COVID-19 Booster Vaccine: is it an absolute need?

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ABSTRACT

Booster vaccine doses are meant to revive the fading immunity created by prior exposure to an immunizing antigen. They stabilize the antibody response ultimately leading to longer and higher protection against pathogens. Immunological studies done for COVID-19 vaccines have documented a steady decrease in antibody levels among vaccinated individuals and evidence of breakthrough infections over a course of time. With an emerging science behind the need for COVID-19 vaccine booster shots, there equally is a contrasting idea regarding its absolute necessity.

KEY WORDS

Antigen, Booster, COVID-19

INTRODUCTION

COVID-19 and its components is an emerging science. Newer things are being known about the disease, its prevention, and treatment every single day. As of 3rd June 2021, the World Health Organization completed its evaluation regarding the safety and efficacy of six vaccines against COVID-19.[1] The primary goal of these vaccines has been to prevent severe disease, hospitalization, and death. The vaccines have been found to work effectively in all these circumstances. However, due to the poor vaccine rollout and substantial vaccine inequity, the virus has been capable to mutate producing numerous variants of concern and vaccine resistance.[2]

Why does the immunity fade?

Recently, the growing evidence of a steady decline in antibody levels has raised concerns. All vaccine-induced short-lived plasmablasts do not necessarily differentiate into long-lived plasma cells responsible for memory and long-term effectiveness. This variability due to non-differentiation has resulted in a significant decline in spike protein antibodies over a course of time. It has been proposed that at 6 months after the second dose, the spike antibody levels were comparable to those after the first dose or the SARS-CoV-2 natural infection.[3] Since studies have demonstrated that the level of neutralizing antibody directly correlates with the immune-protection, which further adds up to the uncertainty of the SARS-CoV-2 immunity and possible need for booster vaccine.[4]

Is it necessary?

The idea behind the absolute necessity lies in individual response. It is a fact that immunocompromised individuals do not respond to the vaccine as effectively as immunocompetent people. Therefore it may be necessary to receive a third dose because the first two doses aren't doing what they do in otherwise normal, healthy people. The group necessarily includes those with solid organ or bone marrow transplants, cancer, or autoimmune disease that requires immunosuppressive medications. Evidence has suggested that the rate of confirmed infection and severe disease to be substantially lower among those who have received a booster (third) dose compared to the non-booster (two) dose group.[5] Another spectrum regarding the concern is whether boosters are necessary for those who

are fully vaccinated and immunocompetent. The reason a third dose might be needed is the declining or inadequate performance of the vaccines against some of the variants of concern that have emerged. Newer studies are yet to emerge regarding this context.

World for booster vaccine.

The USA, Israel, and now even the UK have decided to start giving booster vaccine shots, these are the countries who have been fortunate in providing enough primary vaccines to their adult population.[6] The number of countries that plan on giving booster shots is increasing. The increasing vaccines inequity evident early on in the pandemic and now expanding because of the increasing demand for booster vaccine among the high-income countries will further increase the gap between the numbers of vaccinated in the world. Prioritization of booster doses over speed and breadth in the initial dose coverage damages the prospects for global mitigation of the pandemic, with severe implications for the health, social and economic well-being of people. Offering booster doses to a large proportion of a population when many have not yet received even a first dose undermines the principle of national and global equity.

Booster dose in Nepal

Nepal initiated vaccination against SARS-CoV-2 in phases with prioritization of health care workers and population above 65 years in the initial phase. With the first phase beginning from January 27, 2021, as of today, Nepal has vaccinated a total of 32% of its total population, considerable but far below the WHO's target to end the pandemic.[7] The country has mostly relied on international donors and COVAX for the maximum of its vaccine supply. At this point, while Nepal still falls far behind, the need for booster vaccination seems to be a far-fetched idea. While evidence supports the benefits of booster doses and their possible need in the future, priority should be still given to the vaccinating the unvaccinated especially in a country like Nepal. There is an immense science behind the virus's capability to notoriously replicate and it happens more often in the unvaccinated populations who are also more prone to die of severe disease. In the meantime masking up, avoiding crowds, and vaccinating with any available vaccine is the best we can do.

CONCLUSION

The evidence of the effects of the booster vaccine is emerging and is showing impressive results. While its necessity in the future may be unavoidable but the need to vaccinate the unvaccinated holds higher importance. Nepal needs to focus on the unvaccinated at this moment and improve its primary coverage.

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