VACCINEINSIGHTS

COMMENTARY

Why vaccinate children against COVID-19?

Lancet Commission on COVID-19 Vaccines and Therapeutics Task Force
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Any guidance on vaccine use prioritization, including booster dose policies, cannot ignore the current, ongoing profound inequities in global COVID-19 vaccine access and coverage. While higher-income countries expand their vaccination programs to children as young as 6 months old, and in some countries, multiple booster doses to a large proportion of their populations, many lower-income countries still struggle to get access and coverage of a primary vaccination series for their highest priority-use groups, including older adults and healthcare workers who comprise only a small proportion of their populations.According to the updated WHO Roadmap, averting severe disease and deaths and protecting health systems remain the primary objectives of vaccine use in the context of the global COVID-19 response [1]. The WHO Roadmap, however, also considers vaccine use for resuming socio-economic recovery, particularly the priority of maintaining uninterrupted education to keep children connected and learning. Here, we examine the rationale for vaccinating children based on consideration of those objectives, together with a potential surplus of currently available vaccines.

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The World Health Organization (WHO) Roadmap identifies priority-use groups to optimize the public health impact through recommendations that seek to ensure equitable distribution and urgent vaccine access to those most at-risk, no matter where they live.

To achieve the primary objectives of averting deaths by preventing severe disease and protecting health system impact by reducing hospital admissions and preventing intensive care from becoming overwhelmed, older persons and adults with comorbidities were allocated to the highest priority-use category. Children and adolescents with underlying health conditions that put them at higher risk of severe COVID-19 outcomes are in the medium priority-use groups. Healthy children were allocated to the lowest priority-use group based on their lower risk of COVID-19-related severe disease and death. Age-disaggregated cases reported to WHO from December 30, 2019, to July 4, 2022, showed that children less than 5 years of age represent 2% (6,607,392) of reported global cases and 0.1% (2,627) of reported global deaths; older children and younger adolescents (5–14 years) account for 11% (28,256,515) of cases and 0.1% (1,935) of deaths, while older adolescents and young adults (15–24 years) represent 14% (37,438,185) of cases and 0.4% (9,019) of deaths [2]. Patients less than 25 years represented less than 0.6% of reported global deaths.

The global burden of pediatric COVID-19 is not insignificant. According to United Nations Children's Fund (UNICEF), nearly 20,000 children (under age 20) have died from COVID-19 globally [3], and even this number is considered an underestimate. More than 1,000 pediatric deaths have occurred in the USA alone [4], such that COVID-19 outranks many other causes of vaccine-preventable deaths in the USA. But case counts and death rates are not the only outcomes relevant to the health and well-being of children. Despite a lower risk of severe disease, the COVID-19 pandemic and its control measures disproportionately affected children and adolescents. The most damaging and long-term effects relate to school closures, which disrupt the provision of educational (and in some cases health and nutritional) services and increase emotional distress and mental health problems [5]. Consistent and continuous school attendance is critical to the well-being and life prospects of children and parental participation in the economy.

Beyond educational setbacks, school closures and stay-at-home orders have been associated with increased domestic violence [5], including sexual assault, adolescent pregnancy, and child marriage. These traumas are further exacerbated by the increased probability of missing further education and of poor pregnancy outcomes. School closures also lead to loss of access to a wide range of school-provided services, including school meals, monitoring of health and welfare, social skills training, and services targeted to children with special needs. As schools moved online, impoverished children experienced dramatic educational setbacks [5], contributing to inequalities and long-term hardship.

While school closures during the peak of a pandemic may contribute to rapidly flattening the curve, greater overall health and well-being benefits come from keeping schools open by implementing comprehensive, multi-layered measures to prevent the introduction and spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in educational settings. That is why, very early on in the pandemic, WHO and UNICEF advised against school closures and developed guidance on how to minimize transmission in schools and keep schools open [5].

Vaccinating school-aged children has been recommended in some countries to help minimize school disruptions by reducing the number of infections at school and the number of children required to miss school because of quarantine requirements. Vaccinating children and adolescents has also been advocated to reduce intergenerational transmission, an important additional public health objective. Prior to the emergence of the Delta variant, the risk of symptomatic cases in household contacts of vaccinated cases was reported to be about 50% lower than that among household contacts of unvaccinated cases [6]. However, the impact of

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vaccination on reducing transmission in the context of the more transmissible Delta and Omicron variants appears to be significantly lower and less durable [7]. As such, the use of current COVID-19 vaccines to directly protect teachers, family members, and other adult contacts of children and adolescents is likely to have a greater impact on reducing severe COVID-19 and deaths in the contacts of children than vaccinating children to indirectly protect their contacts.

The emergence and spread of the Omicron variant showed that hospitalizations in younger children (all generally unvaccinated) became more frequent, reflecting increasingly widespread community transmission. Although children and adolescents can experience prolonged clinical symptoms (known as 'long-COVID', or post-acute sequelae of SARS-CoV-2 infection), the frequency and characteristics of these conditions remain under investigation. One large study from London found that approximately 14% of COVID-19-infected children suffer symptoms lasting more than 15 months [8]. Additionally, a hyperinflammatory syndrome, referred to as pediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 in Europe and multisystem inflammatory syndrome in children (MIS-C) in the USA, may not be as rare as previously believed [9], and has been reported to occur worldwide and complicate recovery from COVID-19 [10].

However, there is an evidence gap that must be acknowledged – the preponderance of evidence on the risk of severe COVID-19 and death in children and adolescents comes from studies in high-resource settings. One systematic review suggests that there may be a larger impact of pediatric COVID-19-related fatality in low- and middle-income countries (LMICs) versus high-income countries (HICs) [11]. Clearly, we need more research on the direct health and indirect societal impacts of COVID-19 in children and their families in LMICs.

Still another consideration is the increasing availability of COVID-19 vaccine doses and new vaccines released for children under emergency use authorization. Benefit–risk assessments for this age group must be conducted rigorously for each of the COVID-19 vaccines that have received emergency use authorization. As COVID-19 vaccines become more readily available globally and vaccine coverage rates among high-priority use groups increase, there is now a stronger rationale for vaccinating children. Along those lines, some LMICs have begun pediatric or adolescent COVID-19 immunization campaigns, in some cases, such as in India, using locally produced vaccines. With increasing seroprevalence rates reported globally, especially among children and adolescents, vaccine strategies need to be adapted. The number of vaccine doses, inter-dose interval, and need for booster may differ in settings with high seroprevalence [1].

Taking all the above into consideration, the decision to vaccinate healthy children and adolescents must account for prioritization to first fully protect higher priority-use groups (e.g., older adults, adults with comorbidities, health workers and essential workers) through primary vaccination series, and, as vaccine effectiveness declines with time, through booster doses [1]. Although benefit–risk assessments clearly underpin the benefit of vaccinating all age groups, including children and adolescents, the direct health benefit of vaccinating healthy children and adolescents is lower compared with vaccinating older adults due to the lower incidence of severe COVID-19 and deaths in younger persons. While at the patient level, decisions regarding vaccinating a child must take into account individual circumstances and values and local considerations, at a societal and global level, vaccinating children is a less urgent public health priority at a time when many higher priority-use groups have not yet achieved high levels of access and coverage.

Regardless of vaccination, countries' strategies related to COVID-19 control should facilitate children's participation in education and other aspects of social life, and minimize loss of in-person interactions [12].

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