Ethical and scientific complexity in debates about COVID vaccination in children

Decisions about COVID-19 immunisations for children must consider five interrelated issues. First, one must clarify the goals of immunisation. Is it to prevent infection, severe infection, hospitalisation or mortality for the immunised individual? Is it to protect others? A vaccine can be effective for some of these goals but not others. Studies of vaccine efficacy can choose any or all of those endpoints. A vaccine’s efficacy for each can vary for different patients or patient populations. For each, there is then a threshold question of how effective the vaccine ought to be in order to be recommended. Children exist within families. All these risks will have a direct impact on the child’s family. Because children depend on their family, their interests cannot be examined in isolation.

Second, there are issues of safety. Every vaccine can cause adverse events. Judgements about safety must balance the adverse events caused by the vaccine against the adverse events caused by the disease. For rare adverse events, there is uncertainty about the magnitude of risk. Furthermore, the risk of complications from the disease depends in part on the severity of the disease itself and in part on the likelihood of getting infected. The likelihood of getting infected varies as we get closer to herd immunity. When more people are immunised or have acquired natural immunity through infection, the risk of getting the disease is lower and the relative risk of immunisation compared to infection is higher. In the UK today, more than 85% of children have likely had prior infection with COVID-19. In that situation, the benefits of immunisation are lower than in a population without such natural immunity.

Third, we must decide how much to extrapolate from outcome studies in one age group to draw conclusions about other age groups. We differentiate by age in doing formal clinical trials but do so in a somewhat arbitrary way. The age categories that we choose – 12–18, 5–11, under 5 – have no biological basis. Even within each age category, we analyse differences by age to estimate the likely effect of each additional year.

Fourth, for a disease like COVID, we must consider the likely effect of new variants. COVID-19 mutates so quickly that the time the study results have been analysed and published the circulating variant is not necessarily the same as when studies were conducted. Rapid mutation of the virus, combined with waning immunity, may mean that short-term benefits of the vaccine are not sustained (or at least, that there is uncertainty about the duration of benefit).

Fifth, once a vaccine is determined by licensing authorities and professional societies to be safe and effective, we must decide whether it should be mandated, recommended or just made available for parents/young people to choose.

Given these five factors, it is not surprising that different people and different countries will come to different conclusions about the appropriate vaccine policy for children. In this issue of the journal, Abecasis argues against vaccination of otherwise healthy children against COVID-19. Others will likely disagree. Disagreement may be traced back to some of the specific issues noted above.

There are points of agreement. COVID-19 causes less serious disease in children than in adults. However, it is not risk free. Children with complex chronic conditions are more likely to get serious illness. Over 1200 children in the United States have died of COVID-19, though rates appear to be lower in other countries. The currently available vaccines decrease the likelihood of serious illness or hospitalisation in children over 12. Some children get multisystem inflammatory disease (MISC). In earlier waves of COVID-19, this affected only 0.1% of children who were infected, but 68% of those required intensive care but the severity and incidence of MISC appears to be significantly lower with the Omicron variant. We do not know how future variants will behave. Estimates of the prevalence of long COVID in children vary widely. The symptoms of long covid for children are also non-specific and some may be attributed to a prolonged lockdown.

Beyond those areas of agreement, however, there remain disagreements about how to balance the risks of the vaccines against the known benefits. Most scientists and paediatricians today agree that, for older children, the benefits of immunisation outweigh the risks. Nevertheless, professional organisations differ in their recommendations. While the American Academy of Paediatrics recommends COVID-19 vaccination for children 5 years and older, the UK national vaccination committee advised a ‘non-urgent offer’ of vaccination to otherwise healthy children aged 5–11. Finland and Norway have taken a similar approach. Sweden decided in early 2022 against recommending these vaccines for children under 12. The FDA has very recently decided to approve the COVID for children under 5, so policies will have to consider that population as well.

Parental attitudes mirror the differences in national policies. In the United States, where children have been eligible for COVID
vaccination since October 2021, 32% of US parents said that they would definitely not immunise their children while 12% would only do so if required for school. As of 9 June, most parents had consented to immunisation of their adolescent children, and 70% of US teens had received at least one dose of vaccine. But only 36% of 5–11 year-olds had received a dose.

Different views about COVID vaccine for children arise from different attitudes to possible harms and benefits. For example, some parents will wish to take all possible steps to reduce the risk of serious illness from COVID-19 for their child and/or their family. Other parents, perhaps particularly where the child has previously had COVID and recovered or in families in which nobody is at high risk for mortality or hospitalisation, will be more concerned to avoid possible risks associated with vaccination. Where communities have very high rates of vaccination among older, medically vulnerable groups, (as well as high rates of natural immunity) the additional benefit for reducing transmission by vaccinating children may be small or non-existent. But the opposite would potentially apply in communities where there are still large numbers of non-immune and vulnerable older adults. Differing parental attitudes could represent an opportunity to do an open-label, non-randomised prospective trial to refine estimates of vaccine efficacy.

The variable professional recommendations and public attitudes lead to the following conclusions about where we are and where we are going. Science can guide us in deciding whether COVID vaccine for children is safe enough and effective enough, even with the limitations stated in this article. But it cannot answer the question of how to decide what those ‘enoughs’ mean. Questions about thresholds for either recommending or mandating a vaccine for kids will inevitably be political decisions, hopefully based on science, local public health and values, rather than purely scientific ones. A reflexive and humble analysis, incorporating different viewpoints based on scientific data, is generally superior for these complex decisions to rigid inflexible protocols that fail to address values and differences in systems. Paediatricians should be able to discuss immunizations for children, providing parents with balanced information to make decisions for their child depending on their family structure and the child’s age and health. But at the present time, a vaccine mandate for children would not be proportionate. Moreover, it seems that there would be little community support for this even in communities where other childhood vaccines are mandatory (e.g. for school entry).

At this point, the most urgent issue is to make the COVID vaccine available for every adult and older child in the world and to educate parents, patients and clinicians so that they can make informed decisions. Finally, it is imperative that any remaining uncertainty that parents or professionals have about COVID vaccination does not affect the uptake of other proven effective, safe, and vital childhood vaccines.

CONFLICT OF INTEREST
None.

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