

Viewpoint of the European Pediatric Societies over Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Vaccination in Children Younger Than Age 12 Years Amid Return to School and the Surging Virus Variants

Pettoello-Mantovani, Massimo; Carrasco-Sanz, Angel; Huss, Gottfried; Meštrović, Julije; Vural, Mehmet; Pop, Tudor Lucian; Ferrara, Pietro; Somekh, Eli; Mujkić, Aida; Hoey, Hilary; ...

Source / Izvornik: **The Journal of Pediatrics, 2021, 239, 250 - 251.e2**

Journal article, Published version

Rad u časopisu, Objavljena verzija rada (izdavačev PDF)

<https://doi.org/10.1016/j.jpeds.2021.09.013>

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:105:850684>

Rights / Prava: [In copyright](#)/[Zaštićeno autorskim pravom.](#)

Download date / Datum preuzimanja: **2024-11-12**



Repository / Repozitorij:

[Dr Med - University of Zagreb School of Medicine](#)
[Digital Repository](#)





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.

Viewpoint of the European Pediatric Societies over Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Vaccination in Children Younger Than Age 12 Years Amid Return to School and the Surging Virus Variants

Massimo Pettoello-Mantovani, MD, PhD¹, Angel Carrasco-Sanz, MD^{1,2}, Gottfried Huss, MD², Julije Mestrovic, MD^{1,3,4}, Mehmet Vural, MD^{1,5}, Tudor Lucian Pop, MD^{1,3,6}, Pietro Ferrara, MD^{1,7}, Eli Somekh, MD^{1,8}, Aida Mujkic, MD^{1,3,4}, Hilary Hoey, MD^{1,9}, and Leyla Namazova-Baranova, MD, PhD^{1,10}

Since its first appearance in the Wuhan region of China in December 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has caused a worldwide public health and socioeconomic crisis.¹ According to the World Health Organization Coronavirus (COVID-19) dashboard, as of September 2021, there have been more than 217 million confirmed cases and 4.5 million deaths reported.² Mass vaccination campaigns against SARS-CoV-2 are ongoing worldwide. Currently, 5.38 billion doses have been administered globally, 39.9% of the world population has received at least 1 dose of a COVID-19 vaccine, and approximately 40 million are administered each day. However, only 1.8% of people in low-income countries have received at least 1 dose,³ and there will likely be increasing high demand for the limited supplies of vaccine against SARS-CoV-2 in many areas, raising important ethical issues and socioeconomic debates on how vaccine distribution should be prioritized.

Children are returning to class after long pandemic closures. As a new school year begins, local governments in low- and high-income countries are struggling over teacher vaccinations and mask mandates amid the surge of virus variants.⁴ With the fast spread of the more contagious delta variant and SARS-CoV-2 vaccines not available for much of the global school-aged population, children's health risks have become a pressing public health issue. A global debate is underway on whether SARS-CoV-2 vaccination should be made available in children younger than age 12 years and be made mandatory for those attending schools.

This commentary, authored by the working group on social pediatrics of the European Paediatric Association/Union of National European Paediatric Societies and Associations (EPA-UNEPSA), presents the viewpoint of EPA-UNEPSA and its partner society European Confederation of Primary

Care Paediatricians (ECPCP), on SARS-CoV-2 vaccination in children younger than age 12 years. The aim is to raise awareness of pediatricians, lawmakers, public health officers, and school educators on the importance of extending vaccination after a careful risk assessment is made. We emphasize that proper and safe vaccination procedures should be initiated after satisfactory clinical trials are completed and following formal approval by public authorities.⁵

Increased Cases of COVID-19 in Children following the Emergence of Virus Variants

These changes may affect the virus's properties, including ability of spreading, severity of associated diseases, and resistance to preventive and therapeutic measures.⁶ The emergence of SARS-CoV-2 variants rapidly spreading worldwide pose an increased risk to global public health. In Europe, the delta variant initially arose in the United Kingdom in April 2021⁶ and later became the dominant strain in the majority of the European countries. Currently, the classification developed by the World Health Organization to identify specific variants of interest and variants of concern helps to prioritize an effective global monitoring and research, to elaborate the development of public health guidance to prevent the spread of COVID-19, and ultimately to inform the ongoing response to the COVID-19 pandemic⁶ (Table; available at www.jpeds.com).

After the delta variant became the most dominant circulating strain, the number of children contracting COVID-19 has increased.⁷ After the infection initially declined among children in early Summer 2021, the US and European

AAP	American Academy of Pediatrics
COVID-19	Coronavirus disease 2019
ECPCP	European Confederation of Primary Care Paediatricians
EPA-UNEPSA	European Paediatric Association/Union of National European Paediatric Societies and Associations
SARS-CoV-2	Severe acute respiratory syndrome coronavirus 2

From the ¹European Paediatric Association/Union of National European Paediatric Societies and Associations (EPA/UNEPSA), Berlin, Germany; ²European Confederation of Primary Care Paediatricians, Lyon, France; ³Paediatric Association of the Balkans, Istanbul, Turkey; ⁴Croatian Society of Paediatrics, Zagreb, Croatia; ⁵Turkish Paediatric Association, Istanbul, Turkey; ⁶Romanian Society of Social Paediatrics, Cluj-Napoca, Romania; ⁷Italian Society of Paediatrics, Rome, Italy; ⁸Israel Paediatric Association, Tel Aviv, Israel; ⁹Faculty of Paediatrics, Royal College of Physicians of Ireland, Dublin, Ireland; and ¹⁰Russian Academy of Paediatrics, Moscow, Russia

The authors declare no conflicts of interest.

0022-3476/\$ - see front matter. © 2021 Elsevier Inc. All rights reserved.
<https://doi.org/10.1016/j.jpeds.2021.09.013>

countries showed an impressive 5-fold increase of cases in this population. As reported by the American Academy of Pediatrics (AAP), during a 4-week period between July and August 2021, COVID-19 cases in children increased from 38 000 to nearly 204 000 and numerous states reported an increase, although moderate, in child hospitalizations amid the ongoing delta surge.⁷ Similarly, a significant increase in COVID-19 cases is reported in Europe. In the United Kingdom, there has been a 5-fold greater rate of COVID-19 test positivity among children 5-12 years of age (0.35% prevalence) and adults ages 18-24 years (0.36% prevalence) than in those 65 years of age or older.⁸ Furthermore, of great concern is the increase of pediatric multisystem inflammatory syndrome in children associated with COVID-19, which showed an incidence of about 100 affected children per week.⁹ In Italy, the local National Institute of Health reports that after the emergence of the delta variant, the increase of COVID-19 cases involved the population 0-9 years old, whereas the older age groups showed a decline in cases.¹⁰ In Israel, emerging data indicate a sharp rise in SARS-CoV-2 infections during the first months of 2021 in the population 0-9 and 10-19 years, with more than 50 000 children and teens testing positive.¹¹

The Importance of Using COVID-19 Vaccine in Children Younger Than 12 Years after Rigorous Risk Assessment and Approval Procedures

The debate over the importance of COVID-19 vaccination in children younger than 12 years rapidly arose after the emergence of aggressive virus variants. In this population, the number of infections sharply grew in parallel with the number of severe cases, which led to the hospitalization of young children.⁹ In particular, the delta variant showed to be more contagious to children and from children than the older variants. SARS-CoV-2 may spread in schools, homes, and gatherings where kids typically can get infected most and although the virus has been less aggressive in children than adults, not all children have been immune to some severe health risks associated to the infection, including multisystem inflammatory syndrome in children.⁹

Two main approaches may be considered in vaccine prioritization: directly vaccinate people at greatest risk for severe outcomes and indirectly protect the weakest part of the population by vaccinating those who do the most transmitting.¹² The experience provided by the influenza vaccination programs, which suggest that children are vaccinated due to their critical role in transmission,^{13,14} shows that direct protection is superior when reproduction numbers are high, but indirect protection is greater when transmission is low.¹⁵

The rationale behind vaccinating children younger than 12 years would be not only to help the communities reach

herd immunity, minimize viral transmission, and reduce the risk of development of virus variants but also to protect this age group from the SARS-CoV-2 infection and disease. Vaccines undergo rigorous regulatory approval procedures to ensure their safety, efficacy, and quality.¹⁶ Clinical trials are currently underway for the COVID-19 vaccine in children younger than 12 years old and is strictly monitored in the US by the Food and Drug Administration and in Europe by the European Medicines Agency.^{17,18} Currently, trials of the COVID-19 mRNA vaccines in younger children are under way.¹⁹ The studies aim to assess safety and immune responses after 2 vaccinations with 3 different dose sizes.¹⁹ A trial of AstraZeneca's COVID-19 vaccine in children aged 6-17 years started in March 2021 in the United Kingdom. However, this trial was paused as a precautionary measure following reports of blood clots in adults who received this vaccine.¹⁹ A study compared rates of 25 adverse events between vaccinated and unvaccinated adult individuals.²⁰ Few adverse events were associated with the vaccine, including swelling of the lymph nodes, appendicitis, and herpes zoster. Myocarditis was associated with an excess of 2.7 cases per 100 000 vaccinated persons.²⁰

Several pediatric organizations urge for an early emergency approval of the vaccine in children younger than age 12 years and a possible administration of the vaccine off-label in this age group, who currently have no available vaccine. However, the EPA-UNEPSA, ECPCP, and their member pediatric societies join AAP in strongly discouraging such practice.

Conclusions

SARS-CoV-2 vaccines proved their effectiveness to prevent severe illness and hospitalization in adults and adolescents. EPA-UNEPSA, ECPCP, and their member European pediatric societies urge national authorities to work intently toward the authorization of safe SARS-CoV-2 vaccine programs. The vaccination in children younger than age 12 years will allow a large number of children to attend school, spend time with friends, travel with their families, and enjoy their communities safely.²¹⁻²³ European pediatric societies join AAP recommendations against giving the vaccine to children younger than 12 years before rigorous clinical trials are completed, adverse events carefully assessed, and not until vaccines are authorized and adequate dosage established by the respective national agencies. This ensures that vaccines are safe and effective for this age group. ■

Reprint requests: Massimo Pettoello-Mantovani, MD, PhD, Department of Pediatrics, University of Foggia, Foggia, Italy. E-mail: mppm@unifg.it

References available at www.jpeds.com

References

1. Hoey H, Mestrovic J, Vural M, Baranova LN, Somekh E, Pettoello-Mantovani M. Children facing natural, economic and public health crisis in Europe: the risks of a predictable unpredictability. *Turk Pediatr Ars* 2020;55(suppl 1):4-9.
2. World Health Organization. WHO Coronavirus (COVID-19) Dashboard. Accessed September 2, 2021. <https://covid19.who.int/>
3. Oxford Martin School, University of Oxford. Our World Data. Statistics and research: coronavirus (Covid-19) vaccinations. Accessed September 2, 2021. <https://ourworldindata.org/covid-vaccinations?>
4. Torjesen I. Covid-19: delta variant is now UK's most dominant strain and spreading through schools. *BMJ* 2021;373:n1445.
5. Pettoello-Mantovani M, Namazova-Baranova L, Ehrich J. Integrating and rationalizing public healthcare services as a source of cost containment in times of economic crises. *Ital J Pediatr* 2016;42:18.
6. World Health Organization. Tracking SARS-CoV-2 variants. Accessed September 2, 2021. <https://www.who.int/en/activities/tracking-SARS-CoV-2-variants/>
7. American Academy of Pediatrics. Children and COVID-19: State-Level Data Report. Accessed September 3, 2021. <https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/children-and-covid-19-state-level-data-report/>
8. Center for Infectious Disease Research and Policy. University of Minnesota. Youth, Delta variant behind UK COVID surge. Accessed September 3, 2021. <https://www.cidrap.umn.edu/news-perspective/2021/06/youth-delta-variant-behind-uk-covid-surge>
9. Rubens JH, Akindele NP, Tschudy MM, Sick-Samuels AC. Acute COVID-19 and multisystem inflammatory syndrome in children. *BMJ* 2021;372:n385.
10. Istituto Superiore di Sanità. COVID-19 integrated surveillance: key national data. Accessed September 3, 2021. <https://www.epicentro.iss.it/en/coronavirus/sars-cov-2-integrated-surveillance-data>
11. Day M. COVID-19: More young children are being infected in Israel and Italy. *emerging data suggest BMJ* 2021;372:n383.
12. Bubar KM, Reinholt K, Kissler SM, Lipsitch M, Cobey S, Grad YH, et al. Model-informed COVID-19 vaccine prioritization strategies by age and serostatus. *Science* 2021;371:916-21.
13. Weycker D, Edelsberg J, Halloran ME, Longini IM Jr, Nizam A, Ciuryla V, et al. Population-wide benefits of routine vaccination of children against influenza. *Vaccine* 2005;23:1284-93.
14. Medlock J, Galvani AP. Optimizing influenza vaccine distribution. *Science* 2009;325:1705-8.
15. Bansal S, Pourbohloul B, Meyers LA. A comparative analysis of influenza vaccination programs. *PLoS One* 2006;3:e387.
16. Seo Y, Pacifici E. Elements of regulatory dissonance: examining FDA and EMA product labeling of new vaccines (2006-2018). *Vaccine* 2020;38:7485-9.
17. American Academy of Pediatrics. American Academy of Pediatrics Cautions Against Off-Label Use of COVID-19 Vaccines in Children Under 12. Accessed September 3, 2021. <https://www.aap.org/en/news-room/news-releases/aap/2021/american-academy-of-pediatrics-cautions-against-off-label-use-of-covid-19-vaccines-in-children-under-12>
18. European Medicines Agency. Covid-19 vaccines. Accessed September 3, 2021. <https://www.ema.europa.eu/en/human-regulatory/overview/public-health-threats/coronavirus-disease-covid-19/treatments-vaccines/covid-19-vaccines>
19. Wood N. The Conversation. University of Sidney. Under-12s are increasingly catching COVID-19. How sick are they getting and when will we be able to vaccinate them?. Accessed September 3, 2021. <https://theconversation.com/under-12s-are-increasingly-catching-covid-19-how-sick-are-they-getting-and-when-will-we-be-able-to-vaccinate-them-165948>
20. Dagan N, Barda N, Kepten E, Miron O, Perchik S, Katz MA, et al. BNT162b2 mRNA covid-19 vaccine in a nationwide mass vaccination setting. *N Engl J Med* 2021;384:1412-23.
21. Pettoello-Mantovani M, Pop TL, Mestrovic J, Ferrara P, Giardino I, Carrasco-Sanz A, et al. Fostering resilience in children: the essential role of healthcare professionals and families. *J Pediatr* 2019;205:298-9.e1.
22. Ferrara P, Guadagno C, Sbordone A, Amato M, Spina G, Perrone G, et al. Child abuse and neglect and its psycho-physical and social consequences: a review of the literature. *Curr Pediatr Rev* 2016;12:301-10.
23. Ehrich J, Pettoello-Mantovani M, Lenton S, Damm L, Goldhagen J. Participation of children and young people in their health care: understanding the potential and limitations. *J Pediatr* 2015;167:783-4.

Table. SARS-CoV-2 VOC and VOI (September 2021)

WHO labels	Pango lineage*	GISAIID clade†	Nextstrain clade‡	Additional amino acid changes shown	Earliest documented samples	Date of designation
Currently designated VOC						
Alpha	B.1.1.7	GRY	20I (V1)	+S:484K//+S:452R	United Kingdom, 09/2020	18/12/2020
Beta	B.1.351	GH/501Y.V2	20H (V2)	+S:L18F	South Africa, 05/2020	12/18/2020
Gamma	P.1	GR/501Y.V3	20J (V3)	+S:681H	Brazil, 11/2020	11/01/2021
Delta	B.1.617.2	G/478K.V1	21A	+S:417N	India, 10/2020	VOI: 04/04/2021 VOC: 11/05/2021
Currently designated VOI						
Eta	B.1.525	G/484K.V3	21D	–	Multiple countries, 12/2020	3/17/2021
Iota	B.1.526	GH/253G.V1	21F	–	US, 11/2020	3/24/2021
Kappa	B.1.526	G/452R.V3	21B	–	India, 10/2020	4/4/2021
Lambda	B.1.526	GR/452Q.V1	21G	–	Peru, 12/2020	6/14/2021
Lambda	B.1.526	GH	21H	–	Colombia, 01/2021	8/30/2021

VOC, variants of concern; VOI, variants of interest; WHO, World Health Organization.

*Pango lineage: The Phylogenetic Assignment of Named Global Outbreak Lineages (PANGOLIN) is a software tool developed by members of the laboratory of Andrew Rambaut, with an associated web application developed by the Centre for Genomic Pathogen Surveillance in South.

†GISAIID clade: Global initiative on sharing avian influenza data (GISAIID) (<https://www.gisaid.org/about-us/mission/>).

‡Nextstrain clade: Nextstrain is an open-source project to harness the scientific and public health potential of pathogen genome data (<https://nextstrain.org/>).