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Risks related to Distribution of covid vaccine

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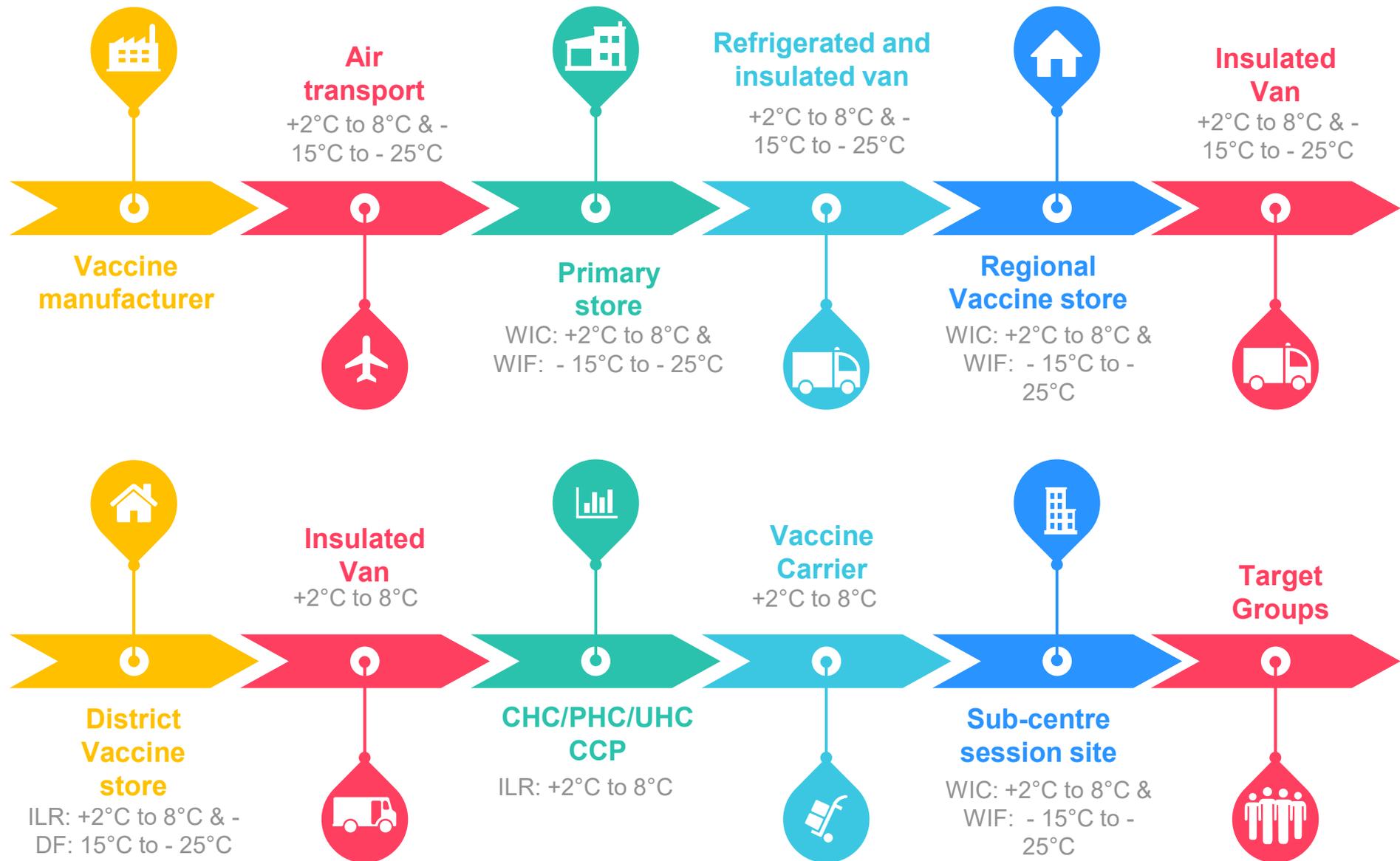
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Vaccine Cold Chain Distribution Network In India



Raw Material Constraint In Production Scaling

Scaling access to material inputs and boosting production levels can cause logistical, contractual, and even diplomatic challenges, requiring new forms of collaboration.

However, the suppliers of many niche chemical and biological vaccine components are scattered, and countries may compete for limited resources.

At the same time, because vaccine manufacturers must load mRNA into lipid nanoparticles and purify the resulting therapeutic on a massive scale while following strict regulations, many vaccine manufacturers have sought highly specialized contract-manufacturing partners.

Raw Material Constraint In Production Scaling

Vaccine Candidate	Storage Temperature Required
Oxford-AstraZeneca	2-8° C
Moderna	-25° C to 15° C (can be refrigerated at 2-8 C for 1 month)
Pfizer	-80° C to -60° C
Sputnik V	-18° C (Freeze dried form is being explored)
Covaxin	2-8° C
Novavax	2-8° C

Transport and Storage Challenges : Temperature Constraints

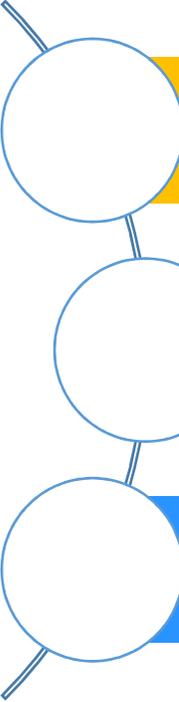
India has a 28,000-unit cold storage network that is used for the government's universal immunisation programme. Since this demand is not permanent, a majority of companies are looking for coordinated efforts to ramp up short term competencies.



Increased Labor Requirements

Complex protocols for handling and preparing COVID-19 vaccines, as well as the added precautionary observation period after patients are injected, have the potential to strain labour capacities or divert workers from other critical areas.

Once vaccines are approved, and assuming the distribution capabilities are resolved, comes the question of who will administer the vaccine?.



Across the world it is acceptable for pharmacists to administer vaccines; such is not the case for India, where only doctors and trained nurses are permitted.

Health and Wellness Centres as well as Primary healthcare Centres (PHCs) have been instated recently by Indian government. At present, PHCs in India are supposed to cover a population of 30,000 per PHC.

However, PHCs do not function as expected uniformly across the country; in certain rural areas, they do not run at all. The pandemic and the subsequent vaccination process requires the upgrade of these centres which is a major challenge.

IT Challenges and Waste Management

Wastages at Points of Care

Errors in storing, preparing, or scheduling administration of doses at points of care will have significant consequences.

Failure to ensure that recipients attend their appointments will not only prevent individual immunity, it could also lead to product wastage.

Proper on-site storage conditions are also of critical importance.

The current mRNA vaccines will pose a larger challenge for on-site storage because of the temperature requirements.

IT Challenges

- IT systems, including vaccine-tracking systems (such as CDC's VTrckS) and immunization information systems (IIS), will be essential for allocating, distributing, recording, and monitoring the deployment of vaccines.
- Ensuring that these can operate at unprecedented scale and are configured for a two-dose vaccine schedule has become a major software-development, data-hosting, and operational challenge.
- additionally, it will remain vital that these systems protect patient privacy and are secure against cyberthreats, given the potential for hackers and criminals to cause damage. Cyberattacks have already occurred against COVID-19-vaccine developers and regulators.
- The contact tracing tools of earlier in the pandemic were generally unsuccessful because they did not give residents a sense of adequate privacy consideration. location tracking. these challenges must be met as well so that

Quality Assurance

- Generating yields while ensuring the safety and efficacy of each dose poses quality-assurance challenges.
- A chain of custody will need to be maintained at every step of the supply chain — to ensure a verifiable transcript of the vaccine's lifecycle and journey
- To produce a new class of vaccines—such as those based on mRNA or viral vectors—at an unprecedented scale (1.8 billion to 2.3 billion doses by mid-2021), manufacturers have required massive volumes of inputs, a larger technical workforce, and a much-expanded ecosystem of production facilities Understanding and managing large inherent variability in manufacturing.

SIGNS OF POTENTIAL SCAMS INCLUDE

to obtain the vaccine, you must pay a fee.

adding a person's name to a vaccination waiting list or charging a fee to obtain early access to a vaccine.

marketers' offers to sell or ship vaccine doses for a fee.

receiving vaccine advertisements via social media platforms.

you've never heard of a vaccine or medication that has been approved by the US Food and Drug Administration.

Increased Risks Of Corruption With Vaccine Distribution

The increase in COVID-19-related crimes, such as fraud, cybercrime, misdirection or exploitation of government funds or international financial assistance, is creating new sources of proceeds for illicit actors.

Measures to contain COVID-19 are impacting on the criminal economy and changing criminal behaviour so that profit-driven criminals may move

to other forms of illegal conduct.

The COVID-19 pandemic is also impacting government and private sectors' abilities to implement anti-money laundering and counter terrorist financing (AML/CFT) obligations from supervision, regulation and policy reform to suspicious transaction reporting and international cooperation.

These threats and vulnerabilities represent emerging money laundering (ML) and terrorist financing (TF) risks. Such risks could result in:

Criminals finding ways to bypass customer due diligence measures.

Increased misuse of online financial services and virtual assets to move and conceal illicit funds.

Exploiting economic stimulus measures and insolvency schemes as a means for natural and legal persons to conceal and launder illicit proceeds;

Increased use of the unregulated financial sector, creating additional opportunities for criminals to launder illicit funds,

Misuse and misappropriation of domestic and international financial aid and emergency funding.

Criminals and terrorists exploiting COVID-19 and the associated economic downturn to move into new cash-intensive and high-liquidity lines of business in developing countries

- Domestic coordination to assess the impact of COVID-19 on AML/CFT risks and systems;
- Strengthened communication with the private sector;
- Encouraging the full use of a risk-based approach to customer due diligence;
- Supporting electronic and digital payment options.

Steps To Mitigate Risks

Brainstorm & Ideas

Blockchain based end-to-end active vaccine tracking right from manufacturer plant to being administered at a remote corner of India will help. Serialisation and Data Management in such transparent decentralised databases on cloud (and healthcare use case pilots/PoCs being functionally effective like PharmaLedger in EU) is what probably makes Blockchain an automatic choice, despite some implementation complexities.

Construction & Design

24*7 Control Tower (combining people and technology) for continuous monitoring and timely action. Solutions exist like Roambee for such tracking where rules can be pre-configured (temperature zone, safe laning, geofencing, the authorized destination, etc.) in the hardware for outages

Marketing Campaign

Perform root-cause analytics (using 5 Why's / Lean or similar Methods) on reasons for contamination. Managing the reverse logistics for such contaminated vaccines need to be administered along with the blacklisting of "callous" transportation partners.



Optimise batches

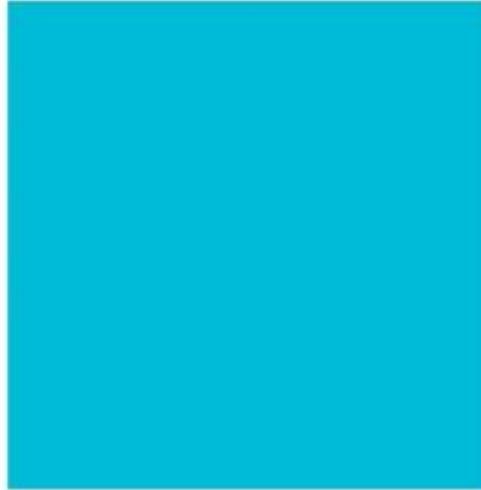
Optimise n batches of vaccine skews consistent with transport capacity through safer lanes .

Chanel and Re-direct

The movement of deep refrigerated vaccines skews by truck keeping the near room temperature vaccines skews by rake to ensure a robust distribution to the State / District / Block level vaccine administration zones..

Launch Your Project

Budget for off-the-shelf RFID + temperature sensors through IoT feeds apart from the serialisation to ensure vaccine "health" and add the SOPs for contamination / potency check. The expiry validity check of the non-contaminated vaccines through batch barcode scanning done as a one-time exercise by the task force administering the dose..



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