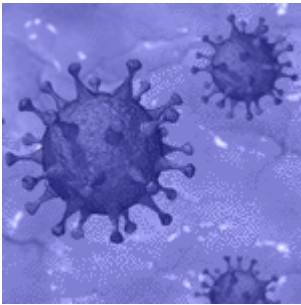


# Why is COVID-19 so mild in children?



The reasons for mild COVID-19 disease in children remain elusive, and multiple hypotheses exist. Brodin recently suggested that one explanation for the milder COVID-19 disease presentation in children may be that children have a qualitatively different response to the SARS-CoV2 virus to adults (1).

Another possibility is the common simultaneous presence of additional viruses in the mucosa of lungs and airways of young children, which could limit the growth of SARS-CoV2 by direct virus-to-virus interactions and competition (2). This theory is supported by emerging data from the current pandemic, which has indicated a link between the number of viral copies and COVID-19 severity (3). This could also explain some of the tragic deaths of healthcare workers, who have likely been exposed to large amounts of the SARS-Cov2 virus.

Another possible theory for the mild COVID-19 presentation in children is related to differences in the expression levels of the angiotensin-converting enzyme (ACE)-2 receptor, which is necessary for SARS-Cov2 binding and infection (4). This is an example of the fact that the immune systems of children and adults are different, both with respect to their composition and functional responsiveness (5).

The COVID-19 disease is characterised by three phases: the viral phase, the pulmonary phase, and finally, the

hyperinflammatory phase, which can lead to severe acute respiratory distress syndrome (ARDS), impaired cardiac function and death. Interestingly, children are not less prone to developing ARDS during respiratory tract infections than adults (6). In fact, during the H1N1 flu pandemic in 2009, being under the age of one year was a significant risk factor for developing a severe form of ARDS (7). Therefore, the reasons for the mild presentation seen in most children with COVID-19 is not clear at the moment.

To note, although children tend to have mild forms of COVID-19, protective measures should be taken to prevent them from becoming infected. This is important for mitigating the pandemic, as not only can children transmit viruses even when presenting mild forms of the disease, but they have been shown to harbour large amounts of the virus even without showing symptoms (8). It is important to remember that viruses can persist in faeces long after they are gone in nasopharyngeal secretions.

Understanding the milder COVID-19 disease in children will provide important information about the disease. It may also suggest important protective mechanisms and targets for future therapies.

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