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# Covid vaccine - From the lab to the last mile

## Government must join hands with the private sector. The Railways, electoral machinery and e-comm infra must be put to use

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The big question on everyone's mind in the country today is when do we get the Covid-19 vaccine and how will we ensure it reaches the entire nation? With the fight against the pandemic about to enter its final phase, four pharma giants (Pfizer, Moderna, Oxford and Sputnik) have already announced success of their vaccine trials.

It is high time that India, the country having the second highest infections in the world, comes up with a plan for effective and timely inoculation of its 1.3 billion people. The Universal Immunisation Plan (UIP) that has been carried out by the Health Ministry to vaccinate people against 12 diseases, aims to vaccinate 2.67 crore children and 2.9 crore pregnant women every year. A similar (and much larger scale) exercise needs to be carried out for the Covid-19 vaccination. However, the problem in this case is much more magnified.

The staggering numbers to be vaccinated poses huge challenge in terms of logistics, infrastructure and crowd management. Another issue is the two-shot requirement of the vaccine process — this means that the public will need to travel twice to the vaccine location. The third and possibly the biggest problem is that of cold storage requirements.

Vaccines from Pfizer or Moderna require a storage temperature of -70 degrees centigrade and -20 degrees centigrade, respectively, which is almost impossible in the Indian conditions (particularly the former). Vaccines from Sputnik V and AstraZeneca require to be stored at -18 degrees centigrade and 2-8 degrees centigrade respectively. The latter can be handled relatively easily as these are the temperature ranges around which the Polio vaccine is stored.

Also, the final protocol in terms of priority segments (frontline health workers, senior citizens, those with co-morbidities, pregnant women) is not clear. How do we identify them in a targeted fashion and reach the vaccine to them first?

Delaying to vaccinate the rest will lead to the mutation of the virus, thereby rendering the future inoculation of the vast majority ineffective. Therefore, the government needs to use as many vaccines as possible in the fastest time.

A disruptive and comprehensive distribution system that combines government infrastructure and the private sector's efficiency is called for.

## Ensuring reach

India has more than 6.3 lakh villages and around 7,935 towns. Since the reach of the vaccine in every nook and corner of the country is important, the government needs to choose a medium of transportation such as the Railways to ensure connectivity.

With its 1.23-lakh-km reach and approximately 13,500 trains that transport people and freight across the 7,349 railway stations, the Railways has the capacity to transport the vaccine to almost all the places in the country, particularly to the rural areas where railroad connectivity is much better than the road network.

The train coaches have to be installed with refrigeration facilities and power systems to the cold storage system should be independent. Also, the locomotive pilots have to be advised to operate the trains at speed ranges that optimise the transportation time, while reducing the shocks felt in the coaches due to the train traversing varying terrains at high speeds.

Minimising the shocks experienced by the containers in which the vials are stored is essential. The moment a vaccine batch reaches the station nearest to its final destination, it must immediately be transported using vehicles that have cold storage capabilities.

In the densely populated urban regions, the last mile delivery of vaccines can be taken care of by the e-commerce players, who have approximately penetrated 5-6 per cent of the market and are witnessing robust growth. They employ superior algorithms to ensure the fast delivery of products. Their warehouses (Amazon has 60 and Flipkart has 15, but can be ramped up) and delivery trucks or two-wheelers need to be modified to store the vaccines.

## Storage of inventory

The electronic vaccine intelligence network (eVIN) under the UIP has to be extended to the coronavirus vaccine and the National Cold Chain Management Information system (NCCMIS) can be used to track the inventory levels and distribution. India currently has just 28,000 cold storage units that are dedicated for vaccine storage under the UIP and the government must look to upgrade them and increase their numbers.

Assuming a target of 25 crore people per year (to be vaccinated), which is 10 times the number of people targeted in the UIP, this would require 2,80,000 cold storage facilities. This once again stresses the need to have an active participation from the private sector. Business leaders have to participate in funding this cost intensive storage and distribution plan.

Companies like Amul, Hatsun and HUL, which are in the frozen desserts category, can share their knowledge and expertise in cold storage. They can even voluntarily dedicate some of their storage areas and help other people set up facilities for storing vaccines. The government can incentivise them by way of tax cuts, reduce borrowing rates from banks. Public-private partnership has worked well in testing for the virus and this should work for the vaccination process too.

## The act of vaccination

Hospitals and primary health care centres will need support from other government infrastructure such as post offices, BSNL/MTNL centres and Railway stations, to complete the vaccination in the stipulated time period. India has an efficient postal network with 1,55,015 post offices and e-seva centres that could serve as nodal point to get the vaccination.

The presence of medical supervisors or nurses and trained technicians need to be made available on a war footing. People who have lost their jobs during the pandemic period from related sectors like hospitality (around 55 lakh jobs), tourism (38 lakh jobs) and aviation (18,000 jobs) can be trained to handle the vaccine.

## Communicating to the public

In this era of social and digital media, communication is possibly the easiest task in the entire chain. India has witnessed strong growth in the number of mobile and internet users, at around 20.5 crore users in urban and 22.7 crore users in rural areas respectively.

This could be a very effective medium to sensitise people and create awareness about the need to get vaccinated. In rural areas, key influencers like the panchayat heads could be tapped for persuading people and ensuring their participation for vaccination. Giving proof of vaccination through a certificate is another critical step.

Our time-tested electoral infrastructure can be leveraged. The Election Commission prepares for the voting of around 90 crore Indians every five years. A similar exercise for vaccinating our people can be facilitated by mimicking the election process. The know-how of setting up a number of polling (or vaccination) booths, handling voter information (voter certification), managing the logistics and manpower etc. can all be effectively used. The arduous task of distributing the vaccine can only be done through a combined effort of the government machinery and private sector.

All major government infrastructure such as IRCTC, Postal networks, BSNL/MTNL Communication centres and the Electoral system should come in handy. The private sector by way of e-commerce last mile delivery, cold storage sharing and training of new personnel will be a great contribution. The faster the people get vaccinated, the sooner will normalcy return.

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