The Longest Mile of the Vaccine Supply Chain

Bhutan started its COVID-19 vaccination campaign on Saturday 27th March and on Monday the Health Minister reported that 56% of the eligible population had been vaccinated. Such a speedy rollout will not be achievable for most LMICs. Bhutan's small population and the availability of sufficient vaccines gifted from India made this admirable feat possible.

Vaccine availability is likely to remain the major hurdle for some time. But when vaccines are available, they also require suitable distribution. The last mile can be particularly challenging, especially in LMICs. The magnitude of this logistical task is unprecedented. Bold collaborative action is required to ensure the rollout of vaccines around the globe.

In transporting vaccines, key challenges are maintaining appropriate temperatures and not moving potentially labile substances too often or for too long. But cold-chain logistics capabilities and capacity are underdeveloped in many countries. Fortunately, most vaccines that have gained authorisation so far do not require ultra-cold temperatures. Even the Pfizer/BioNtech vaccine, often seen as the most challenging one to distribute, has a 120-hour shelf-life at 2-8 degrees Centigrade according to its UK authorisation.

The same document also states that transit "can occur either in two journeys each up to 6 hours or, where there are real deployment needs, for a maximum of 12 hours in one sitting". This requires careful distribution planning, especially in areas with poor or no road or air connectivity.

Planning is needed not only for the vaccine delivery. Last mile distribution also has to include other essential supplies like syringes, needles and PPE. These will require additional transport capacity and supplies of all items need to be synchronised to enable vaccinations to go ahead. At the same time, qualified medical personnel have to be available to administer the shots.

Crucially, supply needs to be matched by demand at each location. Given the scarcity of vaccines, as few doses as possible should be wasted. Doses need to be used efficiently and equitably. As few countries will be able to match Bhutan's one week rollout, suitable vaccination priorities have to be established for each country. When deliveries arrive, people need to be contacted by suitable means and be able to reach the vaccination locations. All of this requires significant logistical planning.

Vaccine distribution, like the development of the COVID-19 vaccines, has to be a collaborative effort. Governments, NGOs, and commercial organisations working together to ensure the fastest, most inclusive distribution possible is essential. Successful last mile distribution in particular depends on a mixture of local knowledge and logistics expertise.