



Indian National Young Academy of Sciences
भारतीय राष्ट्रीय युवा विज्ञान अकादमी

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Open Statement from Indian National Young Academy of Sciences (INYAS)

As we head towards immunization: COVID-19 vaccine and how are we positioned?

The ongoing pandemic of COVID-19 is an example of a zoonotic disease outbreak that caused international alarm and necessitated every nation to expedite research towards mitigating the crisis. Normally, vaccines take years of research and testing before being rolled out for public use. However, in case of COVID-19 there has been phenomenal effort for making a vaccine available at the earliest. As per the vaccine landscape R and D blueprint documented by World Health Organization (WHO) dated 26th March 2021, there are 83 vaccines in clinical development and 184 in pre-clinical development. Some of the commonly discussed vaccine candidates which progressed faster as compared to others in the pipeline are Oxford-AstraZeneca vaccine, Moderna's mRNA-1273 vaccine, Pfizer's mRNA vaccine and Russia's Sputnik V. India also has almost multiple vaccine candidates which are in various stages of development including two of them been rolled out for public use.

India has been at forefront in vaccine diplomacy as well. The advantage of India is the vaccine manufacturing capacity. Serum Institute of India (SII), partnered with Global Alliance for Vaccines and Immunisation (GAVI) and Bill and Melinda Gates Foundation for rapid vaccine manufacture as well as distribution of vaccines to low- and middle-income countries in 2021. As a part of India's 'neighbourhood first and act east' policy, and the more recent operation 'Vaccine Maitri', India is helping her neighbours and other needy countries. Currently, SII is manufacturing Covishield, which is the Oxford-AstraZeneca vaccine and Dr. Reddy's lab is manufacturing Russia's Sputnik V. These are the vaccines originally developed by other another country but are been manufactured in India.

As per a press statement by the Drugs Controller General of India (DCGI) dated 3rd January, 2021, SII and Bharat Biotech were provided approval for using Covishield and Covaxin for restricted use in emergency situation. As per this statement Covaxin was recommended for restricted use in emergency in public interest, in clinical trial mode for having more options for vaccinations. The same statement also approved Cadila Healthcare Ltd. to conduct phase III clinical trial for their vaccine. Recently, Covaxin was reported to have a good efficacy of around 81% thus strengthening India's vaccine pipeline.

Thus, currently India has two vaccines approved for public use, Covishield and Covaxin out of which Covaxin is being used under clinical trial mode.

Covishield is recombinant chimpanzee adenovirus vector vaccine encoding the SARS-CoV-2 Spike (S) glycoprotein and was originally developed by Oxford-AstraZeneca under the names ChAdOx1 nCoV-19 or AZD1222. SII is manufacturing this after obtaining license under the name Covishield.

Covaxin is a joint venture of Bharat Biotech, Indian Council for Medical research (ICMR) and National Institute of Virology (NIV) (Pune). It is an inactivated whole virus vaccine developed using Vero cells. India started the vaccination process against COVID-19 from January 2021, first with the dry runs followed by priority-based mass immunizations. The plan is to vaccinate 300 million people in one year. The prioritized population groups for COVID-19 vaccination originally included healthcare workers, frontline workers like security personnel and those in essential services and prioritized age group comprised of people above 50 years of age and with co-morbidities. More recently the age group with co-morbidities was brought down to 45 years. Modification was also recommended with respect

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to the booster dose time frame in case of Covishield. Recently, it was suggested that the booster dose of Covishield could be administered between 4-8 weeks duration whereas there is no change in the time frame for booster dose of Covaxin.

Viruses mutate frequently and the same holds for SARS-CoV-2 as well. Whenever a mutant gets positively selected and spreads in the population, it creates panic and concern with respect to usability of existing therapeutic strategies. Currently we don't have enough evidence to question the efficacy of existing vaccines against the circulating mutants. This is more so since the current approved vaccines in India are based on full spike protein or the whole virus and thus alternate antigenic regions are available to retain function of a vaccine.

The price of the approved vaccines in India ranges from Rs200-Rs295 per dose and both the vaccines are to be stored in refrigerated condition. Hence, storage is not a problem. Currently, people will not have a choice between the two vaccines as each centre will get only one type of vaccine due to limited availability. Availing the vaccine is completely voluntary and if anyone does not want to accept the vaccine being offered can opt out and wait for the next turn.

Vaccination of such a large population in such a short period of time is extremely challenging and thus cooperation between government and public is extremely important to enable execution of this daunting task efficiently. Since vaccines are preventive, a vaccinated person may still contract the virus and can transmit it to others without himself/herself suffering the ill-effects of the disease. Thus, those who are not vaccinated are likely to be at a higher risk for virus-related complications compared to those who aren't.

Indian National Young Academy of Sciences (INYAS) as only recognized academy of Young Scientists appeal to all to get vaccinated as per the Government of India plan and at the same time follow approved protocols of social distancing and using face mask to join the fight against the Covid-19.

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