Source : www.thehindu.com Date : 2021-05-11

FIXING THE VACCINE CRUNCH

Relevant for: Developmental Issues | Topic: Health & Sanitation and related issues

The unprecedented rise in COVID-19 cases has changed vaccine hesitancy to vaccine advocacy. Even as the government has allowed those aged 18 and above to get vaccinated, the availability of vaccines has become an issue. Many extraneous issues such as Centre-State relations have clouded the picture. Given the rise in cases and deaths, COVID-appropriate behaviour has to be strictly implemented from now on and vaccination has to take place on a war footing.

The main issue is of volume of vaccines. Bharat Biotech (BB) was making about 8-10 million doses of Covaxin a month. Serum Institute of India (SII) makes about 70 million doses of Covishield a month. We need about 1,500 million doses (two doses per person) to vaccinate the target population. India has covered about 10% of the target population. BB is expanding its capacity and hopes to reach a target of 50-60 million doses a month in four months. SII has stated that it will push production to 100 million doses a month. Sputnik may chip in with 50 million doses a month in about four months.

Besides these, three vaccine candidates look promising. The DNA vaccine (for spike protein) by Zydus Cadila, the recombinant spike protein (Biological E), and self-amplifying messenger RNA (Sa-mRNA for spike protein) by Gennova can reach field application in four months. All the three may need emergency approval from the DCGI. With the availability of five approved vaccines, with some outside help perhaps, and with an aggressive timeline, India should be able to vaccinate the target population in six months from now.

What are the riders and imponderables? Despite the unfolding tragedy, there are some major outcomes. The DNA vaccine, if successful, will be the first DNA vaccine that goes into human application for any disease. The 10,000L bioreactor for mammalian cell expansion, to be commissioned by BB, will be largest by global standards. But it is not easy to scale up the micro-carrier technology used by BB. Sa-mRNA, being developed by Gennova, is the first of its kind (uniquely, stable between 2-8°C), even for a mRNA vaccine, already commercialised by Moderna and Pfizer (require -20 and -70°C for stability). Sa-mRNA can amplify itself and so a lower dose may be adequate. In the context of ‘variants’, mRNA vaccines provide the greatest flexibility to tweak and make a new vaccine in the shortest time. Interestingly, the five vaccines would represent five different platforms and eventually need not be confined to a single company for production. Several research publications have shown that vaccines produced using different platforms are all effective in preventing severity of disease and hospitalisation, although infection may still happen.

It is possible that when 60% of the target population is reached in terms of vaccination (in addition to the infected and recovered individuals), herd immunity may kick in and cases may go down drastically. But people and the system may once again get complacent and a third wave may become a reality. We also do not know how long the antibody-mediated protection lasts. We need to look into T-Cell memory and its role in long-term protection. The issue of vaccinating children will become a priority, since, being asymptomatic, they are the largest carriers to spread the disease. This would call for independent trials based on age groups.

A few other public sector units (Haffkine Bio-Pharmaceutical Corporation Limited, Mumbai; Indian Immunologicals, Hyderabad; Bharat Immunologicals and Biologicals Corporation, Bulandshahr) have also been supported for capacity building and can become major vaccine manufacturing centres over time. Viral variants will evolve, especially under vaccine pressure,

and pose challenges to vaccine efficacy. Constant tweaking may be needed or a new vaccine strain may be added each year. Vaccines produced using different platforms may be priced differently and it is possible that we may have a poor man's vaccine and a rich man's vaccine since the government may not subsidise the cost forever. One hopes that these efforts will also prepare India for a future pandemic.

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To reassure Indian Muslims, the PM needs to state that the govt. will not conduct an exercise like NRC

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