

# Do we need to Vaccinate Every Child Against COVID-19?

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## Abstract

The world has been through the worst pandemic of last 100 years and COVID-19 have been a health emergency of the most significant impact that has put the whole world under siege. But the silver lining during these gloomy times have been the fast development of COVID-19 vaccines. Within a short span, the scientific the community rose to the occasion and developed vaccines against this raising pandemic, but the biggest concern now is equitable distribution and judicious use of the vaccines. Children too have been affected with it but fortunately, they have a milder course of disease, and a vast majority of them recovered even after asymptomatic infection. The current debate is whether every child should be immunized against COVID-19? Given the current disease epidemiology, relatively benign course of infection in children, global vaccine shortage for the use of most vulnerable populations and the likelihood of multi system inflammatory syndrome, the moot question is whether vaccination of all children against COVID-19 is this the most appropriate strategy?

## Commentary

Nearly after two decades of this 21<sup>st</sup> century came a time, when every human activity was ranging from traveling internationally to even the children attending schools in their towns, came under siege. The tiniest creature on the planet had put a halt on this pacing world. The COVID-19 Pandemic has changed the world thereafter. The number of individuals suffering from the disease increased dramatically in number, burdening the existing healthcare infra-structure. The whole population is not immune to this novel. SARS-COV 2 virus posed a major challenge to limit the spread of disease.

After a century of 1918–1919 influenza pandemic, we have lessons of interventions, such as social distancing, hand hygiene, and quarantine. Public health interventions implemented during the coronavirus disease 2019 (COVID-19) pandemic are based on experience gained from past pandemics to reduce community transmission [1]. On the other hand, to combat this disease the classes of drugs like antiviral agents, inflammatory inhibitors, low molecular weight heparins, plasma, and hyperimmune immunoglobulin's were the cornerstone of treatment.

From the concept of immunization by Edward Jenner dating back in the 18<sup>th</sup> century, to the successful elimination of the crippling disease Polio from the globe barring three countries, vaccines have revolutionized the course and outcome of infectious diseases. The need for an effective broadly protective 'universal' influenza vaccines to prevent or at least mitigate the impact of future pandemics and to prevent deaths from seasonal influenza in the period is between pandemics, was recognized way back [2].

The need to rapidly develop a vaccine against SARS COV-2 came to light with the exploding numbers of cases worldwide. Vaccine development and manufacturing, a tedious, lengthy, and expensive process was going side by side with the rising number of cases. By January 2021, the world had a handful number of vaccines with available data of efficacy, safety, and adverse effects, based on clinical trials. From here, the course of pandemics took a new turn. The whole world was witnessing one of the largest vaccine drives. India also became its part on January 16, 2021. However, all the clinical trials were done on healthy adults.

Vaccination on a large scale is crucial to control the disease and later elimination of the virus. However, the logistics and economic investment in the production of vaccines is a challenge. Apart from this, the emergence of new variants and existing vaccines' effectiveness is also a ground for debate. Duration of the effective immune response target herd immunity, number of variants existing in the environment, increased incidence of other infections associated with SARS-COV 2 all these had made the future prediction of this pandemic uncertain.

Gradually, the clinical trials also included children as vaccine safety, immunogenicity and efficacy study participants. Pfizer-Biotech the vaccine has been approved by the U.S. Food and Drug Administration for use in children ages 12 years. Moderna and Bharat Biotech vaccines are currently under clinical trial. Again tracing back in the past, children and vaccines have been found in close relation. Where we have schedules for vaccination of children, which undergo modification with changing epidemiology of diseases, the introduction of vaccines against SARS-COV 2 was bound to happen. Greater acceptability to the vaccine among adults, pacing rate of vaccination in adults in various countries, populations bound by geo-graphical areas targeting to achieve herd immunity; accountability and rationale of the introduction of vaccines among children are yet to be explored.

The epidemiology of the disease is distinct in pediatric and adult age groups. Despite the high incidence of coronavirus respiratory infections in adults, the lower incidence (1%–5%) in children of COVID-19 cannot be fully explained [3]. More interesting has been the milder disease pattern and less severity. Similar findings from 1918 Influenza pandemic showed that children between the ages of 4 and 12 showed a substantially decreased mortality rate [4]. It should be emphasized that these children were not protected from infection, but for reasons as mysterious today as they were in 1918, they were able to cope with the disease much better than their adult counterparts [4]. Although this is a reflection of the schematic reporting by high-income countries. There is a knowledge gap between high and Low/Middle-Income Countries (LMICs), both because the pandemic has emerged later among LMICs and the resources to conduct the needed epidemiologic and clinical studies are more limited in such settings [5]. Data available from various studies do not represent a grave

situation among children, unlike adults. Adding to this, available evidence suggests transmission risk may be lower from younger children to other children and adults than from adolescent and adults to children or adults, but further evaluation is needed to determine whether children will play a more substantive role in the community spread once mitigation measures are eased [5]. Hence focusing on this small fraction to achieve a bigger goal of herd immunity and reduced transmission in the future, this target seems inappropriate.

On May 5, 2021, Canada became the first country in the world to approve the COVID-19 vaccine for emergency use in children aged 12 years–15 years. Children younger than 12 years are the next population being targeted to assess vaccine safety and efficacy. A clinical trial of an inactivated vaccine has shown good safety, tolerability and immunogenicity among children aged 3 years–17 years. Apart from the immunogenicity of vaccines, the safety of vaccines among children is of paramount importance [6]. A series of US cases of myocarditis following the Pfizer-Biotech COVID-19 mRNA vaccine in adolescent males was reported. All cases in this report occurred after the second vaccine dose [7]. Such adverse events need to be scrutinized well. Some speculate that MISC (Multisystem-Inflammatory Syndrome in Children) could occur in children receiving COVID-19 vaccines because of the hypothesis of aberrant immune-mediated pathogenesis of MISC associated with natural SARS-CoV-2 infection [8]. The safety profile of vaccines before administration on a large scale should be addressed. The role of post-marketing surveillance also comes into the picture for the identification of any remote adverse effect. In the zeal of early control of coronavirus disease, the benefit should be weighed with the long-term consequences faced by our future generations.

Since the onset of this pandemic, the pediatric age group remained relatively less affected, unlike other age groups and mortality remained lower than in other age groups. Community transmission as stated above, it is greater than the adult population. In the current world scenario, the availability of sufficient vaccines for vulnerable populations is still a challenge. Moreover, when projections suggest that universal availability of vaccine, which can cover the entire population on earth including disadvantaged groups in Low and Middle Income Countries (LMICs) will take at least two more years, it will be a waste of scarce resources if all children are to be vaccinated. In such circumstances use of vaccines in all the children, at present may not give prudent results, when we have a mass vaccination drive running along for individuals more than 18 years. While keeping the safety of the vaccine in children as a subject of concern. Children with risk factors were affected severely [3]. Prioritizing the use of vaccines in them could curtail severe cases. The future uncertainty of the course of this pandemic has been questioned the efficacy of the available vaccines, and this can lead to changes in vaccination policy in the near future for both adults and children.

### Conflict of Interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. Informed consent was obtained for this publication.

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