Immunisation supply chain interventions that enable coverage and equity and contribute to resilient systems

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Immunization supply chain interventions that enable coverage & equity & contribute to resilient systems

Michelle Seidel
Against a backdrop of disrupted services due to COVID-19 - WUENIC 2019 data shows continued stagnation

Coverage of a third dose of vaccine protecting against diphtheria, tetanus, and pertussis (DTPcV-3) remains at 85% in 2019, leaving 19.7 million children vulnerable to vaccine preventable diseases.

The key goal of the Immunization Agenda 2030 is to make vaccination available to everyone, everywhere, by 2030.

While immunization is probably the most successful public health intervention, reaching 85% of infants is not enough. Coverage has plateaued over the last decade, leaving almost 20 million children unprotected. Almost half of these live in the African Region.

Almost 9 out of 10 children reached in 2019, but almost 20 million children un-or under vaccinated
Impact on Immunization – Penta 3 Coverage (January- July 2019-2020)

Figure 1 indicates that there has been overall reduction of RI coverage in the Region in 2020. This is linked to Covid-19 pandemic. But some countries seem to have been more affected than others.

- In AFR, ~ 1 million less children were vaccinated this year (first 6 months of 2020) compared to 2019.

- 20 countries have >10% reduction in number of vaccinated children either for DPT3 or MCV1 for the first half of 2020 compared to the same period in 2019.
Immunization Campaigns were also disrupted (as of 15th Sep)

Map showing countries where 1 or more immunization campaigns has been postponed as a result of COVID-19

<table>
<thead>
<tr>
<th>Diseases/ Vaccines</th>
<th>No. of countries with postponed campaigns (fully or partially)</th>
<th>No. of campaigns postponed (fully or partially)</th>
<th>No. of campaigns postponed by regions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>AFR</td>
</tr>
<tr>
<td>Measles/ Measles Rubella/ Measles Mumps Rubella (M/MMR)</td>
<td>25</td>
<td>26</td>
<td>5</td>
</tr>
<tr>
<td>Polio (IPV)</td>
<td>8</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Bivalent Oral Poliovirus (bOPV)</td>
<td>11</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Monovalent Oral Poliovirus Type2 (mOPV2)</td>
<td>8</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Meningitis A (Men A)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Yellow Fever (YF)</td>
<td>7</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Typhoid (TCV)</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Cholera (OCV)</td>
<td>5</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Tetanus (Td)</td>
<td>6</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total postponed</strong></td>
<td><strong>54</strong>*</td>
<td><strong>86</strong></td>
<td><strong>38</strong></td>
</tr>
</tbody>
</table>

*Total no. of countries with at least one VPD immunization campaign postponed (fully or partially)

Data source: WHO/IVB Repository, as of 15th September 2020

48% measles campaigns (in 25 countries) are still being postponed due to COVID, which has affected at least 74M persons (*data as of 1 Sept).
WHO & UNICEF joint global guidance’s developed on continuation of immunization activities during COVID-19 pandemic
THE WORLD IS TAKING A SERIOUS LOOK AT EQUITY

The Sustainable Development Goals aim to reach the most marginalized communities
YET A CLOSER LOOK UNCOVERS PERSISTENT INEQUITIES

We continue to miss children and we know very little about them.

GLOBAL IMMUNIZATION COVERAGE WITH THREE DOSES OF DIPHTHERIA, TETANUS, AND PERTUSSIS (DTP3) CONTAINING VACCINES, 1980-2017
SUBNATIONAL DATA HELPS EXPLAIN WHERE THE CHILDREN ARE VACCINATED.

**Proportion vaccinated: DTP 3rd dose (%)**

0 20 40 60 80 100

**NATIONAL**

**5 KM**
The ERG identified
FOUR PRIORITY AREAS OF IMMUNIZATION INEQUITY

REMOTE RURAL  URBAN  AFFECTED BY CONFLICT  GENDER
Never reached children mostly live in Africa

The African Region and countries affected by conflict are home to large numbers of “zero-dose children***

The 14 million children who didn’t receive an initial dose of basic vaccines often lack access to immunization services and other health services.

Zero-dose children live disproportionately in the African continent and in countries affected by conflict. They are also likely to lack access to other health and welfare services and are subject to multiple deprivations.

Middle income countries such as the Philippines, Brazil, Mexico and Angola also have sizeable numbers of zero-dose kids.

If coverage is unchanged, by 2030, projected population increases in Africa will mean that 15 million children may be left out.

* Zero dose children defined as lacking DTP1
# The challenging contexts to reach every child

## Urban poor

- A lack of accurate, disaggregated data creates difficulty in identifying and tracking populations.
- Cultural differences and discrimination create social distance and disenfranchised communities, leading to a mistrust of the health system and influence health care-seeking behavior.
- Quality of services and lack of information impact access to immunization services, especially for low-income, working caregivers.
- A lack of political will to prioritize immunization services for disenfranchised communities.
- Residents of informal settlements may fear encountering public authorities, and authorities may be less interested in investing in residents of informal settlements.
- Multiple stakeholders and a lack of effective partnerships, particularly with private sector providers, reduce the ability to improve immunization equity.
- Insecurity and violent crime restrict access to public services, especially in slums.

## Remote Rural

- The marginal cost of reaching remote rural populations is high, relative to other environments, due to low population density.
- Retention and motivation of personnel is impeded by resource-limited environments in rural areas.
- It is challenging to reach remote areas with potent vaccines at the right time due to the geographic remoteness.
- Remote rural populations have limited socio-political power, which limits access to health institutions and health services.
- Weak data and information on remote rural populations produce incomplete and underutilized data.

## Conflict

- Damage to infrastructure, supply chain
- Difficulty retaining health workers
- Delivery of services amidst insecurity
- Mistrust between authorities and communities
- Population displacement and migration
Cross Cutting Levers in your supply chain which can be implemented with operational strategies

- Forecasts – increasing buffer stocks in targeted areas and adjusting forecasts to accommodate variations in target populations across the three settings
- Stratified budgets for each setting to ensure sufficient funding to meet the unique requirements of each setting
- Controlled Temperature Chain – using licensed vaccines outside of the cold chain
- Alternative vaccine presentations – utilizing smaller dose per vial presentations to encourage health workers to open vials and prevent missed opportunities where target populations are small
- Cold Chain Capacity – optimizing vaccine carrier and cold box carrier capacity for transportation and session sizes
- Cold Life/Range of passive devices- improving the range of passive devices to reach target populations
- Supply Chain Design- optimized to prioritize coverage and equity ahead of the usual efficiency indicators
- Integration of both services and commodities into EPI
Remote Rural Contexts

<table>
<thead>
<tr>
<th>Challenges</th>
<th>iSC Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The marginal cost of reaching remote rural populations is high, relative to other environments, due to low population density.</td>
<td>• Coordination with other programme interventions</td>
</tr>
<tr>
<td>• Retention and motivation of personnel is impeded by resource-limited environments in rural areas.</td>
<td>• Community based involvement</td>
</tr>
<tr>
<td>• It is challenging to reach remote areas with potent vaccines at the right time due to the geographic remoteness.</td>
<td>• Cross-border teams and entry vaccination at border points or camps &amp; establishment of temporary fixed site before the border for vx storage</td>
</tr>
<tr>
<td>• Remote rural populations have limited socio-political power, which limits access to health institutions and health services.</td>
<td>• The use of long range passive containers and temporary storage sites to aid cross border teams and mobile teams</td>
</tr>
<tr>
<td>• Weak data and information on remote rural populations produce incomplete and underutilized data.</td>
<td>• Availability of mobile storage units</td>
</tr>
<tr>
<td></td>
<td>• Adequate storage capacity to accommodate buffer stock</td>
</tr>
</tbody>
</table>
## Urban Poor Contexts

<table>
<thead>
<tr>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lack of accurate, disaggregated data creates difficulty in identifying and tracking populations.</td>
</tr>
<tr>
<td>• Cultural differences and discrimination create social distance and disenfranchised communities, leading to mistrust of the health system and influence health care–seeking behavior.</td>
</tr>
<tr>
<td>• Quality of services and lack of information impact access to immunization services.</td>
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<td>• A lack of political will to prioritize immunization services for disenfranchised communities.</td>
</tr>
<tr>
<td>• Residents of informal settlements may fear encountering public authorities.</td>
</tr>
<tr>
<td>• Multiple stakeholders and a lack of effective partnerships, particularly with private sector providers, reduce the ability to improve immunization equity.</td>
</tr>
<tr>
<td>• Insecurity and violent crime restrict access to public services, especially in slums.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>iSC Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Integration of services</td>
</tr>
<tr>
<td>• A focus on solarisation and larger storage capacity to manage the influx and uncertainty of the target population.</td>
</tr>
<tr>
<td>• Partnerships with private sector.</td>
</tr>
<tr>
<td>• System design to include increased distribution points.</td>
</tr>
<tr>
<td>• Adaptation of health facilities operations to the context (i.e. flexible opening hours) will also provide opportunities for working caregivers to seek health services.</td>
</tr>
</tbody>
</table>
## Conflict Contexts

<table>
<thead>
<tr>
<th>Challenges</th>
<th>iSC Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Damage to infrastructure, supply chain</td>
<td>• Resiliency in the supply chain</td>
</tr>
<tr>
<td>• Difficulty retaining health workers</td>
<td>• The use of temporary storage sites and long range passive containers for “hit and run” teams</td>
</tr>
<tr>
<td>• Delivery of services amidst insecurity</td>
<td>• Partnerships with military agencies</td>
</tr>
<tr>
<td>• Mistrust between authorities and communities</td>
<td>• Shock-proof passive containers</td>
</tr>
<tr>
<td>• Population displacement and migration</td>
<td></td>
</tr>
</tbody>
</table>

**Challenges**

- Damage to infrastructure, supply chain
- Difficulty retaining health workers
- Delivery of services amidst insecurity
- Mistrust between authorities and communities
- Population displacement and migration

**iSC Interventions**

- Resiliency in the supply chain
- The use of temporary storage sites and long range passive containers for “hit and run” teams
- Partnerships with military agencies
- Shock-proof passive containers
The full set of strategies can be found here:

https://public.tableau.com/profile/unicef.health#!/vizhome/Pro-EquityImmunizationStrategies/Pro-EquityStrategies
Conclusion

• COVID-19 provides the opportunity/necessity to push for “real” integration between the various immunization initiatives & into PHC for the most underserved:
  ○ At the global level (e.g. GPEI, M&RI, etc.)
  ○ At implementation level (routine fixed post & outreach; PIRI; multi-antigen SIA’s)

• The need to deliver services in a safe manner through a human centered design could enhance quality of services and enhance service experience and trust

• Immunization Agenda 2030 provides a framework to structure this under, including the linkages to PHC and UHC

• The cost to reach zero dose children will be more and needs to be considered in the budgeting processes

• Supply chains needs to be designed to maximise programmatic outcomes
“Immunization supply chain interventions that enable coverage and equity and contribute to resilient systems”

Eshioramhe Kelobo
Naeem Asghar
Four Priority Areas for Immunization Inequity

- Remote Rural
- Urban
- Affected by Conflict
- Gender
Using Supply Chain Interventions to address Equity

• Four major interventions have been used to reduce inequity in Pakistan
  – CCEOP priority consideration to reach unimmunized children
  – System design consideration to address equity
  – Through Urban profiling
  – Equity analysis of all districts that identified districts with large number of zero dose & unimmunized children

• While the CCEOP & System design were direct intervention, the other 2 provided the platform targeted iSC intervention address inequity
CCEOP Considerations & prioritization

- Identified districts with immunization coverage <50%
- Identified Polio endemic districts
- Using this 2 parameters, we identified 65 districts in 6 districts with 1,000,769 unimmunized children (comprising 30% of the total birth cohort in these districts).

<table>
<thead>
<tr>
<th>Province</th>
<th># of districts</th>
<th>Birth cohort</th>
<th>Unimmunized (UI)</th>
<th>% UI children</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJK</td>
<td>5</td>
<td>61,287</td>
<td>6,508</td>
<td>11%</td>
</tr>
<tr>
<td>BALOCHISTAN</td>
<td>13</td>
<td>128,700</td>
<td>72,702</td>
<td>56%</td>
</tr>
<tr>
<td>FATA</td>
<td>5</td>
<td>58,429</td>
<td>42,668</td>
<td>73%</td>
</tr>
<tr>
<td>KP</td>
<td>7</td>
<td>240,040</td>
<td>85,548</td>
<td>36%</td>
</tr>
<tr>
<td>PUNJAB</td>
<td>4</td>
<td>201,329</td>
<td>24,176</td>
<td>12%</td>
</tr>
<tr>
<td>SINDH</td>
<td>31</td>
<td>958,260</td>
<td>268,781</td>
<td>28%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>65</strong></td>
<td><strong>3,296,090</strong></td>
<td><strong>1,000,769</strong></td>
<td><strong>30%</strong></td>
</tr>
</tbody>
</table>
## CCE Allocation to address gap for the 65 districts for yr1

<table>
<thead>
<tr>
<th>Province</th>
<th># of districts</th>
<th># of facilities</th>
<th>Ice-lined Refrigerators</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;50ltrs</td>
<td>50-100ltrs</td>
</tr>
<tr>
<td>AJK</td>
<td>5</td>
<td>7</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>BALOCHISTAN</td>
<td>13</td>
<td>88</td>
<td>33</td>
<td>4</td>
</tr>
<tr>
<td>FATA</td>
<td>5</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KP</td>
<td>7</td>
<td>132</td>
<td>75</td>
<td>4</td>
</tr>
<tr>
<td>PUNJAB</td>
<td>4</td>
<td>243</td>
<td>185</td>
<td>7</td>
</tr>
<tr>
<td>SINDH</td>
<td>31</td>
<td>379</td>
<td>201</td>
<td>76</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>65</strong></td>
<td><strong>859</strong></td>
<td><strong>497</strong></td>
<td><strong>90</strong></td>
</tr>
</tbody>
</table>
Pakistan System Design & Equity Consideration

Generally

- Equity is not a major consideration for allocation of resources in government
- Existing facilities are given priorities over equity (implication is that same targets are reached with services all the time)
- CCE allocation was prioritized for existing equipment
- From the system design study it was observed that
  - Cold chain per infant is relatively high, but moving vaccine storage closer to service delivery points could help alleviate geographic barriers to vaccine availability
  - This is so because the CCE are concentrated in urban and placed with average to high population densities
  - Areas with sparse population are usually left out
Pakistan System Design & Equity Consideration

• Three supply chain equity metrics were used
  – **Cold chain coverage**: Liters of cold chain per surviving infant (estimated birth cohort surviving, from target populations in model)
  – **Inbound resupply distance of vaccines to district store**: Kilometers to the district store from the store from which it received vaccines directly (province or division)
  – **Average resupply distance of vaccines to EPI Centers**: Kilometers traveled by each dose to EPI centers from resupply store (district, town, or tehsil) divided by total number of doses allocated to the district

• Immunization coverage (such as DTP3 coverage) and socio-economic indicators (such as rural-urban spread, women’s primary school attainment) were also compared with supply chain equity metrics
## Equity: Supply chain metrics from modelling outputs

<table>
<thead>
<tr>
<th>Metric</th>
<th>Definition</th>
<th>Benchmark</th>
<th>Visualization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cold chain coverage</strong></td>
<td>Net cold chain volume for the district divided by surviving infants in the district</td>
<td><strong>0.06 liters</strong> (vaccine volume required per fully immunized child (FIC) at district level and below (1 month cycle stock, 1 month buffer stock), includes HPV &amp; Typhoid)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>0.06 to 0.09 liters/surviving child</strong></td>
<td><strong>Greater than 0.09 liters/surviving child</strong></td>
</tr>
<tr>
<td><strong>Inbound resupply distance of vaccines to district store</strong></td>
<td>Distance from the resupply point (provincial or division store) to the district store</td>
<td><strong>120 km</strong> (average distance that can be traveled in four hours)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Less than 90 km</strong></td>
<td><strong>90 km to 120 km</strong></td>
</tr>
<tr>
<td><strong>Average resupply distance of vaccines to EPI Centers</strong></td>
<td>Kilometers traveled by each dose to EPI centers from resupply store (district, town, or tehsil) divided by total number of doses allocated to the district</td>
<td><strong>60 km</strong> (average distance that can be traveled in four hours)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Less than 45 km</strong></td>
<td><strong>45 km to 60 km</strong></td>
</tr>
</tbody>
</table>
Equity: Immunization coverage and socioeconomic indicators at the district level

<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Measurement</th>
<th>Groups</th>
</tr>
</thead>
</table>
| Immunization Coverage        | DPT3 coverage (%)                                     | Range from 100% to 6%.  
- 90th percentile = 91%  
- 70th percentile = 72%   | 91% - 100%  
73% - 90%  
6% - 72% |
| Indicators                   | Disparity in DPT3 coverage (% difference in urban vs. rural) | Range from 0 to 74 percentage points:  
- 90th percentile = 7 percentage points  
- 70th percentile = 22 percentage points | 0 - 7 points  
8 - 21 points  
22 - 74 points |
| Socio-economic Indicator     | Women’s primary school attainment (%)*                | Range from 73% to 3%:  
- 90th percentile = 66%  
- 70th percentile = 52%   | 66% - 73%  
53% - 65%  
3% - 52% |

* Women’s primary school attainment (%) = Percentage of children aged 1-15 years who have completed primary school.
Cold chain capacity per surviving infant against immunization coverage for all provinces.
Weighted average resupply distance to health facilities against third-dose pentavalent vaccines for all provinces
Changing supply source would reduce resupply distance

Key Message:
- For this scenario, reducing resupply distance of district stores would improve reliability and responsiveness of supply chain, and contributing to improved immunization coverage. And equity
- This was applied to all districts & HFs and guided in prioritizing locations for our year 3 CCEOP equipment

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Battagram</th>
<th>Kohistan</th>
<th>Shangla</th>
<th>Tor Ghar</th>
<th>Karak</th>
<th>Lakki Marwat</th>
<th>Tank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (Peshawar)</td>
<td>Scenario (Manshera)</td>
<td>Baseline (Peshawar)</td>
<td>Scenario (Manshera)</td>
<td>Baseline (Peshawar)</td>
<td>Scenario (Bannu)</td>
<td>Baseline (Peshawar)</td>
</tr>
<tr>
<td>Supply Chain Equity Metrics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold chain/surviving infant</td>
<td>0.19</td>
<td>0.04</td>
<td>0.11</td>
<td>0.13</td>
<td>0.17</td>
<td>0.14</td>
<td>0.19</td>
</tr>
<tr>
<td>infant (liten, including new</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>CCE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inbound resupply distance of</td>
<td>259</td>
<td>47</td>
<td>250</td>
<td>146</td>
<td>181</td>
<td>96</td>
<td>156</td>
</tr>
<tr>
<td>vaccines to district store</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>(km)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average resupply distance to</td>
<td>33</td>
<td>48</td>
<td>48</td>
<td>24</td>
<td>24</td>
<td>34</td>
<td>43</td>
</tr>
<tr>
<td>health facilities (km)</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>Immunization Coverage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTP3 coverage (%)</td>
<td>57</td>
<td>24</td>
<td>49</td>
<td>6</td>
<td>63</td>
<td>50</td>
<td>68</td>
</tr>
<tr>
<td>No change</td>
<td></td>
<td></td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>Urban-Rural Gap in DTP3</td>
<td>Rural only</td>
<td>No change</td>
<td>Rural only</td>
<td>Rural only</td>
<td>Rural only</td>
<td>No change</td>
<td>75-62</td>
</tr>
<tr>
<td>coverage (%)</td>
<td></td>
<td></td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
</tbody>
</table>

This table compares the baseline and scenario metrics for different indicators across various districts and health facilities. The changes in resupply distance and other metrics are highlighted, with improvements in reliability and responsiveness of the supply chain noted.
Changing Supply source include

• Provision of CCE in facility (districts & HFs)
• Changing source of vaccines/supplies across boundary lines (districts collecting from nearby Provinces)
• Facilities distance communities collecting supplies from nearest supply hub/districts outside its own districts
Other indirect supply chain interventions

• Through the urban informal settlement (slumps) profiling
• Using equity assessment to identify districts the highest risks districts (highest numbers of zero doses & unimmunized children)
• 43 districts have been identified as very high risk districts with the highest number of zero dose
Other indirect supply chain interventions
Key Highlights

- 11.9 Million People Live in Slums/Undererved Areas
- 97% Slums/Undererved Areas Report No Access to any Health Facilities
- 93% Slums/Undererved Areas Report No Access to EPI Facilities
- 58% Slums/Undererved Areas are not Covered by LHWs
- 29% Slums/Undererved Areas Report No Coverage for Outreach
Key Highlights

4 Million
Children (Under Five Years)
Live in Slums/Underserved Areas

44%
Children have Vaccination Cards

53%
Children are Fully Immunized Records/Recall Basis

47%
Children are either Unimmunized or Under Immunized

70%
Reasons of Zero Dose Relates to Unawareness
What is the supply chain intervention to improve equity?

Identify locations with HFs within 5km & CC needs

Identify other passive CCE required & quantify needs

Currently procuring 6,500 CB & 6,500 VCs to address Outreach needs
Thank you
Immunization supply chain interventions that enable coverage and equity and contribute to resilient systems in Nigeria

Hajia Kubura Daradara
Nigeria’s iSC transformation strategy is aimed at providing equitable access to immunisation.
Nigeria has a 5-tier immunisation supply chain structure

**BACKGROUND**

NLWG  
ZLWG  
SLWG

![Map of Nigeria showing the 5-tier immunisation supply chain structure](Figure 1: Location of National and Zonal stores)
Last mile vaccine availability

- Outsourced distribution of vaccines and devices from national level, through the zones, to the state cold stores under long term agreements
- Direct vaccine delivery from state/state-satellite cold stores to equipped apex facilities in 8 states
  - Cascade deliveries from equipped apex facilities to unequipped facilities within catchment area
- Ensuring availability of potent vaccines in security compromised and hard-to-reach areas (e.g. Borno, Yobe)
  - Collaboration with the military
  - Use of long-holdover active and passive devices
- Oversight provided by LWGs at national, zonal and state levels
Cold Chain Expansion

- Inadequate storage capacity at all levels
- Country’s policy of at least one functional vaccine refrigerator per ward to provide equitable access to vaccines

Cold Chain Expansion and Rehabilitation Plan developed by NLWG

- Procurement of additional cold rooms at national and 6 zonal stores (*long term plan is to have 3 mega-hubs*)
- Procurement of cold rooms to fill state-level gaps (*e.g. Borno, FCT, Kano, Katsina, Lagos, Sokoto, Zamfara*)
- Leveraging Gavi Cold Chain Equipment Optimisation Platform (CCEOP) support up to 2028 capacity requirements to close all LGA and ward level gaps
  - All CCE equipped with RTMDs to monitor equipment performance and proactively trigger maintenance activities
  - 36+1 state maintenance units that are being equipped with the necessary resources
State-specific vaccines and devices forecast

- Demand planning and forecasting informed by coverage projections modeled in the NSIPSS: 2018 – 2028
  - States categorized based on coverage
  - Buffer stock categorized according to modeled target coverage (50% for <60% coverage and 25% for >60% coverage)
- Country-specific wastage rates guided by WHO indicative wastage rates
- State Engagement and review of forecast parameters vis-à-vis consumption and physical stock count

Vaccine accountability concerns against the background of 2016/17 NICS/MICS (33% national immunisation coverage ranging from 3% in Sokoto to 80% in Lagos states)
Institutionalising continuous improvement systems

2017 Effective Vaccine Management Assessment findings (68% score)

• Development of 3-year national, zonal and state-specific EVM continuous improvement plans
• Quarterly evaluation of progress with implementation of EVM cIPs
• Conducted EVM2.0 onboarding
• Quarterly supportive supervision, using EVM2.0 tool, at all levels
• Reviewing and updating Vaccine Management Standard Operating Procedures (SOPs) in line with EVM2.0 guidelines
• Development of Nigeria Immunisation Supply Chain policy
Immunisation supply chain interventions have contributed to Nigeria’s demonstrable improvement in RI coverage and equity while building system resilience.
BUILDING RESILIENT
Immunization Supply Chain in Afghanistan
2020-2025

Dr Dastagir Nazary, National EPI Director, Ministry of Public Health, Afghanistan
Ranjit Dhiman, Immunization Specialist (Supply Chain), UNICEF, Afghanistan
COUNTRY CONTEXT AND BACKGROUND

INFORMATION
- 32 million population
- 34 provinces
- 3500 HF s providing vaccinations
- NGO contracts at province level for all health services
- World Bank, GAVI, Govt. of Japan, Gates Foundation, UNICEF & WHO support

CHALLENGES
- Polio endemic
- Low immunization coverage (51% FIC)
- Insecurity- restricted access to half of country
- Difficult geographical terrain
- No population census since last 41 years
- Electricity infrastructure

STRENGTHS
- Vaccine security (assurance)
- Strong Cold chain infrastructure
- Strong partner and donor support
WHAT IS WORKING WELL

- Temperature within +2 to +8°C throughout supply chain
  - Summer 2019: 96.9% (37,603 hours)
  - Winter 2019-20: 99.2% (44,907 hours)

- Temperature monitoring study confirmed WHO compliance of supply chain for more than 96% and 99% of time (both seasons)

VACCINE FUNDING
- VACCINE FUNDED BY GAVI AND GOVT. OF JAPAN
  - No lapse in vaccine supply, no national level vaccine stock out
  - Rationalization of vaccine distribution to lower levels

COLD CHAIN FUNDING
- COLD CHAIN FUNDED THROUGH CCEOP + HSS + UNICEF
  - National, regional and province vaccine store buildings
  - Countrywide Upgrade from Gas based refrigerator to SDD
  - 1,850 HF with SDD (by 2021)
  - 60% of plan implemented by 2020

Download immunization supply chain documents
VISION
• ISCL on top agenda of EPI management
• Leadership on SC at National, regional and province level
• M&E of action plans

ACTION
• Establishment of National and regional Vaccine logistics working groups
• EVM IP and ISC strategy as anchor guide for LWGs annual plans and focus of meetings

IMPACT
• Focus on service delivery, EQUITY
• Vaccine delivery, cold chain for hard to reach areas
• Solutions for persistent problems (security, logistics, service delivery)
VISION
• cEVM improvement plan for 2021-25, aligned with national strategy
• Annual Implementation, M&E
• Government and partner collaboration for governance

ACTION
• EVM IP built around 5 supply chain fundamentals
• Detailed EVM IP for each province
• EVM IP tracking by N/RVLWG for each region

IMPACT
• Reaching the un-reached, with supply chain solutions
• Resilient supply chain for routine & SIA immunization program
• Tailor solutions for Hard to reach zones
VISION
• Quality data: data collection at source
• Availability, use of timely and accurate data for decision making

ACTION
• Single platform mobile-phone based app for supply chain data (cold chain inventory, stock management and coverage)
• Online Dashboards access to all stakeholders

IMPACT
• Improvements in data quality and availability
• Planning tools for logistics and program implementation (addressing equity – identify poor performing zones)
• Informed decisions
VISION
- Adequate cold chain capacities all levels of supply chain
- Infrastructure to store and transport vaccine
- Freeze free cold chain (storage and transport)

ACTION
- Cold chain equipment plan in EVM IP (5 years)
- Buildings for provinces (EVM standards and capacities)
- **Infrastructure for Urban and hard to reach areas** (EVM IP)

IMPACT
- Resilient cold chain
- Improved access, addressing Equity (service delivery enabler)
- Vaccine availability and quality
VISION
• Maintenance of temperature and equipment
• Optimum vaccine distribution networks
• Supply chain for addressing pandemic and seasonal vaccinations

ACTION
• Center of excellence – Establishing maintenance infrastructure, use of RTM for maintenance
• Engagement with NGO and private players for service delivery (urban & HTR)

IMPACT
• Improved access, logistics for reaching the most difficult targets
• Service Delivery of Covid-19 vaccine
• Reduced recurring investments in cold chain
ACTION PLAN

SITUATION ANALYSIS AND VISION

National immunization strategy 21-25
- ISCL Strategy part of National immunization strategy
- EVM assessment 2020

IMPLEMENTATION PLAN

EVM cIP 21-25
- Yearly EVM implementation plan
- Yearly implementation of ISC strategy

FUNDING, MONITORING & EVALUATION

GAVI full Portfolio planning
- Funding for EVM IP (2022-25) implementation
- Funding for ISL strategic action plan

Partnerships: Government, UN agencies, GAVI, Govt of Japan, Gates foundation, NGOs

Continued Dialogues: service agreements and IPC with AGE (Anti-Government-Elements, Taliban)
Contributors for addressing equity and coverage

**DEMAND GENERATION**
- Reaching the unreached
  - Immunization
  - Micro-plans of health facilities
  - Added pool of vaccinators
  - IPC
  - Community engagement

**SUPPLY CHAIN**
- ISCL strategy
  - Improved access
  - Leadership
  - Cold chain infrastructure
  - Quality data for continuous improvement

**RESULTS**
- Improved coverage
  - Reach zero dose children
  - Reduction in dropouts
  - Improved FIC
  - Resilient system for routine + emergency vaccinations
For the children of Afghanistan

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