India's COVID-19 vaccination drive: key challenges and resolutions

Lancet Infect Dis 2021
Published Online
September 13, 2021
https://doi.org/10.1016/
S1473-3099(21)00567-3

India has been gravely struck by the second wave of COVID-19[1] caused by SARS-CoV-2, and is predicted to be hit by the third wave in the next few months. It is challenging for the Government of India to implement a mass vaccination drive while mitigating the subsequent COVID-19 waves. Recommendations for the second wave of COVID-19 in India have been described elsewhere.[2] Here, we highlight challenges and resolution measures for mass vaccination of the second-most populous country in the world.

India sustains a staggering 17·7% (1·39 billion) of the world's population, and vaccine production has therefore been a challenge in the country. India has three vaccines (Covishield [ChAdOx1 nCoV-19; Oxford–AstraZeneca; manufactured by Serum Institute of India], Covaxin [BBV152; Bharat Biotech], and Sputnik V [Gam-COVID-Vac; Gamaleya Research Institute of Epidemiology and Microbiology]) approved for emergency use. Around 70 million Covishield doses and 10 million Covaxin doses per month have been manufactured in India up to May, 2021.[3] This production pace is insufficient to cover the enormous population of India; hence, manufacturers have committed 100 and 80 million doses per month, respectively, in the coming months. Indian Immunologicals will also provide 10–15 million doses of Covaxin per month by August–September, 2021.[3] Besides national production, the country should also consider importation to achieve mass vaccination quickly.

Vaccination planning has also been a challenge in India. Earlier in the year, individual Indian citizens had to register on the CoWIN or Aarogya Setu portal in order to receive a COVID-19 vaccination. The limited number of vaccination slots resulted in fewer administrations during the initial 5 months of the vaccination programme (phase 1–4). The Government of India has now amended the vaccination policy by waiving the preregistration requirement and offering free vaccinations to accelerate the programme. However, mass gatherings at health-care settings might lead to a further surge in daily cases. Door-to-door vaccination might be a feasible and safe solution to avoid such assemblies.

The COVID-19 vaccine drive in India was launched on Jan 16, 2021. From May 1, 2021, all people older than 18 years are eligible in phase 4 of the vaccination drive. By July 20, 2021, 326·4 million people in India (23·4% of the population) had received the first dose of the vaccine, and 85·4 million people (6·1% of the population) had received the second dose.[4] At the current pace, it would not be possible to vaccinate the whole nation by the end of 2021. The Government of India therefore implemented a centralised vaccination policy and administered more than 8·6 million COVID-19 vaccine doses on day 1 (June 21, 2021).[4] Such a vaccination strategy might be helpful in achieving mass vaccination against COVID-19. However, ensuring a consistent vaccine supply is a substantial challenge to maintaining such a high pace and achieve nationwide coverage.

Vaccine hesitancy is a widespread challenge in India, fuelled by misinformation and mistrust, particularly in rural areas where 65·5% of the population resides. For example, in Jamsoti village (Uttar Pradesh), there is a prevalent myth that SARS-CoV-2 does not exist in villages.[5] In another instance, a team for COVID-19 awareness and vaccination drive was attacked by the local residents of Malkhedi village (Madhya Pradesh). Rumours about vaccines disrupting the menstruation cycle and reducing fertility have also contributed to fear and skewed the data in favour of men.[5] To overcome these rumours at the village level, the Government of India needs to take stringent actions to achieve mass awareness and vaccination. Village heads and community health workers could have a proactive role in organising culturally relatable campaigns in local languages.

Various SARS-CoV-2 variants have emerged worldwide and been classified as variants of interest, variants of concern, and variants of high consequence on the basis of their impact on transmission, disease severity, diagnostics, vaccines, and therapeutics.[6] In India, variants of interest such as B.1.617 (sub lineages B.1.617.1 [kappa] and B.1.617.3) and B.1.618 have emerged. Currently, the variants of concern B.1.617.2 (delta) and B.1.617.2.1 (delta plus) are spreading

quickly across the world, including in India.[7] Vaccine efficacy against these variants is a big concern. In a recent study, the effectiveness of Covishield against the SARS-CoV-2 delta variant was found to be only 60%.[8] The experience of Seychelles with the potency of the vaccines should concern everyone, especially those in India. Despite fully vaccinating 63% of its population, as of May 15, 2021, Seychelles reported more COVID-19 cases per 1 million people than India.[9] This surge in infections has put the vaccines' effectiveness against novel variants under scrutiny, as well as casting doubt on the lifting of economic and festive restrictions. However, optimism about the vaccines remains as more than 80% of hospital admissions, almost all the severe cases requiring intensive care unit admission, and COVID-19 related deaths have been observed only in the unvaccinated population of Seychelles.[10]

In conclusion, the Government of India needs to devise effective public health strategies regarding mass vaccination and avoid assembling people at health-care units for vaccination. Many states have adopted door-to-door vaccination to avoid superspreading and to assist in the nation's mass vaccination efforts. Vaccine hesitancy should be tackled by awareness campaigns at the village level. Looking at the emerging SARS-CoV-2 variants, the government should focus on maintaining a high vaccination pace and coverage with a double-dose of COVID-19 vaccine and a shorter time between doses so that high efficacy rates can be achieved in the whole population of India.

We declare no competing interests.

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