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.

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Editorial

SARS-CoV2 vaccine boosters for India

With the omicron variant rising in several countries, the demand for boosters has been increasing. Prior to the emergence of the omicron variant, countries with excellent vaccination programmes used data that indicated a waning of vaccine effectiveness against infection and symptomatic disease with the delta variant to make the case for booster doses for their populations [1], an approach that has been amplified with the new variant.

The initial randomized phase III efficacy trials used an outcome of severe disease (occasionally symptomatic disease) as the primary outcome to measure vaccine efficacy. When vaccines were introduced, the real-world impact of vaccines began to be monitored, mainly using the test-negative design recommended by the World Health Organisation [2]. Large effectiveness studies have, so far, been conducted in mainly in upper middle income or high income countries with a limited range of vaccines, with the maximum data on the mostly widely used Comirnaty (Pfizer mRNA vaccine) and Vaxzevria (Astra Zeneca chimpanzee adenovirus vectored vaccine). These studies have demonstrated that one or two dose schedules of most vaccines work well against most viral variants, that some vaccines protect better than others when both are used in the same age groups and locations, that protection against severe disease and mortality is greater than protection against infection and that, in general, binding and neutralizing antibodies parallel protection even though no cut off has been established [3].

Data from Israel, which exclusively used the Pfizer vaccine showed initial very high levels of protection against death, severe disease, all symptomatic infection and all infection. This protection declined with time, particularly with the delta variant, prompting Israel to begin booster doses with the same vaccine in July 2021, raising protection to high levels again [1]. In the UK, data with both Astra Zeneca and Pfizer vaccine showed similar high initial protection but a decline of about 15% against severe disease over time with the delta variant [4]. The UK introduced booster doses for its vulnerable population, but with the advent of omicron, decided to boost its entire vaccinated population, as did almost all other high income countries.

However, there are key issues to consider for India. Data from high income countries indicate that infection and vaccination, labelled 'hybrid immunity' or 'super-immunity' protects better than two doses of vaccine against symptomatic and severe disease and produces a broader range of antibodies [5]. Based on the 4th national serosurvey conducted by the Indian Council for Medical Research, at least half of India was infected by June–July 2021 [6], creating a situation where increasing vaccination coverage with one or two doses is generating a population with high levels of hybrid immunity. In December 2021, cases are at a low level, a situation which has persisted for several weeks. Given this situation, and the remaining coverage of one or two doses needed for adults, are boosters needed now for India?

There are currently no data in India indicating waning immunity. The only country-wide effectiveness data is available on the Ministry of Health and Family Welfare website under India Covid-19 Vaccine Tracker (Metabase (icmr.org.in)) is for the effectiveness of one or two doses of vaccines against death and this is recorded as being greater than 98% until October 31, 2021, the last date for which the tracker is available. The analysis does not provide separate data on the two vaccines. Independent analyses by data journalists tracking excess and COVID-19 deaths by age indicate increasing deaths in those over 60 years in the past few months, which is concerning. It would be useful to have COVID-19 hospitalization data stratified by age and linked to vaccination status available over time for analysis of waning, but no data are publicly available.

Therefore, what should we do other than asking for data? Based on global data, it is evident that immunosuppressed individuals require additional or booster doses. Similarly, although no data are available from India, global data indicate that the vaccinated elderly experience a drop in antibodies and protection after several months, so if there is a high level of threat, this group should be boosted as soon as possible. Individuals with co-morbidities are at higher risk of severe disease and as a matter of abundant caution, this group should also be boosted. For the general population in India, there are no data with the combination of the infection history and the vaccines we have, on which decisions on boosters can be based, so there is an urgent need to define our data and research needs, so that evidence can inform future policy.

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