National EVM Assessment 2018

NCCVMRC-NIHFW &

UNICEF

Contents

Abbreviations and Glossary

AEFI	Adverse Event Following Immunization
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
AVD	Alternate Vaccine Delivery
BMW	Bio Medical Waste
CCE	Cold Chain Equipment
CCP	Cold Chain Point
CCT	Cold Chain Technician
CFC	**Chlorofluorocarbon** (ozone depleting substance)
CPCB	Center Pollution Control board
DD	Deputy Director
DF	Deep Freezer
DTFI	District Task Force Meeting for Immunization
DVS	District Vaccine Store
EEFO	Early Entry First Out
eVIN	Electronic Vaccine Intelligent Network
EVM	Effective Vaccine Management
EVSM	Effective Vaccine Store Management
FAQ	Frequently Asked Question
GMSD	Government Medical Store Depot
GOI	Government of India
HW	Health Worker
IEC	Information Education Communication
ILR	Ice Lined Refrigerator
IP	Improvement Plan
IPV	Inactivated Polio Vaccine
iSC-CC	Immunization Supply Chain Cold Chain
ISO	International Organization for Standardization
iTMIS	Immunization Training Management Information System
ITSU	Immunization Technical Support Unit
JSI	John Snow Inc.
LD	Last Delivery point (DVS)
Max.	Maximum
Min.	Minimum
MIS	Management Information System
MO	Medical officer
MoHFW	Ministry of Health & Family Welfare
MOIC	Medical Officer In charge
MR	Measles Rubella
NCCMIS	National Cold Chain Management Information System
NCCRC	National Cold Chain Resource Center
NCCVMRC	National Cold Chain Vaccine Management Resource Center

NEVM	National Effective Vaccine Management
NHM	National Health Mission
NIHFW	National Institute of Health & Family Welfare
PCV	Pneumococcal Conjugative Vaccine
PIP	Program Implementation Plan
PPE	Personal Protective Equipment
PPM	Planned Preventive Maintenance
Prof.	Professor
PVS	Primary Vaccine Stores
PWD	Public Works Department
RDD	Regional Deputy Director
RI	Routine Immunization
RVS	Regional Vaccine Store
RVV	Rota Virus Vaccine
SCCO	State Cold Chain Officer
SEPIO	State EPI Officer
SN	Sub National
SOP	Standard Operating Procedures
SP	Service point (Last Cold Chain Point)
SS	Supportive Supervision
STFI	State Task Force Meeting for Immunization
SVS	State Vaccine Store
UIP	Universal Immunization Program
UNDP	United Nation Development Program
UNICEF	United Nation Children Fund
VAR	Vaccine Arrival Report
VCCH	Vaccine and Cold Chain Handler
VCCLM	Vaccine and Cold Chain Logistic Manager
VMA	Vaccine Management Assessment
VS	Voltage Stabilizer
VVM	Vaccine Vial Monitor
WHO	World Health Organization
WIC	Walk in Cooler
WIF	Walk In Freezer

Contextual

Health care facilities and programmes count on competent and operational supply chain system to store, transport and apportion health care commodities. This ensures that the right products are available at the right place, at the right time and in the right condition to deliver health care services to the community.

Experiences demonstrate that a high-quality vaccine supply chain is a crucial element of an immunization program. Over the past decade, the world has invested enormous resources and energy into the development of new and lifesaving vaccines. With the availability and accessibility of new and costly vaccines under the programme, the new challenge is to ensure a seamless supply chain system.

With high stock values and greater storage capacity at every level of the cold chain system, managers must be able to maintain optimal stock levels, reduce wastage, accurately forecast vaccine requirements, and prevent equipment break-downs or malfunctions. Maintaining high standards of performance in these areas can only be achieved if all the links in the vaccine supply chain are effectively monitored, assessed and improved based on the gaps identified.

UIP and Immunization Supply Chain-Cold Chain in India

India's Universal Immunization Program (UIP) is among the largest in the world and caters to 26 million infants and 30 million pregnant women, saving 2.5 million lives each year [1i]. The program has contributed significantly to saving lives of millions of children and ensuring that they survive and thrive.

The effectiveness of UIP depends largely on a functional end-to-end Immunization Supply Chain system. Immunization supply chain plays a focal role in ensuring the uninterrupted accessibility of quality vaccines from the level of the manufacturer to that of the beneficiary.

In last few years many new interventions by Government of India include introduction of newer lifesaving vaccines, such as Pentavalent, Inactivated Polio Vaccine (IPV), Rota Virus Vaccine (RVV), Pneumococcal Conjugative Vaccine (PCV) & Measles Rubella (MR) vaccine, Cold chain space assessments for newer vaccines, largest augmentation of cold chain space and CCE distribution, strengthening of immunization centres i.e. NCCVMRC, NCCRC etc., purchase of newer technological solar equipment, eVIN (Electronics Vaccine Intelligence Network), NCCMIS (National Cold Chain and Management Information System), iTMIS (Immunization Training Management Information System), supportive supervision for immunization, various capacity building initiatives including development of audience specific modules i.e. VCCH, ILR/DF/WIC/WIF/VS repair and maintenance, MO handbook, FAQs for ASHA, ANM, Community and Media personnel, job aids including short video films for capacity building and quick referencing, etc.

Immunization supply chain - cold chain consists of a series of storage and transport links, all of which are designed to keep the vaccine at the recommended temperature from the point of manufacture till it reaches the targeted beneficiary.

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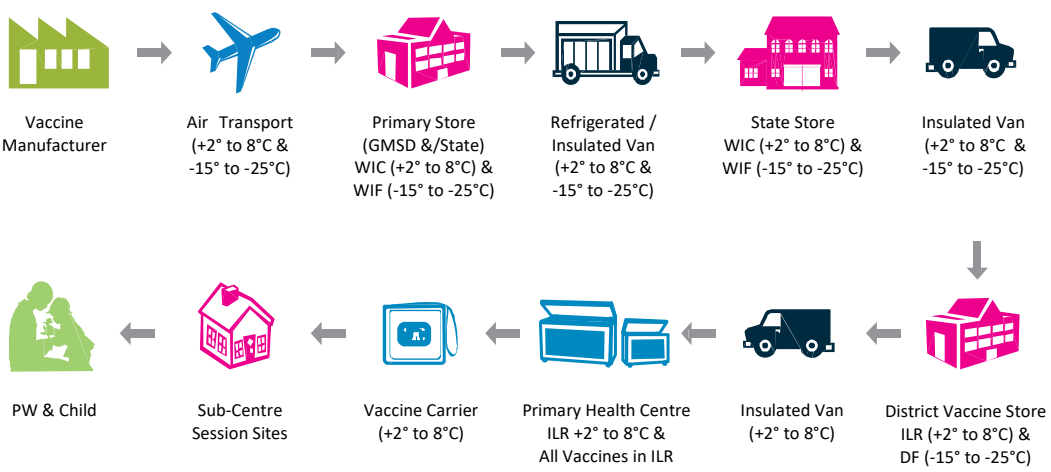
[1] - https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32804-0/fulltext,

The cold chain system and vaccine flow in the country is schematically represented below:



Global Effective Vaccine Management Initiative

WHO-UNICEF have developed the Global Effective Vaccine Management (EVM) initiative, that integrates the learning from the former Effective Vaccine Store Management (EVSM) initiative and the Vaccine Management Assessment (VMA) tool which were in use till August, 2010 for such evaluations.

It is a globally accepted tool for methodical assessment of cold chain and vaccine management system by the national/state level programme managers to identify and fix the short comings using measurable indicators under different criteria, categories, and priorities at all levels of supply chain. EVM also helps in allocating resources in a more equitable manner. It provides a snapshot of comprehensive vaccine supply chain management from the national level to the far reached health facilities with vaccine storage. EVM assesses 9 global criteria for an agreeable vaccine supply chain over a defined period of past 12 months at all levels. EVM sets minimum standards for the entire vaccine supply chain management.

Criteria and category for the EVM assessment:

There are 9 categories and 7 criteria used for the assessment of the effective vaccine management practices. Weightage are given to each categories appropriately as per their significance in the program. The following table depicts the relation between each criteria and categories with weightage as per the global EVM assessment tool.

EVM criteria indicator	EVM categories						
	Building	Capacity	Equipment	Management	Repair and Maintenance	Training	Vehicle
Vaccine Arrival				93%		3%	3%
Temperature				34%		66%	
Storage Capacity		90%		10%			
Building, Equipment & Transport	45%		40%				15%
Maintenance					100%		
Stock management			1%	99%			
Distribution				63%		37%	
Vaccine Management practices in the field				41%		59%	
Management Information System and Supportive function				100%			

Seven categories of EVM listed below are needed to assess the current process and control of the system for quality and sufficiency.

The guiding components are:

1. Buildings;
2. Storage and Transport capacity
3. Cold chain equipment
4. Management
5. Repairs and maintenance
6. Training and
7. Vehicle

A minimum of 80 % performance is recommended by WHO for each criterion.

Objective

The objective of the EVM assessment is to evaluate the existing performance of the immunization supply chain using the EVM assessment tool in order to identify key strengths, weaknesses and bottlenecks and to utilize the findings and recommendations to translate these into a comprehensive plan of action, identifying interventions and activities to address both current and future challenges.

After this to implement the comprehensive plan of action and put in place a mechanism for reviewing progress against planned activities on an annual basis, and monitor implementation using defined process indicators.

About National EVM Assessment 2018

India is the seventh largest country in the world on the basis of land area and second largest on the basis of population. India is a multicultural, multi-lingual and has nearly all kind of geographical settings within the country. 18% of the world's population lives in India, and many states of India have populations similar to those of large countries. Each state, require that the Effective Vaccine Management (EVM) is conducted at State level to understand local perspective and design localized improvement plan.

The overall design and management of immunization program in India is centrally driven by Government of India, including procurement and supply of vaccines and cold chain equipment, introduction of new vaccines, development of uniform guidelines, financial support for program management etc.

It emerges the need of national level review of immunization supply chain-cold chain to maintain uniformity and to review existing practices and advancement of national guidelines. Hence National EVM Assessment is essential to review the immunization supply chain-cold chain (iSC-CC) on global tools.

last a National EVM assessment in India was held in 2013 under 9 global criteria's and additionally was undertaken by a comprehensive Improvement Plan. This was the first National EVM Assessment ever conducted in the country.

Total sample size in National EVM 2013 was 114, comprising of 4 GMSDs, 16 Primary Vaccine Stores, 14 Sub National (Regional) Vaccine Stores, 28 Last Delivery Stores (DVS), 52 Service Points (CCPs). A total of 27 teams were formed, each comprising of two national assessors for data collection from field.

Inimitable traits of National EVM Assessment 2018

India's National EVM Assessment 2018 is one of the world's largest EVM assessments. The profundity of assessment can be measured by its sample only. Thoroughly 145 stores were assessed in 5 different layers of the vaccine stores i.e. GMSDs, SVS, RVS, DVS & CCPs. National EVM Assessment 2018 activity was additionally utilised to strengthen the system by generating pool of National Assessors from different states of India, who will be the vanguard of iSC-CC. Involvement of companions from various Medical Colleges were part of the strategy. Medical colleges are contributing enormously in providing skilled human resource which in turn strengthens the system.

The National EVM Assessment 2018 was a paperless activity to enable easy data collection with consistency and seamless data consolidation.

The National EVM Assessment was conducted using a Mobile Based Application complemented by an online link to collect the data from field. This has benefitted in terms of time, money, empowerment and analysis. The mobile application was developed by the NCCVMRC with necessary support from UNICEF.

The activity was attained by consistent efforts of 74 assessors fractionated into 40 teams to accomplish the data collection from 145 Cold Chain Points from different locations across 23 states. The immense size of sample and participations from different agencies like NCCVMRC, ITSU, UNICEF, UNDP, WHO, JSI and faculty from Medical Colleges has made this activity distinctive. NCCVMRC NIHFW and UNICEF conjointly led this activity under the guidance of MoHFW.

The National assessment was followed by "Improvement Plan workshop" in the mid of July'18. Attendees of the workshop included contributors from MoHFW, State SEPIOs/CCOs, faculty from medical colleges and other associates like NCCVMRC, ITSU, UNICEF, UNDP, WHO, JSI.

Sampling methodology

For conducting National EVM assessment 2018, different forms of sampling methodologies have been used viz. -

1. ***Purposive sampling*** - Government Medical Store Depot (GMSDs) are primary hub of Government of India and receive vaccines straight from the manufacturer. Primary Vaccine Stores (PVSs) also receive vaccines directly from the manufacturer and supply these vaccines state wide. The quantity of vaccine and logistics kept at GMSDs & PVSs is colossal hence it was felt essential to review all GMSDs and PVS (with few exceptions) to assess the situation and make improvement plans accordingly.

For census survey of all 4 Government Medical Store Depot (GMSDs) and Primary Vaccine Stores (PVSs), ***Purposive*** sampling has been used for conducting EVM.

2. ***Systematic Random Sampling*** – For Systematic Random Sampling, "Sampling frame" was engendered. List of all the stores i.e. Sub National Stores, Last Delivery Points and Service Delivery Points was generated. The listing of various stores was then transferred manually to "Site Selection Tool" for EVM sampling developed by WHO. With 85% Confidence Interval and 10% Precision Rate the site selection tool was then ran and sample was generated for National EVM Assessment 2018.

3. ***Equilibrium of eVIN & Non eVIN states in sampling****:* At the time of National EVM Assessment, Electronic Vaccine Intelligence Network (eVIN) was fully implemented in 8 states of India. While doing sampling for EVM 2018, it was also decided to keep balanced representation of both eVIN and non eVIN states.

4. ***Separate Systematic Random sampling for north east states****:* While undertaking systematic random sampling on WHOs site selection tool, North East States were not picked up by the tool because of its small size population. To give equal representation of North East States in the study, it was decided to run the site selection tool separately for North East States.

Exclusion criteria -

While doing sampling the team has made few criteria for excluding states for EVM assessment-

1. **Measles Rubella (MR) campaign** – India is introducing MR vaccine in a phased manner with an initial MR campaign followed by introduction under routine immunization. MR campaign targets the beneficiaries between 9 months to 15 years of age and the vaccine supply for the campaign is humongous and short lived.

   During the period of National EVM Assessment 2018, 8 states & Union Territories namely Assam, Delhi. Punjab, Haryana, Meghalaya, Manipur, Mizoram, Andaman & Nicobar were preparing for state MR campaigns.

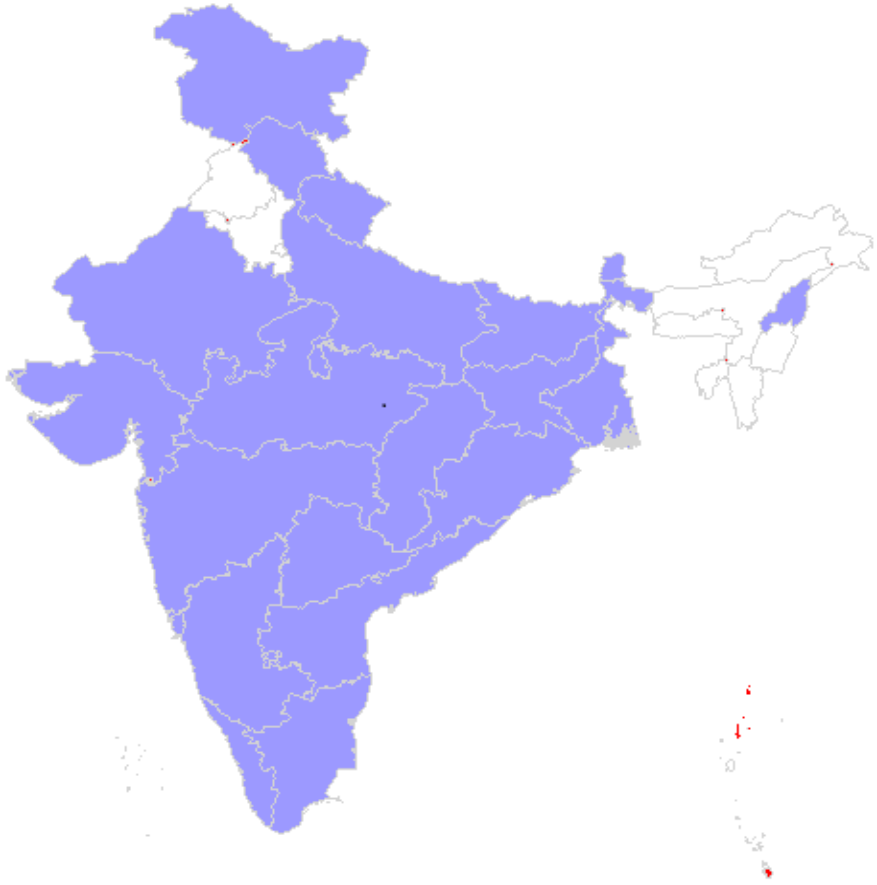
   The supply chain would have presented a very factitious picture if assessed around campaign. Therefore, it was decided to exclude states undergoing MR campaign.

2. **The states which were planning State EVM this year** – Health being a state subject, many states like Maharashtra, Gujarat & Andhra Pradesh, had planned their State EVMs in year 2018. To avoid repetition, only Primary Vaccine Stores (PVS) of these states have been assessed under National EVM 2018.

Sample Size of National EVM 2018

The table below depicts the summary of sample size of National EVM assessment 2018. Initially 154 stores were to be sampled for NEVM 2018 but due to political unrest in Karnataka, 9 stores were dropped from sample. Particulars of stores are listed below: -

Level of stores	EVM-2018 (No. of stores Planned to assess)	EVM-2018 (No. of stores actually Assessed)
GMSD	4	4
Primary Stores	42	40
Sub National Stores	12	11
Lowest Distribution Points	32	30
Service Points	64	60
Total	**154**	**145**



In National EVM Assessment 2018, stores located across 23 states from all over India were assessed. 40 teams of assessors have visited 145 stores in a very short two-week span of time for collecting the data.

The displayed India's map may easily exemplify the gigantic task of collecting the data from almost all over the country.

EVM Training

EVM Tool is very affluent in content hence required in-depth training. As per WHO-UNICEF module, 5 days residential training for all 74 assessors was organized by NCCVMRC with the technical and financial support from UNICEF. Assessors from Medical Colleges, MoHFW, NCCVMRC-NIHFW, NCCRC, UNICEF, UNDP, WHO, ITSU and JSI attended this training. The training was scheduled from 1st to 5th May 2018.

Participant interacting with officials during EVM workshop

Trainers giving practical demonstration on EVM training content

Field Assessment and Data Collection

Data collection for EVM 2018 started immediately after 5 days training. 74 assessors were divided into 40 teams to collect data from 145 sites. Data collection took 2 weeks from 6th May to 18th May 2018. Data collected via mobile application was submitted by assessors on a day to day basis.

Prof. J.K.Das, Director NIHFW along with Dr. Bhrigu Kapuria, Health Specialist UNICEF ICO visited cold chain points/ vaccine stores in West Bangal for EVM data collection

Prof. Sanjay Gupta, Dean NIHFW along with team of national assessors visited cold chain points/ vaccine stores in Karnataka for EVM data collection

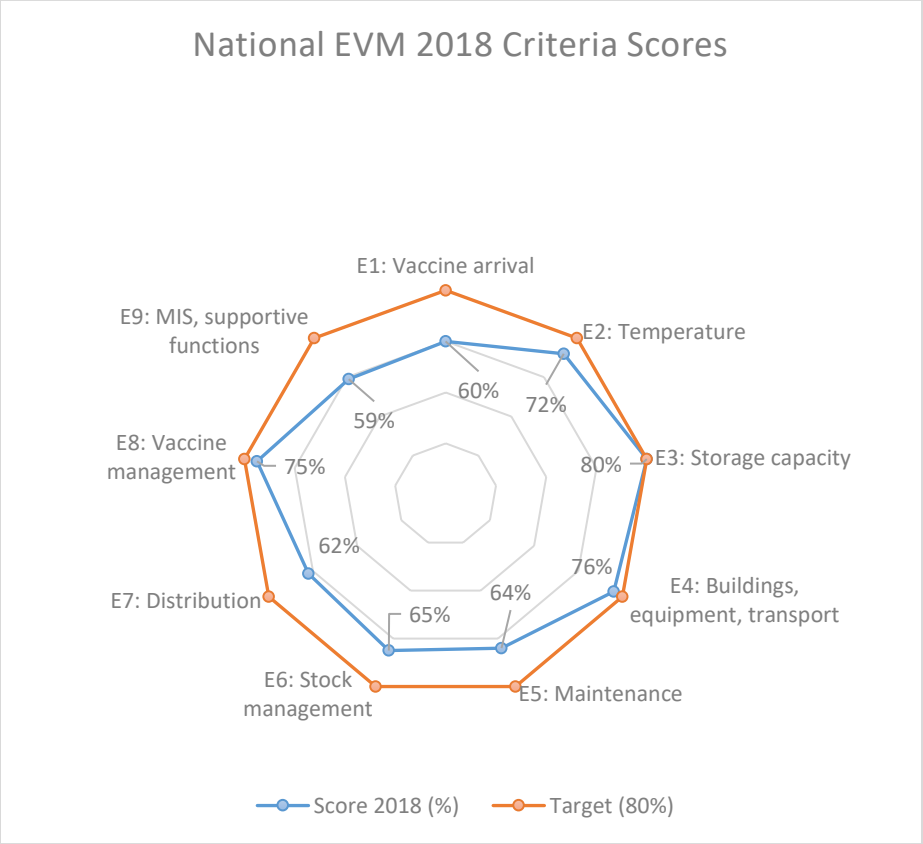
Salient Findings of National EVM Assessment 2018

1) National Findings

After completion of data collection, the EVM assessment tool generates an overall score in percent, for each criterion at each level of the supply chain assessed. The minimum recommended standard score for each criterion at each level of the supply chain is set at 80%. "WHO and UNICEF recommend that countries should strive to reach and exceed the minimum requirement for EVM. The minimum EVM score for each of the nine criteria and for each level of the national supply chain system should be 80% or higher".

The Graphs/Tables below depict the summary of consolidated EVM scores for the indicators clubbed into different criteria's and categories.

1.A) National EVM Assessment 2018 Criteria Scores Summary

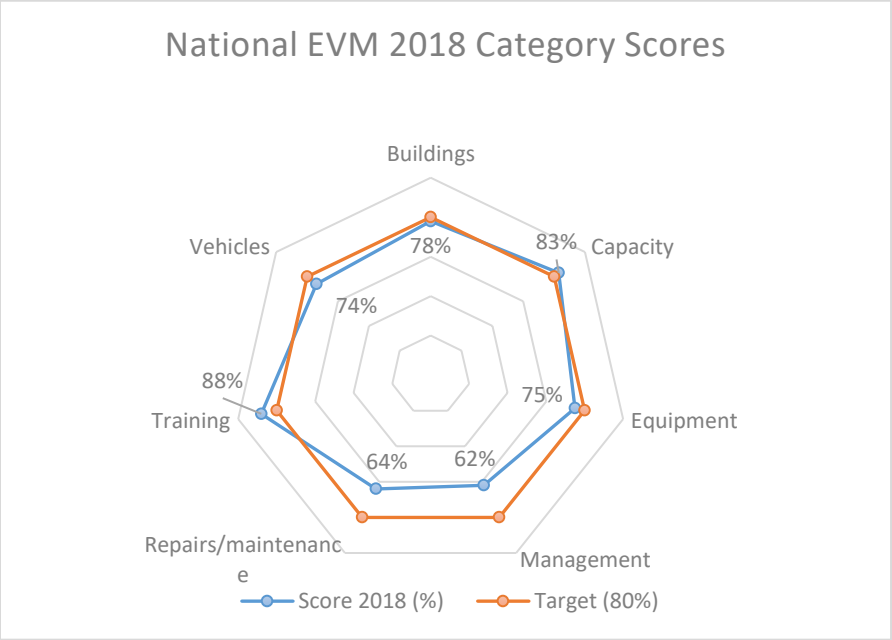


Graph 1

Graph 1 displays the criteria scores of National Level. The spider graph shows picture of findings from 145 different stores i.e. GMSD, SVS, RVS, DVS, CCPs located in 23 different states.

India has achieved (72%) scores in Temperature, (80%) scores in Storage capacity, (76%) in Building, Equipment, Maintenance and (75%) scores in Vaccine Management. The results are encouraging.

The lowest scores have been achieved in MIS & Supportive functions (59%), Vaccine arrival (60%), Distribution (62%), Maintenance (64%), Stock Management (65%).



1.B) National EVM Assessment 2018 Category Scores Summary

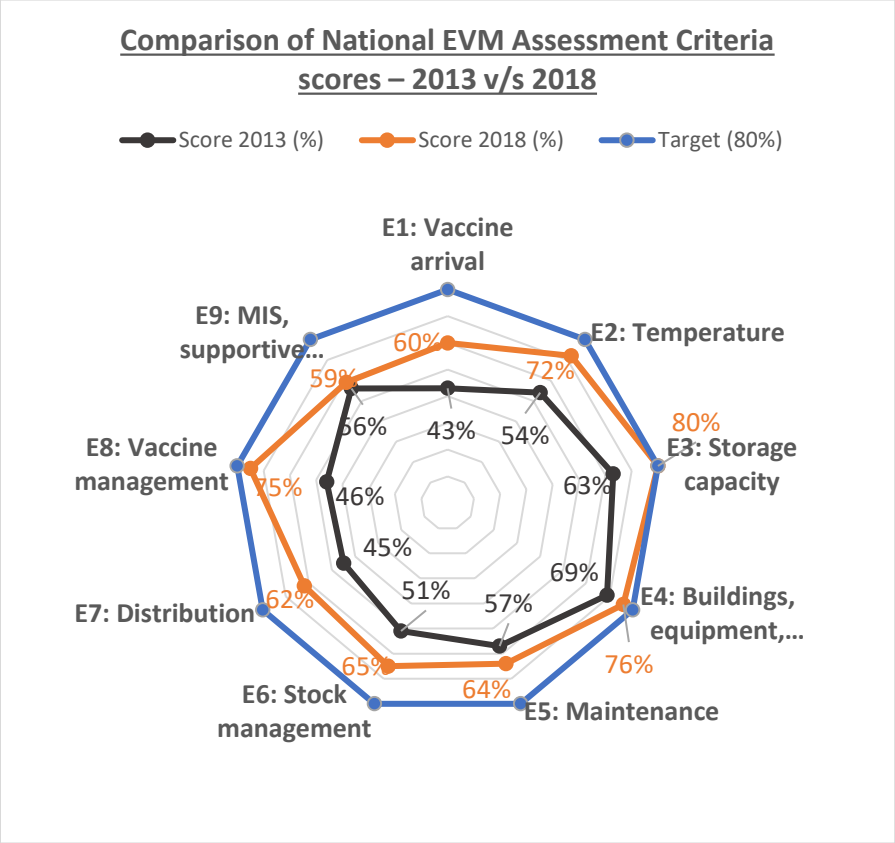
Graph 2

Graph 2 shows summary of Category Scores of National EVM Assessment 2018.

India has achieved more than 80% scores in two categories - Capacity (83%) and Training (88%). The other categories scores are - Building (78%), Equipment (75%), Vehicles (74%)

The lowest scores are in Repair / maintenance (64%) and Management (62%).

1.C) Comparison of National EVM Assessment Criteria scores – 2013 v/s 2018

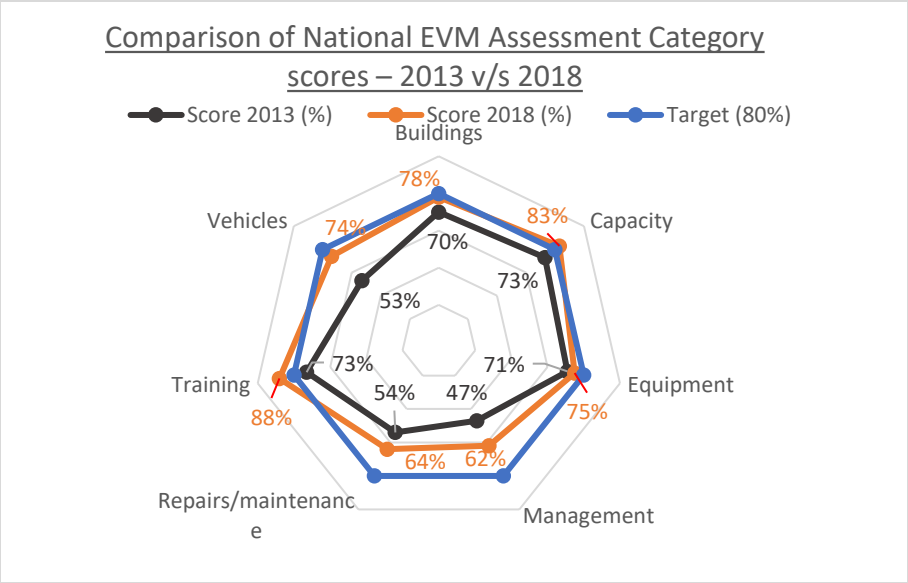


Graph 3

Graph 3 illustrates Comparison of both the National EVM Assessment scores – 2013 v/s 2018.

In compare to 2013 India has made significant progress in almost all the indicators i.e. Vaccine arrival (+17%), Temperature (+18%), Storage (+17%), Building (+7%), Maintenance (+7%), Stock Management (+14%), Vaccine Management (+29%) and MIS (+3%).

1.D) Comparison of National EVM Assessment Category scores – 2013 v/s 2018



Graph-4

Graph 4 shows a comparison between category scores of National EVM 2013 and 2018.

India has made significant progress in almost all the categories i.e. Buildings (8%), Capacity (10%), Equipment (4%), Management (15%), repairs/maintenance (10%), Training (15%) Vehicles (21%) in 2018.

1.E) Comparison of National EVM Assessment in eVIN & Non eVIN States

Criteria scores comparison: The below table 5 indicates the Criteria scores of eVIN and Non eVIN states for National EVM Assessment 2018. eVIN state are performing good in comparison to non eVIN states in respect of almost all the indicators except in Storage Capacity. The scores are equal in Maintenance criteria for both eVIN and non eVIN states.

Table 5

	Criteria Scores in %								
	E1: Vaccine arrival	E2: Temperature	E3: Storage capacity	E4: Buildings, equipment, transport	E5: Maintenance	E6: Stock management	E7: Distribution	E8: Vaccine management	E9: MIS, supportive functions
Target	80%	80%	80%	80%	80%	80%	80%	80%	80%
eVIN states score	75%	78%	80%	79%	65%	70%	62%	81%	65%
Non eVIN states score	43%	67%	82%	73%	65%	59%	61%	70%	54%

Red – scores are lower in eVIN states in comparison to non eVIN states

Category scores comparison: The below table 6 illustrate the comparison of category scores of eVIN & Non eVIN states for National EVM Assessment 2018. eVIN states are scoring high in Equipment, Management and Training. The scores of eVIN states are lower in Building, Capacity and Vehicle categories. The scores of Repair & Maintenance is equal in both eVIN and Non eVIN state.

Table 6

Categories Score in %							
	B	C	E	M	R	T	V
	Buildings	Capacity	Equipment	Management	Repairs / maintenance	Training	Vehicles
Target	80%	80%	80%	80%	80%	80%	80%
eVIN states score	78%	79%	80%	68%	65%	92%	41%
Non eVIN states score	79%	88%	70%	56%	65%	84%	45%

Red – scores are lower in eVIN states in comparison to non eVIN states

2) Store level wise findings

Table – 7

Sr. No.	Global Criteria (Minimum target is 80%)	India Consolidated scores	GMSD	PVS	Sub National Stores	Lowest Delivery Stores	Service Point Stores
1	Vaccine Arrival Process	60%	80%	58%	N/A	N/A	N/A
2	Vaccine Storage Temperature	72%	41%	62%	67%	78%	78%
3	Storage Capacity	80%	57%	65%	61%	82%	94%
4	Building, Cold Chain Equipment & Transport	76%	66%	69%	66%	81%	81%
5	Maintenance & Repair	64%	37%	65%	65%	66%	65%
6	Stock Management	65%	60%	72%	66%	66%	60%
7	Distribution	62%	76%	70%	65%	68%	52%
8	Vaccine Management Practices	75%	42%	71%	70%	71%	83%
9	MIS & Supportive Functions	59%	46%	68%	59%	65%	52%

Red - <60%, Black – 61-79% and Green - >80%

The table 7 gives the criteria scores of different levels of stores. GMSD, Lowest Delivery Stores, and Service Point Stores have achieved more than 80% scores in few of the criteria which is really encouraging. GMSDs have scored 80% score in Vaccine Arrival criteria, Lowest Delivery Stores have scored more than 80% scores in Storage capacity and Buildings, equipment, transport criteria. Service Point stores have scored more than 80% scores in Storage capacity, Buildings, equipment, transport, and Vaccine management. Primary and Sub National Vaccine Stores have not achieved more than 80% scores in any of the criteria.

Table – 8

Sr. no.	Global Criteria (Minimum target is 80%)	India Consolidated scores	GMSD	PVS	Sub National Stores	Lowest Delivery Stores	Service Point Stores
1	Buildings	78%	61%	74%	73%	81%	80%
2	Capacity	83%	59%	68%	62%	83%	98%
3	Equipment	75%	67%	67%	61%	80%	80%
4	Management	62%	49%	64%	62%	65%	60%
5	Repairs/maintenance	64%	37%	65%	65%	66%	65%
6	Training	88%	82%	88%	83%	87%	90%
7	Vehicles	74%	63%	68%	73%	84%	NA

Red - <60%, Black – 61-79% and Green - >80%

Table 8 shows Category scores of seven different EVM categories. Lowest Delivery Stores and Service Point stores are performing good in Category scores. National average is more than 80% in Capacity and Training category. GMSDs, PVSs and Sub National Stores have achieved more than 80% scores only in Training category. Lowest Delivery Stores have achieved more than 80% scores in Building, Capacity, Equipment, Training and Vehicles categories. Service Points have scored more than 80% scores in Building, Capacity, Equipment and in Training categories.

3) Comparison of scores of National EVM Assessment 2013 v/s 2018

First National EVM assessment of India was conducted in 2013 and as a follow up in 2018, 2nd National EVM Assessment has been emerged. The below table illustrate comparison of both the National EVM Assessments.

Table 9 – Criteria Scores Progress

Sr. No.	Global Criteria (Minimum target is 80%)	EVM year	India Consolidated scores	GMSD	PVS	Sub National Stores	Lowest Delivery Stores	Service Point Stores
1	Vaccine Arrival Process	2013	43%	52%	34%	N/A	N/A	N/A
		2018	60%	80%	58%	N/A	N/A	N/A
2	Vaccine Storage Temperature	2013	54%	37%	43%	46%	71%	70%
		2018	72%	41%	62%	67%	78%	78%
3	Storage Capacity	2013	63%	71%	66%	46%	57%	76%
		2018	80%	57%	65%	61%	82%	94%
4	Building, Cold Chain Equipment & Transport	2013	69%	65%	64%	69%	70%	75%
		2018	76%	66%	69%	66%	81%	81%
5	Maintenance & Repair	2013	57%	59%	61%	59%	58%	49%
		2018	64%	37%	65%	65%	66%	65%

Sr. No.	Global Criteria (Minimum target is 80%)	EVM year	India Consolidated scores	GMSD	PVS	Sub National Stores	Lowest Delivery Stores	Service Point Stores
6	Stock Management	2013	51%	57%	56%	49%	46%	45%
		2018	65%	60%	72%	66%	66%	60%
7	Distribution	2013	45%	24%	41%	39%	42%	77%
		2018	62%	76%	70%	65%	68%	52%
8	Vaccine Management Practices	2013	46%	29%	50%	35%	47%	67%
		2018	75%	42%	71%	70%	71%	83%
9	MIS & Supportive Functions	2013	56%	50%	65%	52%	58%	0%
		2018	59%	46%	68%	59%	65%	52%

Red – Scores are lower in 2018 EVM in comparison to 2013 EVM

As per data shown in above table, India has made significant progress in all the criteria's except E7-Distribution. The efforts put in by Government of India to strengthen immunization supply chain-cold chain are showing positive results in improvement. In most of the criteria scores indicators have improved significantly.

Table 10 – Category Scores Progress

Sr. no.	Global Criteria (Minimum target is 80%)	EVM year	India Consolidated scores	GMSD	PVS	Sub National Stores	Lowest Delivery Stores	Service Point Stores
1	Buildings	2013	70%	60%	69%	69%	61%	78%
		2018	78%	61%	74%	73%	81%	80%
2	Capacity	2013	73%	70%	69%	46%	61%	88%
		2018	83%	59%	68%	62%	83%	98%
3	Equipment	2013	71%	71%	61%	70%	75%	71%
		2018	75%	67%	67%	61%	80%	80%
4	Management	2013	47%	43%	45%	40%	43%	51%
		2018	62%	49%	64%	62%	65%	60%
5	Repairs / maintenance	2013	54%	59%	57%	59%	57%	49%
		2018	64%	37%	65%	65%	66%	65%
6	Training	2013	73%	57%	74%	69%	76%	75%
		2018	88%	82%	88%	83%	87%	90%
7	Vehicles	2013	53%	42%	56%	52%	52%	NA
		2018	74%	63%	68%	73%	84%	NA

Red – Scores are lower in 2018 EVM in comparison to 2013 EVM

The above table illustrates category score comparison of both the National EVMs (2013 & 2018). In most of the indicators India has made significant progress in comparison to 2013 scores. All 5 levels of store, from GMSDs to Service Points showing increasing trend in 2018 EVM in Building, Management, Training and in Vehicles category.

As far as category scores of storage capacity, equipment and repair & maintenance is concerned, showing mix trends at different level of stores.

Key issues identified

E 1, Pre-shipment and Arrival Procedures – EVM 2018 Score "60%"

Strengths	
As per the available VAR at primary stores 99.8 % vaccines are received in proper condition from the manufacturer.	99.8%
Challenges	
The VARs are found at 58% places and remaining places without VAR	42%
Out of the available VARs, 'Inspection Supervisor' not completed VARs correctly	50%
Incompletely documented arrivals were not followed up	80%

E 2, Vaccine and Diluent Storage Temperatures - EVM 2018 score "72%

Strengths	
HWs knowledge on correct storage temperature range	98%
HWs knowledge on correct reading of all types of thermometer	89%
Challenges	
Systematic temperature monitoring study being carried out at any store (It is a global recommendation and not practiced in India)	0%
Fully documented temperature mapping not carried out	55%
Temperature recorder traces/logger not matching with the manual temperature log books (more than ± 2 degree C difference)	73%
Stores temperature log books and alarm events formally NOT reviewed	55%
Out of the total stores assessed for alarm events, documentation of alarm events found	20%

E 3, Capacity of Cold chain, Dry storage and Transport- EVM 2018 score "80%"

Strengths	
Net storage capacity of the +2°C to + 8°C is sufficient in SP level stores	93%
Net storage capacity of the -15°C to -25°C is sufficient in PR level stores	92%
Challenges	
Net storage capacity of the +2°C to + 8°C is not sufficient in GMSDs	100%
Net storage capacity of the -15°C to -25°C is not sufficient in GMSDs	50%
Net storage capacity of the +2°C to + 8°C is not sufficient in PR level stores	38%
Net storage capacity of the +2°C to + 8°C is not sufficient in SN level stores	36%
Net storage capacity of the +2°C to + 8°C is not sufficient in LD level stores	37%
Net storage capacity of the delivery vehicle is not sufficient	55%
Maximum daily demand for ice-packs is not sufficient	43%
Maximum daily cold boxes and vaccine carrier's vaccine storage capacity is not sufficient at Primary and Sub National Vaccine Stores	55%
Contingency plan SOP in the event of equipment failure or other emergency is not available at stores	53%

Emergency contact details not posted in vaccine store	24%
Staff don't know what to do in the event of an emergency	15%

E 4, Status of Buildings, Equipment and Transport - EVM 2018 score "76%"

Strengths	
VCCLM's office is close to the vaccine storage area in most of the stores	97%
WIC and WIF found functional and satisfactory in most of the stores	87%
ILR/DFs also comply with the WHO specifications	100%
Stores have sufficient space to maintain the equipment	85%
Challenges	
Store rooms are not well ventilated	25%
Protective gears are not available	89%
HWs didn't receive training on safe working practices in cold stores	77%
WICs and WIFs didn't have fully functioning continuous temperature recorders	34%
WIC/WIF didn't have functioning alarm systems placed in stores.	47%
Telecommunications links not adequate	25%

E 5, Maintenance of Buildings, Equipment and Transport - EVM 2018 score "64%"

Strengths	
WIC and WIF refrigeration units were fully operational at the time of inspection	93%
ILR & DFs were fully functional at the time of visit	90%
Challenges	
Written planned preventive maintenance (PPM) programme for Building not available	95%
Written planned preventive maintenance (PPM) programme for refrigeration equipment not available	66%
Written planned preventive maintenance (PPM) programme for vehicles not available	70%
Vehicles service not in accordance with the manufacturer's service manual	60%

E 6, Stock Management System & Procedures - EVM 2018 score "65%"

Strengths	
Stock balances recorded and updated within one working day of the transaction	89%
EEFO Principal is followed	85%
Immunization records are secure in % of stores	92%
Challenges	
Stores don't have Computerized stock control system	41%
Stores don't have a completed arrival voucher from the receiving store	40%

Stock records of diluents don't have vial size	67%
Stores don't have placements of vaccine	68%
Stores don't have stock control system designed to record wastage in unopened vials	35%
Stores don't carry out internal reviews of the vaccine loss/damage records	75%
Stock level policy not followed properly at any level (Min. stock)	40%
Stock level policy not followed properly at any level (Max. stock)	38%
Actual supply of Pentavalent vaccine during the assessment period was not equivalent to forecasted demand	77%

E 7, Effective Distribution between Each Supply Chain Level - EVM 2018 score "62%"

Strengths	
Knowledge of Ice Packs conditioning found satisfactory	95%
Planned outreach activities held	98%
Challenges	
Documented communicated vaccine distribution system not in place	30%
Freeze indicators are required but not available	95%
Arrival sections of the sampled issue vouchers returned to the issuing store	40%
Written transport contingency plan is not available in stores	75%

E 8, Vaccine Management and Handling- EVM 2018 score "75%"

Strengths	
Storekeepers/health workers knowledge of reading VVM	98%
Store keepers/health workers uses VVM status for vaccine management	96%
Challenges	
Health workers don't know **how** to conduct shake test	33%
Health workers don't know **when** to conduct the shake test	26%
Stores don't have job-aids on the use of VVMs	40%
Stores have not mentioned date and time of opening of vials found in the ILR during assessment	30%

E 9, MIS and Supportive Management Functions - EVM 2018 score "59%"

Strengths	
Standard Operating Procedures (SOP) Cold Chain Handler manual was available	100%
Qualified member of staff assigned to write and manage SOPs nationally	100%
Cold chain equipment inventory was available	100%
PIP exist for the review period	92%
Staff members received training based on the SOPs	88%
Stores have up-to-date set of relevant SOPs	79%
Challenges	

Stores don't use standard method to estimate annual vaccine need	19%
Stores don't use evidence-based target population in the calculation	18%
Stores don't use evidence-based coverage data in the calculation	60%
Stores don't use standard method to estimate annual need for syringes and hub cutter	42%
Stores don't use evidence-based target population data in the calculation for syringes and hub cutter	21%
Stores didn't have written contract of vehicle outsourced	37%
Storekeepers/health workers didn't received on-the-job or classroom training in vaccine management during the review period	30%
Stores didn't have record of training was also not available	22%
Stores didn't received any supervisory visits during the review period	37%

Improvement Plan Development Workshop

Group of officials participated in the Improvement Plan development workshop from 11th to 13th July 2018 at NCCVMRC, NIHFW, New Delhi

Representation of all leading development partners i.e. ITSU, UNICEF, WHO, JSI & UNDP along with MoHFW & NIHFW in Improvement Plan development workshop

As a part of process 3 days Improvement Plan workshop was organized from 11th to 13th July 2018 at The National Institute of Health & Family Welfare (NIHFW) by NCCVMRC & UNICEF. Participants from Medical Colleges, State government officials i.e. SEPIO, SCCO, RI Consultants, NCCVMRC-NIHFW and partner agencies like UNICEF, UNDP, JSI, ITSU, WHO participated in the development of an implementable improvement plan.

Recommendations

Recommendations centred on the gaps identified through NEVM 2018 have been classified in following categories -

A. Management and policy
B. Human resource
C. Infrastructure (Building, Equipment, Transport and Temperature Monitoring)
D. Planning, documentation and MIS
E. Capacity building
F. Supportive supervision and improvement in practices (Vaccine distribution, Temperature recording, Stock Keeping, Integration of vaccine and cold chain management information system)

The recommendations have been categorized under 4 priority intensities. Priority 1 requires the immediate attention, whereas priority 4 may be considered in next 2 years. Attributes of priorities are as follows:

Priority	Activity Time Frame
1	Urgent - To be implemented immediately or within next 3 months
2	To be implemented within the next 6 months
3	To be implemented within a year
4	To be implemented within the next 2 years

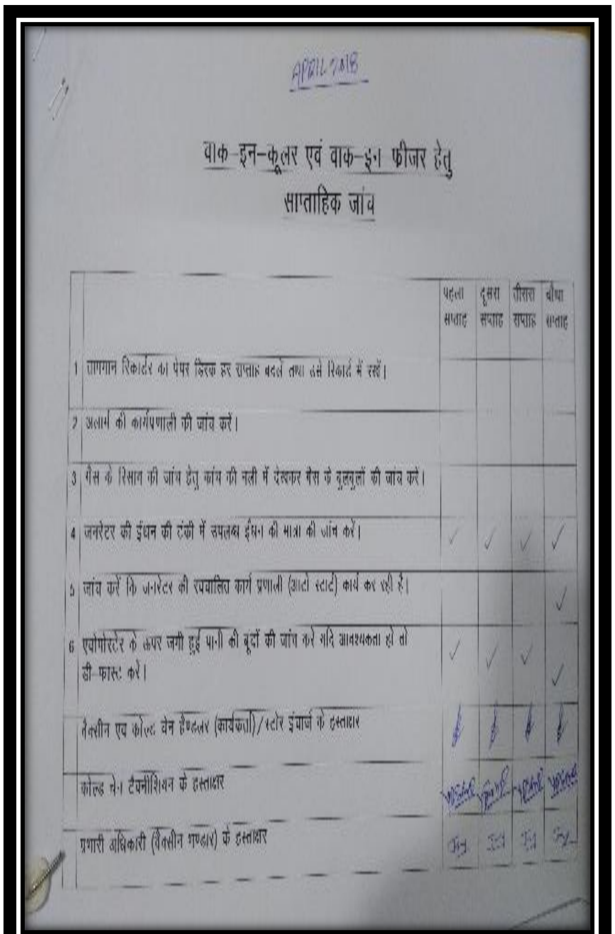
A. Management and policy

Priority	Gaps identified	Action to be taken
1	Lack of availability of VARs for most of the individual vaccine arrivals was noted across all the primary vaccine stores. The available reports depicted absence of complete information by inspection supervisor. Furthermore, lapse in accompanying documentation in some VARs was also reported.	VAR is globally accepted essential tool to ensure the quality processes of vaccine arrivals from manufacturer 1. Regular follow up and supportive supervision with states about use of VAR by government as well as partner agencies 2. Letter from MoHFW to concerned States accompanied by VAR format & SOPs for compliance. 3. Availability of VAR in online tool at NCCMIS may be developed for analysis of VAR for decision making 4. Training of Vaccine logistic managers on VAR may be organized for all PVSs at NCCVMRC with VCCH module training
2	Planned Preventive Maintenance (PPM) Checklist for Building is not available at any store.	1. Detailed SOPs of PPM for building, may be developed and provided at all levels 2. Frequency of PPM activity may be decided 3. States need to establish a linkage between Health and Civil works (PWD) department for maintaining PPM of buildings. 4.
2	Non-utilization of Product Arrival Report (PAR) is recognized across nation. Standardized format is unavailable	If consumables are acquired directly from a supplier or manufacturer, Product Arrival Report is looked-for. Presently availability of any format at any level is non-existent. A detailed format complemented with SOP could be developed to safeguard uniform practices at all levels.
2	Planned Preventive Maintenance Checklist for Vehicles is missing.	Maintenance of vehicles under Immunization program is crucial for judicious supply of vaccine to achieve supreme immunization coverage. Vehicles call for systematic maintenance hence -
2	Planned preventive maintenance should be done weekly via VCCH and once in every four months by CCT. Yet majority of stores are not documented with a devised PPM activity.	MoHFW has already formulated and shared a PPM checklist for Equipment and is also part of VCCH handbook. 1.Weekly PPM checklist need to be the part of temperature logbook universally 2.MoIC to oversee the filling of PPM while reviewing the temperature logbook and provide necessary supportive supervision. 3.Real time entry of findings for PPM visit by CCT can be incorporated in mobile app.

Priority	Gaps identified	Action to be taken
		4.eVIN platform can correspondingly be utilized for PPM activities
3	At present stock control system to record vaccine and diluent wastage in unopened vials due to breakage, expiry, freezing or heat-exposure is non-existent. All registers are to be updated with a dedicated column to record wastage.	1. Nation-wide rollout of eVIN to ensure that these wastages are captured. 2. A column may be added manually or printed within stock registers. 3. Timely monitoring to record wastage during supportive supervision by RDD / DD / Divisional Immunization officer and other partner agencies should be done.
3	Immunization Waste Disposal facilities and procedures are not in accordance either with WHO and / or with national norms. Detailed disposal guidelines considering program needs and new BMW guidelines are to be designed.	1. SOP for immunization waste disposal 2. Bio-waste disposal guidelines may be updated particularly considering packing material undermining immunization needs and disseminated with all stakeholders. 3. Training on new BMW guidelines may be provided 4. Guidelines related to disposal of packaging items i.e. thermocol boxes, gel packs etc. to be developed and circulated. 5. Disposal facilities to be made available at the GMSDs as per the GMSD/National norms
4	Lack of provision for communication allowance to VCCH and Vaccine Van Drivers. Reliable communication is a requisite in case of situations arising from emergencies.	Closed user group SIM for communication may be promoted or properly chalked out incentive process may be pointed.
3	Guideline to carry out internal reviews of the vaccine loss/damage record is absent. It is imperative to carry out these reviews at least twice a year.	MoHFW is bringing together several newer and expensive vaccines in UIP viz. Rota, PCV etc. A Vaccine Wastage Study was conducted in 2010 and there is a need to conduct the study again to identify programmatic challenges and further reduce vaccine wastage. Recording and systematic review of vaccine wastage is essential at all levels. For refining this - 1. Documentation of wastage need to be strengthened by providing dedicated space in stock registers 2. SOP for vaccine damage review may perhaps be prepared and process to review vaccine wastage rates by facility and sharing of these findings with higher stores could be put in place.
1	Unavailability of much needed Freeze indicators with freeze sensitive vaccines during transportation is a matter of concern. Manufacturer is sending freeze	1. MoHFW possibly could do need assessment along with financial feasibility to induct freeze indicators within system. 2. Guidelines/SOP to be developed for GMSDs and

Priority	Gaps identified	Action to be taken
	tags with freeze sensitive vaccine but gap exist in transporting them to other targeted centers due to absence of freeze indicators within system.	PVS to supply vaccine with freeze indicators. 3. Freeze safe cold boxes may also be procured to avoid freezing during transportation
2	Some CCTs don't have toolkits to carry out day to day activities.	1. Distribution of the recently procured tool kits to be reviewed and need of additional tool kits to be assessed for procurement. 2. While issuing or transfer of tool kits, items within the tool kit along with their functional status to be recorded. 3. Online monitoring via NCCMIS may be ensured
2	Vaccine stocks should be kept between Minimum and maximum to avoid stock out and vaccine wastage, but most stores are not equipped with these records through review period. For SP level minimum stock is for .5 months and maximum stock is for 1.5 months and for LD, SN & PR level stores, minimum stock is for .75 months and maximum stock is for 2.75 months. Major challenges for maintaining stock levels are identified to be:- 1) Inadequate understanding of stock level among cold chain handlers 2) Irregular supply of vaccines	It was also evident that as per current guidelines, minimum stock definition is equivalent to the reordering point and therefore as per definition, every cold chain point will be below minimum stock during the time regular stocks are supplied. MoHFW may review and redefine the 'Minimum stock point' as 'Reorder point' and 'Buffer stock point' as the 'Minimum stock level'.
1	Non availability of even a single antigen results in interrupted supply for other vaccines also as the common practice by SVS is to supply vaccines only after accessibility to all the antigens is ensured. This overall leads to a delay in supply cycle and can further cause stocking out of several antigens at multiple level.	A meticulously structured micro plan along with proper follow up to aid in scheduling of vaccine supply from GMSD and manufactures to SVS can ensure availability of antigens timely. State and District Vaccine Logistics Manager need to review the availability of all vaccines regularly and ensure push down or pull up vaccines as per status
1	Gaps were identified in expected and actual awareness among some CCH and VCCLM.	VCCH module was developed in 2016 to train personnel accordingly. Some states are still required to undergo the training for the same. Following measures may be observed to overcome the identified gaps:- 1. Follow up with states on VCCH training status and training attendance updation in iTMIS. 2. A catch up session may be formulated for the target personnel. 3. Rigorous follow up to further ensure the mentioned activity can be done.

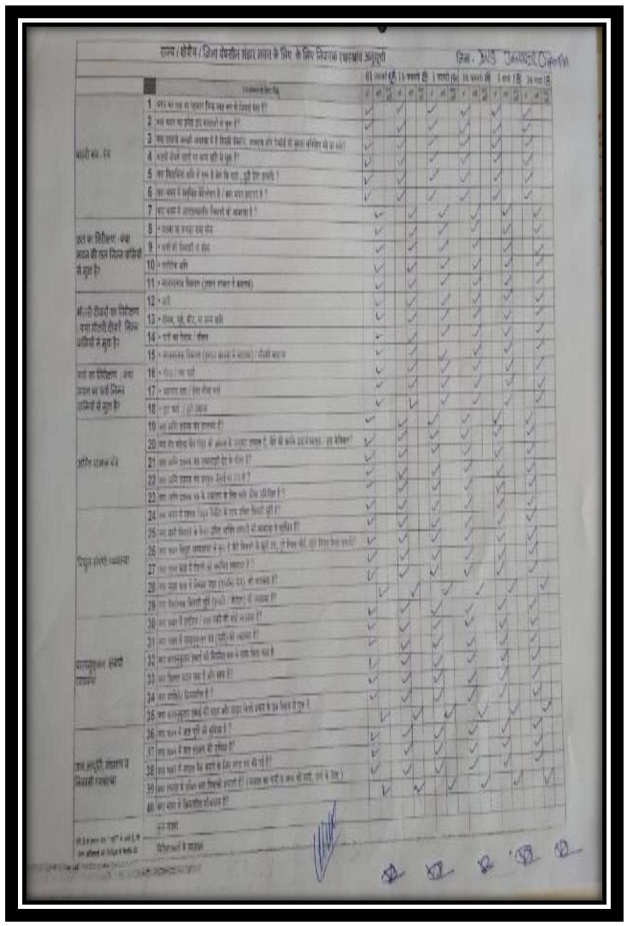
Priority	Gaps identified	Action to be taken
2	Hosting of RVS & DVS in same building with no clear demarcation of equipment, HR and records exist.	Documentation of all such stores, followed by escalation of issue with concerned states to possibly run RVS and DVS as individual units is required. Existing partner agencies can supplement by supportive monitoring in completion of the activity.
3	Dedicated space for VCCH / VCCLM harbouring basic facilities like drinking water, hand washing area, washrooms, cupboard etc. is needed in order to perform multiple everyday tasks. However some stores presented with lack of these basic amenities.	It is vital to provide ease to workforce to complete their task with quality. States and Districts are might utilize their resources to full-fill the requirement. Provision of such facilities to be incorporated as part of layout design for new buildings.
2	Though eVIN is conducting Temperature Mapping Study at PVSs before installing their temperature monitoring devices.	1. Temperature monitoring study and Temperature mapping study are need to be conducted at all PVSs. Technical agencies of GOI may support the states in conducting these studies. 2. Detailed SOPs as per WHO recommendation should be followed. 3. Engagement of partner agencies for hands on training may be done



APRIL 2018

वाक-इन-कूलर एवं वाक-इन फ्रीजर हेतु
साप्ताहिक जांच

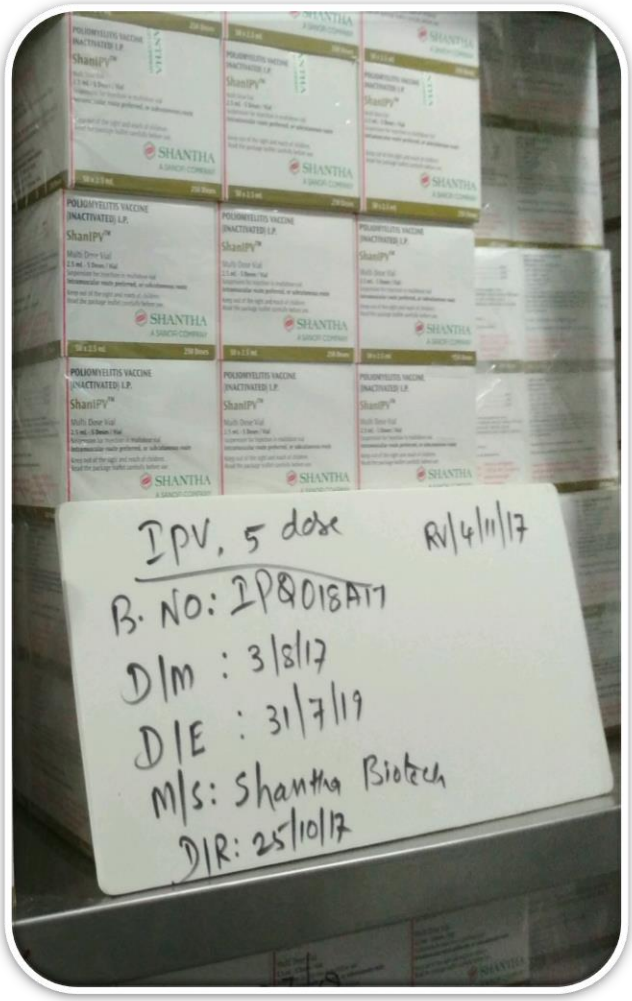
		पहला सप्ताह	दूसरा सप्ताह	तीसरा सप्ताह	चौथा सप्ताह
1	तापमान रिकार्डर का पेपर प्रिंट हर सप्ताह बदलें तथा उसे रिकार्ड में रखें।				
2	अलार्म की कार्यप्रणाली की जांच करें।				
3	गैस के रिसाव की जांच हेतु कांच की नली में देखकर गैस के बुलबुलों की जांच करें।				
4	जनरेटर की ईंधन की टंकी में उपलब्ध ईंधन की मात्रा की जांच करें।	✓	✓	✓	✓
5	जांच करें कि जनरेटर की स्वचालित कार्य प्रणाली (आटो स्टार्ट) कार्य कर रही है।				✓
6	इवेपोरेटर के ऊपर जमी हुई पानी की बूंदों की जांच करें यदि आवश्यकता हो तो डी-फ्रास्ट करें।	✓	✓	✓	✓
	वैक्सीन एवं कोल्ड चेन हैण्डलर (कार्यकर्ता)/स्टोर इंचार्ज के हस्ताक्षर	[illegible]	[illegible]	[illegible]	[illegible]
	कोल्ड चेन टैक्नीशियन के हस्ताक्षर	[illegible]	[illegible]	[illegible]	[illegible]
	प्रभारी अधिकारी (वैक्सीन भण्डार) के हस्ताक्षर	[illegible]	[illegible]	[illegible]	[illegible]



Best practices related to Vaccine Management, CCEs PPM found during EVM Assessment

B. Human Resource

Priority	Gaps identified	Action to be taken
3	Substantial number of CCT position remains unoccupied across various states.	1. A thorough review of CCT vacancy to be undertaken by NCCVMRC. States need to prioritise filling up of regular as well as contractual position. 2. NCCVMRC to review the workload of CCTs and identify probability of CCTs handling more than one district in case of vacancy or district bifurcation. 3. Follow up can complement the mentioned activity. 4. Temporary arrangements can be made by attaching a district with vacant position to nearest feasible CCT.
1	GMSDs are bulk storage point of vaccines and logistics. Introduction of newer vaccines makes training of involved contributors a necessity. In present scenario GMSD staff are handling the vaccine management, Although it is highly desirable to engage a trained personnel specially dedicated to fulfil this activity.	At GMSD, staff dealing with vaccine and immunization supply chain needs to be efficiently trained on Vaccine & Cold Chain Management. 1. Establishment of a position to look after the vaccine management could be explored. 2. Regular Supportive Supervision activity at GMSD level for capacity building may be carried out
3	GMSDs stock bulk vaccines, logistics, cold chain equipment & spare parts. Henceforth implicate a committed Cold Chain Technician (CCT) and WIC/WIF operator for round the clock monitoring to warranty timely maintenance of CCEs with quality vaccine delivery.	Looking at this, magnitude of vaccines held at GMSDs, a devoted post of CCT and WIC/WIF operator may be shaped at each GMSD level.



For maintaining effective cold chain management trained human resource is must. Few pics of records maintained by CCHs

C. Infrastructure

Priority	Gaps identified	Action to be taken
	Building	
3	State of structure housing vaccine stores is not agreeable for most of the stores and further deter in quality can be observed in dry stores situated in different locations than one. Additionally, such stores pose hindrance in logistic management and appropriate bundling. Dry storage sites in most of the vaccine stores were neither climate resistant nor adequately ventilated, illuminated and were without any temperature control system.	1.Sample model could be devised at national level and its best possible fit within existing system through the accessible resources can be formulated. 2.Implementation of PPM will further divert the situation to favourable circumstances. 3.Infallible association among Health department and PWD should be moulded. 4.Utilization of DTFI & STFI meeting platform may be utilized for quick action in maintenance
3	Insufficient space to maintain the equipment by CCTs. A committed workshop with sufficient space to maintain and to keep the essential spare parts required at all DVSs and SVSs.	Purveying for a devoted workshop can be agreed upon in the proposed model for vaccine stores and its implementation in the system can be boot along with vaccine store and dry store execution.
2	Secondary storage space for diluents, cold boxes and consumables is neither sufficient nor properly maintained in most of the stores. Dry stores shortfall in well-organized shelving, pallet standing or pallet racking to use the space effectively and logistics systematically	Emphasis on improving secondary storage space practices along with supportive supervision, accompanied with need assessment and if necessary obtaining of racks, shelves etc. for storing the diluents and syringes, cold boxes could be a conceivable way out. States may consider upgrading their large cold chain facilities using the cold chain maintenance funds.
3	Loading / unloading bay are devoid of shade in most of the stores and leads to exposure to natural distraction like rain, sun light.	Standard model once made, could be referred to improve upon the identified gaps in the existing infrastructure.
	Equipment	
1	GMSDs store vaccines, logistics (dry stocks) and cold chain equipment. Dearth of space in +2 to +8-degree zone is a challenge for most of the stores.	1. Exclusive planning for upgrading GMSDs including storage space is the need of hour. A discussion to address immunization material storage and handling needs to be initiated at MoHFW level with time bound activities. 2. Rational redistribution of equipment along with repairing of existing non-functional CCEs.
2	Personal Protective Equipment (Gloves, Jacket, Cap, Boot, Trouser) are not available for cold store workers and lacunae exist in training for safe work practices in WIC/WIF.	PPE (Personal Protective Equipment) availability is mandatory for work force dealing with WIC/WIF, hence forth should be ensured by state/district. States to be permitted to procure such protective gears under cold chain maintenance funds and

Priority	Gaps identified	Action to be taken
		supported with appropriate training. Also in Supportive supervision / mentoring visits should include reviewing their presence and use.
2	WIC/WIF are widely equipped with refrigeration units that contain CFC.	As per current guidelines from MoHFW, a WIC/WIF with CFCs need to used till functional and then replaced with a non-CFC instead of repairing. This direction need to be followed in letter and spirit and proper precautions need to be undertaken to prevent leak of CFC gas while replacing the unit/equipment
1	Temperature alarm system non-functional for WICs and WIFs while auto dialler facility is not available anywhere	1.Installation of hooter alarm system with apt financial aid from state is an advisable solution in comparison to repairing of existing non-functional temperature alarms. 2.CCT should be motivated to keep a check on these alarm through PPM. 3.eVIN implementation will automatically overcome the issue pertaining to lack of auto dialler facility.
3	Fire extinguisher system remain inoperable for most of the stores and no proper training given to officials on use.	Under annual maintenance fire extinguishers should be checked for malfunctioning and recurrent training under the guidance of fire services department is suggested.
	Transport	
1	Most of the vehicles at GMSD are outsourced. It's an extremely uphill task for stores to procure their own refrigerated vehicles and no such practice prevails in current scenario. This makes the Vaccine Vans at SVS & RVS overworked.	To make certain that transportation of vaccines from GMSDs is carried out in most agreeable fashion it is suggested to scrutinize the likelihood to acquire the refrigerated vans for GMSDs
1	Vaccines from GMSD to lower store are being supplied in thermocol along with gel packs provided by manufacturers. Lack of guidelines regarding disposal of these gel packs/thermocol are creating clutter at stores and occupying space.	1.Bio Medical Waste disposal guideline need to be updated as per new CPCb guideline addressing gel pack disposal and thermocol stack issue. 2.Dissemination of the prepared guideline, followed by training could be arranged. 3.Furthermore availability of refrigerated vans at GMSDs can bring down the problem created by transportation using thermocol and gel packs.
2	Vaccine vans accessible at stores are not put to function as they either require repair and maintenance or because of unfilled vacancies of required drivers.	Systematic care of vaccine vans is obligatory to avoid breakdown. 1. PPM checklist for vehicle can be developed 2. PPM of vehicle may be monitored during supportive supervision visits. 3. Improved coordination among health and transport department will certainly smoothen the process of maintenance of vehicles.
	Temperature monitoring	

Priority	Gaps identified	Action to be taken
2	Temperature log books and alarm events are not reviewed at most of the PVSs and documentation was found to be incomplete. Adequate supportive monitoring activities were not encountered at bulk storages.	1. Sensitizing local personnel to carefully review temperature log books and alarm events. 2. Supportive supervision visits can be meticulously planned with support from partner agencies and findings can be shared with the state. 3. Temperature excursions recorded through remote temperature monitoring under eVIN may also be recorded in the log-book including reasons for excursion and steps taken thereof.
3	Detailed guidelines and SOPs for calibration are not existent. Also, no test calibration is done within every 12 months for any WICs, WIFs.	1. NCCVMRC to develop clear guidelines for calibration and support in development of job aids to facilitate capacity building. 2. CCTs can carry out test calibration at desired time interval to identify the errors.

Some of the best practices found in the field during National EVM Assessment

D. Documentation, Planning and MIS

Priority	Gaps identified	Action to be taken
1	• Vaccine distribution should be held as per pre-decided plan to ensure sufficient vaccine availability at every time. Mechanism to prepare routine reports on internal vaccine distributions, and to summarize the details of each and every transaction is not in place. • Vaccine and logistic need forecasting is crucial to avoid any stock out. Standard methods to estimate annual vaccine need are not practiced. Non consideration of population, wastage and coverage data for vaccine forecasting also exist as an issue.	Development of micro plan for cold chain system is to be proposed, this could be achieved through gaining technical support from National level and can include the below mentioned components:- • State wise annual vaccine and logistics demand • Vaccine order to manufacturers • Supply cycle of vaccine and logistics • Annual demand of CCEs • Supportive supervision plan • Annual budget demand • Minimum and Maximum stocks (Stock Management)
1	Vaccine transportation is a critical conjunction that can affect vaccine potency adversely. The enumerated threats pose as potential problems: - • Few GMSDs have outsourced the vaccine distribution, however during monitoring they failed to produce a valid third party contract which may cause breach in ideal practices that should be followed. • Pre-delivery/pre-collection notification system during vaccine distribution not in place at most of the stores. • Issue vouchers should ideally exist as a 3 copy system for thorough and faultless documentation process, but this practice is not encountered in field, additionally at some settings vouchers didn't have the provision to register the VVM status. • Contingency plan for transport was not available. • Vehicle inventory is not maintained regularly at stores.	For improving vaccine safety in transportation following steps may be taken – 1. SOP for PPM of Vehicles, contingency plan for transportation, 3 copy issue vouchers, standard contracts for out sourced vehicles can be developed and integrated as a part of Supportive Supervision to keep a consistent check. 2. Monthly route plan for vaccine delivery can be made a part of proposed micro plan. 3. Vehicle inventory and service records may be regularly updated in NCCMIS portal
2	Site visit particulars by CCTs for PPM are not accurately entered in NCCMIS and for operational execution compulsory projection of document can perhaps	1. NCCMIS may include measure for updating monthly PPM visit plan 2. Conducting NCCMIS review by states to comprehend visit feedback for corrective actions

Priority	Gaps identified	Action to be taken
	facilitate reimbursement. Absence of an effective mechanism to do so can lead to subnormal output of equipment.	and necessary consideration.
2	Instant reporting of equipment breakdown by CCH is not accomplished as anticipated causing non detection of actual sickness rate, this furthermore paralyze the analysis of gravity of situation.	1. Breakdown reporting can be incorporated as a component within mobile application for PPM which in turn smoothens the equipment breakdown reporting 2. Situation can be further made advantageous through the integration of eVIN and NCCIMS.
3	During holidays, definite protocol to carry out the task of temperature monitoring is not practiced and cause irregular observation of temperature.	Duty roaster of first and second cold chain handler supported by other health workers depending on their availability at facility during holidays might be a thoughtful answer. This can be made certain through SS and discussion during monthly review meetings.

राज्य वैक्सीन भंडार वैक्सीन वितरण तालिका

क्र	वैक्सीन वितरण दिवस	प्रस्थान की जगह	वैक्सीन प्राप्त करने वाली जिला का नाम	दूरी किलोमी	जिला टीकाकरण अधिकारी का नाम	मो नं०	कोल्डचेन हैण्डलर दूरभाष नं०
01	प्रथम माह में प्रथम सप्ताह	रायपुर	धमतरी	78	डॉ. डी के विधान	9893817057	9981237538
02		धमतरी	कांकेर	63	डॉ. इन्द्रकुमार रोहन	9424273570	9993863765
03		कांकेर	कोण्डागांव	95	डॉ. वाय पुरोम	9424296909	9425262345
04		कोण्डागांव	नारायणपुर	52	डॉ. बी एन बामनिया	9425598179	
05		नारायणपुर	जगदलपुर	158	डॉ. चांद राम वैती	9425598469	9406077714
06		जगदलपुर	सुकमा	120	डॉ. दिपेश चन्द्राकार	9406437075	9407927024
07		सुकमा	दन्तेवाडा	79	डॉ. वरवाडा	8109884209	
08		दन्तेवाडा	बिजापुर	110	डॉ. सतेन्द्र कुमार	7587228155	9479275423
09		बिजापुर	रायपुर	450			

रूट चार्ट क्रमांक 2

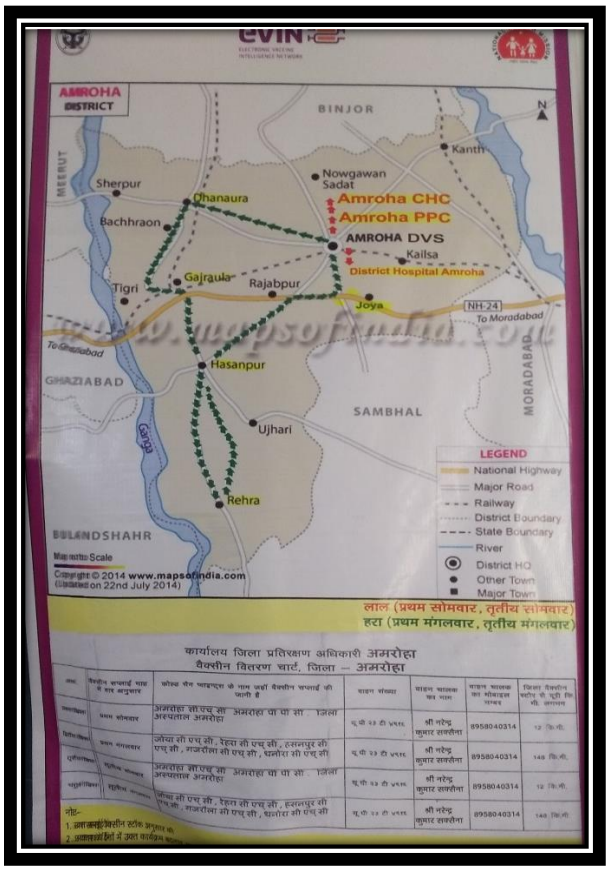
01	प्रथम माह में दुसरा सप्ताह	रायपुर	मुंगेली	110	डॉ. कन्हैया	8965054437	8889443144
02		मुंगेली	बिलासपुर	56	डॉ. अविनाश खरे	9826652420	9300833804
03		बिलासपुर	जांजगीर चांपा	60	डॉ. विजय श्रीवास्तव	7389619389	7879866991
04		जांजगीर चांपा	कोरबा	52	डॉ. अंकित	9893633327	8817543602
05		कोरबा	कोरिया	143	डॉ. सरेन्द्र पैकरा	8085530904	
06		कोरिया	सरगुजा	38	डॉ. आर एस सिंग	9826778450	
07		सरगुजा	कलरामपुर	110	डॉ. आर एस सिंग	8319750018	
08		कलरामपुर	सरगुजा	70	डॉ. सुनिल एक्का	9826119767	
09		सरगुजा	रायपुर	352			

रूट चार्ट क्रमांक 3

01	दुसरा माह में प्रथम सप्ताह	रायपर	गरियाबंद	100	डॉ. बी बरा	9424218606	9753559531
02		गरियाबंद	महासमुंद	88	डॉ. अरविंद गुप्ता	98261-81640	9926751175
03		महासमुंद	बलौदा बाजार	90	डॉ. के एल बंजारे	99776-18307	9826744762
04		बलौदा बाजार	रायगढ़	165	डॉ.भानू प्रताप पटेल	8839268592	8962769086
05		रायगढ़	जशपुर	150	डॉ. आर एस पैकरा	9424184272	9407725372
06		जशपुर	रायपुर	408			

रूट चार्ट क्रमांक 4

01	दुसरा माह में दुसरा सप्ताह	रायपुर	रायपुर	03	डॉ. आर के चन्द्रवंशी	9754860328	9826399310
02		रायपुर	दुर्ग	45	डॉ. सुधाम्ब चन्द्राकार	9977827108	8871281235
03		दुर्ग	बालोद	75	डॉ. सिरीश कुमार सोनी	9755911245	9589769124
04		बालोद	राजनांदगांव	60	डॉ. बी एल कुमरे	9827174966	8966838377
05		राजनांदगांव	कांकर्रा	115	डॉ. एस जयशवाल	7697573927	9424130993
06		कांकर्रा	बेमेतरा	45	डॉ. सारद खाडेवाल	9179637128	9993441903
07		बेमेतरा	रायपुर	75			



Vaccine distribution plans found in the field during National EVM Assessment

E. Capacity building

Priority	Gaps identified	Action to be taken
1	GOI has prepared VCCH training module to train all the VCCHs on standardized cold chain and vaccine logistic practices. Gaps were identified in VCCH's knowledge on following topics- • Detection of vaccine exposed to sub-zero temperatures and awareness regarding conducting "shake test" knowledge was below acceptable. • Understanding about vaccine wastage calculation was not upto agreeable standard. • Vaccine waste segregation system not in practice. • Many of the Store keepers were not been trained on the mentioned module in last one year.	Quality training of VCCHs is vital to update their knowledge. Following activities can be used- 1. Recognizing the untrained manpower through iTMIS and planning a catch up session. 2. During the extension of eVIN to newer states, a comprehensive brief training of VCCH module can be clubbed along. 3. Refresher training of VCCH at every 3 years
3	Unfilled CCT places and high attrition rate of personnel employed on contractual basis poses a major issue of channelized capacity building of the hired workforce.	1. Spotting the newly recruited CCTs with the help of iTMIS to set the priority for their desired capacity building by training them at NCCVMRC/NCCRC.
4	Vaccine store keepers are not receiving any training in safe working in WIC/WIF. Most of the WIC & WIFs are installed in Primary Vaccine Stores and the staff dealing with vaccines in PVSs are not trained to work in cold rooms.	1. Safe working in cold rooms "Module" may be developed and may become a part of VCCH training 2. A special training batch for all PVSs VCCH may be organized as most of the WIC/WIFs are installed in PVSs

Supportive Supervision / Mentoring and improvement in Practices

Priority	Gaps identified	Action to be taken
1	Supportive supervision is an imperative process to strengthen cold chain system. However it was pointed out that except for CCPs, regular SS visits are not made to stores at DVS,SVS etc.	1. Evaluation and subsequent modification of existing SS formats based on the findings encountered during EVM 2018. 2. Converting the SS program to Mentorship program with clear roles of supervisor built in the mobile application. Tracking the number of Mentoring visits made by Govt. officials and reviewing progress regularly. 3. NCCVMRC to act as secretariat for scaling up Mentorship programme across the country
2	For episodes of equipment failure or other emergencies, the SOPs to set out contingency plan was revealed to be missing at DVS and other higher level establishments.	1. Development of a format for contingency plan suited to higher establishment (DVS, RVS, SVS, GMSDs) might be put to place, with the aid from local IEC funds. 2. The obtainability and application of these formats can be observed through SS.
3	Regular counting of physical stock is lacking and miss match in the records and actual availability, specifically of consumables and freeze dried vaccines with diluent was evident during the assessment.	Record apprising through repeated physical stock count is primary to keep the records updated. For betterment - 1. Real time stock management through eVIN may be implemented in all states. 2. Use of SS/Mentoring tool for improving the practices 3. Recording of stock management to be discussed during monthly review meeting. 4. Multiple pre planned training platforms can serve as stage to apprise the concerned personnel knowledge on the requisite topics.
2	Ensuring Open/Multi Dose Vial Policy is essential to minimize vaccine wastage. Noticeably many open vials at various facilities failed to demonstrate mentioning of the required date and time during assessment.	Open vial policy has already been disseminated along with the necessary trainings- 1. Use of SS/Mentoring tool for identifying the gaps, discussing during monthly review meetings and taking corrective actions. 2. AVD strengthening can also ensure open vial policy implementation.
2	**a. Vaccine Distribution** Varied and inconsistent practices exist within vaccine distribution system at different settings:- 1. Specific spaces for ice packs conditioning prevails as a rarity across various locations. 2. Packing of cold boxes and Use of standardized ice packs is non	VCCH book serves as a point of reference to queries related to vaccine and cold chain management. Still practices vary from person to person hence planning and supportive supervision to bring about evenness is required:- 1. Track states to make certain regarding completion of VCCH trainings. 2. Ensuring supportive supervision 3. Regular review in monthly VCCH meetings

Priority	Gaps identified	Action to be taken
	consistent. 3. Vaccine arrival vouchers are either not maintained or unavailable and those which were available were unable to display arrival checks record	
3	**b. Temperature recording** Temperature recorder discs found to be in non-functional state leading to discomfort in tracking the data of the targeted time period.	1. eVIN implementation will on its own address the difficulty.
2	**c. Stock keeping** Of all the stores surveyed greater number exposed the following:- 1. Clarity regarding the basic terminologies used like maximum, minimum and buffer stock was not up to the mark among CCHs and the mentioned stocks were not suitably upheld. 2. EEFO was not appropriately followed and awareness regarding the same was also not optimal.	VCCH book is a recognized guide to resolve the enquiries associated with vaccine and cold chain management. Nevertheless practices show difference from person to person hence planning and supportive supervision to bring about evenness is required:- 1. Follow up with states to assure completion of VCCH trainings. 2. Ensure supportive supervision 3. Regular review during monthly VCCH meetings. 4. Online refresher course can be developed and hosted on NCCMIS.
3	**d. Vaccine Management practices** Display of material concerning VVM, cold chain etc. was insufficient at several stations.	Standard IEC models have been developed and made available by GOI, these prototypes can be shared with the states and can perhaps be printed with the use of IEC fund. Activity can be supervised through SS.

Supportive Supervision and Hand Holding in field is a very important attribute. Few previews of field visits during EVM data collection

Conclusion:

Findings of National EVM Assessment 2018 are really promising and showing results of efforts put in by Government of India in the field of Immunization Supply Chain – Cold Chain. Based on NEVM Assessment 2018 findings, a comprehensive improvement plan recommendation has been prepared for strengthening of Immunization Supply Chain – Cold Chain.

The overall findings clearly indicate the need of a strong supportive supervision and mentoring plan to convert knowledge into practices. A focused approach to bridge gaps identified during NEVM 2018 with pave pathway for a world class immunization supply chain-cold chain network.

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