

‘Workforce excellence is essential for sustainable health supply chains’

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Designing and Implementing an Intelligent Vaccine Logistics Management System for India’s Universal Immunisation Programme (UIP) - ‘the eVIN model’

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Public Health Foundation of India (PHFI)

and

Ministry of Health & Family Welfare, Govt. of India

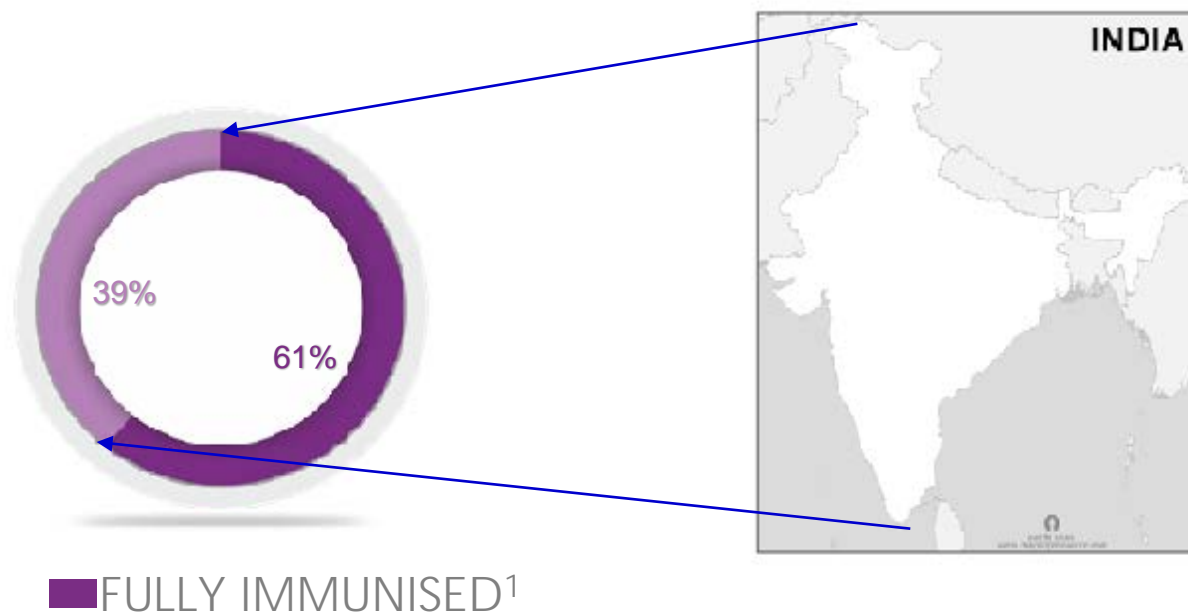
Financial sponsors:



Background

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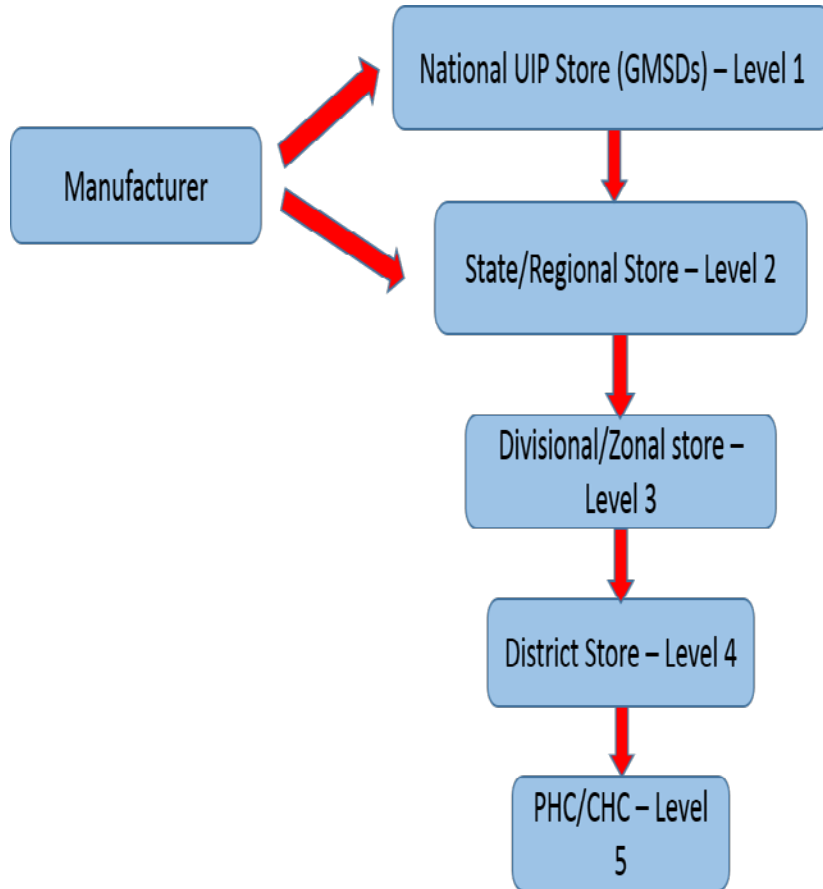
- India has one of the largest Universal Immunization Programs (UIP) in the world
- Targets ~26 million newborns and ~30 million pregnant women each year translating into >300 million doses of vaccines each year



Current Vaccine Logistics System in the Country

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Vaccine Supply Chain System in India



Distribution of vaccines from upper nodes to the lower nodes are supplied based on any of the following:

- Monthly targets
- Stock outs
- Low stocks
- Large quantity of stocks received
- Proximity to State/District store
- Low supply from Manufacturer
- Stocks of other vaccines

Current scenario of vaccine logistic in the country

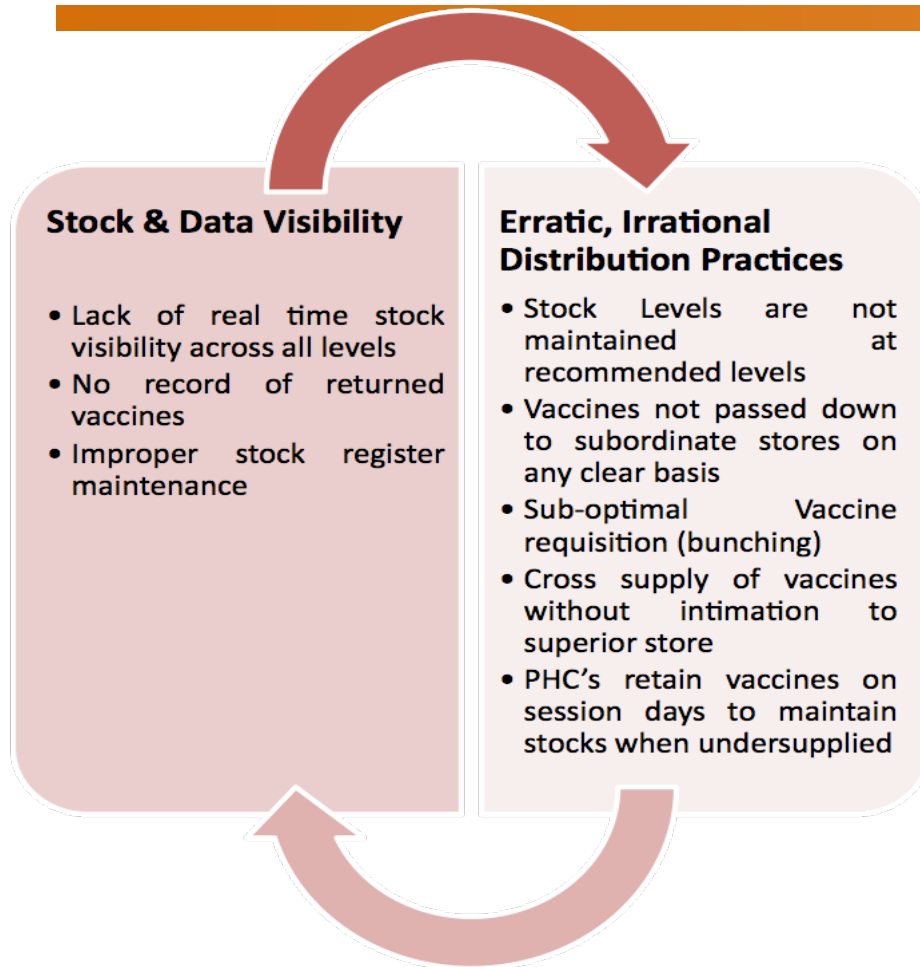
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- The current vaccine logistic system in the country is highly variable from district to district
- One of the major reasons for adhoc management at various levels of supply chain is the limited visibility of stocks at each node – ‘A coal mine effect’
- ITSU conducted a ‘Deep Dive Study’ to understand the *end-to-end issues with vaccines (with diluents and syringes) supply chain and root causes for the stock-outs*



Deep Dive Assessment

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Identified major root cases:

- Lack of stock visibility
- Lack of Human Resource management
- Poor record keeping of stock and sharing across levels

Following Deep Dive, ITSU conducted a 'Feasibility study' to involve private sector in addressing the identified gaps.



Scope of Private sector involvement

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Presence in the
supply chain

State

Region

Division

District

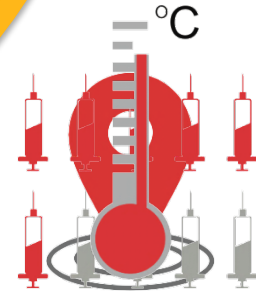
PHC

Proposed Models		Implementation and management of IT solution for supply chain management	HR, training and capacity building	Supply chain operations	Procurement and management of Cold Chain Equipment
Model 1	Supply chain management based on IT application	√	√		
Model 2	Supply chain operations (district and divisional level only)	√	√	√	
Model 3	Complete outsourcing of the vaccine supply chain (district and division level only)	√	√	√	√

- Ministry of Health, Govt. of India assessed all the models based on feasibility, sustainability, cost vs. benefit, impact on the existing system and its long term effects.
- Model 1 was selected by the Ministry and ITSU was suggested to develop a conceptual framework and pilot it to ensure that the proposed model is replicable and expandable.

Q3

Are the ~~new~~ standards and the
recommended
temperatures?



electronic Vaccine Intelligence Network (eVIN)

ITSU DESIGNED THE eVIN PROJECT TO ANSWER THESE FUNDAMENTAL QUESTIONS



PEOPLE

+



PROCESSES

+



PRODUCT

PROJECT DESIGN

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electronic Vaccine Intelligence Network (eVIN)

OBJECTIVE

Real-time information on cold chain temperatures and vaccine stocks and flows so as to ensure adequate quantity of vaccines, stored under recommended temperature, are available at every cold chain point at any point in time

COMPONENTS

Processes

Standardized Recording & Reporting

Regular Capacity building

People

Vaccine & Cold Chain Manager (VCCM)

Regular Supportive Supervision

Product

Appropriate technology selection with features of simplified inputs, intelligent analysis and rapid deployment

Fully automated real time temperature monitoring of all cold chain equipments

OUTPUTS

Rational Distribution of stock

Trend analysis and prediction

Timely re-ordering and refilling

Emergency stock management

Alerts for temperature breach

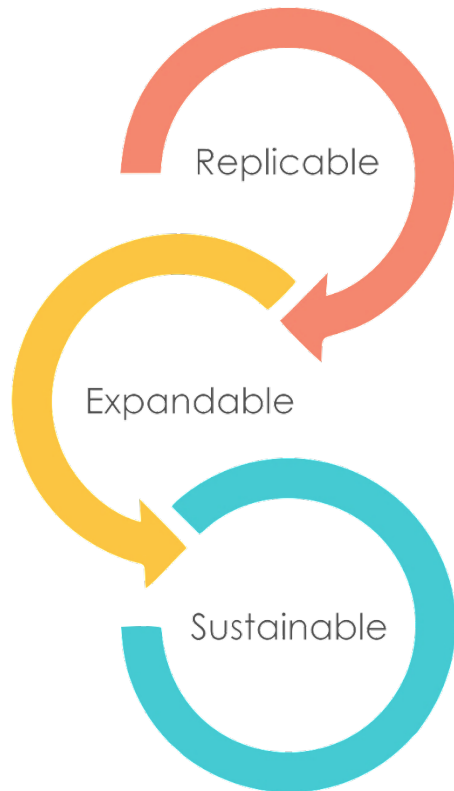
Route planning for routine and emergency management

Activation of Contingency plan for cold chain breach

Consumption pattern of individual cold chain point

GUIDING PRINCIPLES OF THE PROJECT

The model should be



The model will:

- Not disrupt the existing system of manual documentation but will support the system with better and uniform registers and format.
- Will support the system by capacity building rather than taking away the duties and responsibilities
- Will have highly simplified input methodology and output results
- Will develop the system to be used by personnel having 10+ education status and very little IT skills

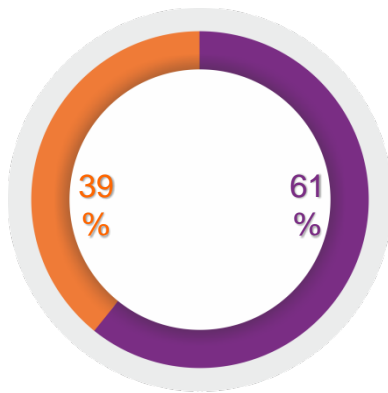
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Based on Built-Operate-Transfer (BOT)

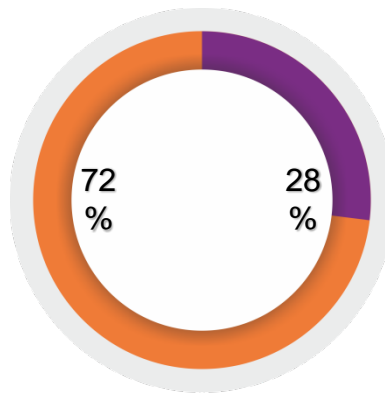
BACKGROUND

Under the RMNCH+A strategy, immunisation is one of the core components to address child health issues and to improve child survival

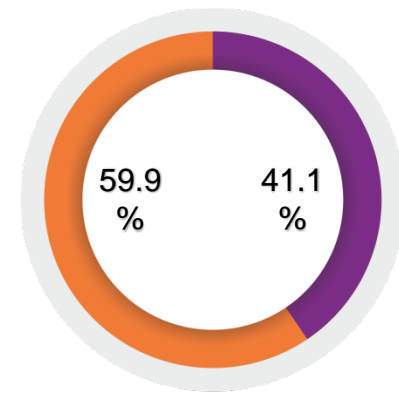
■ FULLY IMMUNISED



INDIA
(CES-2009)



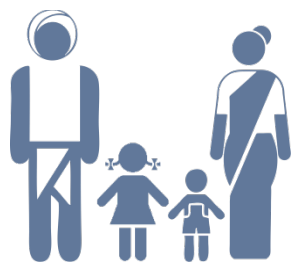
SHAHJAHANPUR
(AHS-II 2011)



BAREILLY
(AHS-II 2011)

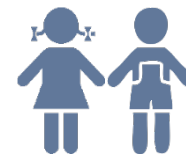
DISTRICTS PROFILE

Bareilly & Shahjahanpur



7.4 million

Total Population



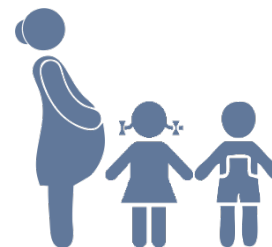
0.2 million

Estimated children
Below 1 year age



0.24 million

Estimated Pregnant
Mothers in 1 year



1.1 million

Total number of children &
Pregnant mothers targeted for
Immunization in 1 year

	BCG	Pat	DPT	Measles	Date	Page	TT	JE	Hep
1-1									
B/F. Parage No (4)	21	-	157	76	300	-	2130		
21-8-12 2001	-	-	190	90	270	-	190		
21-8-12 2001	-	-	380	67.5	30	-	190		
21-8-12 2001	-	-	250	500	-	-	-		
4-1	500	-	-	-	-	-	-	-	-
From DIO. 21-8-12 Vouch No (390)	500	-	1380	820	500	-	1940		
21-8-12 2001	210	-	180	90	170	-	170		
22-8-12 2001	290	-	1200	730	260	-	1770		
23-8-12 2001	200	-	170	100	160	-	180		
23-8-12 2001	90	-	1030	630	200	-	1590		
Pro DIO. 24-8-12 Vouch. No 407	1000	2000	4000	1000	2000	500	12000		
13	1000	2000	5000	1630	2200	500	2500		
25-8-12 2001	16	360	220	105	310	90	110		
27-8-12 2001	20	1700	480	1525	1850	420	2450		
28-8-12 2001	150	260	250	110	280	85	130		
29-8-12 2001	780	1400	4610	1415	1670	335	2320		
30-8-12 2001	140	280	250	95	220	90	110		
31-8-12 2001	640	1160	4400	320	1290	235	2180		
1-9-12 2001	150	900	240	110	310	80	150		
2-9-12 2001	480	860	416	1210	980	55	2030		
3-9-12 2001	160	280	220	120	300	85	160		
4-9-12 2001	30	580	340	100	680	70	1870		
5-9-12 2001	150	300	230	105	290	50	180		
6-9-12 2001	180	280	370	985	390	20	1790		
7-9-12 2001	150	280	210	140	290	20	130		
8-9-12 2001	30	-	350	875	100	-	600		
9-9-12 2001	200	300	-	-	500	100	-		
10-9-12 2001	230	300	350	875	600	100	1600		
11-9-12 2001	70	150	350	100	180	60	100		
12-9-12 2001	110	150	310	97	420	40	150		

	BCG	Pat	DPT	Measles	TT	JE	Hep
13-9-12 2001	160	150	215	675	420	40	1500
14-9-12 2001	70	150	330	100	190	40	100
15-9-12 2001	90	-	282	675	230	-	1400
16-9-12 2001	80	-	300	100	190	-	100
17-9-12 2001	10	-	290	575	40	-	1300
18-9-12 2001	100	-	-	-	1000	-	-
19-9-12 2001	110	-	250	575	1040	-	1300
20-9-12 2001	60	-	280	110	200	-	200
21-9-12 2001	50	-	240	465	840	-	1080
22-9-12 2001	50	-	300	100	200	-	210
23-9-12 2001	-	-	190	365	640	-	870
24-9-12 2001	500	1500	1500	750	750	500	1000
25-9-12 2001	500	1500	3440	1115	1390	500	1870
26-9-12 2001	10	20	240	120	240	-	200
27-9-12 2001	40	110	220	905	1150	500	1650
28-9-12 2001	220	360	250	170	2900	110	200
29-9-12 2001	270	1120	250	385	920	-	1450
30-9-12 2001	200	380	240	120	240	110	210
31-9-12 2001	70	740	2710	785	680	680	1240
1-10-12 2001	250	-	-	-	500	250	-
2-10-12 2001	220	740	2710	785	1180	530	140
3-10-12 2001	200	360	160	100	280	100	180
4-10-12 2001	120	380	250	685	900	430	160
5-10-12 2001	200	-	-	-	500	-	500
6-10-12 2001	3200	280	250	35	1400	430	1560
7-10-12 2001	170	340	160	95	260	110	160
8-10-12 2001	150	40	230	590	1140	320	1400
9-10-12 2001	250	-	-	-	-	-	150
10-10-12 2001	400	40	230	685	1100	470	1400

2. People

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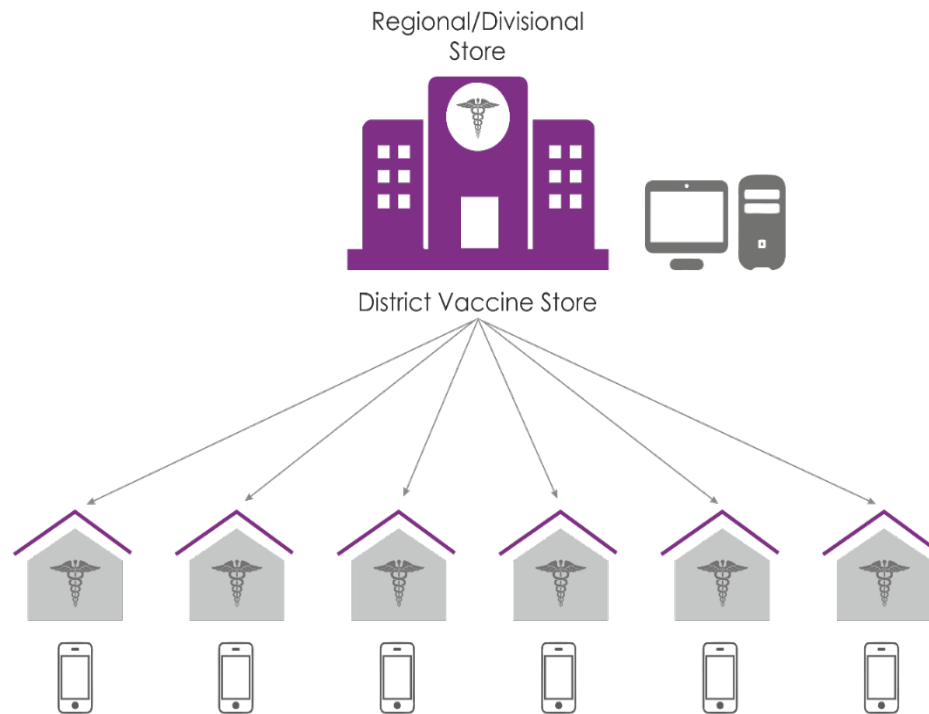
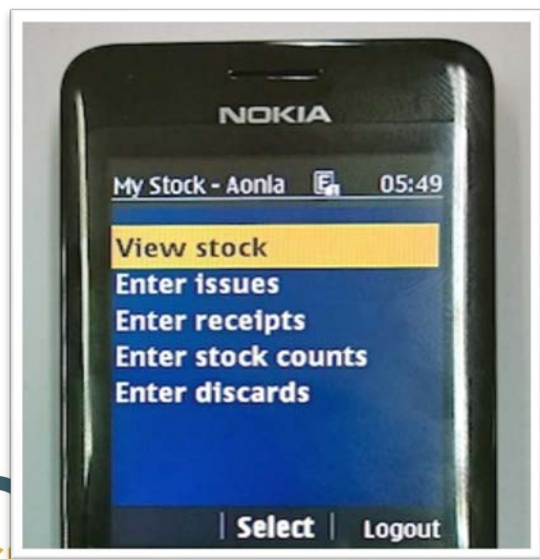
Creation of a new post called **Vaccine and Cold Chain Manager (VCCM) at district level**

- ✓ Overall responsibility for vaccine and cold chain management in the district
- ✓ To Work with the District Immunisation Officer
- ✓ To provide regular Supportive Supervision and Capacity building of the cold chain handlers.
- ✓ Salary in accordance with the current norms of HR salary structure under the country's wider health programme called National Health Mission (NHM)
- ✓ Future vision of developing the VCCM as a Health Logistic Manger with the ability to manage drugs and essential medicines along with the vaccines in the district as an NHM staff



3. Product

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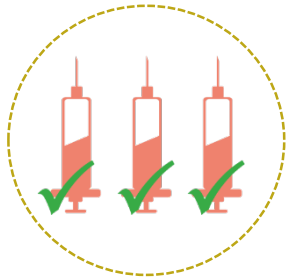
At the end of each session day, CCH enters total vaccine consumed in mobile application

- Simplified user interface
- Dynamic data analysis

EXPECTED OUTCOMES



IMPROVED STOCK AVAILABILITY



through better visibility and standardized procedures

REAL TIME DATA VISIBILITY



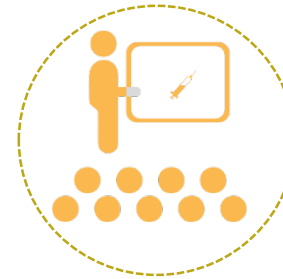
at all cold chain points along with real time temperature monitoring

TOOLS AND REPORTS



reports to facilitate decision making in vaccine logistics management

STRENGTHENED HEALTH SYSTEM



through Human Resource, Capacity Building and Leveraging technology

REPLICABLE MODEL



for state/Nation-wide scale up

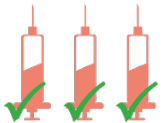
INITIAL RESULTS



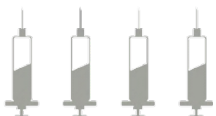
From the onset, eVIN has maintained real-time stock visibility down to the last cold chain point for all the vaccines across both the districts



Within 1 month of deployment, the logistics data reporting rate has continued to be > 90% within 48 hours of each immunization session, from both the districts.



eVIN has achieved and consistently sustaining > 99% availability of all the vaccines across all 43 cold chain points.

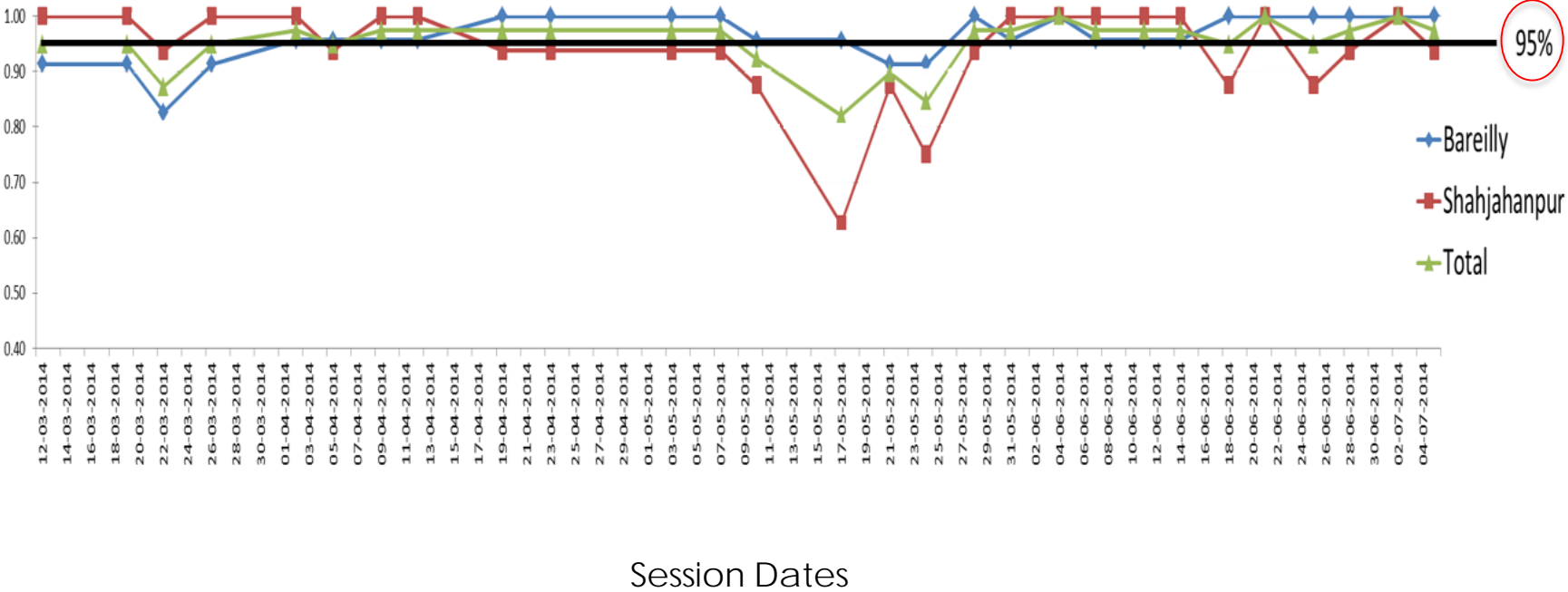


Duration of stock-out events have decreased by > 16% over the course of 14 week program. In Shahjahanpur District, however, response times fell by over 45% in the initial 3 months.

REPORTING RATES

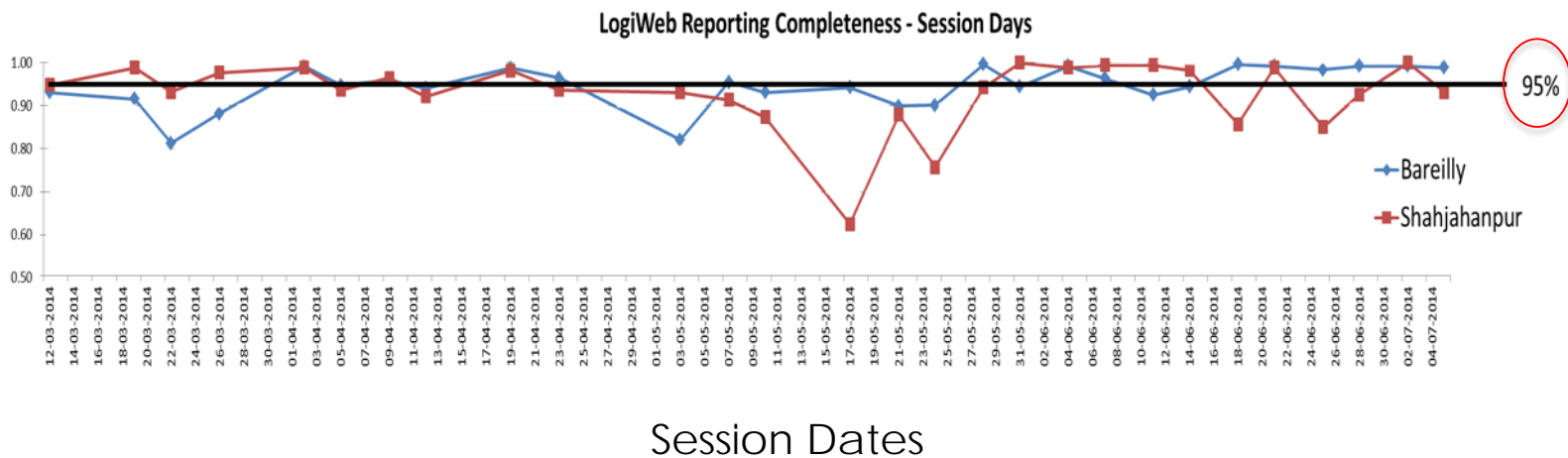
The reporting rates for both the districts – Bareilly and Shahjahanpur are seen **consistently between 80% - 90%**

LogiWeb Access Rate - Session Days



COMPLETENESS RATE

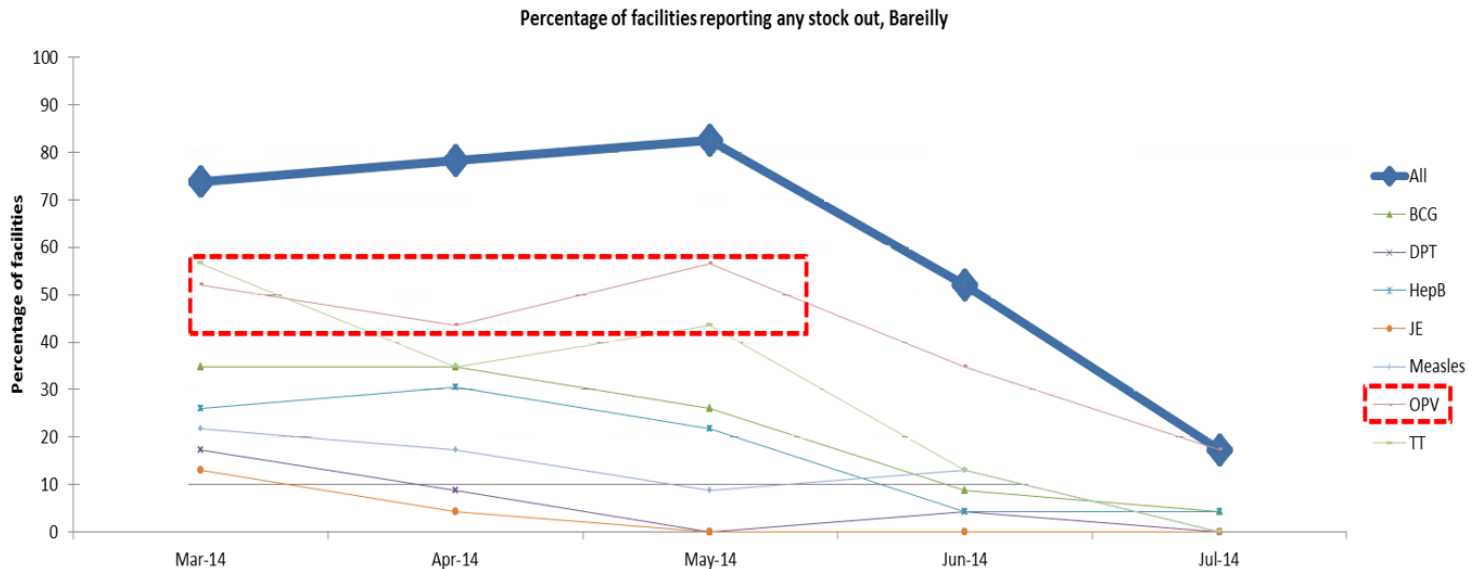
Is the data reported **complete**?



Both the districts have consistently reported **above 80%** of complete data in reporting the utilisation/ net consumption of all the vaccines, diluents and droppers

STOCK-OUT REPORTING RATES

BAREILLY: 70-80% of cold chain points reported stock out in initial months which has now dropped significantly.



Lessons Learnt

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- Introduction of VCCM's under the eVIN model is to establish clear roles, responsibilities and expectations as focusing solely on technology solutions will have a limited effect especially in resource-poor settings.
- User-friendly technology, when married to human resources – with a defined supportive supervision plan results in high adoption rates and high data quality, as evidenced by the eVIN pilot.
- eVIN's impact is being assessed and early results indicate high levels of system adoption by the end users i.e. Cold chain handlers, and high stock data quality, driven by HR strengthening measures.



Next Steps

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- The concept of eVIN model has been adopted by the Ministry of Health, Government of India for the UIP.
- VCCMs are being deployed in 3 major Indian states with a combined population of 345 million under the Health System Strengthening grant
- Introduction of a VCCM position in all districts of the country is currently being explored and considered.



Conclusion

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- ✓ Concept of eVIN was designed to fulfil the desired characteristics required for an IT based LMIS – smooth information sharing, speed order processing and quick decision making.
- ✓ To achieve these characteristics eVIN model was envisioned to build upon a strong and well-supported operations team – VCCM's that uses the technology platform which can do intelligent distribution decision for an effective vaccine logistics management system.
- ✓ Need of the hour is to strengthen the human resource management across the supply chain with standard procedures for recruiting, training and retaining.



Thank You



Immunization Technical Support Unit
Ministry of Health and Family Welfare

The PtD Board:

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