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## Children are protected against SARS-CoV-2 infection

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in Wuhan, China in December 2019. Its subsequent spread was mainly by sustained human-to-human transmission [1] and resulted in the WHO declaring the disease a pandemic [2].

The COVID-19 statistics for children and infants are quite limited. As infants and young children infected with respiratory tract viruses are particularly at risk of hospitalization [3] the paucity of pediatric patients with COVID-19 has raised many questions for clinicians, epidemiologists and scientists. The study previously published by *Lancet Infectious Disease* has important implications for the clinical management of these patients and the social distancing needed to prevent virus transmission [4].

All 811 consecutive patients admitted to the emergency area of the Toulouse University Hospital (CHU) from February 6 to April 2 2020 were enrolled in this study. Each of them underwent a PCR test on nasopharyngeal swab sample to determine the presence or absence of SARS-CoV-2. The cohort included 150 (18.5 %) patients aged 16 years or under, which is close to the percentage in the French general population (18 %, source INSEE). Four children (2.7 %) tested positive for the virus while the 661 adults included 178 (26.9 %) who tested positive. As SARS-CoV-2 has been detected in stools [5], stool specimens from 6 children with respiratory symptoms were also tested: they were all negative for SARS-CoV-2 RNA. Thus SARS-CoV-2 was less common in children than in adults (OR = 0.07, 95 % CI: [0.03;0.20],  $p < 0.01$ ) indicating that children are somehow protected against SARS-CoV-2 infection. The abovementioned study has found that children are susceptible to SARS-CoV-2 infection, but rarely display any physical signs of the disease. This raises the possibility that children are facilitators of virus transmission [4]. We did not find that infected patients had mild or asymptomatic forms of COVID-19 more often than adults but that children were less frequently infected with the virus. It is not at all clear why children should be less susceptible to SARS-CoV-2 infection. However, children are different from adults in many ways. Perhaps the binding of the SARS-CoV-2 spike (S) glycoprotein to the human host cell angiotensin converting enzyme 2 (ACE2) receptor is different, or the interferon-antagonizing and inflammasome-activating properties may differ.

The most important finding emerging from this analysis is the clear evidence that children are less susceptible to SARS-CoV-2 infection than adults. If the difference is confirmed by serological studies, it could have major implications for public health policy. While children have been regarded as facilitators of virus transmission, we now need to identify the mechanism which protects them, at least partially, against SARS-CoV-2 infection.

## Declaration of Competing Interest

None.

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