



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



COVID-19 and the anaesthetist: a Special Series

There is light at the end of the tunnel, but we are still in the tunnel: universal preoperative SARS-CoV-2 testing and precautions remain vital in paediatrics

Adam C. Adler^{1,*} and Elaina E. Lin²

¹Department of Anesthesiology, Perioperative and Pain Medicine, Texas Children's Hospital, Houston, TX, USA and

²Department of Anesthesiology and Critical Care Medicine, The Children's Hospital of Philadelphia, Philadelphia, PA, USA

*Corresponding author. E-mail: adam.adler@bcm.edu



This editorial accompanies: Mandatory preoperative SARS-CoV-2 infection screening policies for paediatric surgery by Colas et al., *Br J Anaesth* 2021;126:e182–e184, doi: [10.1016/j.bja.2021.01.007](https://doi.org/10.1016/j.bja.2021.01.007)

Keywords: COVID-19; paediatrics; preoperative testing; SARS-CoV-2; testing

Since the start of the global coronavirus disease 2019 (COVID-19) pandemic in December 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has infected over 93 million people worldwide, with more than 1.9 million deaths.¹ In the midst of an unprecedented case surge, there appears to be a glimpse of hope in the battle against SARS-CoV-2 as millions of people around the world start receiving vaccinations. Yet, as vaccinations roll out, healthcare providers will be forced to make difficult decisions over the coming months, specifically with regard to continuation of routine preoperative testing and the use of personal protective equipment (PPE), particularly for asymptomatic paediatric patients.

In this issue of the *British Journal of Anaesthesia*, Colas and colleagues² report on their cohort of paediatric surgical patients screened using a reverse transcriptase–polymerase chain reaction (RT–PCR) assay to detect SARS-CoV-2 at the Robert Debré Hospital in Paris, France. Preoperative universal screening of all surgical patients provides a unique opportunity to examine patients that are otherwise asymptomatic. Specifically, it allows determination of asymptomatic carriers of SARS-CoV-2. In their cohort of 2148 paediatric patients tested before surgery, 29 (1.4%) tested positive for SARS-CoV-2, of which 20 (69%) were asymptomatic.²

Recently, Adler and colleagues³ reported on a similar cohort of 19 061 paediatric patients having preoperative SARS-CoV-2 screening by RT–PCR assays at three US paediatric hospitals (Children's Hospital of Philadelphia, Texas

DOI of original article: [10.1016/j.bja.2021.01.007](https://doi.org/10.1016/j.bja.2021.01.007).

Children's Hospital, and Seattle Children's Hospital) between March and July of 2020. The multi-institutional SARS-CoV-2 positivity rate was 161/19 061 (0.85%) with the majority being asymptomatic 123/161 (75.9%).³ Taken together, the combined positivity rate amongst patients screened for SARS-CoV-2, as reported by Colas and colleagues² and Adler and colleagues,³ is 191/21 209 (0.9%) with 143/191 (74.9%) being asymptomatic.

These findings, across the two continents, underscore the finding that the majority of children with COVID-19 are asymptomatic. Furthermore, Colas and colleagues² observed that SARS-CoV-2 positivity rates in their paediatric cohort do not necessarily parallel regional adult positivity rates. The week of highest paediatric positivity rate noted in their cohort was at a time of low adult positivity rate.

Phase 3 testing of the BNT162b2 vaccine (Pfizer, Pearl River, NY, USA) and mRNA01273 vaccine (Moderna, Cambridge, MA, USA) reports an extremely promising 95% and 94.1% efficacy, respectively, in protection from developing symptomatic COVID-19.^{4,5} Although medical providers are amongst the first to receive the SARS-CoV-2 vaccine, it remains to be established whether vaccinated persons can have asymptomatic infection and are able to transmit disease. The SARS-CoV-2 vaccines have not been approved for administration in children. Although paediatric safety and efficacy studies are underway for these vaccines, it is unlikely that data will be available for several months. Furthermore, the virus is mutating, and there is early concern that new circulating variants with changes in their spike proteins, such as strain 501Y.V2, may be resistant to the current vaccines.⁶

Although children are largely spared from severe illness caused by SARS-CoV-2, they remain a source of asymptomatic carriers and may transmit the virus. As an example, the institutions where the authors of this editorial work have a combined annual anaesthetic case volume exceeding 80 000 cases. At current positivity rates, this represents an exposure to approximately 720 SARS-CoV-2-positive patients, of which 549 would be asymptomatic. Universal preoperative SARS-CoV-2 screening, performed within 72 h of a procedure, can be resource intensive, onerous for families, and

uncomfortable for the patient. However, until the majority of the population is vaccinated and circulating levels of virus in the community are minimal, universal preoperative testing, and use of PPE remain important, particularly for aerosol-generating procedures.

Authors' contributions

Both authors contributed to writing of this manuscript

Declarations of interest

The authors declare that they have no conflicts of interest.

References

1. Johns Hopkins University & Medicine. 2021. Available from: <https://coronavirus.jhu.edu> (accessed 14 January 2021).
2. Colas A-E, Azale M, Ayanmanesh F, et al. Mandatory preoperative SARS-CoV-2 infection screening policies for paediatric surgery. *Br J Anaesth* 2021; **126**: e182–4
3. Adler AC, Shah AS, Blumberg TJ, et al. Symptomatology and racial disparities among children undergoing universal preoperative COVID-19 screening at three US children's hospitals: early pandemic through resurgence. *Paediatr Anaesth Adv Access Published November 2020*; **13**. <https://doi.org/10.1111/pan.14074>
4. Polack FP, Thomas SJ, Kitchin N, et al. Safety and efficacy of the BNT162b2 mRNA Covid-19 vaccine. *N Engl J Med* 2020; **383**: 2603–15
5. Baden LR, El Sahly HM, Essink B, et al. Efficacy and safety of the mRNA-1273 SARS-CoV-2 vaccine. *N Engl J Med* 2021; **384**: 403–16
6. Greanery AJ, Loes AN, Crawford KHD, et al. Comprehensive mapping of mutations to the SARS-CoV-2 receptor-binding domain that affect recognition by polyclonal human serum antibodies 2021. Available from: <https://doi.org/10.1101/2020.12.31.425021> (accessed 9 January 2021).