Madhya Pradesh

Assessment cum Training of Vaccine and Cold Chain Management in MP - A VMAT Study

15 September to
15 October 2011

NATIONAL RURAL HEALTH MISSION
राष्ट्रीय ग्रामीण स्वास्थ्य मिशन
(2005-2012)

unicef

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ABBREVIATION AND GLOSSARY

°C	Degree Celsius
AD	Auto-disable (syringe)
AEFI	Adverse Event Following Immunization
ANM	Auxiliary Nurse Midwife
BCG	Bacilli Calmette-Guérin (tuberculosis vaccine)
CC	Cold Chain
CC&VLM	Cold Chain and Vaccine Logistics Management
CFC	Chlorofluorocarbon (ozone depleting substance)
CHC	Community Health Centre
CI	Critical Indicator (in EVM)
CM&HO	Chief Medical & Health Officer
CPCB	Central pollution control board
DF	Deep Freezer
DIO	District Immunization Officer
DLM	Divisional Logistic Managers
DPM	District Programme Manager (NRHM)
DTP	Diphtheria, Tetanus and Pertussis vaccine
DVS	District Vaccine Store
EEFO	Earliest Expiry First Out
EPI	Expanded Programme on Immunization
EVM	Effective Vaccine Management
EVSM	(WHO-UNICEF) Effective Vaccine Store Management initiative
FIC	Fully Immunized Child
GAVI	Global Alliance for Vaccines and Immunisation
GMSD	Government Medical Supply Depot
GoI	Government of India
GTN	Global Training Network (Now known as Global Learning Opportunities- GLO)
HepB	Hepatitis B vaccine
HP	Health Post
ILR	Ice-lined refrigerator
JE	Japanese encephalitis vaccine
LD	Lowest delivery level store
MCH	Maternal and child health
MDVP	Multi Dose Vial Policy (not adopted in India)

MO	Medical Officer
MOHFW	Ministry of Health & Family Welfare of Govt. of India
MPHW	Multi-Purpose Health Worker
MPW	Multi Purpose Worker
MQP	Model Quality Plan (module 2 of EVSM)
OPV	Oral Polio Vaccine
PHC	Primary Health Centre
PIP	Project implementation Plan
PR	Primary store
PWD	Public Works Department
RCHO	Reproductive and child Health Officer
RM or RT	Refrigeration Mechanic / Refrigeration Technician
RVS	Regional vaccine store
SC	Schedule cast
SCCO	State Cold Chain Officer
SN	Sub-national store (zone, divisional or Regional store-RVS)
SEPIO	State EPI Officer
SOP	Standard Operating Procedure
SP	Service point (health facility)
ST	Schedule tribe
SVS	State Vaccine Store
UNICEF	United Nation's Children Fund
VAR	Vaccine Arrival Report
VM	Vaccine Management
VMAT	Vaccine Management Assessment Tool
VVM	Vaccine Vial Monitor
WHO	World Health Organization
WIC	Walk-in-Cooler (Cold room)
WIF	Walk-in-Freezer (Freezer room)

ACKNOWLEDGEMENT

This assessment mission was conducted as a joint effort by the Government of Madhya Pradesh and UNICEF, Bhopal Office to improve the cold chain and vaccine management in the state.

The assessment mission was conducted with the technical support of APT-Progress. We would like to acknowledge the technical assistance provided by Dr. Kshem Prasad and his team for the conduction of this assessment.

The leadership provided to the state by Dr. Manohar Agnani, Mission Director NRHM made it possible to conduct this exercise which will be a guiding document for strengthening cold chain and vaccine management in the state. State Immunization Officer, Dr. B.N Chauhan, State Deputy Immunization Officer Dr. J.P. Khare, State Cold Chain Officer Mr. Vipin Shrivastava and Dr. Ashwin Bhagwat have contributed to the successful implementation of this mission.

The active support provided by Dr. Sufia Askari – Health Officer, Dr. Gagan, Health Specialist and Mr. Manish Mathur, Program manager, UNICEF have been instrumental in the initiation and successful rollout of this mission. We would like to acknowledge the technical support from Dr. Shrihari Dutta, Immunization specialist UNICEF Delhi during the mission. We would also acknowledge the support provided by Rahul Bhadouria, Dr. Hubbe Ali, Regional routine immunization coordinators and Mr. Paras Jain for ensuring the smooth completion of the project.

We would also like to acknowledge the participation of Dr. Henri Von Den Hombergh, Chief of Health, UNICEF and the keen interest and support of all other partners from WHO, NIPI and others agencies has led to the successful completion of the project.

The entire exercise of training and field assessment would have lost its worth without the zeal and efforts put in by the whole team that was involved including the District Immunisation officers, DLM and Cold Chain Handlers It is hoped that these efforts will percolate to more people through further capacity building to make the whole effort more sustainable.

This is an effort by the government to ensure that a safe and potent vaccine is delivered to all our children of Madhya Pradesh.

Dr. Tania Goldner
Chief Of UNICEF M.P.

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EXECUTIVE SUMMARY

Madhya Pradesh (MP) is the second largest Indian state in size with an area of 308,245 sq. kms, which corresponds to 9.38% of the area of the country. It is a land locked state whose border is surrounded by 5 states namely Uttar Pradesh, Rajasthan, Gujarat, Maharashtra and Chhattisgarh.

Based on the last census in 2001, the total population of state was 60,348,023, with 31,443,652 males and 28,904,371 females. The population density in the state based on the 2001 census is 196 person per sq. Km. The current population of MP (2010-2011) based on projection is expected to be about 73.8 million. Thus the immunization program of Madhya Pradesh has a target population on around 1.9 million infants and around 2 million pregnant ladies.

As per the DLHS-3 (2007-08) the immunization coverage regarding the fully immunized children was 36.2% and 9.8% children had not received any vaccination. However, the BCG coverage was 84. 2% and but the measles coverage was 57.7%. The recent CES 2009 shows some improvement with coverage of fully immunized children increased to 42.9%, and Measles coverage to 61.9%

WHO-UNICEF have designed the Global Effective Vaccine Management (EVM) initiative to help countries to improve the quality of their vaccine and cold chain management from the time the vaccine arrives in their country down to the service delivery point. This tool is used to assess the quality and sufficiency of the salient components of an effective vaccine supply chain.

The current mission for assessment of vaccine management was initiated by the Ministry of Health & Family Welfare (MoH&FW) of Govt. of MP and supported by UNICEF - MP. This is an effort to strengthen the cold chain system and improve the vaccine management in the state which will go a long way in strengthening the immunization program in the state. It was also undertaken keeping in mind the measles campaign to be undertaken by the state.

THE OBJECTIVE

The objective of such an assessment is to identify the following aspects:

- **Strengths & good practices**
- **Major knowledge gaps**
- **Major performance gaps**
- **Resource & Training needs**

In addition the methodology adopted here aims to:

- **Develop internal capacity of the system to conduct similar self-assessment periodically in order to strengthen it and make it self-sustainable and to ensure a more reliable cold chain and vaccine logistic system.**

THE TOOL

WHO-UNICEF have designed the Global Effective Vaccine Management (EVM) initiative to help countries to improve the quality of their vaccine and cold chain management from the time the vaccine arrives in their country down to the service delivery point. It integrates the learning from the former Effective Vaccine Store Management (EVSM) initiative and the Vaccine Management Assessment (VMA) tool which have been used till date for such assessments.

This EVM tool is used to assess the quality and sufficiency of the salient components of an effective supply chain: buildings; storage and transport capacity; cold chain equipment; vehicles; repairs and maintenance; training and the management systems needed for the effective operation and control of the system.

It is based on nine basic *criteria listed below.*

1. **Vaccine arrival procedures**
2. **Vaccine storage temperatures**
3. **Cold storage capacity**
4. **Buildings, cold chain equipment and transport**
5. **Maintenance of cold chain equipment and transport**
6. **Stock management**
7. **Effective vaccine delivery**
8. **Vaccine Management**
9. **SOPs and Supportive Management Systems**

Compliance with the fundamental qualities of a good vaccine supply chain is tested using a series of tightly focussed questions which are numerically scored. It bases itself on the data and practices over the last 12 months.

The resulting scores are used to depict graphically on a spider web the strengths and weaknesses of a country's vaccine management systems. The score helps assessors to identify and document the areas of strengths and good practices as well as the major knowledge and performance gaps in a consistent format. Based on these, the assessor can define targeted support and training needs to address the weaknesses.

Revised version no. 1. 0. 3. 0 of the EVM was used during this assessment.

THE METHODOLOGY AND IMPLEMENTATION

The methodology used is based on the principles of adult learning and the philosophy of Global Learning Opportunities of WHO: "Learning by Doing". Thus several additional complementary activities, many in form of capacity building, are integrated into the assessment mission.

A total of 28 participants were inducted in the use of EVM tool through 5 day training. The training consisted of theoretical session in the morning followed by practical exercise of assessment in the nearby vaccine stores in the afternoons. The exercise also included training on supportive supervision.

This was followed by a 6 days field assessment of 56 sites (4 SVS, 3 RVS, 18 DVS and 31 HFs).

The process of selection of the sites to be assessed was done using the "Site Selection Tool"

based on the bio-statistics, supplied as a part of EVM package. A total of 14 DVS were selected randomly with the help of this tool. This list included 2 of the 5 districts already selected for the Measles SIA. The remaining 3 districts were included in the list as a special request was made to assess all the SIA districts. In addition, 31 health facilities were selected randomly using the same tool, below the already selected DVSs.

The field assessment was conducted by 8 teams, each of which visited one of the 8 zones and assessed its SVS or RVS, 2 DVS and 4 HFs. Each team was comprised of 1 DIO or DLM, 1 storekeeper and 1 refrigeration technician. The assessment was conducted in the form of supportive supervision.

The facilitation team members travelled separately and joined different teams at different times to provide on sit supportive supervision in all aspects of the assessment. This permitted to achieve the following objectives:

- Guide the teams that are encountered to improve the quality of their assessment
- Verify the correctness and accuracy of data collection by the team
- Visit some vaccines stores that are on their itinerary for a rapid appraisal.
- Make independent observations of the vaccine stores visited.

Following the assessment, the data collected were verified, validated, and consolidated over 5 days, with the help of the team leaders from each team.

Thereafter, details discussions were conducted to analyse the result and identify the strengths and weaknesses together. The team then developed their own practicable recommendations through consensus to address the weaknesses with the guidance from the facilitation team.

This methodology enables to obtain the following outputs:

- **Training of health staff in use of EVM**
- **Learning about the good practices of CC&VLM**
- **Assessment of Cold Chain and Vaccine logistics Management (CC & VLM)**
- **Planning and Review of CC & VLM**
- **Developing Training skills**
- **Developing skills in supportive supervision**
- **Provide on spot hand-holding in correct practices in CC and VM**
- **Developing their capacity to identify weaknesses and define recommendations to address them**
- **Analysing the data collected from the field using the EVM tool**
- **Learn to summarise the observations and make its presentation**
- **Computer skills (Excel)**

Thus, it is a multi-faceted capacity building activity, which is targeted at strengthening the vaccine management system in order to make the system more efficient with zero stock-out.

ADDITIONAL TASKS

Each team also submitted a list of strengths and weakness identified by them during their visits along with the nature of supportive supervision provided by them to the stores they visited. This is submitted as a separate report.

In addition, each team prepared a short presentation for presentation during the debriefing. The presentation contained the following information:

1. Strengths observed
2. Weaknesses observed
3. Recommendations
4. Future actions they would undertake when the team members return to their post

These presentations can be used by the respective zones / division to improve the vaccine management in their area.

THE RESULTS

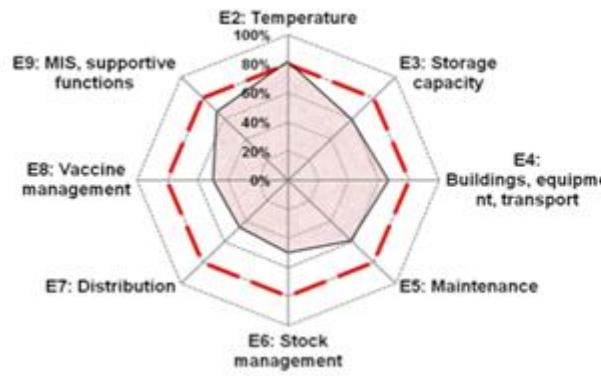
The summary of the consolidated results is given in the table below. WHO recommends a minimum of 80% of performance for each criterion. Therefore, in the table below, scores ***less than or equal to 70% are marked in red with italics*** to highlight that these indicators at the respective level need attention. The scores between 70% and 90% are left in the normal black font to indicate that they are in the acceptable range. Those **above 90% are marked in green** to indicate that these are in a very comfortable range.

Table 1: Summary of consolidated EVM score for Madhya Pradesh

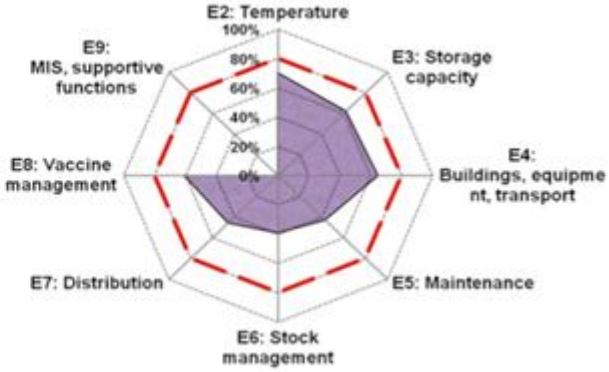
Ind.	Indicator	Consolidated scores			
		4 SVS	3 RVS	18 DVS	31 CHC/PHC
1	Vaccine Arrival Process	*50%*	NA	NA	NA
2	Vaccine Storage Temperature	*53%*	71%	80%	*67%*
3	Storage Capacity	*51%*	*59%*	*62%*	*61%*
4	Building, Cold Chain Equipment and Transport	74%	75%	*66%*	*62%*
5	Maintenance of Cold Chain Equipment and Transport	*42%*	*36%*	*57%*	*42%*
6	Stock Management	*63%*	*48%*	*48%*	*38%*
7	Distribution	*47%*	*35%*	*43%*	*43%*
8	Vaccine Management	*57%*	*56%*	*46%*	*58%*
9	MIS & supportive functions	81%	*53%*	*64%*	NA

Looking at the score table, one can observe that none of the scores are above 90%. There are only five scores in black. The rest are all in ***red*** which reflect predominance of weaknesses in the system. The consolidated spider graphs for the 4 SVS, 3 RVS, 18 DVS and 31 HFs (CHCs & PHCs) are given below.

Spider Graph Results of Performance of EVM



Consolidated 18 DVS



Consolidated for 31 CHC & PHC

The findings are presented in detail in section 10 of this report. The strengths and weaknesses identify

RECOMMENDATIONS

A comprehensive analysis of the weaknesses has led to a set of recommendations. These are given in the corresponding section of the report. The recommendations have been categorized into:

A. Management, Policy & Human Resource	**E. Planning & Documentation**
B. Infrastructure	**F. Supportive supervision & improvement of practices**
C. Maintenance and Repair	
D. Capacity building	

In each of these categories, a priority has been defined between 1 and 4 for each recommendation based on the score and criticality of indicator that affect the cold chain and vaccine logistics. These are listed below:

1. Urgent - To be implemented immediately or within the 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.

The tables below give the list of recommendations to be implemented urgently in the different categories.

A - Management, Policy and Human Resource

Priority	Major Gaps	Action to be taken
1 Urgent	**Staffing** Refrigeration mechanics are handling the responsibility of storekeeper at 6 DVS. As a result, they are unable to allot the time required for repairing equipment and several equipment have been awaiting repair since a long time. Defective equipment lying idle for a long time may reach the stage of beyond repair and may have to be condemned.	❖ Appoint one adequate trained vaccine handler at all RVS and DVS.
1 Urgent	**Staffing** Staff at several places have been appointed without any formal or adequate on-the-job training. Such staff have poor knowledge of proper handling of vaccines (e.g. correct storage temperature and which vaccines' potency is vulnerable to freezing). Such staff put a serious threat to the potency of the vaccines and any resulting adverse even can jeopardise the immunization programme.	❖ Avoid frequent transfer of the trained staff working with the vaccines and cold chain to other duties and substituting them by untrained staff.
2	**Staffing** There are several serious management issues in the vaccine logisitcs in the state which can be addressed by appointing a trained vaccine logistic manager at the state level.	❖ Appoint one state level vaccine logistic manager, with management background and provide him with training on vaccine logistics. He should coordinate with all the divisional logistic managers to oversee and ensure adequate vaccines management at all levels.

B – Infrastructure

Priority	Major Gaps	Action to be taken
1 Urgent	**Equipment** Several new WIC and WIF have been supplied by GoI for the SVS and RVS. The facilitation team have encountered many of these and observed serious lacuna in the rating of the equipment and quality of the installation.	❖ Ensure that all new installation of WICs / WIFs, Stabilizers and generators are completed according to required standards. ❖ The commissioning report MUST be received from the manufacturer before signing of the completion certificate.
1 Urgent	**Equipment** In two instances, one of the refrigeration unit of a WIC is non-functional since quite some time. In case the second one fails while the first one is still not made operational, a situation of emergency will arise.	❖ Ensure that both the refrigeration units of a WIC / WIF are always in proper working condition. ❖ Install hooters at every WICs and WIFs to alert responsible staff in case the safety of the vaccine is threatened. ❖

Priority	Major Gaps	Action to be taken
1 Urgent	**Equipment Condemnation** Condemned equipment are occupying usable space in many districts. This leads to limitation of floor space to add more equipment, which will be required to comply with GoI on total storage capacity to be ensured at the DVS.	❖ Implement urgently the directives on how to dispose of all condemned items. The issue of disposal must be put on the priority agenda in a periodic manner.

D - Capacity Building

Priority	Major Gaps	Action to be taken
1 Urgent	**Vaccine Handling** Staff at several places have been appointed without any formal or adequate on-the-job training. Handling of vaccines by such staff puts a serious threat to the potency of the vaccines.	❖ All staff must be provided with adequate quality training before assuming any duty. o Untrained staff should NEVER be given the responsibility of handling vaccines. o Preferably, train at least two staff from every vaccine store, so as to replace each other in case of need.
1 Urgent	**Distribution** Most of the staff right from the SVS level do not know how to condition ice packs. The current practice puts serious threat of freezing of the T-series and Hep B vaccines during long transport. Staff at DVS are also not fully knowledgeable about correct way of packing cold boxes. Some tend to make use of the non-standard ice packs provided to cover the ILRs and DF of Haier make.	❖ Conduct practical training on correct ice-pack conditioning and vaccine packing in the cold box to staff at all levels.

F - Supportive Supervision and Improvement of Practices

Priority	Major Gaps	Action to be taken
1 Urgent	**Distribution** Staff have poor knowledge and practice in: 1. Conditioning of ice-packs. 2. Packing cold boxes. 3. Use of standard ice packs.	❖ Always ensure use of standard ice packs after proper conditioning. ❖ Ensure proper packing of ice packs and vaccines in the cold boxes during distribution.
1 Urgent	**Storage Temperature** In certain cases, the temperature records seem to be marked in a mechanical manner without actual carrying out any real reading, since there was no fluctuation in the temperature over several days. This is practically not possible. Such incorrect practice can threaten the potency of the vaccine and can cost the life of a child and the reputation of the programme.	❖ Temperature monitoring and recording should be carried out twice daily, 7 days of the week. o All staff MUST record the reading correctly after due verification. o All additional salient aspects associated to the operation of the equipment should also be

Priority	Major Gaps	Action to be taken
	In several places, the temperature records are not systematically verified by a supervisor. As a results the weakness mentioned above are not noticed and addressed.	note (e.g. hours of power breakdown, defrosting, servicing etc.) ❖ There MUST be **periodic technical supervision visits** (not administrative) to ensure that correct practices of vaccine storage and temperature monitoring are followed.
1 Urgent	**Stock keeping** Records of VVM status and diluents are not maintained below the SVS. Diluents details are not maintained anywhere except SVS.	❖ All salient parameter of vaccine & diluents MUST be noted, particularly the VVM stage (for vaccines), manufacturer, Batch number and expiry date in a **standard structured vaccine management register.**

The other recommendations in the different categories are:

A - Management, Policy and Human Resource

- The state needs to appoint dedicated DIOs.
- Requirements of vaccine management should be included in the Pro-MIS or the state should adopt another real time Vaccine Logistic Supply Management System (VLMS).
- All RVS that are merged with their SVS or DVS must be segregated for better vaccine management.
- Use the improved skills of the DLMs for cascading capacity building and supportive supervision.
- The position of DLM should be made regular as they can play an important role to improve the immunization programme.
- At SVS and RVS there should be round the clock staff for ensuring safety of the vaccines. Semi-skilled helpers should be employed at these vaccine stores to ensure supervision round the clock.
- Appoint one semi-skilled helper at every DVS. He should be involved in regular manual recording of temperatures.

B - Infrastructure

- There is a need to update the equipment inventory and evaluate the exact storage space available at every SVS, RVS and DVS based on the physical verification.
- The state should procure the required number of stabilizers to ensure that each equipment has its own stabilizer.
- Based on the evaluation of the required storage space as per the recommendations of GoI, and the available space, the state must procure and install necessary equipment at all levels to ensure sufficiency of storage space.
- Ensure that at each CHC and PHC that store and supply vaccines are equipped with the required number of ILR and DFs.
- Carry out expansion of RVS and DVS where required to ensure adequate space for cold chain equipment, dry space, workshop, packaging and storekeeper's office.
  - Where expansion is not possible plan new building taking into account future needs.
- Most DVS require revamping of basic infrastructure.

C - Maintenance & Repair

- All defective old stabilizers, whose spares are no longer available, should be repaired using spares from other defective one, if authorised to do so, otherwise condemned and replaced with new ones.
- State level experienced technician should be sent to work with the RVS / DVS technicians to examine all non-functional units and to conduct repairs along with them (in form of hands-on training).
- The MoH&FW needs to co-ordinate with PWD to define plans for maintenance of the different building used in the health services.
- In order to ensure sustainable operation, there is an imperative need to prepare work plans for the refrigeration technicians and have the SCCO to monitor their operations. The plans should include preventive maintenance and on demand repairs.
- All maintenance and repair work need to be reviewed at the quarterly review meetings to systematically strengthen the technical operations.
- The supervision / verification of repair works should look into the total holding time (duration between the reporting of a breakdown to the day when the equipment is back into operating condition). This reflects the efficacy of the refrigeration technician and repair operation.
- Periodically collect cold chain performance indicators such as sickness rate, response time and downtime of equipment.
- It is important to define the total quantity of excess equipment after adequate allotment for required capacity at RVS and DVS. Future indent should consider the new equipment in stock to ensure that excess stock of new equipment is avoided.
  - Use repaired equipment to replace defective ones, instead of new ones.
- Adequate quantity of spares should be procured periodically, based on the total equipment inventory and expected failure rates.

D - Capacity Building

- Refrigeration technicians need training on temperature profiling of all cold room and freeze room and how to calibrate the temperature sensors.
- All staff involved in vaccine handling require refresher course. The newly deputed staff require fully fledged training. The trainings should cover the following areas which appear quite weak:
  - Estimation of vaccine requirement based on working stock and buffer stock,
  - Total volume of storage space required,
  - Proper recording of stocks and use of stock registers,
  - Use of indent and supply forms,
  - Correct indenting and supply of diluents particularly at DVS and CHC levels.
- During every training, related to diluents, the language used **MUST avoid the words water, distilled water or saline water for the diluents and emphasize that the specific diluents manufactured by the same company MUST be used exclusively.**
- Staff needs regular review, refreshing and updating through Continue Medical Education (CME) programs.
- Upcoming cold chain handlers or other immunization trainings should practically demonstrate the shake test. The RCHOs and MOs should demonstrate the same
- All DIOs, MOs , DLMs and other supervising staff should be oriented on the periodic supportive supervision activity.
- DPM, BMP, DLM and CC technicians need to be sensitized in immunization programme including cold chain and vaccine management.

E - Planning & Documentation

- Standardised temperature record books should be designed, printed and distributed to all levels across the state.
- Adapt the MO module contingency plans at different levels of the state. Disseminate the structure of the plan to the concerned staff and do needed follow up in review meeting.
- Define, print and supply, standardized stock registers at all vaccine stores to ensure proper recording of all salient parameters of vaccines, diluents and consumables.
- Define a comprehensive indent form, which also includes the details of quantities used and balance in stock.
- Define a comprehensive indent and distribution plan at all levels starting from SVS down to PHCs based on maximum stocks requirements and available storing space.
- In principle the upper store should distribute the vaccine as they have been provided with the funds for this purpose.
- Provide and implement use of freeze indicators at all levels for use during transport of freeze sensitive vaccine.
- Establish system to record all kinds of wastages
- Encourage staff to record them without apprehension of disciplinary action
- Efforts to reduce wastages should not result in missing out any child. GoI clearly states that every child should be vaccinated – staff should be encouraged to open a vial even if it is just for a single child.
- Staff need to be aware of the proper disposal procedures and improve practice across the state.

F - Supportive Supervision and Improvement of Practices

- There is a need to establish and implement proper plans for supportive supervision.
- DIOs and supervisors should always sign all documents they supervise as a sign of endorsement of its correctness.
- The DIO, BMO or the MO should periodically monitor the contents of the cold chain to ensure that the correct of vaccines are stored properly.
- In order to ensure proper traceability of each lot of vaccine arriving in the state, it is recommended to fill up the VAR for every type and lot of vaccine.
- Copies of blank VAR should be kept at all SVS for this purpose as the same are not supplied during the shipment by GMSDs and local manufacturers.
- A supervisor should verify the VAR and a copy should be sent to GoI or UNICEF as required for further record and follow-ups.
- Ensure that indent and storage are based on the maximum and minimum stocks estimated according to the GoI guidelines:
  - RVS & DVS : 3 months working stock and 1 month buffer (safety) stock.
  - CHC& PHC : 1 month working stock and 0. 5 month buffer (safety) stock.
- DIOs, DLMs or other responsible persons should verify that the correct practice of stock management is maintained.
  - Immediate action is taken when buffer stock is breached.
- Ensure complete record keeping monitoring the actual vaccine distribution.
  - While sending the new indent or bringing it during collection of vaccines, the receiving store should return the endorsed copy of previous month's issue voucher

- Staff should keep important manuals for easy reference and correct practice.
- At health facilities (CHC and PHCs) the DF used to prepare ice packs should not be used for storing vaccines. All vaccine should be kept in the ILR at HF level.
- Ensure that at service level, all diluents are kept in the cold chain all the time as there is enough cold chain capacity. This will endure that the diluents is always kept in the cold chain for minimum of 24 hours before use.
- Conduct temp monitoring studies once every 5 years.
- Conduct temperature profiling for each WIC and WIFs.
- Temperature sensors should be calibrated at least once a year for each sensor, especially for each WIC and WIF.
- Implement practice of monthly physical verification of all vaccines, diluents and consumables at DVS, CHC and PHC level, and quarterly verification at SVS and RVS level. Result of physical verification must be marked in the stock register.
  - The supervisor should countersign the same.
- To minimize problem of mixing manufacturers during supply and use of freeze dried vaccines, the vaccine handler should make an identical identification mark on the cartons of vaccines and diluents supplied together.
- All used, opened and damaged vaccines should be disposed off according to the state guidelines.

THE WAY FORWARD

The cold chain and vaccine management, and the immunization programme as a whole needs to be revitalized in order to improve the current coverage and performance.

A comprehensive list of recommendations has been provided to address the different weaknesses that are responsible for the current performance of the immunization programme.

These recommendations, segregated according to categories and priorities should be used to develop an action plan for the near future and next year. The action plan and the budget should be used to prepare the PIP for the next year.

Hand in hand with the preparation of the action plan, there needs to be close oversight of the implementation / rollout of the action plan by the state authorities.

Let us care for the vaccines for the sake of our children.

INTRODUCTION

Background

Madhya Pradesh, because of its central location in India, is called 'Madhya Pradesh' or MP. The undivided Madhya Pradesh was founded on November 1, 1956. It has remained a crucible of historical currents from North, South, East and West. The state came into existence in its present form, following its bifurcation to create a new state of Chhattisgarh.

It is the second largest Indian state in size with an area of 308,245 sq. kms, which corresponds to 9.38% of the area of the country. It is a land locked state whose border is surrounded by 5 states namely Uttar Pradesh, Rajasthan, Gujarat, Maharashtra and Chhattisgarh.

The whole of MP is divided into 10 administrative divisions. There are 50 districts in Madhya Pradesh (includes new districts Alirajpur and Singroli), 285 tehsils, 394 cities / nagars, 313 development blocks and total 55,393 villages. Based on the last census in 2001, the total population of state was 60,348,023, with 31,443,652 males and 28,904,371 females. The population density in the state based on the 2001 census is 196 person per sq. Km. Thus, MP ranks as the 7th most populated and 13th least densely populated states of India. The current population of MP (2010-2011) based on projection is expected to be about 73.8 million, with the target group of less than 1 years infants of 1.9 million and around 2 million pregnant ladies.

In 2006, the birth rate was 29. 1 per thousand. During this period the infant mortality rate was 74 per thousand. For every 1000 males there are 919 females, based on the population the highest population is in the district of Indore (2,465,827) and the smallest one is Harda (474,416).

A large proportion of members of SC and ST reside in MP. As per 2001 census, the total SC residing in MP were 9,155,177 which is 15.2 % of the total population of MP. The total population of ST is 12,233,474 in MP, which is 20.3% of the total population. Based on the population estimate the largest absolute number of the ST resides in MP.

In year 2001 total Literacy in MP was 63.7%. The male literacy was 76.1% and the female literacy was 50.3 %. The 57.85 of the rural population and 79.4% of the urban population is literate. This puts MP at the 24th position in the country. Furthermore, MP is divided into 3 parts, each having separate geographical and demographic patterns leading to separate strengthens and challenges.

Organization of immunization services

Under the mission director NRHM, the Expanded Programme on Immunization (EPI) is managed by two State EPI Officer (SEPIO) [Joint Director and Deputy Director (Immunization)] and strengthened by one State Cold Chain Officer (SCCO).

At the district level there are District Immunization officers (DIOs) now designated as MCH officers who are responsible for Immunization service delivery, reporting to the administrative head of the department of the health – CMHO.

For the urban area immunization civil surgeon who is the in-charge of the District Hospital has been assigned the responsibility. The districts are divided into blocks. Each block has a CHC at the block headquarter. The Block Medical Officer who is the head of the health section of the Block is responsible for execution of the immunization services along with the outreach services. The block is divided into sectors, and each sector has sector supervisors. At the sub-centre level there are ANMs and MPW, who are the frontline workers. Each ANM organizes sessions in their respective village under the sub centre on Tuesdays and Fridays of every week.

The state has four State Vaccine Store (SVS) at Bhopal, Gwalior, Indore and Jabalpur, 8 Zonal (or Regional) Vaccine Stores (RVSs), 50 district vaccine stores (DVSs), 333 Community Health Centres (CHCs), 1157 Primary Health Centres (PHCs) and 8,659 Sub-centres.

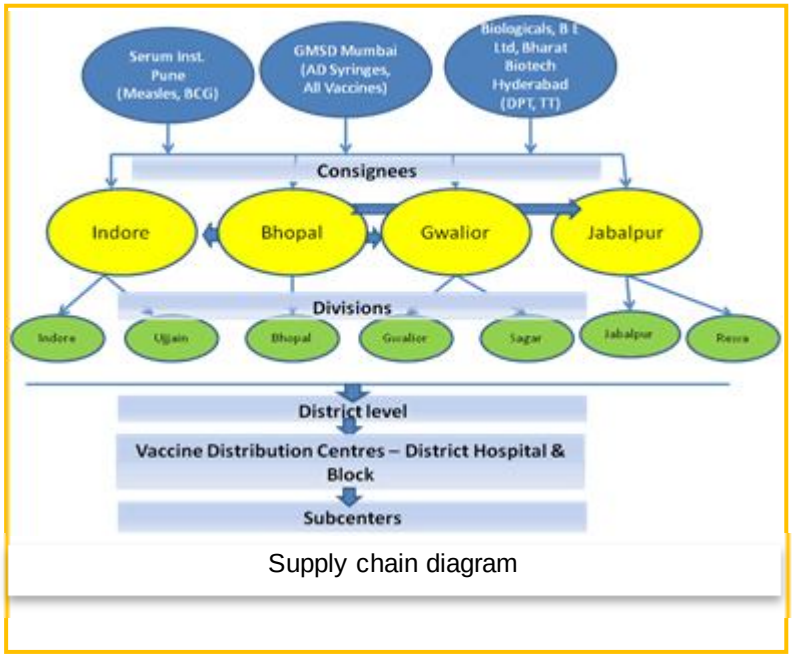
Apart from this there are urban Family welfare centres: 16 of type I, 7 of type II, 13 of type III; 80 urban health posts and 92 civil dispensaries. Based on the geographic profiling and accessibility the state has categorized its institutions as normal, difficult area, most difficult area, and inaccessible areas. The table below provides the distribution of health institutions in the different categories.

	Total	Difficult areas	Most difficult areas	Inaccessible area
District Hospital	50	12 (24%)	-	-
Civil Hospital	56	4 (7%)	-	-
CHC	333	124 (37%)	30 (9%)	-
PHCs	1157	512 (44%)	144 (12%)	11 (1%)

The sub-health centres under respective PHCs belong to the same area as the PHCs.

The vaccines are supplied to the 4 SVSs from the GMSD at Mumbai. Some domestic suppliers also supply vaccines directly to the 4 SVSs as per government of India order. However, the supplies to the state from the centre are usually not as per the requirement and norms (supply of 3 months plus one month buffer stock at one time).

The 4 SVS supply the vaccine down the supply chain consisting of RVS, DVS and Health facilities, most often based on the receipt of the supply rather than a systematic plan.



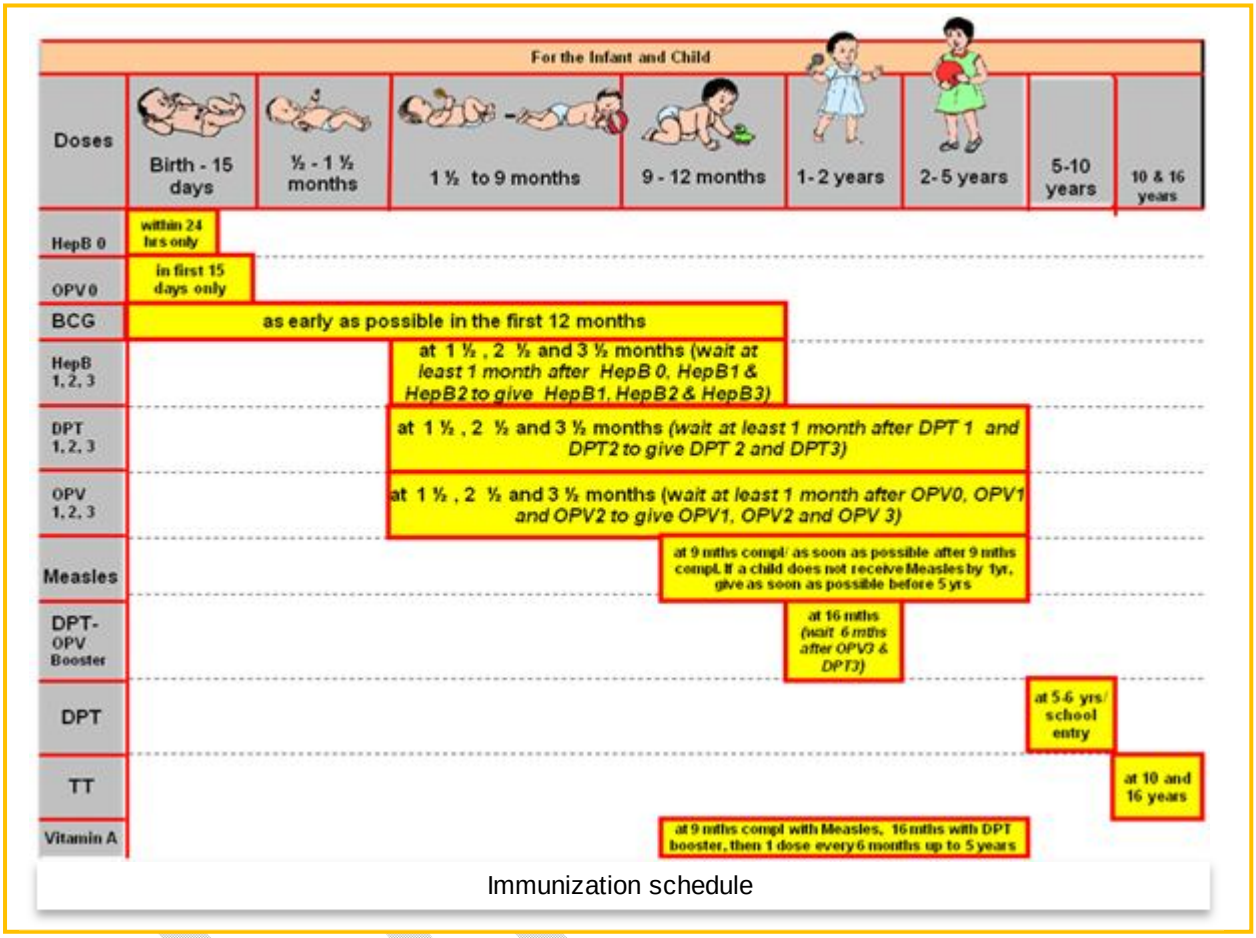
Supply chain diagram

The syringes and needle cutters are supplied by GOI from GMSD Mumbai, as per the requirement

of the state.

The GOI has recently supplied 6 Walk-in Coolers and 2 Walk-in Freezers to enhance the storage capacity of the vaccines in the State. These are under process of installation at the SVS and RVS.

The diagram below illustrates the present immunization schedule. Usually Immunization sessions are conducted at the health facilities (fixed sessions) as well as outreach posts in the villages under the sub centres. Per month there are approximately 50,000 sessions in all MP.



Immunization schedule

As per the DLHS-3 (2007-08) the immunization coverage regarding the fully immunized children was 36.2% and 9.8% children had not received any vaccination. However, the BCG coverage was 84.2% and the measles coverage was 57.7%. The recent CES 2009 shows some improvement with coverage of fully immunized children increased to 42.9%, and Measles coverage to 61.9%. The BCG coverage was recorded to be 81.4%; OPV3 51.7%; DPT3 50.6%; HEP-B 24.3%. The CES also pointed out that 5.9 % of children are still left out and 24% is BCG – Measles Dropout rate.

In view of strengthening of the immunization infrastructure, and planning the Measles SIAs across the state, it is of importance to evaluate the quality of the cold chain and vaccine logistics as well as the immunization programme, and identify the additional needs to strengthen the programme further.

The current mission for assessment of vaccine management was initiated by the Ministry of Health & Family Welfare (MoH&FW) of Govt. of MP and supported by UNICEF - MP.

OBJECTIVE OF EFFECTIVE VACCINE MANAGEMENT ASSESSMENT

The objective of such an assessment is to identify the following aspects:

- **Strengths & good practices**
- **Major knowledge gaps**
- **Major performance gaps**
- **Resource & Training needs**

In addition the methodology adopted here aims to:

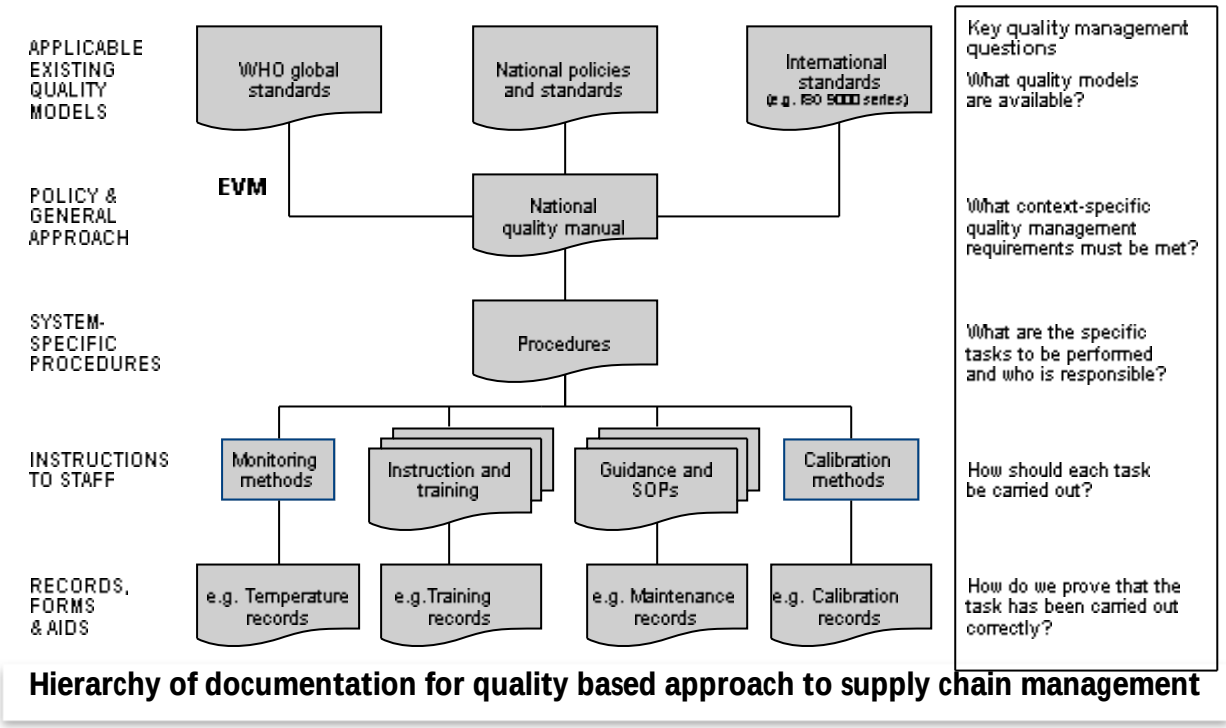
- **Develop internal capacity of the system to conduct similar self-assessment periodically in order to strengthen it and make it self-sustainable.**

The Tool

The Global Effective Vaccine Management Initiative (EVM) initiative is developed by WHO-UNICEF to help countries to improve the quality of their vaccine and cold chain management from the time the vaccine arrives in their country down to the service delivery point. It comprises of a tool that integrates the learning from the former Effective Vaccine Store Management (EVSM) initiative, which was used to assess exclusively the National or State vaccine stores and the Vaccine Management Assessment (VMA) tool, which was used to assess the levels below the National and state level.

The EVM package has been designed so that it can also be used both as an assessment tool for the systematic analysis of strengths and weaknesses across the supply chain but also as a supervisory aid to monitor and support the long-term progress of individual facilities.

Good storage and good distribution practices for temperature-controlled pharmaceuticals and other products are increasingly the focus of national and international legislative and regulatory control in both developed and developing countries. EVM follows the well-established principles of quality management used throughout the industrialised world – for example the ISO 9000 series of quality standards.



Hierarchy of documentation for quality based approach to supply chain management

EVM is designed to help countries to develop strength-in-depth by building a culture of quality based on a structured approach to supply chain management, monitoring and record keeping. The figure above illustrates the hierarchy of documentation needed to support this approach. EVM covers the grey shaded area of the diagram.

The EVM tool is used to assess the quality and sufficiency of the seven component elements of an effective supply chain: buildings; storage and transport capacity; cold chain equipment; vehicles; repairs and maintenance; training and the management systems needed for the effective operation and control of the system.

An EVM assessment uses a structured questionnaire; this questionnaire is designed to allow evaluation of four distinctly different levels in the supply chain, as follows:

1. The primary (PR - generally national) level store where vaccine is received directly from the vaccine manufacturer or from an international supplier such as UNICEF Supply Division. Typically vaccine is stored in large cold rooms and freezer rooms.

   In the context of India this would correspond to the 4 GMSDs and the State Vaccine Stores (SVS).

2. The sub-national (SN) level where vaccine is received from the primary store, stored for an agreed period, and then distributed to lower levels stores or to health facilities. These stores may have a cold room and/or a number of vaccine refrigerators and freezers.

   In the context of any state in India this would correspond to the Divisional / Zonal / Regional Vaccine Store (RVS) that receive vaccines from the SVS and distribute vaccines to several districts below it. These are equipped with Walk-in-Cooler (WICs).

3. The lowest delivery level (LD) store where vaccine is received, either from the primary store or from a sub-national store. From this point it is distributed directly to service delivery points. The LD does not provide any immunization service.

In the Indian context, this would correspond to the District Vaccine Store (DVS), which distribute the vaccines to CHCs and PHCs or to the CHC when the latter distribute the vaccines to their respective PHCs. The DVS are equipped with ILRs and DFs only.

4. Service delivery points (SD) such as health centres, health posts, CHCs and PHCs, where vaccine is stored for a short time before delivery to the target population – usually in a single refrigerator, but also, on a very short-term basis, in vaccine cold boxes or vaccine carriers.

   In the Indian context, the SD consists of the CHCs and PHCs. They are referred to as Health Facilities (HF) in the present context. They also distribute vaccines for outreach immunization posts.

The EVM tool is based on nine basic *criteria listed below. Each of these* is divided into a number of *requirements* and *sub-requirements;* together these characterize the fundamental qualities of a good vaccine supply chain. Compliance with each of these sub-requirements is tested using a series of tightly focussed questions, which are numerically scored.

1. Vaccine arrival procedures
2. Vaccine storage temperatures
3. Cold storage capacity
4. Buildings, cold chain equipment and transport
5. Maintenance of cold chain equipment and transport
6. Stock management
7. Effective vaccine delivery
8. Vaccine Management
9. SOPs and Supportive Management Systems

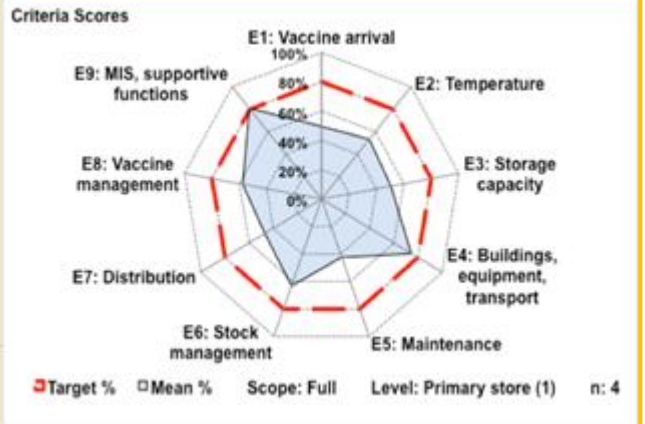
Criteria 1 to 7 are similar to that of EVSM and VMA. Criterion 1 in applicable only at national and state level store (SVS). Criterion 8 is a consolidation of criteria 8, 9 and 10 of VMA and is more specific for the assessment of the periphery (SD or HF) level. Criterion 9 is a modified version of indicator 9 of EVSM and applicable essentially to the national and state level.

The purpose of EVM is to investigate knowledge and practices in vaccine management amongst health staff operating along the entire supply chain starting from the national or state level and down to the service delivery levels (CHC and PHCs). It bases itself on the data and practices over the last 12 months.

A single common list of requirements, sub-requirements and questions is used for the entire supply chain. The EVM tool automatically filters this common list to create questionnaires that are specifically directed at each of the four levels described above. These level-specific questionnaires can be further filtered to pick out only the most critical indicators depending on whether one wants to carry out a full EVM assessment at a specific facility or a rapid review assessment respectively.

Full assessments will typically be used by national staff to carry out long-term monitoring of individual facilities to achieve specific, targeted improvements. Review assessments are intended to be used to gain an overall assessment of a carefully selected sample of

Consolidated spider graph of 4 State vaccine stores



the supply chain. Generally speaking this type of assessment will be carried out by national or international teams, over a short period of time.

In addition to the overall filtering process, the tool dynamically adjusts the questions offered in response to the assessor's answers to certain country or level-specific conditions. For example, if refrigerated trucks are used to distribute vaccines, a set of questions is offered covering this type of equipment.

The scores are used to depict graphically on a spider web, the strengths and weaknesses of a country's vaccine management systems.

The score helps assessors to identify and document the areas of strengths and good practices, identify major knowledge and performance gaps in a consistent format. Based on these, the assessor can define targeted support and training needs to address the weaknesses.

The graph above shows the consolidated result of the assessment of 4 SVSs. A minimum of 80% score is recommended for each criterion as shown by the red polygon. One can see that the performance of all the criteria are less than or equal to 80%. These are cause for concern and are the areas that need to be addressed.

EVM version no. 1. 0. 3. 0. Was used for this mission.

The Methodology

The core objective of the mission is the assessment of vaccine and cold chain management. This is implemented based on the principles of adult learning and the philosophy of Global Learning Opportunities of WHO: "Learning by Doing". Thus several additional complementary activities, many in form of capacity building, are integrated into the assessment mission. Thus the following outputs are achieved:

- **Training of health staff in use of EVM**
- **Learning about the good practices of Cold Chain and Vaccine logistics Management**
- **Assessment of Cold Chain and Vaccine logistics Management (CC & VLM)**
- **Planning and Review of CC&VM**
- **Developing Training skills**
- **Developing skills in supportive supervision**
- **Provide on spot hand-holding in correct practices in CC & VLM**
- **Developing their capacity to identify weaknesses and define recommendations to address them**
- **Analysing the data collected from the field using the EVM tool**
- **Learn to summarise the observations and make its presentation**
- **Computer skills (Excel)**

Thus, it is a multi-faceted capacity building activity, which is targeted at strengthening the vaccine management system in order that it to become self-sustainable.

5.1 Introduction

The EVM mission has several stages, the first being mission preparation through the following steps:

1. Discussion with key state level officials regarding the objective and methodology of the mission,
2. Selection and invitation of key participants for the mission who will implement the knowledge and skill of EVM in future in the state,
3. Collection of background information consisting of:
   a. demographic details,
   b. immunization coverage,
   c. vaccine supply chain system (organogram with site names),
   d. equipment inventory,
   e. human resource,
4. Sampling of assessment sites using the standard EVM tool,
5. Preparation for the training and assessment logistics.

5.2 Time frame

The table below gives the time frame for the implementation of the different aspects of the EVM mission.

Steps	Activity	Time line	work days	State Officials (SEPIO & CCO)	Team Leaders	Other Participants	Consultant Team
1	Preparation for the EVM mission and sampling	1week	5	3	0	0	4
2	EVM Training (Concept, principles of Cold chain and Vaccine management with actual field practice)	5 days	5	5	5	5	5
3	Field Assessment and data collection by teams	7 days	7	7	7	7	7
4	DATA compilation by the team	2 days	2	0	2	0	2
5	Data validation & consolidation (Teams + Lead assessor + State Officer + Partners)	2 days	2	1	2	0	2
6	Analysis of results and development of recommendations (Teams + Lead assessor + State Officer + Partners)	3 days	3	3	3	0	3
7	Review of recommendations and preparation for debriefing (presentation)	3 days	3	1	0	0	3
8	Preparation of Final report	5 days	5	0	0	0	5
9	Detailed work plan preparation (Director FW, NRHM and Partners,) for implementation of recommendations	1 day Imme-diate	1	1	1	0	0
	Total work days		**33**	**21**	**20**	**12**	**31**
10	Implementation of work plan gradually	1year		Ongoing			

A **follow-up EVM assessment should be carried out again after 1-2 years.**

The salient aspect of the methodology of the EVM mission is illustrated in the figure given below. Steps 1, 2 and 3 describe the three phases of the EVM mission. Steps A, B and C mark the principle value addition during the mission.

5.3 The Mission steps

The **first phase (1-Training in EVM) consists of training** of selected health department staff (DIOs / Logistic managers / Storekeepers / vaccine handlers and cold chain technicians) in the use of the Effective Vaccine Management Assessment (EVM) tool. The assumption is that the selected participants have been working in the immunization programme since several years and are well familiar with the good practices.

EVM Mission steps

The reality is quite the contrary. In spite of being on the job as a storekeeper or logistic manager or even a DIO, the concerned staff is not knowledgeable about several aspects (e.g. correct manner of estimation of vaccine requirement, evaluation of cold chain capacity requirement and availability, ice-pack conditioning or correct manner of packing a cold box, etc.). Therefore, it becomes necessary to spend some time to correct the existing misinformation and practices as well as provide additional updating of information, This is indicates as step **A- Training in good Practices.**

The training on EVM is 50% consisting of familiarising the participants to the questionnaires within each of the criteria of EVM, sharing actual related field situations and discussions. The other 50% is based on practical assessment of selected vaccine stores in teams using the tool and then analysing and discussing the results. This "learning by doing" approach helps the participants to get a better grasp at the tool and be more confident in its use. They would then be able to use it periodically to their system in future for supervision or self-assessment.

The second phase (**2-Field Assessment**) consists of **the actual assessment of the current system through a sample size.** The required numbers of teams are formed involving all the participants. The participants are usually sent to assess places other than their duty stations in order to ensure impartiality.

The sample size is decided based on the total number of DVS. The sample size and selection of the sites to be assessed is defined with the help of the **"Site Selection Tool"** described in more detail below.

During the field assessment, whenever the participants (assessors) identify incorrect practices they try to improve the situation through hands-on and supportive supervision. The participants learn through this exercise to become better observers and to provide the necessary support where required. Thus through this exercise, they also learn to provide supportive supervision (**Step B**).

The assessment exercise opens their eyes to the issues present in their own system, which stimulates them to take ownership to address them. It is worth comparing this against an expert conducting a 2 week assessment, and submitting a report which is likely to gather dust in a shelf.

The third phase (**3-Data Analysis and Recommendation**) consists of data verification, entry into the computer, validation and analysis. This entire exercise is conducted with selected team members. At first, the correctness of the collected data is verified. Following this, the data is imported inside the tool and consolidated. Then the results are analysed in order to identify the strengths and weaknesses in the system based on the different scores of the criteria. Detailed discussions are held to then define, in consensus, the best ways to address the weaknesses. As a result, the conclusions reached and the recommendation formulated to address the weaknesses, are largely through the active participation and contributions of the participants, enhancing their taking of ownership.

As an additional outcome of such an approach, depending on the calibre of the participants, it is

possible to have the team leaders and members to make a short write up on observations made at the sites they visited and the nature of support provided. Such a record can then be used to a) define specific action in that region, b) define common issues of priority across the state and last but not least c) help each of the participants to define an action plan for himself.

A further benefit that can be attempted is to involve the participants during the formal debriefing, where each team can present their findings, recommendations, supportive actions provided by them and finally their own action plan to all the others (**Step C – Training in Presentation Skills**). This can be a stimulating exercise, which gives recognition to their efforts.

5.4 Additional benefits

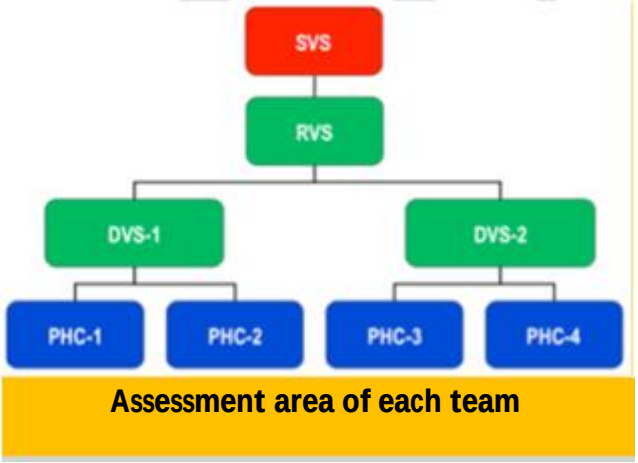
The value additions thus achieved during the EVM mission:

A. Training in good practices in CC & VLM
B. Developing skills in supportive supervision
C. Developing Training skills
D. Provide on spot hand-holding in correct practices in CC and VM
E. Developing their capacity to identify weaknesses and define recommendations to address them
F. Analyzing the data collected from the field using the EVM tool
G. Learn to summarize the observations and make its presentation
H. Presentation skills and

This multi-faceted capacity building helps create a pool of trainers cum supervisors and their skills can be used to develop additional capacity through cascade process.

5.5 Assessment strategy and Sampling Tool

In the context of India, for any given state, a the sample size should be such that any reasonable assessment should include at least the state store (SVS) (all the SVS in case there are more than one), most of the sub-national stores (RVSs) which are supplied by the SVS but which are not merged with their respective SVS and one or more DVS supplied by each RVS. Further to include two health facilities within each DVS. This is illustrated in the adjacent diagram.



Assessment area of each team

The EVM package provides a Site-Selection Tool which is based on the Bio-Statistics. It is used for random selection of the assessment sites. For this, the DVS level is considered as the last level of distribution (LLD), as it is the last level beyond which delivery of immunization service is provided.

A precision of 80% and an accuracy of 15%, leads to the identification of 14 DVS from a total of 50 DVSs in the case of MP. The next step is to identify at least 2 health facilities under each of the selected DVS. The tool offers the possibility to identify one as well. However, considering that there are in all about 1350 health facilities (where vaccine are stored), selecting only one in each DVS would make the sample size rather insignificant. The actual results of the selection are discussed in the next section.

IMPLEMENTATION

The EVM mission in MP started on 12 September. A total of 25 participants were present during the first week of induction. The facilitation team consisted of 6 facilitators. In addition the SEPIO from Haryana state also present during the first two phases. Dr. Srihari Dutta, Immunization specialist from UNICEF-ICO supported the mission as facilitator cum observer. Annexure A gives the list of the participants that were selected by the GoMP.

6.1 Induction Programme

The first part of the induction of the health staff in the use of the assessment tool was held from 14 to 18 September (5 days). Annexure B gives the schedule of the induction programme. The programme began with a pre-course questionnaire to evaluate the knowledge level of the group. Four questions which were considered not applicable were not considered in the total scoring. The results are depicted in the performance matrix given in Annexure C. The performance of most indicators is relatively good and reflects a good level of knowledge. **The average comes up to be 63 %.**

Induction Programme Session & Team

The training of EVM consisted of each day taking up 2 to 3 global criteria and presenting the different aspects of assessment covered under those criteria through case studies and field photographs. The participants then used the same criteria for assessment at the facilities they visited in the afternoon as practical exercise.

The practical field training was carried out by dividing the entire group into 4 teams. Each team visited one of the 4 vaccine stores (the State Vaccine Store, District Vaccine Store, and 2 CHC/PHCs) each day and carried out the assessment using the criteria discussed in the morning.

Thus, over 4 afternoons, each team got a chance to visit a different store and assess it with a different set of criteria. Annexure D gives the details of the practical exercise plan along with the respective teams.

The following aspects are stressed during this phase:

1. Familiarising the participant with the tool,
2. Training the health staff to use the tool to assess specific facilities, (State, District and block level),
3. Collect data from the different facilities visited,
4. Analyse the data collected at the respective facilities,
5. Guide the participants in better data collection,
6. Draw major conclusions on the preliminary data.

The participants were also briefed on the following aspects:

1. To take the store managers into confidence,
2. To try and verify all information as much as possible using documented records,
3. To report factual information based on what is seen. This is important to avoid misinterpretation of results.
4. To provide sufficient comments to support the score given to a question – especially if it is zero,
5. Not to disturb or correct any existing practice unless one is sure of it and it is drastically incorrect (e.g. conditioning of ice packs)
6. Not to tamper with any equipment (e. g. thermostats) unless one is an authorised technician,

Each day, after the field visits, the collected assessment data is consolidated. The experience of the participants is discussed and the data analysed.

The induction programme lasted 5 days and covered all the indicators. During the programme, significant time was devoted to some of the critical areas that were found to be weak in the understanding of the participants.

a. Correct manner of estimation of vaccine requirement,
b. Evaluation of cold chain capacity requirement and availability,
c. Proper ice-pack conditioning
d. Correct manner of packing a cold box.
e. Salient aspects in defining contingency plans.

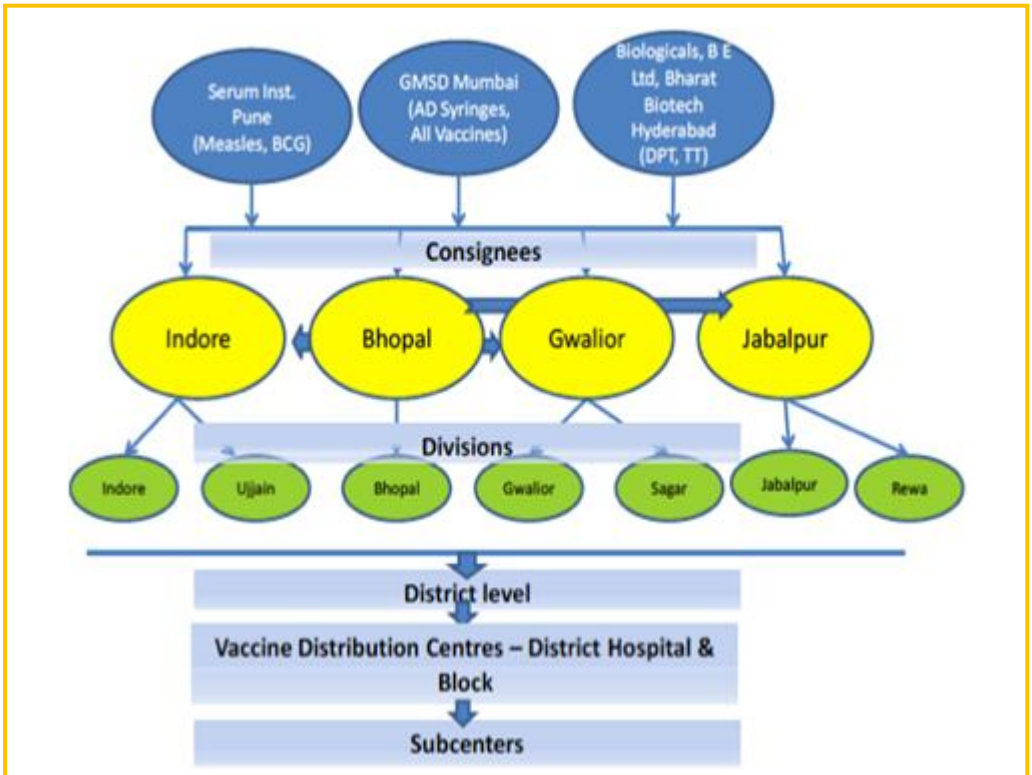
Towards the end of the induction programme, half day was spent to prepare the team leaders on proper handling of the software files to do proper data recording in the assessment tool. Many of the data managers' needed significant support in working with the EVM tool which is in form of excel workbooks.

All the participants worked very enthusiastically over the 5 days and participated actively both in the interactive sessions and in the field exercises. This contributed significantly to enhance their understanding of the good practices and their confidence in the use of the EVM tool.

At the end of the first phase, the consultant circulated an evaluation form for the participants to assess the training programme. It included three aspects: training delivery of the facilitators, the relevance of the training programme to their work and last but not least the confidence of the participants in use of the EVM tool. Annexure E summarises the result of the feedback for the 2 latter parts.

6.2 Site Selection

MP has 4 state vaccine stores (SVS) that receive vaccines from the GMSD or directly from the manufacturers. These in turn supply the vaccines to 8 regional vaccine stores (RVS), four of which are merged with its own SVS. These 8 RVSs in turn supply to their respective district vaccine stores (DVSs). The adjacent organogram depicts this structure and Annexure F gives the complete list of the SVS, RVS and DVS with their respective target populations.



Structure of the vaccine supply chain in MP

A total of 14 DVS were selected using the random site selection tool described earlier. This list included 2 of the 5 districts already selected for the upcoming Measles SIA the remaining 3 districts were therefore included in the list to assess all the SIA districts. In addition since the RVS

of Sagar was non functional – its DVS was assessed. Thus a total number of 4 SVS, 3 RVS and 18 DVS (36%) were included for assessment.

Below the 16 DVS (14 + 2 other selected SIA DVS), two health facilities were identified for assessment using the same tool. One of the selected Health facility did not exist any longer, hence, a total of 31 HF were assessed. MP has a total of 1,536 Health Facilities (CHC, Civil Hospitals and PHCs). Thus this sample size corresponds to 2.0% of the total health facilities.

In the sample selected distribution pattern of the area on the basis of difficulty was as under: -

Vaccine Store Selected	Total	Normal Areas	Difficult Areas	Most Difficult Areas	Inaccessible Areas
District Stores	18* (14+2+1+1)	13 (72.2%)	5 (27.7%)	-	-
Service Provider**	31#	18 (58.1%)	8 (25.8%)	5 (16.1%)	-

* 14 DVS selected by random site selection, 3 selected from Measles SIA district & 1 additional Sagar DVS as RVS was not functional in Sagar.

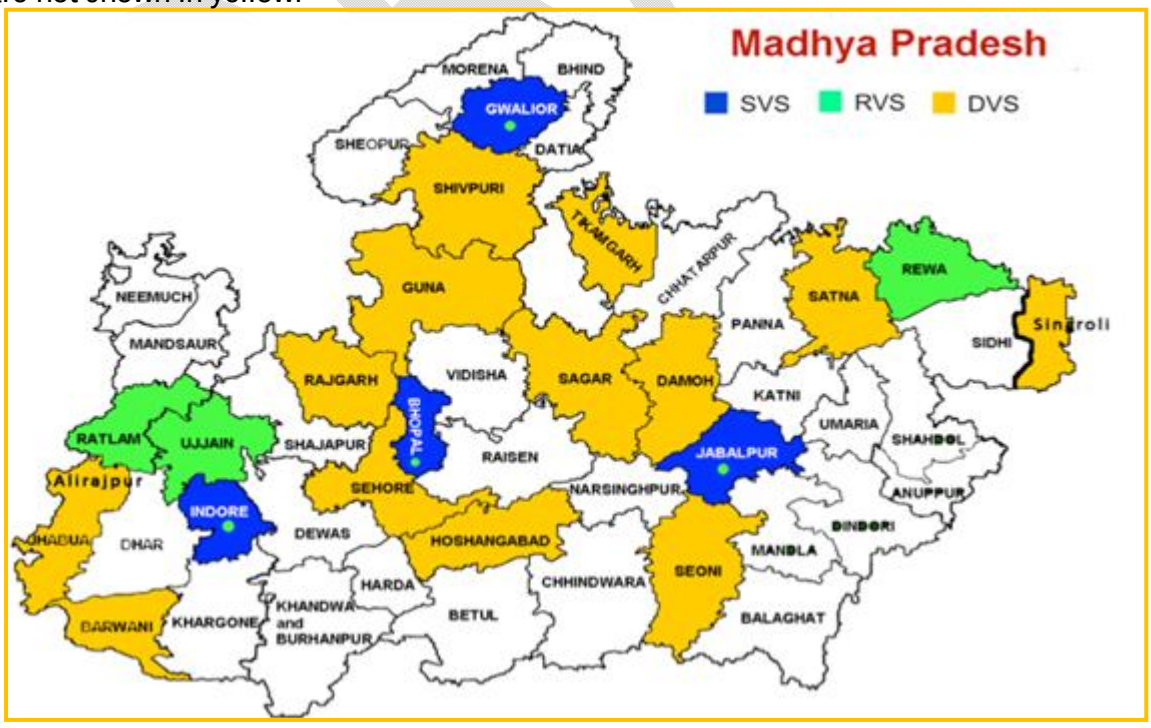
** Service Provider – CHC/PHC/Civil Hospitals

2 Health Facilities from each 16 DVS (one health facility in sample non-existent)

6.3 Field Assessment

To conduct the field assessment of the selected sites in the 8 zones, 8 teams were formed. Each team comprised of 1 DIO or DLM, 1 storekeeper and 1 refrigeration technician. Details of the teams and locations they visited are given in Annexure G.

The adjacent map of MP depicts the locations of the 4 SVS (blue), 3 RVS (Green) and the DVSs selected for the assessment. DVSs belonging to the Districts where the SVS or RVS are situated are not shown in yellow.



Map of MP with the assessment sites

The assessment was conducted from 20 to 26 September 2010.

The facilitation team members travelled separately and joined different teams at different times. This permitted to achieve the following objectives:

a. Make independent observations of the vaccine stores visited,
b. Verify the data collection carried out by the team
c. Guide the teams that are encountered to improve the quality of assessment
d. Visit some vaccines stores that are on their itinerary for a rapid appraisal.

One very valuable outcome of such a mission, is the simple and spontaneous improvements that result while the team is present at the vaccine store or in the days that follow the visit. The photos below show the condition of the vaccine store at DVS-Jhabua and DVS-Sagar as they were initially and the improvements made within the day or weeks that followed.

DVS-Jhabua before

DVS-Jhabua 3 days after visit

DVS-Sagar before

DVS-Sagar 1 month after visit

Generator at a DVS before

Same Generator after 1 month

6.4 Data Validation and Analysis

Data verification and analysis workshop

Following the assessment, in the third phase of the mission, the facilitation team conducted a 5 day workshop for data verification, consolidation, validation and analysis.

The team leader or the data manager was invited to this workshop from each team. The exercise was directed to ensure reliability and consistency of data between the teams for similar observations, and clarification of the comments accompanying the scores. This is critical to ensure a balanced analysis, since the facilitation team could not visit all the locations.

Thereafter, details discussions were conducted to analyse the result and walking through the essential conclusions and identification of strengths and weaknesses. In order to overcome the

weaknesses, the team derived the essential practicable recommendations through consensus.

The findings of the analysis are given in the next section. The resulting graphic representation for each of the SVS / RVS, consolidated result of the two districts and their respective four CHC / PHC is given in Annexure H for respective zones.

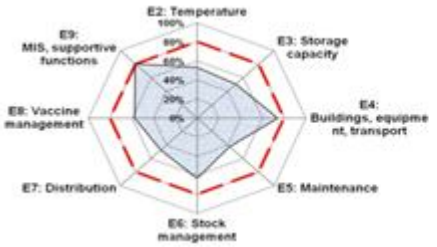
The consolidated table with detailed scores is given in Annexure I along with the averages resulting at each level. The summary of the consolidation is given in the table below. Note that scores **above 90% are marked in green** to indicate that these are in a very comfortable range. The scores between 70% and 90% are left in the normal black font to indicate that they are in the acceptable range. Those ***less than or equal to 70% are marked in red in italics*** to highlight that these indicators at the respective level need attention.

Summary of Consolidated EVM score for Madhya Pradesh

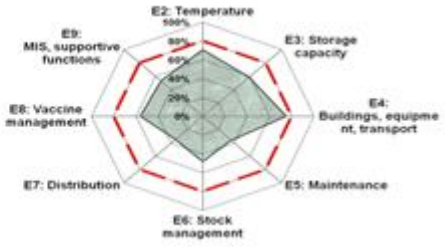
Ind.	Indicator	Consolidated scores			
		4 SVS	3 RVS	18 DVS	31 CHC/PHC
1	Vaccine Arrival Process	*50%*	NA	NA	NA
2	Vaccine Storage Temperature	*53%*	71%	80%	*67%*
3	Storage Capacity	*51%*	*59%*	*62%*	*61%*
4	Building, Cold Chain Equipment and Transport	74%	75%	*66%*	*62%*
5	Maintenance of Cold Chain Equipment and Transport	*42%*	*36%*	*57%*	*42%*
6	Stock Management	*63%*	*48%*	*48%*	*38%*
7	Distribution	*47%*	*35%*	*43%*	*43%*
8	Vaccine Management	*57%*	*56%*	*46%*	*58%*
9	MIS & supportive functions	81%	*53%*	*64%*	NA

Looking at the score table, one can observe that none of the scores are above 90%. There are only five scores in black. The rest are all in ***red*** which reflects limited strengths and predominant weaknesses in the system. The consolidated spider graphs for the 4 SVS, 3 RVS, 18 DVS and 31 HFs (CHCs & PHCs) are given below.

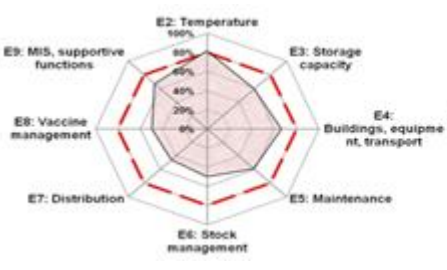
Spider Graph Results of Performance of EVM



4 State Vaccine Stores-



Consolidated 3



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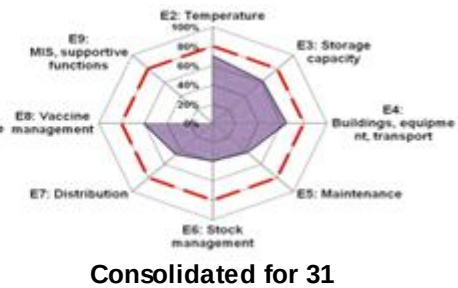


Consolidated for 31

6.5 Debriefing

The formal debriefing was conducted on the 4th October 2010. The meeting was chaired by the Dr. Manohar Agnani, Mission Director, NRHM. The other dignitaries who attended the meeting were Dr. Henri van der Homberg – Chief of Heath section at the India Country Office and Dr. Chouhan – State Immunization Officer. The DIOs from all the districts were called for the meeting.

The event began with an opening address by Dr. Manohar Agnani. This was followed by an introduction of the EVM tool by Dr. Srihari Dutta – Immunization Specialist from UNICEF-ICO. This was followed by the presentation of the findings of the assessment by the consultant team along with specific key recommendations which were categories as policy and human resource, equipment and infrastructure, capacity building, planning and documentation, improvement in practices and finally supervision. The results were also displayed through spider graphs for the eight regions, for its RVS, its 2 DVS and the 4 HFs, on flex charts along the walls of meeting hall. A second presentation by the consultant team focused on specific technical issues related to cold chain and how one can improve on the same with little effort. Two of the team leaders also presented their findings specific to the zone they visited. In addition, Mr. Saxena – UNICEF Cold Chain consultant made a presentation on the Impact of the VMAT studies carried out in other states in previous years, in improvement of the cold chain status.

Dr. Manohar Agnani closed the session with the following significant remarks: "**What the findings of the Assessment of Vaccine Management in M.P. have been shown by the State Assessment Team is not a criticism but it is a mirror in which we can look into & find ourselves.** The success & excuse are not friends & never walk together. If you want success never make an excuse & if you make excuses never think of success. **This is a dynamic study & it has given strategy and plan for future action for MP.**"

A follow up meeting was planned to discuss and define an action plan with all the DIOs based on the findings and recommendations.

6.6 Additional tasks

Each assessment team also submitted a list of strengths and weakness identified by them during their visits along with the nature of supportive supervision they provided. This is submitted as a separate report "3- EVM MP -Special observations and supportive supervision in MP by the teams – Final. Doc". The salient areas of supportive supervision have been summarised institution wise in Annexure J.

In addition, each team prepared a short presentation for presentation during the debriefing. The presentation contained the following slides:

1. Strengths observed
2. Weaknesses observed
3. Recommendations
4. Future actions they would undertake when the team members return to their post

These presentations are submitted along with the presentations used on the 4th October at the debriefing.

Findings

In this section, the findings for each global criterion is presented.

First a general introduction on what that criterion is about is given in a light green coloured box. Then the performance score obtained from EVM for different levels is given. The performance is then discussed in terms of strengths and weaknesses. In certain cases, examples of specific names of sites where a particular problem has been observed is also listed. The objective is not to point any finger, but simply to define an example of a typical case for any required verification.

The recommendations are consolidated in the next section and categorised as described there.

7.1 Pre-shipment and Arrival Procedures

This indicator assesses the process of vaccine arrival from the manufacturer to the primary store. It verifies the following aspects:

- **The standard process of reporting of arrivals is followed**
- **A Lot Release Certificate is received for every lot of vaccines**
- **The clearing of the vaccine through the customs is reliable**
- **Measures for safekeeping of the vaccine during delays in clearing is ensured**
- **The process of receiving, clearing and checking of consumables is effective.**

This criterion is applicable only to national primary stores.

In the case of India, the criterion is applicable to the GMSDs and partially to the State Vaccine Stores, which receive vaccines from the GMSDs and sometimes directly from some of the domestic manufacturers.

This criterion is applicable only partially to the 4 SVS (Bhopal, Gwalior, Indore and Jabalpur) of MP, which receive their supplies either from the GMSD in Mumbai or from the domestic manufacturers (e.g. Serum Institute of India). The SVSs do not clear any vaccines through the customs. The MoH&FW and GMSDs receive the Lot Release Certificates for each lot of vaccines. Hence, this criterion is only partially applicable. The score represents the performance of the parameters that are applicable.

This criterion is not applicable to the other levels of vaccine stores.

Findings

Vaccine Store	State	Zone	District	CHC / PHC
Performance Score	**50%**	*NA*	*NA*	*NA*

The performance is attributed to the following strengths:

- All the vaccine lots that were supplied from the GMSD-Mumbai or the manufacturers have reached the 4 SVSs in good condition. No damage has been reported.

- ❖ The standard VAR form is used only during receipt of campaign vaccines. The same were complete and no follow up was required.
- ❖ As the Lot Release Certificates are received by the Central Govt. this contributes towards a full score although copies of the same were not available at the SVS.
- ❖ There exists a proper procedure to receive, check and record the consumable at all the SVSs.

The shortfall in the score arises from the lack of systematic recording of all the salient information related to the vaccine shipments, as noted in sections I to VII of the VAR form (e. g. pre-notification, actual arrival, condition of the shipment, status of temperature monitors, and other salient aspects of the shipment) for each and every vaccine lot that arrives at the SVS.

It was made to understand that most of the information was available, though scattered among different files and records. Hence, it was not possible to verify all these records.

7.2 Temperature Monitoring

All vaccines are sensitive biological substances. The higher the temperature to which the vaccine is exposed, the quicker is the loss of potency. Some vaccines are also sensitive to freezing, and this can cause irreversible damage.

In this criterion the following aspects are assessed to ensure that vaccines are stored at the recommended temperatures:

- ➢ **Knowledge of the storekeeper with regard to the storing temperature for the different vaccines and their sensitivity to freezing**
- ➢ **The quality of cold chain is systematically monitored**
- ➢ **Continuous temperature records of the cold rooms and freezers rooms and refrigerated vehicles exist**
- ➢ **Twice daily manual temperature recording for all equipment storing vaccines is maintained**
- ➢ **The temperature records are regularly inspected and retained for auditing purposes.**

Findings

Vaccine Store	State	Division/Region	District	CHC / PHC
Performance Score	*53%*	71%	80%	*67%*

Most SVSs and RVSs have good temperature monitoring records in form of continuous and manual records. The exceptions are with the new WICs / WIFs which are installed and operating, but yet to be commissioned. There is a good match between the manual and continuous temperature records.

The weaknesses are:

No study of temperature monitoring has ever been carried out in the state. None of the WIC or WIF have been subjected to temperature mapping study. These two weighted questions affect the performance of the SVS level, the latter affects the performance of the RVS level too.

The refrigeration technicians are not knowledgeable about how to calibrate the thermometers and hence such calibration has not been conducted for any of the WIC and WIF.

Staff at several places, (e.g. SVS-Jabalpur, RVS-Rewa, DVS-Gwalior, DVS-Alirajgarh, and several health facilities) have been appointed without any formal or adequate on-the-job training. DVS-Baroni has had frequent change of staff. Such staff have poor knowledge of correct storage temperature of the vaccines and which vaccines' potency is vulnerable to freezing. **Handling of vaccines by such staff puts a serious threat to the safety and potency of the vaccines**.

There are no standard temperature recording forms. At some places the recording is done on a graphic form whereas in most places it is written in a printed format provided at the district level. Such format provides scope to include information about power breakdown or other actions conducted on the equipment. However, the format is less convenient for verification of the temperatures. Staff do not always mark the other details such as defrosting or repairs.

At heath facility level the monitoring is not done during weekends and public holidays. In certain cases, it seemed that the records were marked in a mechanical manner without actual reading of the thermometer (DVS-Singroli, DH-Rajgarh), since there was no fluctuation in the temperature over several days. This is practically not possible. **Such incorrect practice can threaten the potency of the vaccine.**

Finally, in several places, the temperature records are not systematically verified by any supervisor. As a result the weaknesses mentioned above are not noticed and addressed.

7.3 Capacity of Cold and Dry Storage and Transport

Capacity should be adequate for storage and transport of routine as well as campaign vaccines and the required consumable. Hence the following issues are assessed:

- **Storage capacity is sufficient to accommodate maximum stock requirements for the routine immunization and its consumables, and for supplementary immunization if the same are also kept in the store**
- **Storage capacity is sufficient to accommodate maximum stock requirements of vaccines and consumables for all supplementary immunization at the temporary facilities if these are used for this purpose**
- **Transport capacity is able to meet the maximum demand**
- **There is sufficient number of passive containers and there is capacity to produce the required quantity of coolant as required**
- **Contingency plans are in place to protect the vaccines in case of any emergency.**

Findings

Vaccine Store	State	Division/Region	District	CHC / PHC
Performance Score	*51%*	*59%*	*62%*	*61%*

The performance of these criteria is weak at all levels. The basic reason being lack of adequate storage capacity as per the required GoI guidelines. Further details are provided below.

SVS & RVS

The total storage capacity measured for the 2 WICs, 1 WIF and dry space at Bhopal are given below. In the last right most columns, the space given in the inventory data provided by the SCCO is given. There is significant difference in the actual available gross volume in either type of equipment and the one listed in the existing inventory. Annexure K gives the inventory of WIC and WIFs at the SVSs and RVSs and Annexure L gives the inventory at DVS level. For correct evaluation of available space exact verification should be carried out at each SVS and RVS.

Table giving actual measurement and total storage capacity at SVS-Bhopal

	L	W	H	Gross vol.	Net Vol.	Gross volume in inventory
	cm	cm	cm	CuM	CuM	CuM
WIF-1	370	200	220	16. 28	4. 88	33
WIC-1	345	300	210	21. 74	7. 60	16
WIC-2	244	255	255	15. 87	5. 53	
Dry Store	920	1220	330	370. 39	111. 12	-

There is sufficient storage capacity at all levels for storage of OPV at -15 to -25 ^{o}C. There is also sufficient ice pack freezing capacity at all levels.

At service level, current practice is to keep a maximum of 1 month of working stock only. Even if one would add to this a buffer (safety) stock of 2 weeks , there would be no shortage of storage space at the service level. At times, depending on the target population, there is sufficient space to keep all the diluents at 2 to 8 ^{o}C.

The current practice is to store only one month of vaccine stock at the RVS and DVS without considering buffer stock. If one considers this as the norm, then there seems to be sufficient storage capacity for all vaccines. However, the GoI guideline recommends to keep at least 3 months of stock at SVS, RVS and DVS and in addition 25% as buffer stock (say one more month). In such case the available space would be insufficient at several vaccine stores (SVS-Bhopal, Indore, Jabalpur, RVS-Rewa, and several DVSs) above the health facility.

Overloaded cold rooms

In addtion, the four SVSs are merged with their respective RVS and the remaining four RVSs are merged with their respective DVS. In all cases the staff (storekeeper), storage equipment and even the stocks are common. One does not realise the shortage of space at a first glance. However, if one were to consider independently 4 months of stock for each level, then the shortage becomes very evident.

The table below gives the salient parameters associated to each antigen of the immunization schedule. Using these parameters and considering 3 months of working stock and 1 month of buffer stock at the RVS and DVS level, one can estimate the total volume required to store the vaccines at each level.

Salient parameters related to the vaccines in the immunization schedule

Vaccine	Unit	**BCG**	**Measles**	**DTP**	**HepB**	**TT**	**TT**	**OPV**	**OPV Booster**
Schedule	When	at birth	at 9 months	at 6,10 & 14 weeks	at 6, 10 & 14 weeks	Expected pregnancies	10 & 14 Yrs	6, 10 & 14 weeks	School entry and leaving
Target Group	Age	0-1 year (by Session)	0-1 year	0-1 year	1-2 years	15-45 Yrs women	Girls 10 & 14 Yrs	0-1 year	6 Yrs and 12 Yrs
no. of doses per recipient	Doses	1	1	5	3	2	2	4	1
Presentation (doses/vial)	Doses	10	5	10	10	10	10	10	10
Vol / dose	Cucm	2.4	6	3	4	3	3	2	2
Wastage Mutiplication Factor	no.	by session	1.33	1.33	1.33	1.33	1.33	1.33	1.33
Coverage	%	100%	100%	100%	100%	100%	100%	100%	100 %

Annexure M gives the total storage volume calculated for the 8 RVSs and 50 DVSs for each antigen using the parameters listed above and the target group defined for the respective vaccine store. The table below summarises the net storage requirements at +2 to +8^{o} C, for all vaccine except OPV and at -15 to -20^{o}C for OPV.

Total vaccine storage space required at the 8 RVS and 50 DVSs for 3 months of working stock and 1 month of buffer stock

Ref.	District	Total Required at +2 to +8 °C	Total Required at -15 to -20 °C
		Ltrs	Ltrs
D1	MORENA	1,038	223. 5
D2	BHIND	883	190. 5
D3	SHEOPUR	391	82. 1
D4	GWALIOR	1,086	232. 8
D5	DATIA	419	87
D6	SHIVPURI	979	207. 5
D7	GUNA	658	140. 7
D8	ASHOKNAGAR	473	99. 2
R1	Gwalior Division	5,926	1263. 3
D9	TIKAMGARH	841	174. 2
D10	CHHATARPUR	992	212. 7
D11	PANNA	599	120. 3
D12	SAGAR	1,321	281. 8
D13	DAMOH	605	148. 3
R2	Sagar Division	3,992	937. 3
D14	SATNA	1,127	269. 9
D15	REWA	1,334	283. 4
D16	SHAHDOL	580	122. 7
D17	SINGROLI	652	138. 4
D18	SIDHI	643	137
D19	UMARIA	358	71. 9
D20	ANUPPUR	449	90. 3
R3	Rewa Division	5,292	1113. 5
D21	JABALPUR	1,400	301. 8
D22	NARSINGHPUR	629	132. 6
D23	MANDLA	555	117. 1
D24	CHHINDWARA	1,150	248. 4
D25	SEONI	731	155
D26	BALAGHAT	956	206. 3
D27	KATNI	685	146
D28	DINDORI	5,926	1263. 3
R4	Jabalpur Division	6,449	1382. 1

Ref.	District	Total Required at +2 to +8 °C	Total Required at -15 to -20 °C
		Ltrs	Ltrs
D29	JHABUA	512	110
D30	ALIRAJPUR	406	85. 6
D31	DHAR	1,166	251
D32	INDORE	1,886	409. 1
D33	KHARGONE	1,032	221. 6
D34	KHANDWA	695	146. 4
D35	BARWANI	741	158. 8
D36	BURHANPUR	417	86. 3
R5	Indore Division	6,855	1468. 7
D37	RATLAM	792	172. 2
D38	MANDSAUR	765	166. 1
D39	NEEMUCH	470	100
D40	UJJAIN	1,103	240
D41	SHAJAPUR	844	182. 7
D42	DEWAS	862	187. 2
R6	Ujjain Division	4,836	1048. 1
D43	RAJGARH	840	179. 3
D44	VIDISHA	803	172. 5
D45	BHOPAL	1,303	281. 3
D46	SEHORE	731	156. 6
D47	RAISEN	757	162. 1
D48	BETUL	878	187. 8
D49	HOSHANGABAD	708	150. 9
D50	HARDA	318	67
R7	Bhopal Division	6,337	1357. 3
N	M.P.	40,146	8570. 3

The current inventory does not provide the exact model numbers of the cold chain equipment, which would allow precise determination of actual vaccine storage space. Hence, it is advised to evaluate the exact net storage available based on a re-verified inventory. Thereafter, one can compare the result with the total space required and determine the additional equipment required to fill the gap.

In many stores, there is no dedicated space for the consumables (e.g. RVS Rewa and Ujjain, DVS-Tikumgarh, Damoh, Rajgarh …). This is discussed in more detail in the next section.

In general there is sufficient capacity to produce ice packs and there is sufficiency of cold boxes and vaccine carriers.

Most staff have limited knowledge on how to handle emergencies arising from equipment breakdown or excess stock in hand. Many have the impression that the total stock of RVS or DVS can be saved in cold boxes. This is quite unrealistic considering the number of cold boxes and ice pack that would be needed. Emergency numbers are not always displayed in the right place and right manner.

7.4 Status of Building, Equipment and Transport

The good operating conditions of the building housing the vaccine store, the equipment storing the vaccines and the vehicles that are used for transport are important aspects to ensure safety of the vaccines. The following aspects are assessed here:

- **The location of the store building, the quality of construction and accessibility are satisfactory**
- **The building provides space for all the activities to be carried out there**
- **The condition of all the equipment used is satisfactory**
  - **WIC and WIF, ILR and DF, and generator**
- **The condition of transport vehicles and containers are satisfactory.**

Findings

Vaccine Store	State	Division/Region	District	CHC / PHC
Performance Score	74%	75%	*66%*	*63%*

The scores indicate the status of the building, equipment and transport at different levels. It reflects certain limitations at the SVS and RVS, but more serious concerns at the DVS and HF level.

At the same time the assessment identified several complementary limitations that are not directly scored in the tool which are important to be addressed as well. These are also discussed as part of the findings in this section.

New WIC / WIF installation

Several WIC and WIF have been supplied by the GoI for the SVS and RVS. The facilitation team have encountered many of these and observed serious lacuna in the rating of the equipment and quality of installation. A separate report has been submitted to this effect as the observations and learning pertain to all 91 units being installed by Blue Star.

As an example - the stabilizer provided with the new WIC / WIF are rated at 10 KVA. Hence these cannot withstand the total current in case both refrigeration units of a WIC or WIF are working. It was learnt during the debriefing from Mr. S. Saxena (Cold Chain Consultant to Govt. of India) that these are being exchanged by the manufacturer (Blue Star).

At SVS-Jabalpur, the old WIC is running without a stabilizer, which needs immediate attention. One refrigeration unit of WIC is also not working which can cause emergency at any time as new WIC & WIF are not yet ready to keep stocks.

The old WIC should be repaired by local technician by replacing the compressor with equivalent R-134a compressor of same capacity.

SVS Indore is having two generators, each of 15 KVA, which are yet to be tested on load. A single stabilizer is supplied with the new WIC & WIF, while the stabilizer of the old WIC is beyond repair. Hence 2 more stabilizers are required.

The general status at the 8 RVS is summarised in the table below. The strengths are marked in black and weaknesses are marked **in bold red fonts**. The graph below illustrates some of the aspects.

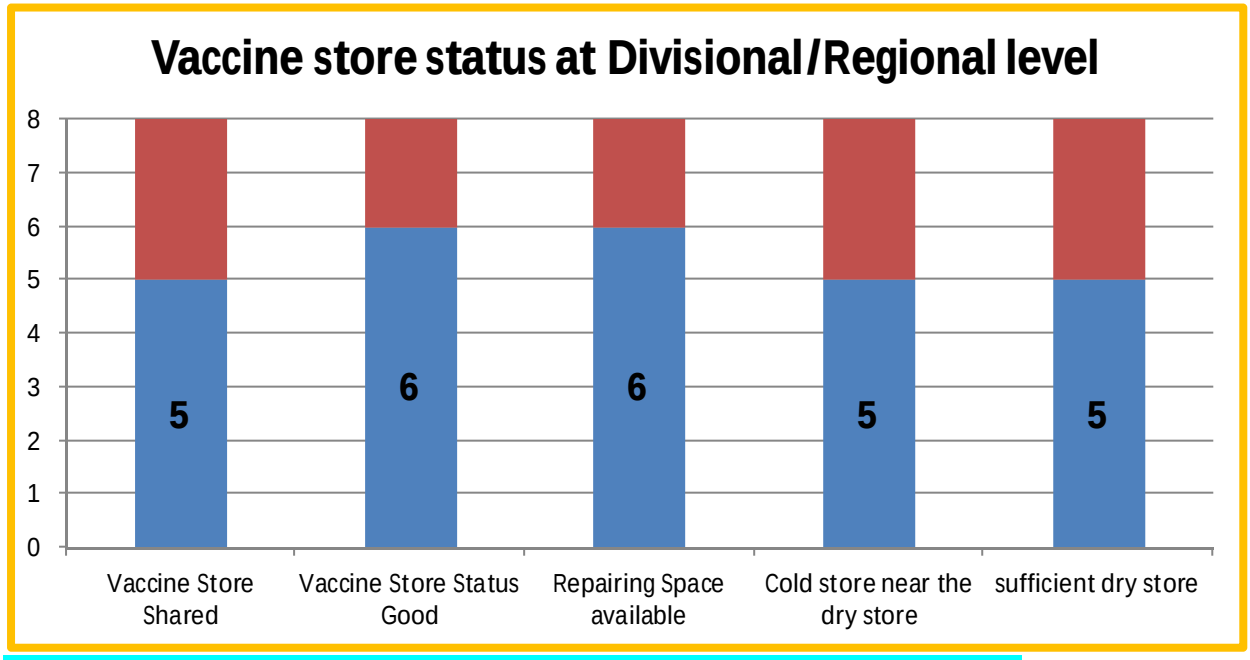
Summary of Status at Divisional / Regional Vaccine stores

Area	SVS or RVS Parameter	Bhopal	[illegible]	Sagar	Indore	Ratlam	Ujjain	Jabalpur	Rewa	Strength	Weakness
Cold storage	SVS and RVS or RVS and DVS are Segregated	**N**	Y	Y	**N**	**N**	**N**	**N**	Y	**3**	**5**
	Vaccine Store status Good	**N**	Y	**N**	Y	Y	Y	Y	Y	**6**	**2**
	WIC & WIF installed in the same premise	Y	**N**	N/A	Y	Y	Y	Y	N/A	**5**	**3**
	Repairing space available	Y	Y	**N**	Y	Y	Y	Y	**N**	**6**	**2**
Dry storage	Cold store near the dry store	Y	**N**	**N**	Y	Y	**N**	Y	Y	**5**	**3**
	Dry store is not shared	**Y**	**Y**	N	**Y**	**Y**	N	Y	N	**5**	**3**
	Sufficient dry space	Y	Y	N	Y	Y	**N**	Y	**N**	**5**	**3**
Human Resource	Is there a Div. Logistic Manager	Y	Y	Y	Y	**N**	Y	Y	Y	**7**	**1**
	There is a Refrigerator Mechanic	Y	Y	**N**	**N**	Y	**N**	Y	Y	**5**	**3**
	There is a Storekeeper	Y	Y	Y	Y	Y	**N**	Y	Y	**7**	**1**
	No. of Helpers	1	1	**0**	**0**	1	**0**	**0**	**0**	**3**	**5**
Equipment	No. of ILRS in working condition	5	3	5	0	6	0	0	2	**21**	**-**
	No, of ILR awaiting repair	**-**	**3**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**6**
	No. of DF in working condition	5	1	8	4	4	0	13	0	**35**	**-**
	No. of DF awaiting repair	**-**	**-**	**-**	**-**	**2**	**-**	**5**	**-**	**-**	**7**
	No. of equipment condemned	**-**	**-**	**-**	**4**	**23**	**-**	**10**	**-**	**-**	**37**
	No. of stabilizers in working condition	10	4	0	4	10	1	12	2	**43**	**-**
	No. of Stabilizers awaiting repair	-	-	-	-	-	-	-	-	**-**	**0**
	No. of stabilizers condemned	-	-	-	-	-	-	5	-	**-**	**5**

In summary:

Vaccine Store:

- 5 out of 8 RVS are shared with its respective SVS or DVS. Only 3 are segregated.
- The status of 6 vaccine store is good and 2 of the stores Bhopal & Sagar RVS need immediate attention of the authorities.
- Gwalior has its WIC and WIF installed at different sites
- RVS Sagar & Rewa have insufficient space for conducting repairs.
- 3 SVS / RVS out of 8 has dry stores far off from the cold storage.
- The stores of Sagar, Ujjain & Rewa are sharing the dry stores & all the three stores have insufficient dry storage space.



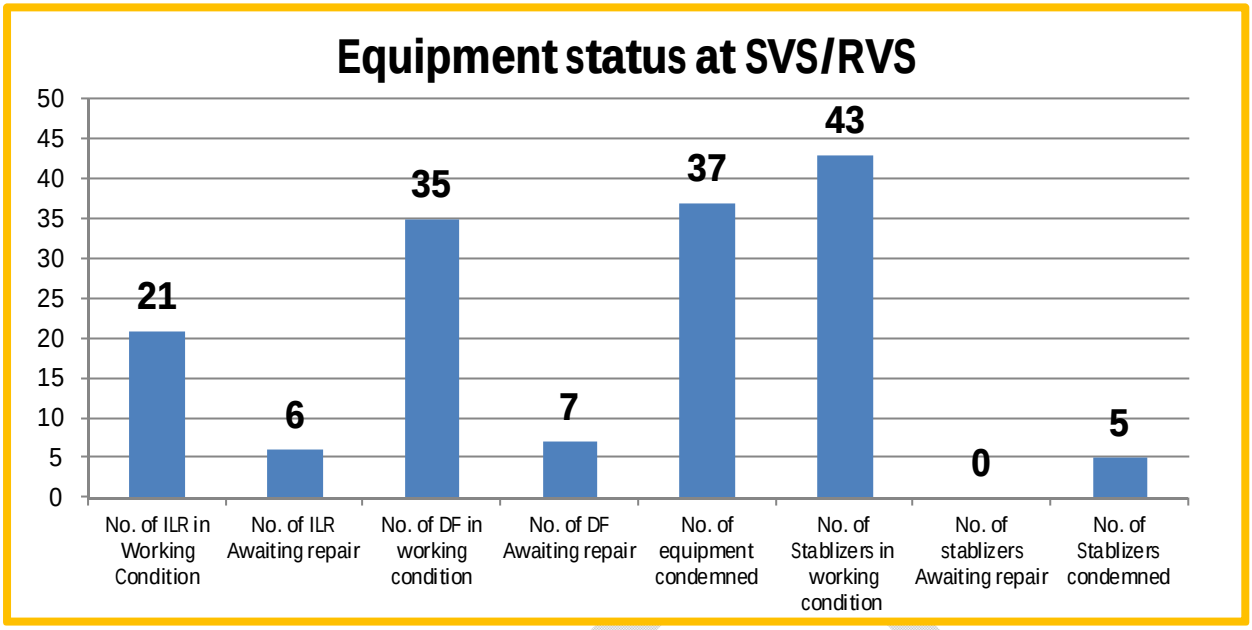
(add values to the bars eg. 5 for blue part and 3 on the top red part in first bar)

Staffing:

- One DLM is yet to be posted at Ratlam,
- 3 mechanics out of 8 are yet to be posted. The RMs form the critical support pillars for the cold chain and their absence can lead to serious risk in case of equipment failure.
- There is no storekeeper in Ujjain

Equipment:

The graph below illustrates the status.



- 13 ILR & DFs are awaiting repair since a long time
- 37 units have been condemned and awaiting disposal and free usable space (specially at Ratlam & Jabalpur)

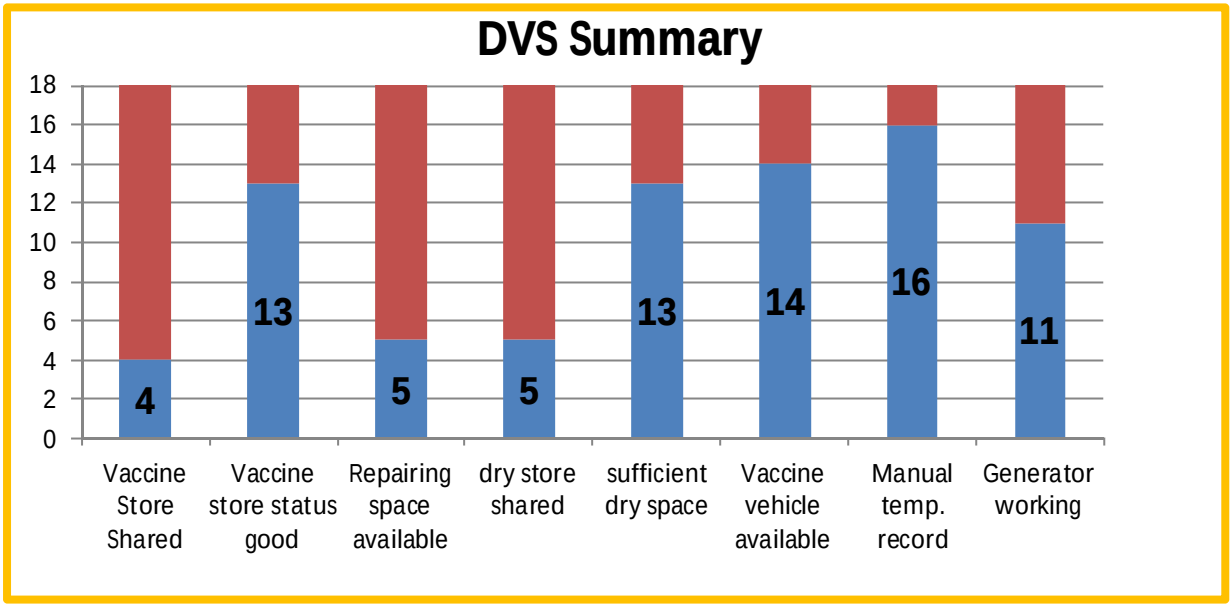
DVS

Likewise, the table below gives the summary of status at the 18 DVS visited during the assessment. The details are given in Annexure N. The strengths are marked in black and weaknesses are marked **in bold red fonts**.

Summary of status at the 18 DVS

Parameter	Parameter	Strength	Weakness
Cold storage	Vaccine store not shared	14	4
	Vaccine Store status Good	13	5
	Repairing space available	5	13
Dry	dry store not shared	5	13
	Sufficient dry space	13	5
Transport	Vaccine Vehicles available	14	4
Other Resources	Generator working	11	7
Human Resource	Is the DIO Posted?	18	-
	Infra structure support to DIOs	10	8
	Is there Vaccine Storekeeper	18	-
	Refrigerator Mechanic	14	4
	RM is also doing SK's job	-	5
Equipment	ILRS working	106	-
	ILR awaiting repair	-	40
	DF working condition	77	-
	DF awaiting repair	-	32
	Condemned equipment	-	238
	Stabilizers working condition	133	-
	Stabilizers awaiting repair	-	144
	Stabilizers condemned	-	106

The graphs below illustrate the key aspects.



(add values to the red part of bars)

The salient aspects are summarised below:

A well organized (left) and poorly organized (right) vaccine store

Building:

Problematic building condition

- The condition of 13 stores building and its organization is sufficiently good, but 5 others require revamping.
- Repairing space is available only in 5 DVSs, and the other 13 require such space allocation.
- There is limitation of storage space for consumables at most DVSs. In DVS-Sagar the AD syringes were lying outside along with the condemned equipment. While the space in the vaccine store was occupied by condemned stabilizers.
- Condemned equipment are occupying usable space in many districts. This leads to limitation of floor space to add more equipment which will be required to comply with GoI guidelines for storage capacity needed at the DVS.

- At DVS-Sagar, several carton of AD syringes were stored along with the condemned equipment in the open, vulnerable to theft and damage. There was no room even in the Cold store for storing the AD syringes and there is no space provided for dry store.
- The DVS Jabalpur is allotted two rooms, placed on two different floors. This will introduce difficulties of transport of equipment and material on the upper floor and demotivate the storekeeper.
- Some DVS have allotment of two rooms which are distant from each other (e.g. DVS-Tikumgarh, DVS-Seoni).

Examples of shortage of space for equipment and accessories

Usable vaccine carriers and AD syringes lying alongside condemned materials at DVS-Sagar

Human resource:

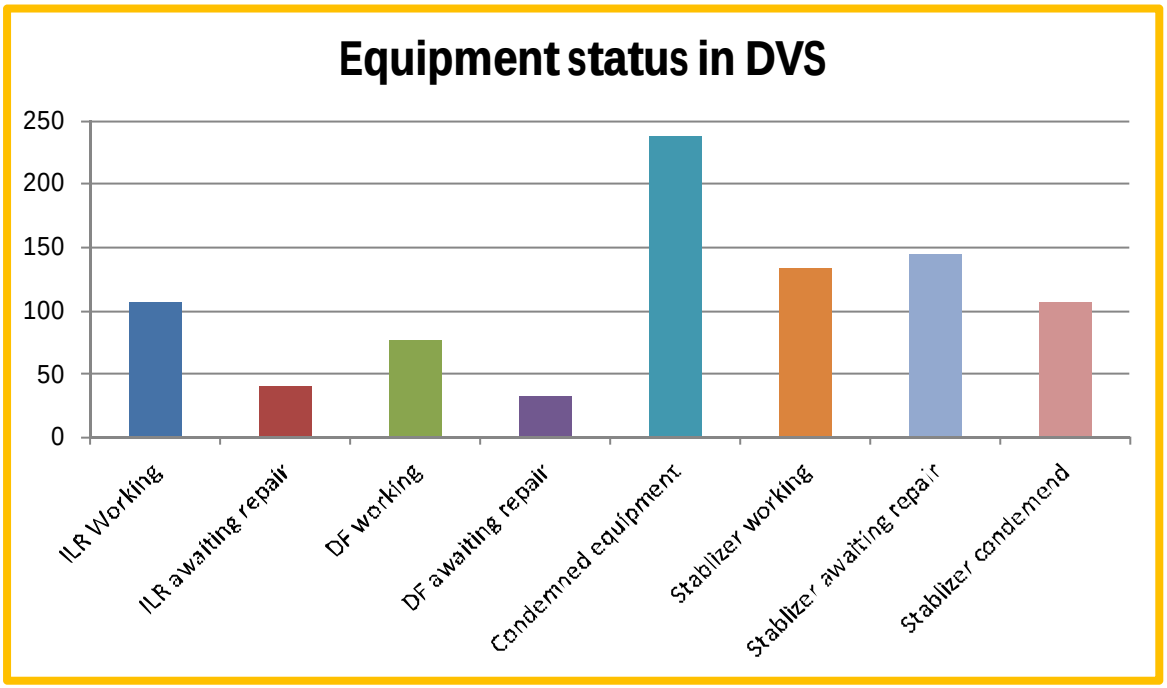
- All Districts have a DIO but their involvement in the cold chain and vaccine management has been wanting. Only a handful of them have been actively visiting the vaccine store periodically and conducting supervision of some kind. This has resulted in several areas of persistent weakness.
- All DVS have storekeepers, but 8 of them do not have any helper.
- At 6 DVS the responsibility of storekeeper is assumed by the Refrigeration Mechanics and hence the time they can allot for repairing equipment is compromised (e.g. Sagar, Tikumgarh, Hoshangabad, Alirajpur, Ujjain and Jhabua).

Equipment:

The graph here illustrates the status of the equipment.

- Power cuts are prevalent at all DVS, but only 11 of these have working generators. Some have generators that have not been operated since more than couple of years and at 4 others they are not connected.
- A total of 72 (40 ILRs and 32 DF) units are awaiting repair at the DVS. Many of these belong to the field, but due to lack of spares and time for conducting repairs, the same are lying since several months.

Clutter of condemned equipment



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- A total 238 equipment have been already condemned. Their disposal through auctioning is pending. DVS-Sagar disposed of about 44 units 3 months back; however, another 35 are still cluttering the corridors of the old building where it is located.
- Likewise, only 133 stabilizers are in working condition and in several places stabilizers are missing or being shared between two equipment. 144 Stabilizers (72 at DVS-Sagar) are awaiting repair and another 106 need to be disposed of. These stabilizers are more than 10 years old, manufactured by AVR, Blue Star, Sagar and Blue line, who even if in business, may no longer be producing similar models and electronic spares. Hence procurement of spares may not be possible.

Vehicles

- 6 DVS have vehicles in poor condition.

CHC & PHC

Several CHCs (e.g. Chitolla, Rani Durgavati, District Hospital –Jabalpur, Gonapur) and PHCS do not have deep freezer. The ice packs are frozen in domestic refrigerators provided to other services.

In many CHC and PHCs the stabilizers are shared. Several stabilizers are no-functional.

Most of the health facilities are not equipped with any generator.

Ice packs frozen in refrigerator of other services and poor installation of stabilizers

7.5 Maintenance of Building, Equipment and Transport

For ensuring a sustainable safety of the vaccines, the building, equipment and transport vehicles need to be maintained and upgraded periodically. Hence it is important to ensure that:

- **A periodic preventive maintenance plan for building, equipment and vehicles is in place and being implemented,**
- **An arrangement is in place to carry out prompt repairs of equipment and vehicles in case of any failures.**

Findings

Vaccine Store	State	Division/Region	District	CHC / PHC
Performance Score	*42%*	*36%*	*57%*	*42%*

The performance score results from **the following strengths**:

The state benefits of the regular replacement plan prepared by the GOI based on plans submitted to it and the new equipment are supplied accordingly. The state vehicles are subjected to routine servicing based on the usage in terms of miles. At the time of inspection, most of the equipment have been in good operating condition. Maintenance of vehicles is carried out according to its mileage. Replacement is carried out when the vehicles are out of service.

Vaccines have never been damaged due to failure of equipment. In case of equipment failure and if the problem is major, the non-functional equipment is promptly replaced with a new one. The defective one is usually returned to the RVS or DVS and awaits action by the refrigeration technician. The response time of the technicians, though not monitored, does not seem to be very good from the number of equipment that are accumulated for repairs. This is not a very sustainable manner of ensuring a functioning cold chain.

The areas of weaknesses are:

There are no plans or agreement for the maintenance of the buildings. Several buildings are in a pretty bad shape (e.g. DVS-Jabalpur, DVS-Sagar etc.) and require attention.

There are no real plans for preventive maintenance for equipment. Service is basically provided on demand. Refrigeration technicians visit the CHC and PHCs during the vaccine deliveries and have a quick look at the equipment. This is only a minimum form of preventive maintenance.

There has been a shortage of spares particularly of compressors for the Vestfrost ILRs and DFs in the field since the last 5 years (e.g. DVS Sagar). As a result several equipment could not be repaired. Such instances have contributed to the high number of equipment lying idle for a long time and reaching the un-repairable condition.

At SVS Bhopal one compressor of WIC is not working from last one year. **Immediate attention is needed for this.**

There have been several instances of breakage of the hinge attached to the doors of ILRS and DFs. This is caused due to 2 reasons: a) absence of regular maintenance of the hinge by putting some lubricant for the articulation and b) the axis of the hinge is resting on the sharp edge of the spring holder. The solution lies in adding a small cup to the hinge that will bear the load of the door when it is opened this is illustrated below.

Broken hinge (left) and with a cup (right)

Many technicians are not fully trained and competent. The refrigeration mechanic at Jhabua & storekeeper at Alirajpur ware appointed recently. As mentioned earlier, in several places, the mechanic is also having the responsibility of a storekeeper and not able to do justice to the repair work.

The status of condemned equipment is not very clear at many of the RVS and DVS. The technicians are also not fully familiar with the process of auctioning which needs to be handled at another level.

7.6 Stock Management System & Procedures

In order to maintain the quality of vaccines and consumables throughout the cold chain, it is essential to keep complete and accurate records of all stocks and their transactions. A stock control system comprises of several steps, each of which must be performed regularly, accurately and completely. The various steps are checking and recording details of the consignments or stocks:

1) When they arrive, 2) During their storage and 3) When they are leave the storage point for distribution and finally 4) In case any vaccine is damaged or expired.

Here the following issues are assessed:

- **A standardised recording and reporting system, preferably computerized at the primary level is in place and is being followed**
- **All lots of vaccines, diluents and consumable have been recorded at the time of arrival, distribution and dispatch along with all their salient parameters**
- **Stocks of vaccines and diluents are maintained between maximum and safety (buffer) stock levels**
- **Periodic physical inventories is conducted**
- **Proper requisition and receipt forms are in place**
- **Good warehouse practices are followed**
- **Deliveries are made following Early Expiry First Out (EEFO)**
- **Storekeepers know when to over ride EEFO based on VVM status**
- **Standard recording system is in place to safely dispose of damaged or expired stock**
- **All Stocks and records are safe.**

Findings

Vaccine Store	State	Division/Region	District	CHC / PHC
Performance Score	*63%*	*48%*	*48%*	*38%*

The scores above indicate that this criteria is one of the weak ones in performance at all levels.

The salient aspects of the observations are as follows:

The strengths observed are:

- Pro-MIS software is being implemented to maintain the stock records down to DVS level. However, Pro-MIS is designed for general medical drugs and not specifically for vaccines. Hence there are inherent limitations. The records are updated in the computer after the operations; hence it is not a real time system.
- At most SVSs the vaccine and diluents stock records are maintained.
- Early expiry-first-out (EEFO) is practiced across the state by most staff (except those appointed without training). They also know how to over ride EEFO due to advance stage of VVM.
- Physical verification is carried out at most levels and records are updated.
- Good warehouse is practiced in the new stores where space is not a limitation (e.g. RVS-Jabalpur, DVS-Hoshangabad)
- When the upper store is transporting and distributing the vaccines (which is not always the case) a pre-notification is sent to the receiving store.

The weaknesses present are:

- Records of VVM status and diluents are not maintained below the SVS.
- Since diluents are not noted in the supply voucher, the receiving store is not willing to mark the diluent as received - in its registers. Hence **diluents details are not maintained anywhere** except SVS.
- **There is no uniform stock recording system.** Standard record book is not developed and implemented across the state for vaccines, diluents and consumables.
    - Each district has adapted its own method. Some DIOs have used the format provided in the Immunization Handbook for Medical Officers using the NRHM funds.
    - Some are using ad-hoc registers from the stationary.
- Well defined supply chain system is missing although the supply pre-notification is always practiced across the state.
- **No standard vaccine indent and distribution forms** are used except in a few places (e.g. RVS Jabalpur, RVS Chintwada).
- Issue vouchers are never returned by the receiving stores after the receipt and entry of the stocks in the stock registers.
- **There are no records of wastage.** Therefore, there does not seem to be any wastage due to crossing of expiry date or heat damage (VVM in stage 3). However, the following situation was observed during the visits:
    - At Rewa-DVS 20,000 doses of m-OPV have expired in July 2010, and another 64,000 doses of m-OPV, which have been lying since the campaign of February 2009, have been in third stage of VVM.

  If proper information about these large stocks was communicated to the national or state level, these vaccines could have been used in another state.
    - At Satna 2,000 doses of m-OPV expired, and its records were available.
- Internal reviews on vaccine wastage management are not conducted. There are no standard guidelines available for management of damaged vaccines including recording, storage and disposal.
- Irregular supply of Hep-B vaccine was recorded across the state.
- There is lack of concept of maximum and buffer stocks. As a result stock-outs have occurred at several stores in the past 12 months. The table below gives the details:

Vaccine Store	Vaccine	From	To
DVS Shihore DVS Singroli	Hep B	12 April 8 August	6 May Till date
DVS Tikamgarh	Hep B, BCG & DTP	11 Aug	Till date.
DVS Jabalpur	Hep B, OPV, DTP, Measles	8 Instances of stock out between April to July 2010 of different vaccines	
CHC Maihar	Hep B, Measles	August – till date	

It is important to address these serious shortcomings and enhance the performance.

7.7 Effective Distribution

For an effective immunization programme, timely deliveries of the required quantities of vaccines are important. The parameters assessed here ensure the effectiveness of the vaccine distribution between each level of the supply chain. These are:

- **The vaccine distribution programme is planned and implemented in timely fashion,**
- **A system to manage short shipment is in place,**
- **Vaccines are correctly packed during transport,**
- **Freeze indicators are used correctly to monitor the quality of the transport,**
- **In case of damage to the vaccine during transport, a system is in place to take corrective action effectively.**

Findings

Vaccine Store	State	Division/Region	District	CHC / PHC
Performance Score	*47%*	*35%*	*43%*	*43%*

This is another very weak area of performance at all level of vaccine distribution.

The strengths are that:

- All deliveries of vaccines have been conducted on time.
- There are no records of any damage to vaccines due to any mishap during transport.
- Usually, the storekeepers (or refrigeration technicians who work as storekeepers) especially from districts, accompany the vehicle during transport. Thus, in case of any emergency, the same is handled appropriately.

The areas of concern are:

Vaccine distribution plans exist in very few places (e. g. DVS-Hoshangabad and Sagar). In most cases, the supply is dependent on the arrival of the vaccines stocks at the upper level store – a fact which prevents implementation of any proper plan. The other factor is that stores have not been keeping maximum stocks as recommended by GoI at their respective levels. Hence the indent is not made accordingly.

No proper plans for the vaccine indenting and supply are existing at most of the stores. RVS-Indore tried to implement some plans for two months but failed as its DVS didn't send indent forms as requested. In most cases, the receiving store brings the indent when it comes to collect the vaccines. In a few cases where the supply store brings the supply to the receiving store, the indent is prepared there based on the supply given.

Most of the staff right from the SVS level do not know how to condition ice packs. The current practice puts serious threat of freezing of the liquid vaccines during long transport. Staff at DVS are also not fully knowledgeable about correct way of packing cold boxes. Some tend to make use of the non-standard ice packs provided to cover the ILRs and DF of Haier make (e.g. DVS-Sagar, DVS-Rewa), despite several years of experience.

Non-standard icepack

The state has not yet to implemented use of freeze indicators. The same are awaited from GoI.

7.8 Vaccine Management and Handling

This criterion is essentially applied to the service delivery level. Only 6 out of 16 questions are applied at the SVS, RVS and DVS.

For the proper Vaccine Management and handling several parameters are assessed:

- **Knowledge and proper use of VVM and shake test by the staff,**
- **The freeze dried vaccines and their corresponding diluents are correctly ordered, received, stored and distributed,**
- **The vaccines are always used with their corresponding diluents,**
- **Diluents are maintained at +2 to +8°C, same as the vaccine before reconstitution,**
- **The reconstituted vaccines are discarded within 6 hours of reconstitution** (4 hours in case of India) **or at the end of each immunization session, which ever comes first.**
- ***The MDVP is implemented correctly.*** *(MDVP is currently not implemented in India)*

A vaccine wastage monitoring system should be in place:

- **Reporting forms are used to monitor vaccine wastage,**
- **Wastage data can be used to make necessary corrections when re-ordering vaccines. The information can be used to reduce wastage in future,**
- **Is regular supportive supervision exist,**
- **There must be an effective system for disposal of used sharps and vials.**

Findings

Vaccine Store	State	Division/Region	District	CHC / PHC
Performance Score	*57%*	*56%*	*46%*	*58%*

The consolidated score indicates the weak performance of this criteria at all levels.

The strengths that contribute to the performance indicated above are:

- Most of the staff are knowledgeable of VVM and use it as management tool.
- Staff are making use of correct diluents for their respective vaccines at most levels.
- Diluents are cooled for at least 24 hours before use.
  In many CHC and PHCs, due to availability of space, all the diluents are stored in the ILR itself.
- Needle cutters are in use.
- In many places the used vials and needles from hub cutters are collected in respective disposable bags.
- Time of reconstitution of freeze-dried vaccine is marked.
- Reconstituted vials are discarded after 4 hours as per the GoI guideline or at the end of the session if that is earlier.

The weaknesses that need to be addressed are:

- There were couple of instances of diluents supplied by a different manufacturer that were supplied with the vaccines.
- Staff have poor knowledge on the actual implementation and practice of shake test at all levels.
- There is shortage of VVM posters for display at most stores.
- The key area of concern is the rather poor supervision at most levels, particularly at health facilities.

Multi Dose Vial Policy

As the govt. of India has not adopted this policy, this issue is scored as non-applicable.

Vaccine wastage control

This criteria was not assessed systematically, as it was felt that it was more important to focus on the other aspects. The wastage due to expiry or due to heat damage (VVM stage 3) seems to be low. As such there are no records. However, there are some exceptions (as mentioned earlier):

- At DVS-Rewa 20,000 doses of OPV are expired (expired date July 2010) and
- m-OPV 64,000 OPV belonging to the supply received during the NID of February 2009, were in the third stage of VVM

Both these stocks were still lying in the ILR and occupying space.

The current level of knowledge of wastage control is poor, and there is no formal system or practice to monitor wastage. Hence adequate use of any kind of information on wastage is not possible. The wastage factor used by the state is estimated based on the total consumption.

Disposal of Syringes and open/ damaged vials

Proper disinfection of used syringes before disposal is not practiced at several CHCs and PHCs (e.g. Shyampur, Budani, Ruthyai, Bokarata, Udhaygarh, etc. ...)

Opened or damaged vials are not disposed as per the CPCB (Central pollution control board immunization waste control) guidelines in 10 out of 31 health facilities visited.

There is a serious need to improve the performance of this criterion.

7.9 MIS and Supportive Management Functions

This criterion is essentially applicable at the Primary (National or State) level. Only 4 out of 18 questions apply at the RVS and DVS level. It is not applicable and therefore not scored for the health facility level, although it is marked as 0 in the spider graph.

The aspects evaluated here are:

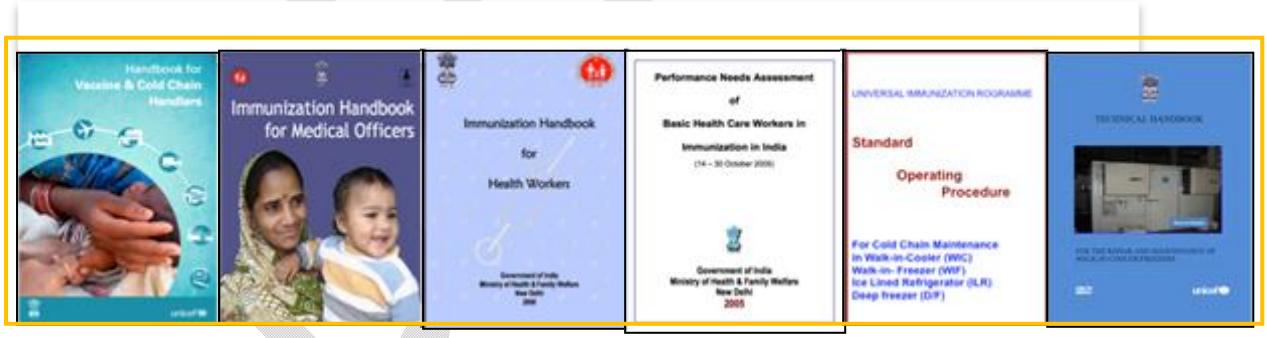
- **Standard Operating Procedures are in place,**
- **Field data is collected and the same are used for programme management purpose,**
- **An annual work plan is in place,**
- **Out-sourced services are fully funded and resourced.**

Findings

Vaccine Store	State	Division/Region	District	CHC / PHC
Performance Score	81%	53%	64%	NA

The MoH&FW of GoI has developed several manuals, which form part of the teaching aids, guidelines and Standard operating Procedures. These are supplied to the states for further distribution and use at respective levels. Some of the important documents directly related to the Vaccine and Cold Chain Management are:

1. Handbook of Cold chain and vaccine handlers (Newly published).
2. Immunization Handbook for Medical Officers and Health Workers and several other technical manuals.



These are updated, reprinted and distributed as and when the need is identified by the GoI, and all the states benefit by this.

The MoH&FW has also initiated the National Rural Health Mission (NRHM) in 2005. Every year the State Govt. prepares a work plan and budget in Part C of the PIP for the implementation of the upcoming year's immunization programme. The plan contains the line items that cover all the salient aspects of the programme

Certain number of guidelines and checklists are also available, both from national level and state level for supportive supervision.

A complete inventory of the cold chain equipment exists in the state.

On the other hand some of the weaknesses prevail:

- Many of the vaccine stores do not have a copy of the important documented material for quick reference.
- The senior staff do not make use of the supervisory checklists and in general the supervision is weak.
- Staff do not make adequate use of SoPs
- As precise and complete records of target population and wastage do not exist, the annual vaccine forecast is made based on estimated values.

The state does not outsource any of the services to external parties.

ADDITIONAL TASKS DONE

The following additional tasks were undertaken by the teams during the mission, the reports and presentations of which are shared.

Reports

- Summary of supportive supervision in MP. Doc
- EVM MP -Special observations and supportive supervision in MP by the teams – Final. Doc
- Note on new installations of WIC & WIF. Doc

Team Presentations

The team members were requested to prepare short presentation for the debriefing. These have been also included in the final debriefing package.

- T1-Bhopal Team Presentation. ppt
- T2-Gwalior-Team presentation. ppt
- T3-Sagar Team Presentation. ppt
- T4-Indore Team Presentation. ppt
- T5-Ratlam-Team presentation. ppt
- T6-Ujjain Team Presentation. ppt
- T7-Jabalpur Team Presentation. ppt
- T8-Rewa Team presentation. ppt

Recommendation

The EVM exercise has helped to identify the strengths and weaknesses of the current vaccine and cold chain management system in Madhya Pradesh. The performance on the whole is poor in all the nine criteria of EVM. A comprehensive analysis of the weaknesses has led to a set of recommendations. Implementing them will ensure improved performance and a greater success of the immunization programme.

The recommendations have been categorized into:

A. Management, Policy & Human Resource	D. Capacity building
B. Infrastructure	E. Planning & Documentation
C. Maintenance and Repair	F. Supportive supervision & improvement of practices

In each of these categories, a priority has been defined between 1 and 4 for each recommendation based on the score and criticality of indicator that affect the cold chain and vaccine logistics. These are listed below:

1. Urgent - To be implemented immediately or within the 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.

It is hoped that these categorised recommendations will be helpful to draw up an action plan and a road map by the respective authorities to rapidly implement the corrective actions.

A - Management, Policy and Human Resource

Priority	Gaps Identified	Action to be taken
1 Urgent	**Staffing** Refrigeration mechanics are handling the responsibility of storekeeper at 6 DVS. As a result, they are unable to allot the time required for repairing equipment and several equipment have been awaiting repair since a long time. Defective equipment lying idle for a long time may reach the stage of beyond repair and may have to be condemned.	❖ Appoint one adequate trained vaccine handler at all RVS and DVS.
1 Urgent	**Staffing** Staff at several places have been appointed without any formal or adequate on-the-job training. Such staff have poor knowledge of proper handling of vaccines (e.g. correct storage temperature and which vaccines' potency is vulnerable to freezing). Such staff put a serious threat to the potency of the vaccines and any resulting adverse event can jeopardise the immunization programme.	❖ Avoid frequent transfer of the trained staff working with the vaccines and cold chain to other duties and substituting them by untrained staff.
2	**Staffing** There are several serious management issues in the vaccine logisitcs in the state which can be addressed by appointing a trained vaccine logistic manager at the state level.	❖ Appoint one state level vaccine logistic manager, with management background and provide him with training on vaccine logistics. He should coordinate with the divisional logistic managers to oversee and ensure effective vaccines management at all levels.
2	Almost every District has a DIO, however, their involvement in the cold chain and vaccine management does not seem very active. This has resulted in several areas of weakness.	❖ The state needs to appoint dedicated DIOs. They MUST be actively involve in **regular supportive supervision**.

2	The computerised vaccine stock management system should ensure capturing of all salient parameters. It should also be a real time tool to allow real time verification of stocks. The Pro-MIS stock management software, which is currently used, is designed for general medical drugs and not specifically for vaccines. It has inherent limitations. The records are updated in the computer after the operations; hence, it is not a real time system.	❖ Requirements of vaccine management should be included in the Pro-MIS or the state should adopt another real time Vaccine Logistic Supply Management System (VLMS).
3	Currently, the four SVSs are merged with their respective RVS and the remaining four RVSs are merged with their respective DVS. In all these cases the staff is the same, the equipment are shared and even the stocks are merged. Hence, one does not realise the limitation of space and difficulties of properly managing the stocks. The present system is not conducive to establish proper and sustainable vaccine management practices.	❖ All vaccines stores that are merged / shared must be segregated for better vaccine management. o The segregation should imply separation in terms of rooms, equipment and staff.
3	There is a need to have suitable staff for capacity building in the area of cold chain and vaccine management. The selected trainers need to have a good understanding and overview of the vaccine logistics.	❖ Use the skills of the DLMs, developed during the EVM training, for cascading capacity building and supportive supervision. ❖ The position of DLM should be made regular as they can play an important role to improve the immunization programme.
3	SVSs and RVSs store large volumes of vaccines. In case of emergency, timely measures need to be taken to save the stocks otherwise the immunization programme can be adversely affected. Currently the storekeeper attends to the store only during working days and working hours. It is advisable to have round the clock presence at these stores. All DVS have storekeepers, but 8 of the 18 visited, do not have any helper.	❖ At all SVS and RVS semi-skilled helpers should be employed to ensure supervision round the clock. ❖ Appoint one semi-skilled helper at every DVS. He should be involved in regular manual recording of temperatures ❖ Alternatively funds for taking staff on contract should be made available.

B – Infrastructure

Priority	Gaps Identified	Action to be taken
1 Urgent	**Equipment** The GoI has supplied several new WIC and WIF for the SVS and RVS. The facilitation team have encountered many of these and observed serious lacuna in the power rating of their stabilizers and quality of their installation.	❖ Ensure that all new installation of WICs / WIFs, their stabilizers and generators are completed according to required standards. ❖ The commissioning report MUST be received from the manufacturer before signing of the completion certificate.
1 Urgent	**Equipment** In two instances, one of the refrigeration units of a WIC is non-functional since quite some time. In case the second one fails while the first one is still not made operational, a situation of emergency will arise.	❖ Ensure that both the refrigeration units of a WIC / WIF are ALWAYS in proper working condition. ❖ Install hooters at every WICs and WIFs to alert responsible staff in case the safety of the vaccine is threatened.
1 Urgent	**Equipment Condemnation** Condemned equipment are occupying usable space in many districts. This leads to limitation of floor space to add more equipment, which will be required to comply with GoI on total storage capacity to be ensured at the DVS.	❖ Implement urgently the directives on how to dispose of all condemned items. The issue of disposal must be put on the priority agenda in a periodic manner.
2	**Storage Capacity** The current equipment inventory needs to be corrected and updated, as there is significant difference between the values listed in it and the actual available gross volume in the WIC and WIFs. The inventory also does not provide the exact model numbers of the cold chain equipment at the RVS and DVS, which would allow precise determination of net vaccine storage space available.	❖ Update the equipment inventory and evaluate the exact storage space at every SVS, RVS and DVS based on the physical verification. ❖ The result should be used to determine additional requirements of equipment, based on the GoI recommendation of peak storage of vaccines at respective levels.
2	**Equipment** Every WIC, WIF, ILR and DF should have its own functioning stabilizers. Currently only 133 stabilizers are in working condition. In several places some equipment are operating without any stabilizers or sharing one with another equipment. Several CHCs (e.g. Chitolla, Rani Durgavati, District Hospital –Jabalpur, Gonapur) and PHCS do not have deep freezer. The ice packs are frozen in domestic refrigerators provided to other services.	❖ Procure the required number of stabilizers to ensure each one stabilizer for every equipment. ❖ Ensure that each CHC and PHC that store and supply vaccines are equipped with the adequate ILR and DFs.

Priority	Gaps Identified	Action to be taken
3	**Storage Capacity** The current practice is to store one month of vaccine stock at the RVS and DVS without considering any buffer stock. Hence, there seems to be sufficient storage capacity for all vaccines. However, the GoI guideline recommends keeping at least 3 months of stock at SVS, RVS and DVS and in addition 25% as buffer stock (say one more month)- i.e. a maximum stock corresponding to total of 4 months of vaccine stock. Based on this the storage space available at present would be insufficient at most of the vaccine stores above the health facility.	❖ Based on the evaluation of the required storage space as per the recommendations of GoI, the state must procure and install additional necessary equipment at all levels to ensure sufficiency of storage space. ❖ It is advisable to keep one extra large ILR and DF in reserve at each RVS and DVS to substitute rapidly any equipment breakdown.
4	**Building** The space available in many of the SVS, RVS and DVS is inadequate. In some cases, the WIC and WIF are installed in different sites. Three SVS / RVS have dry stores far off from the cold storage. Several RVS and DVS have not proper space for conducting repairs. Some others require revamping of the building. ➢ There is limitation of storage space for consumables at most DVSs. At times AD syringes were lying outside with the risk of theft or contamination. ➢ Some DVSs have been allotted two rooms located on two different floors or distant from each other. This will introduce difficulties of transport of equipment and material on the upper floor and demotivate the storekeeper.	❖ Carry out expansion of RVS and DVS where required to ensure adequate space for cold chain equipment, dry space, workshop, packaging and storekeepers office. o Develop and adopt state specific model for RVS and DVS based on IPHS recommendations. o Ensure adequate space to install equipment required for storage of 3 months of working stock and 1 month of buffer stocks as per the GoI guidelines. o Ensure adequate space to carry out equipment repairs at all RVSs and DVSs. o Avoid dividing store space at two sites or on two floors. **Where expansion is not possible, plan new building taking into account the needs of the future.** ❖ Most DVS require revamping of basic infrastructure. This should include: o Proper plastering of walls and improved electrical fitting. o Free floor space by fixing shelves on the wall, at head height, to keep stationary and light dry material. Fix supports on the wall for stabilizers.

C - Maintenance & Repair

Priority	Gaps Identified	Action to be taken
2	144 Stabilizers are awaiting repair and another 106 need to be disposed of. These equipment are more than 10 years old, manufactured by AVR, Blue Star, Sagar and Blue line, who even if in business, may no longer be producing similar models and electronic spares. Hence spares are unlikely to be available.	Repair all defective old stabilizers if possible using spares from other defective one, if authorised to do so; or if the required spares are available from local TV and radio repair shop. ❖ Otherwise condemn them and replace with new ones.
2	The status of condemned equipment is not very clear at many of the RVS and DVS. A certain confusion prevails between equipment beyond repair and those condemned. Equipment to be condemned require a clear certificate for condemnation and auctioning.	❖ State level experienced technicians should be sent to work with the RVS / DVS technicians to : o Examine all non-functional units, and conduct repairs along with the local technician (in form of hands-on training). o Condemn all non-repairable units and define the reason for their condemnation. o Technicians should maintain a repair log for each equipment. Such a log sheet can be included in the temperature recording booklet
3	There are no plans or agreement for the maintenance of the buildings. Several buildings are in a pretty bad shape and require attention.	❖ The MoH&FW needs to coordinate with PWD to define plans for maintenance of the different building used in the health services.
3	There are no real plans for preventive maintenance for equipment. Service is basically on demand. Refrigeration technicians visit the CHCs and PHCs during the vaccine deliveries and have a quick look at the equipment, which can be considered only as a rapid verification as the time available is too short to conduct any proper maintenance. The response time of the technicians, though not monitored, does not seem to be very good from the number of equipment that are accumulated for repairs over the months.	❖ Prepare work plans for the refrigeration technicians, which should be monitored by the SCCO. The plans should include preventive maintenance and on demand repairs. ❖ The maintenance and repair works must be reviewed quarterly to systematically strengthen the technical operations. ❖ The review should look into the cold chain performance indicators such as total sickness rate, response time and downtime of equipment. ❖

Priority	Gaps Identified	Action to be taken
3	During any major problem with equipment, the non-functional equipment is promptly replaced by the refrigeration technician with a new one from the reserve stock of new equipment. The defective one is usually returned to the RVS or DVS and awaits for repair by the refrigeration technician. Often the equipment is never repaired due to lack of time or lack of required spare resulting in a large stock of non-functional equipment. This is not a very sustainable manner of ensuring a functioning cold chain.	❖ Define the total quantity of excess equipment after ensuring adequate storage capacity at all RVS and DVS. Future indent should consider the new equipment in stock to ensure that excess stock of new equipment is avoided. o Technicians MUST give priority to put non-functional equipment in to operation as soon as possible. o Repaired equipment MUST be used, as a priority, to replace defective ones, before unpacking a new one.
3	There has been a shortage of spares particularly of compressors for the imported Vestfrost ILRs and DFs in the field since the last 5 years. As a result several equipment could not be repaired and have been condemned. Such instances have contributed to the high number of equipment lying idle and reaching the un-repairable conditions.	❖ Procure adequate quantity of spares based on the total equipment inventory and expected failure rates. o Always procure recommended number of spares spares along with each new procurement of equipment. o A list of locally available spares should be prepared and circulated to the technicians o State should procure local spares. This will avoid the cumbersome process of procurement by each district.

D - Capacity Building

Priority	Gaps Identified	Action to be taken
1 Urgent	**Vaccine Handling** Staff at several places have been appointed without any formal or adequate on-the-job training. Handling of vaccines by such staff puts a serious threat to the potency of the vaccines.	❖ All staff must be provided with adequate quality training before assuming any duty. o Untrained staff should NEVER be given the responsibility of handling vaccines. o Preferably, train at least two staff from every vaccine store, so as to replace each other in case of need. o

Priority	Gaps Identified	Action to be taken
1 Urgent	**Distribution** Most of the staff right from the SVS level do not know how to condition ice packs. The current practice puts serious threat of freezing of the T-series and Hep B vaccines during long transport. Staff at DVS are also not fully knowledgeable about correct way of packing cold boxes. Some tend to make use of the non-standard ice packs.	❖ Conduct practical hands-on training on correct ice-pack conditioning and vaccine packing in the cold box to staff at all levels.
2	**Storage Temperature** The refrigeration technicians are not knowledgeable about how to calibrate the thermometers and hence such calibration has never been conducted for any of the WIC and WIF.	❖ Refrigeration technicians need training on: o Temperature profiling of all cold room and freeze room. o How to calibrate the temperature sensors.
3	**Stock keeping** There are several lacunas in the knowledge and practices of the storekeepers: o The current practice is to store only one month of vaccine without any buffer stock. As a result stock-outs have occurred at several stores in the past 12 months. o Records of VVM status and diluents are not maintained below the SVS. o Standard vaccine indent and distribution forms are not used except by a few vaccine stores o Issue vouchers are never returned by the receiving stores after the receipt and entry of the stocks in the stock registers.	❖ All staff involved in vaccine handling require refresher course. The newly deputed staff requires fully fledged training. The trainings should cover the following areas which appear quite weak: o Estimation of vaccine requirement based on working stock and buffer stock, o Total volume of storage space required, o Proper use of stock recording registers, o Proper uses of indent and supply forms. ❖ Adapted training / refresher course should also be conducted for DIOs, DLMs and supervisors.
3	**VM policies & practices** Staff have poor knowledge on the actual implementation and practice of shake test at all levels.	❖ Upcoming cold chain handlers or other immunization trainings should practically demonstrate the shake test. o The RCHOs and MOs should demonstrate the same**.**

Priority	Gaps Identified	Action to be taken
3	**VM policies & practices** The term "saline water" or "water for vaccine" leads to potential risk of staff replacing the specific diluents meant for a freeze dried vaccine with ordinary saline water or even distilled water. There were couple of instances of diluents supplied by a different manufacturer that were supplied with the vaccines.	❖ During every training related to diluents, the language used MUST avoid the words water, distilled water or saline water for the diluents and emphasize that the specific diluents manufactured by the same company MUST be used exclusively. ❖ There is an urgent need for training staff in correct indenting and supply of diluents particularly at DVS and CHC levels. Staff needs regular review, refreshing and updating through Continue Medical Education (CME) programs.
3	**Supportive Management Function** Lack of supportive supervision remains one of the weakest link of the immunization system, which further contributes to the deterioration of practices and good performance. One of the reasons for this is that the supervising staff are not fully informed of what to supervise and how.	❖ **All DIOs, MOs and other supervising staff require to be oriented on the periodic supportive supervision activity.** ❖ They need to be oriented in **what to supervise**. ❖ DPM, BMP, DLM and CC technicians need to be sensitized in immunization programme including cold chain and vaccine management.

E - Planning & Documentation

Priority	Gaps Identified	Action to be taken
2	**Storage Temperature** There is no standardised temperature recording format. At some places the recording is done on a graphic form whereas in most places it is written in a printed format provided at the district level. Such format provides scope to include information about power breakdown or other actions conducted on the equipment.	❖ Design a standardised temperature record booklet. Print and distribute them across the state. o The booklet should have possibility to include information regarding maintenance services conducted on the equipment.

Priority	Gaps Identified	Action to be taken
2	**Storage Capacity** Most staff have limited knowledge on how to handle emergencies arising from equipment breakdown or excess stock in hand. Storekeepers working since decades have the impression that the total stock of RVS or DVS can be saved in cold boxes. This is quite unrealistic considering the number of cold boxes and ice pack that would be needed.	❖ Adapt the MO module contingency plans at different levels of the state. Disseminate the structure of the plan to the concerned staff and do needed follow up in review meeting. o Standardise the plans that are developed. o Provide formats for displaying emergency numbers. o Conduct mock drills to handle contingency.
2	**Distribution** No proper plans for the vaccine indenting and supply are existing at most of the stores in the states. In most cases, the receiving store brings the indent when it comes to collect the vaccines. In a few cases where the supply store brings the supply to the receiving store, the indent is prepared n the spot based on the supply given.	❖ Define a comprehensive indent and distribution plan at all levels starting from SVS down to PHCs based on maximum stocks requirements and available storing space. o In principle the upper store should distribute the vaccine as they have been provided with the funds for this purpose. ❖ Distribution reports must demonstrate compliance with the planned delivery schedule.
3	**Distribution** The state has not yet implemented use of freeze indicators, as the same is still awaited from GoI.	❖ Provide and implement use of freeze indicators during transport of freeze sensitive vaccine at all levels.
2	**VM policies & practices**. The key area of concern is the rather poor supervision at most levels, particularly at health facilities.	❖ There is a need to establish proper supervision plan and implement the same. ❖ Concerned staff must make use of supervisory checklists.
3	**Stock keeping** There is no uniform stock recording system. Standard record book is not developed and implemented across the state for Vaccines, diluents and consumables. o Each district has adapted its own method. Some DIOs have used the format provided in the Immunization Handbook for Medical Officers and printed them using the NRHM funds.	❖ Define, print and supply, standardized stock registers at all vaccine stores to ensure proper recording of all salient parameters of vaccines, diluents and consumables. ❖ Define a comprehensive indent form, which also includes the details of quantities used and balance in stock.

<table>
<tr><th>Priority</th><th>Gaps Identified</th><th>Action to be taken</th></tr>
<tr><td></td><td>o Some districts are using ad-hoc registers from general stationary.
No standard vaccine indent and distribution forms are used except in a few places.</td><td></td></tr>
<tr><td>3</td><td>VM policies & practices
The current level of knowledge of wastage control is poor, and there is no formal system to monitor wastage.
There is no systematic practice of monitoring wastage. Hence adequate use of any kind of information on wastage is not possible.</td><td>❖ Establish system to record all kinds of wastages
o Encourage staff to record them without apprehension of disciplinary action.
❖ Efforts to reduce wastages should not result in missing out any child. GoI clearly states that every child should be vaccinated – staff should be encouraged to open a vial even if it were for a single child.
❖ Establish practice of maintaining wastage records and review these according to the following plan:
<table>
<tr><th>SVS</th><th>RVS</th><th>DVS</th><th>CHC / PHC</th><th>Session</th></tr>
<tr><td>Once every 6 months</td><td>Once every 3 months</td><td>Once every 3 months</td><td>Once every month</td><td>Once every week</td></tr>
</table></td></tr>
<tr><td>3</td><td>VM policies & practices
Used syringes are not properly disinfected before disposal at several CHCs and PHCs.
Opened or damaged vials are not dispose of as per the CPCB (Central pollution control board immunization waste control) guidelines in several health facilities.</td><td>❖ Staff need to be trained in proper disposal procedures and improve the practice across the state</td></tr>
</table>

F - Supportive Supervision and Improvement of Practices

Priority	Gaps Identified	Action to be taken
1 Urgent	**Distribution** Staff have poor knowledge and practice in: 1. Conditioning of ice-packs. 2. Packing cold boxes. 3. Use of standard ice packs.	❖ Always ensure use of standard ice packs after proper conditioning. ❖ Ensure proper packing of ice packs and vaccines in the cold boxes during distribution.
1 Urgent	**Storage Temperature** In certain cases, the temperature records seem to be marked in a mechanical manner without actual carrying out any real reading. Such incorrect practice can threaten the potency of the vaccine and can cost the life of a child and the reputation of the programme.	❖ Temperature monitoring and recording should be carried out twice daily, 7 days of the week. o All staff MUST record the reading correctly after due verification. o All additional salient aspects associated to the operation of the equipment should also be note (e.g. hours of power breakdown, defrosting, servicing etc.).
1 Urgent	**Stock keeping** Records of VVM status and diluents are not maintained below the SVS.	❖ All salient parameter of vaccine & diluents MUST be noted, particularly the VVM stage (for vaccines), manufacturer, Batch number and expiry date.
2	**Vaccine Arrival** The vaccine arrival reports are helpful to consolidate all the salient details of vaccine arrivals for all future references. Current practice is to fill these reports only during the arrivals of the campaign vaccine.	❖ In order to ensure proper traceability of each lot of vaccine arriving in the state, it is recommended to fill up the VAR for every type and lot of vaccine. ❖ Copies of blank VAR should be kept at all SVS for this purpose as the same are not supplied during the shipment by GMSDs and local manufacturers. ❖ A supervisor should verify the VAR and a copy should be sent to GoI or UNICEF as required for further record and follow-ups.

Priority	Gaps Identified	Action to be taken
2	**Stock keeping** The current practice is to store only one month of vaccine without any buffer stock. As a result stock-outs have occurred at several stores in the past 12 months. The GoI guidelines recommend: ➢ RVS & DVS: 3 months working stock and 1 month buffer stock. ➢ CHC& PHC: 1 month working stock and 0. 5 month buffer stock.	❖ Ensure that indent and storage are based on the maximum and buffer stocks are per GoI guidelines: ❖ DIOs, DLMs or other responsible persons MUST verify that: o Correct practice of stock management is followed. o Immediate action is taken whenever the buffer stock is breached.
2	**Stock keeping** Well defined supply chain system is missing although the supply pre-notification is always practiced across the state. No standard vaccine indent and distribution forms are used except in a few places. Issue vouchers are never returned by the receiving stores after the receipt and entry of the stocks in the stock registers.	❖ Ensure complete record keeping to monitor the actual vaccine distribution. o While sending the new indent or bringing it during collection of vaccines, the receiving store should return the endorsed copy of previous month's issue voucher.
2	**Supportive Management function** Many of the vaccine stores do not have a copy of the important material for quick reference.	❖ Ensure that staff keep and make use of the relevant manuals for ensuring correct practices.
2	There is a tendency to prepare icepacks alongside the vaccines stored in a DF.	❖ Ensure that at all health facilities (CHC and PHCs) the DF used to prepare ice packs are not be used for storing vaccines.
2	**Supportive Management function** In several places, the temperature records or stock registers, are not systematically verified by a supervisor. As a results many weaknesses are not noticed and addressed.	❖ DIOs and supervisors should periodically conduct supportive supervision and always sign the documents supervised as a sign of endorsement of its correctness. This should include: o Ensure correct temperature monitoring is followed. o Proper stock record keeping is practiced. o Proper indenting is practiced

Priority	Gaps Identified	Action to be taken
3	**Storage Temperature** None of the WIC or WIF have been subjected to temperature mapping study. The thermometers have not been calibrated and Temperature profiling of has not been done for any of the WIC and WIF.	Ensure that the following is carried out: ❖ Conduct temp monitoring studies once every 5 years. ❖ Temperature sensors should be calibrated at least once a year for each sensor, especially for each WIC and WIF. ❖ Conduct temperature profiling of WIC and WIFs once every year.
3	**Stock keeping** For a proper stock keeping it is necessary to conduct periodic physical verification and update the stock register. Preferably this should be done before every arrival of new stocks of vaccines.	❖ Conduct physical verification monthly of all vaccines, diluents and consumables at DVS, CHC and PHC level, and quarterly at SVS and RVS level. ❖ Result of physical verification must be marked in the stock register. o The same should be countersigned by the supervisor.
3	**VM policies & practices** There were couple of instances where the vaccines were supplied with diluents from a different manufacturer. It is mandatory to supply all freeze-dried vaccines with their corresponding diluents.	❖ Vaccine handler should make an identical identification mark on the cartons of vaccines as well as diluents as soon as they are received, and ensure that they are distributed always together.
3	**VM policies & practices**. One should ensure that every diluents is kept in the cold chain for minimum of 24 hours before use. Usualy, only the minimum required quantity of diluent is kept in the ILR at health facility. It is always a good practice to keep more than necessary in the cold chain. Often there is sufficient space in the ILR at the health facility to keep all the stock of diluent inside.	❖ Ensure that at service level, more than the required quantity (if not all) of the diluents is kept in the cold chain. ❖ The DIO, BMO or the MO should periodically monitor the contents of the cold chain to ensure that the vaccines and diluents are stored properly.
3	**VM policies & practices** Opened or damaged vials are not disposed of as per the CPCB (Central pollution control board immunization waste control) guidelines in 10 out of 31 health facilities visited.	❖ All used, opened and damaged vaccines should be disposed off according to the state guidelines.

Priority	Gaps Identified	Action to be taken
3	**VM policies & practices** During any campaigns, special instructions regarding storage and use of vaccines are disseminated. These are meant for the campaign vaccines specifically and apply only to those periods. However, often staff tend to continue to apply them in routine immunization.	❖ Ensure that instructions specific to the campaigns are not implemented in routine programme (e.g. regarding reuse of open vials of OPV over several days). ❖ Ensure proper follow up of instruction related to how to discard all open vials after the campaigns and what to do with the unopened vials.

ANNEXURE

EVM Mission in Madhya Pradesh
October 2010

Annexure A - List of Participants

Annexure B - Schedule of the EVM training programme

Annexure C– Performance Matric for Pre-course Questionnaire

Annexure D - Schedule and teams for field practicals

Annexure E – Training programme evaluation form

Annexure F – The vaccine store structure and population

Annexure G - Location and teams for field assessment

Annexure H – Spider Graphs for SVS- RVS-DVS-HF in the 8 Zones

Annexure I – Detailed performance score of EVM Assessment

Annexure J - Institution wise Supportive Supervision

Annexure K - Walk-in Freezer Rooms and Cold Rooms (WIC & WIF)

Annexure L – Status of Cold Chain equipment in MP

Annexure M – Estimation of total storage space required at 8 RVS and 50 DVS

Annexure N – Summary of Status at 18 DVS

Annexure O - Sumary report of EVM Assesment in Jabalpur division

Annexure A – List of Participants

S.No.	Station	Participant Name	Designation	Mobile/ Contact No.
1	BHOPAL	DR. J. P. KHARE	DY. SEPIO	9826037466
2	BHOPAL	ER. V. K. SHRIVASTAVA	SCCO	9893471926
3	BHOPAL	DR. A. BHAGWAT	CO-OR IMMN.	9425102661
4	SAGAR	DR. V. K. KHARE	DIO	9425451398
5	REWA	DR. NANDANI PATHAK	DIO	9425185093
6	SHIVPURI	DR. SANJAY RISHISHWAR	DIO	9479307373
7	REWA	SANJEEV RATHORE	DLM	9752540113
8	SAGAR	PREM KAMAL	DLM	9907744811
9	INDORE	MAUSAM JAISWAL	DLM	8109011038
10	BHOPAL	Puran Chand Pandey	DLM	9425167121
11	UJJAIN	NARENDRA PARMAR	REF TECH	9926932255
12	RATLAM	UDAY KUMAR PAUL	REF TECH	9872095944
13	CHATTARPUR	S. N. REDDY	REF TECH	9425882355
14	DHAR	R. P. HAROD	REF TECH	9425045736
15	KHANDWA	DINESH NAGDIVE	REF TECH	9827393063
16	CHINDWARA	NEERAJ TIMOTHY	REF TECH	9424636272
17	MORENA	VIJAY SINGH	REF TECH	9993921324
18	JABALPUR	VIKRAM KORI	REF TECH	9425389418
19	RAISEN	MANOJ SHUKLA	REF TECH	9893141474
20	SEHORE	RAJESH CHHAPANI	REF TECH	9826881737
21	GWALIOR	ABHAY KULSHRESHTA	STOREKEEPER	9827548319
22	INDORE	MANISH GHANGHORIA	STOREKEEPER	9425050335
23	PANNA	KIRAN KHARE (Ms.)	STOREKEEPER	9893282600
24	ASHOK NAGAR	DINESH SHARMA	STOREKEEPER	9425760233
25	BHOPAL	NEERAJ SHUKLA	STOREKEEPER	9826016431
26	JABALPUR	DR. SYED HUBBE ALI	CONSULTANT UNICEF	9685532345
27	BHOPAL	Rahul Singh Bhadouria	UNICEF	9630032900
28	PANCHKULA	Dr. Suresh Dalpath	SEPIO- Haryana	9501650700

Facilitation Team

1	PONDICHERRY	Dr. Kshem Prasad	APT-Progress	9443262241
2	CHANDIGARH	Anshu Kumar	APT-Progress	7814471132
3	PUNE	Bhairvi Shah	APT-Progress	9595931447
4	BHOPAL	Venkat Aiyer	APT-Progress	9893423039
5	CHANDIGARH	Ashok Kumar Matta	APT-Progress	941733569
6	MUMBAI	Meghna Udgire	APT-Progress	9004049974
7	NEW DELHI	Dr. Srihari Dutta	UNICEF -ICO	95601 89557

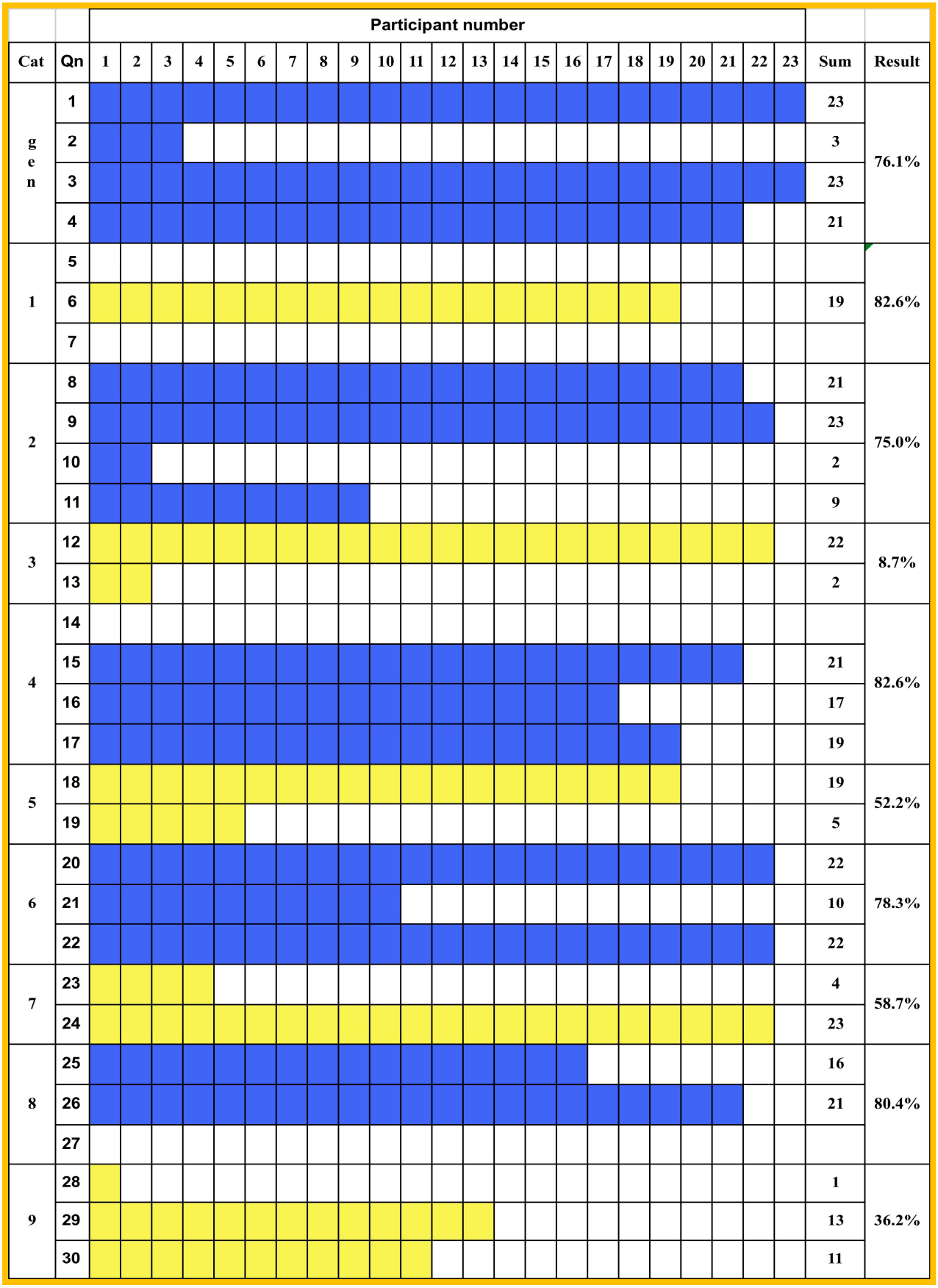
Annexure B – Schedule of the EVM training programme

Day-1		
Starting time	**Duration**	**Topic**
9:00	0:20	Registration
9:20	0:20	Welcome and Opening Ceremony
9:40	0:20	Pre-course questionnaire
10:00	0:20	Programme of the day + House rules
10:20	0:20	*Tea Break*
10:40	0:30	Introduction to EVM
11:10	1:00	Questionnaire 2 - Temperature Monitoring Procedures
12:10	1:00	Questionnaire 3 - Storage and Transport Capacity
13:10	0:20	Details of field work
13:30	0:45	*Lunch*
14:15	2:30	***Practical exercise - travel to site, Collection of data for the given indicators at specified Vaccine stores.***
16:45	0:30	***Return to Venue - Submission of data - Tea Break***
17:15	0:15	***Energiser***
17:30	0:30	Discussion on the experience and results of field work
18:00	0:15	***Evaluation of the day***
Day-2		
Starting time	**Duration**	**Topic**
9:00	0:15	***Energiser***
9:15	0:10	***Programme of the day***
9:25	0:10	***Summary of what we learnt the previous day***
9:35	0:30	Review of the results of previous day
10:05	0:30	Questionnaires 4 - Building, Equip. and Transport
10:35	0:20	*Tea Break*
10:55	0:30	Questionnaires 4 - Continued
11:25	0:30	Questionnaires 5 - Maintenance
11:55	0:10	Details of field work
12:05	1:00	*Lunch*
13:05	3:00	***Practical exercise - travel to site, Collection of defined data at specified Vaccine stores***
16:05	0:30	***Return to Venue - Submission of data - Tea Break***
16:35	0:15	***Energiser***
16:50	0:45	Discussion on the experience and results of field work
17:35	0:15	***Evaluation of the day and closing***

Day-3		
Starting time	**Duration**	**Topic**
9:00	0:15	***Energiser***
9:15	0:10	***Programme of the day***
9:25	0:10	***Summary of what we learnt the previous day***
9:35	0:40	Review of the results of previous day
10:15	1:00	Questionnaires 6 - Stock Management systems
11:15	0:30	*Tea Break*
11:45	0:45	Questionnaires 7 - Distribution
12:30	0:15	Field work plan
12:45	1:00	*Lunch*
13:45	2:30	***Practical exercise - travel to site, Collection of defined data at specified Vaccine stores***
16:15	0:30	***Return to Venue - Submission of data - Tea Break***
16:45	0:15	***Energiser***
17:00	0:45	Discussion on the experience and results of field work
17:45	0:15	***Evaluation of the day and closing***
Day-4		
Starting time	**Duration**	**Topic**
9:30	0:15	***Energiser***
9:45	0:10	***Summary of the previous day***
9:55	0:10	***Summary of what we learnt the previous day***
10:05	0:40	Review of the results of previous day
10:45	0:30	Questionnaires 8 - Vaccine Management
11:15	0:20	Simulation in group
11:35	0:30	*Tea Break*
12:05	0:30	Questionnaires 9 - MIS & Management system
12:35	0:20	Field work plan
12:55	1:30	*Break*
14:25	2:00	**Practical exercise - travel to site, Collection of defined data at specified Vaccine stores**
16:25	0:30	***Return to Venue - Submission of data - Tea Break***
16:55	0:15	***Energiser***
17:10	0:45	Discussion on the experience and results of field work
17:55	0:15	Evaluation of the Programme

Day-5		
Starting time	**Duration**	**Topic**
8:00	0:15	***Energiser***
8:15	0:10	***Summary of the previous day***
8:25	0:10	***Summary of what we learnt the previous day***
8:35	0:50	Review of the results of previous day
9:25	0:45	1-Vaccine arrival procedures
10:10	0:30	*Tea Break*
10:40	1:00	Stock management - safety and working stocks
11:40	1:15	***Revision of Indicator 1 to 5 by participants***
12:55	0:45	*Lunch*
13:40	1:00	***Revision of Indicator 6 to 9 by participants***
14:40	0:30	*Tea Break*
15:10	1:00	Details on Field Assessment programme
16:10	0:50	Evaluation of the programme

Annexure C – Performance Matrix for Pre-course Questionnaire



		Participant number																							
Cat	Qn	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Sum	Result
gen	1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	23	76.1%
	2	■	■	■																					3	
	3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	23	
	4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			21	
1	5																									82.6%
	6	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					19	
	7																									
2	8	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			21	75.0%
	9	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		23	
	10	■	■																						2	
	11	■	■	■	■	■	■	■	■	■															9	
3	12	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		22	8.7%
	13	■	■																						2	
4	14																									82.6%
	15	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			21	
	16	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■							17	
	17	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					19	
5	18	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					19	52.2%
	19	■	■	■	■	■																			5	
6	20	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		22	78.3%
	21	■	■	■	■	■	■	■	■	■	■														10	
	22	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		22	
7	23	■	■	■	■																				4	58.7%
	24	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		23	
8	25	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■								16	80.4%
	26	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			21	
	27																									
9	28	■																							1	36.2%
	29	■	■	■	■	■	■	■	■	■	■	■	■	■											13	
	30	■	■	■	■	■	■	■	■	■	■	■													11	

Average = 63.1%

Annexure D – Schedule and teams for field practical

Day- 1				
Type of VS	**State**	**District**	**Urban centre**	**CHC**
Name of the store	Bhopal	Barasopachas	Katju Hospital	Gandhiangar
	Team - 1	**Team - 2**	**Team - 3**	**Team - 4**
Day- 2				
Type of VS	**State**	**District**	**Urban centre**	**CHC**
Name of the store	Bhopal	Barasopachas	Katju Hospital	Gandhiangar
	Team - 4	**Team - 1**	**Team - 2**	**Team - 3**
Day- 3				
Type of VS	**State**	**District**	**Urban centre**	**CHC**
Name of the store	Bhopal	Barasopachas	Katju Hospital	Gandhiangar
	Team - 3	**Team - 4**	**Team - 1**	**Team - 2**
Day- 4				
Type of VS	**State**	**District**	**Urban centre**	**CHC**
Name of the store	Bhopal	Barasopachas	Katju Hospital	Gandhiangar
	Team - 2	**Team - 3**	**Team - 4**	**Team - 1**

Team Formations for field training				
	Team -1	**Team -2**	**Team -3**	**Team -4**
Team leader	**Dr. V K Khare**	**Dr. A K Bhagwat**	**Er. V K Shrivastava**	**Dr. J P Khare**
Team members	Dr. Nandini Pathak	Sanjeev Rathore	Prem Kamal	Dr. Sanjay Rishishwar
	Mausam Jaiswal	UDAY KUMAR PAUL	NEERAJ TRIMURTI	MANOJ SHUKLA
	NEERAJ SHUKLA	VIKRAM KORI	MANISH GHANGORIA	S. N. REDDY
	VIJAY SINGH	NARENDER PARMAR	KIRAN KHARE (Ms.)	ABHAY KULSHRESHTA
	RAJESH CHAPANI	DINESH SHARMA	R. P. HAROD	DINESH NAGDIVE

Annexure E – Training Programme Evaluation form

EVM TRAINING EVALUATION FORM

Total responses from 26 participants

PROGRAMME Related

METHODOLOGY

Very Productive	*Good*	*Classic*	*Poor*	*Very ineffective*
16	***9***	***1***		

RELEVANCE for your work

Completely	*Majority*	*Partially*	*Minority*	*None*
15	***11***			

FIELD WORK DURING TRAINING

Completely	*Majority*	*Partially*	*Minority*	*None*
1311	***2***			

SELF - Assessment

YOUR ENGAGEMENT IN THE TRAINING

Completely	*Majority*	*Partially*	*Minority*	*None*	***NF***
17	***7***	***1***			***1***

YOUR CONFIDENCE IN USING THE TOOL

Completely	*Majority*	*Partially*	*Minority*	*None*	***NF***
1410	***1***			***1***	

YOUR CONFIDENCE IN ANALYSING THE RESULTS

Completely	*Majority*	*Partially*	*Minority*	*None*
11 11	***3***		***1***	

NF = Not Filled

Annexure F – The vaccine store structure and population

S.No.	State Store (SVS)	Divisional / Regional Vaccine Store (RVS)	Districts Vaccine Store (DVS)	Extrapolated Total Population for 2010 - 11	Estimated Annual Target population (0-11 months) for 2010 - 11
1	Gwalior	Gwalior (WIC & WIF)	MORENA	1,936,740	50,285
2			BHIND	1,647,129	42,864
3			SHEOPUR	710,559	18,483
4			GWALIOR	2,014,022	52,377
5			DATIA	752,632	19,565
6			SHIVPURI	1,792,344	46,696
7			GUNA	2,071,791	31,648
8			ASHOKNAGAR	856,353	22,319
		Gwalior Division		**11,781,570**	**284,238**
9		Sagar (WIC)	TIKAMGARH	1,506,153	39,186
10			CHHATARPUR	1,833,081	47,856
11			PANNA	1,041,575	27,076
12			SAGAR	2,440,538	63,410
13			DAMOH	1,279,060	33,363
		Sagar Division		**8,100,407**	**210,892**
14	Jabalpur	Rewa (WIC)	SATNA	2,341,370	60,723
15			REWA	2,452,820	63,755
16			SHAHDOL	1,844,680	27,599
17			SINGROLI	639,530	31,137
18			SIDHI	639,530	30,832
19			UMARIA	622,767	16,167
20			ANUPPUR	845,126	20,318
		Rewa Division		**9,385,823**	**250,531**
21		Jabalpur (WIC & WIF)	JABALPUR	2,596,502	67,901
22			NARSINGHPUR	1,147,260	29,828
23			MANDLA	1,014,958	26,351
24			CHHINDWARA	2,148,867	55,887
25			SEONI	1,334,599	34,869
26			BALAGHAT	1,848,493	46,414
27			KATNI	1,265,295	32,846
28			DINDORI	648,676	16,872
		Jabalpur Division		**12,004,650**	**310,968**
29	Indore	Indore (WIC & WIF)	JHABUA	458,811	24,744
30			ALIRAJPUR	458,811	19,253
31			DHAR	2,163,229	56,471
32			INDORE	3,375,718	92,043
33			KHARGONE	1,915,011	49,863
34			KHANDWA	1,256,820	32,950

S.No.	State Store (SVS)	Divisional / Regional Vaccine Store (RVS)	Districts Vaccine Store (DVS)	Extrapolated Total Population for 2010 - 11	Estimated Annual Target population (0-11 months) for 2010 - 11
35			BARWANI	1,373,430	35,724
36			BURHANPUR	743,448	19,409
		Indore Division		**11,745,278**	**330,456**
37		**Ratlam (WIC)**	RATLAM	1,488,856	38,749
38			MANDSAUR	1,439,409	37,368
39			NEEMUCH	863,298	22,490
40			UJJAIN	2,080,554	53,998
41			SHAJAPUR	1,581,089	41,110
42			DEWAS	1,614,347	42,118
		Indore Division		**9,067,553**	**235,833**
43	**Bhopal**	**Bhopal (WIC & WIF)**	RAJGARH	1,547,541	40,334
44			VIDISHA	1,488,200	38,809
45			BHOPAL	2,440,808	63,295
46			SEHORE	1,350,798	35,233
47			RAISEN	1,408,693	36,462
48			BETUL	1,621,194	42,246
49			HOSHANGABAD	1,298,949	33,949
50			HARDA	581,160	15,068
		Bhopal Division		**11,737,343**	**305,396**
Madhya Pradesh				**73,822,624**	**1,928,314**

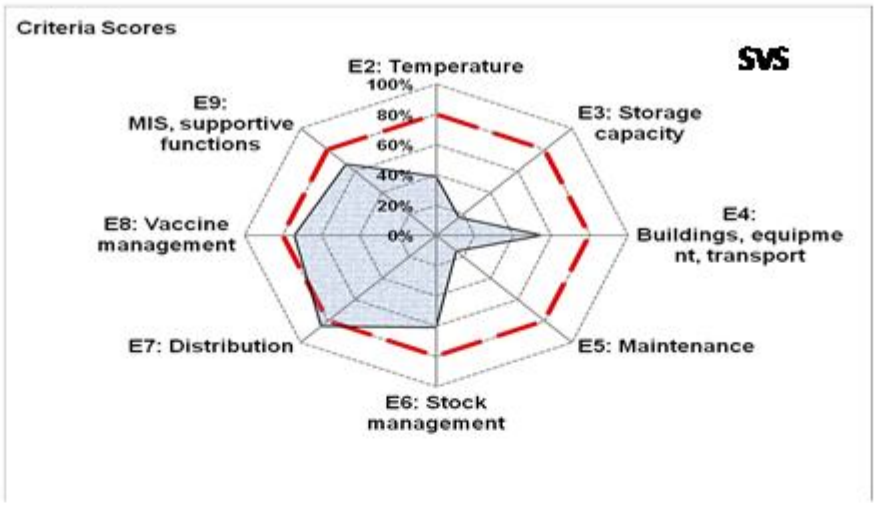
Annexure G – Location and teams for field assessment

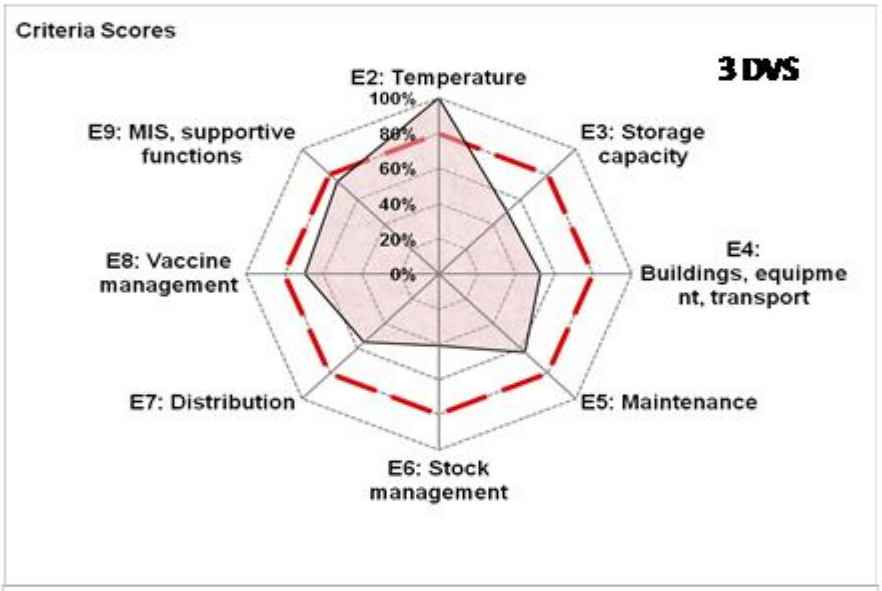
Team	Team Leader	Team Members	State Store	Regional store	District stores	CHC/PHC/Block
1	**Puran Chand Pandey**	MANOJ SHUKLA	Bhopal		Hoshangabad	CHC Sohagpur
		S. N. REDDY				CHC Suktaba
					Sehore	Shyampur
						Budani
2	Dr. Sanjay Rishishwar	ABHAY KULSHRESHTA	Gwalior		Gwalior	DH Murar
		DINESH NAGDIVE				Billauwa
		VENKAT AIYER			Guna	Bamori Guna
						Ruthyai
3	Dr. Nandini Pathak	R. P. HAROD		Sagar DVS	Damoh	Hatta
		NEERAJ TIMOTHY				Tendukheda
					Tikamgarh	MCH Tikamgarh
						Astone
4	Er. V K Shrivastava		Indore		**Alirajpur**	Bazar Hospital
		MANISH GHANGHORIA				Aambua
					Shivpuri	
		KIRAN KHARE (Ms.)			**Barwani**	Bokarata
						Anjad
5	**Prem Kamal**	UDAY KUMAR PAL		Ratlam	**Jhabua**	Udeygarh
		VIKRAM KORI				Umarkot
6	**Sanjeev Rathore**	NARENDRA PARMAR		Ujjain	Ujjain	Ingoria
		Dinesh Sharma				PHC Unnhel
					Rajgarh	Distt Hos Rajgarh
						CHC Zeerapur
7	**Mausam Jaiswal**	NEERAJ SHUKLA	Jabalpur		Jabalpur	CH Sihora
		VIJAY SINGH				Rani Durgawal
					Seoni	PHC Dhobni
						PHC Palari
8	Dr. V K Khare	RAJESH CHHAPANI		Rewa	Satana	Maihar
		DR. SYED HUBBE ALI				Kulgarhi
					Singroli	Mada
						Bargawan

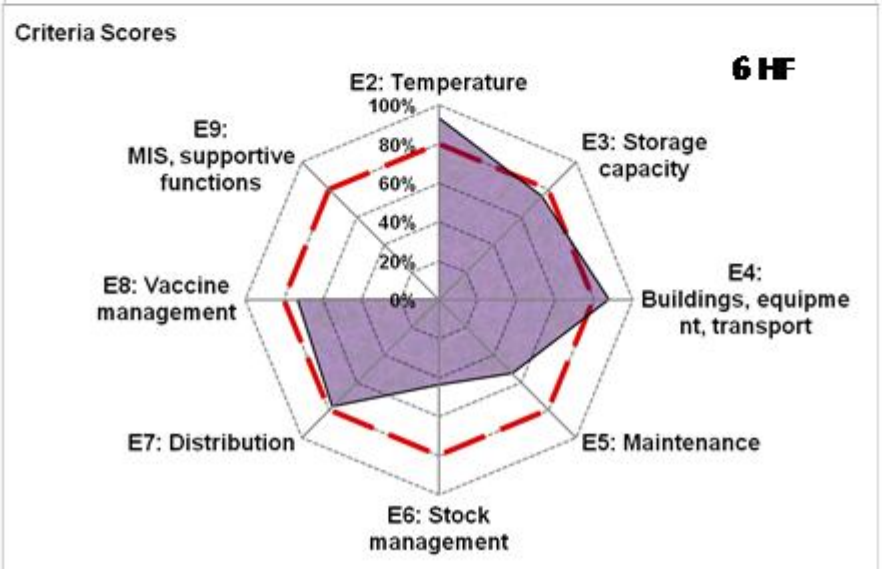
Normal Area **Difficult Area** **Most Difficult Area**

Annexure H – Spider Graphs for SVS- RVS-DVS-HF in the 8 Zones

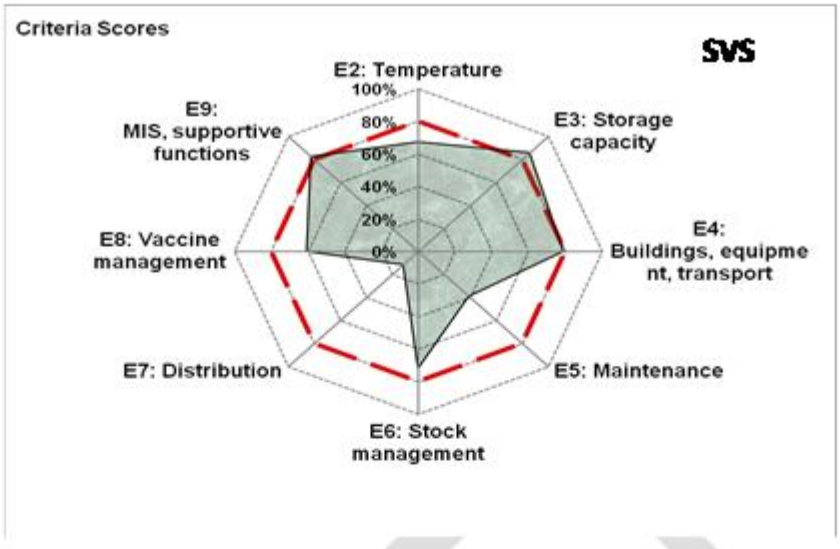
EVM Consolidated graphs for M.P.
Bhopal Zone

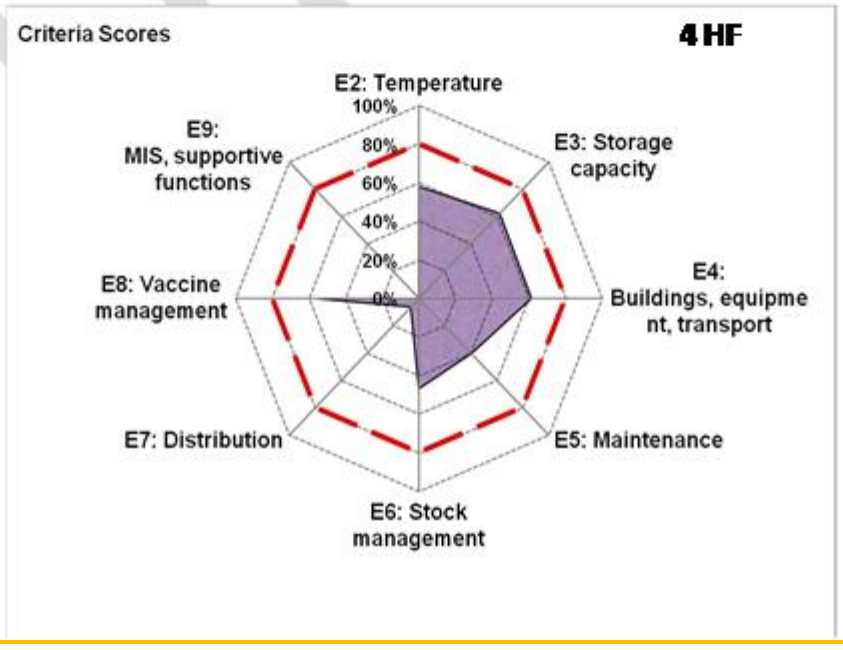




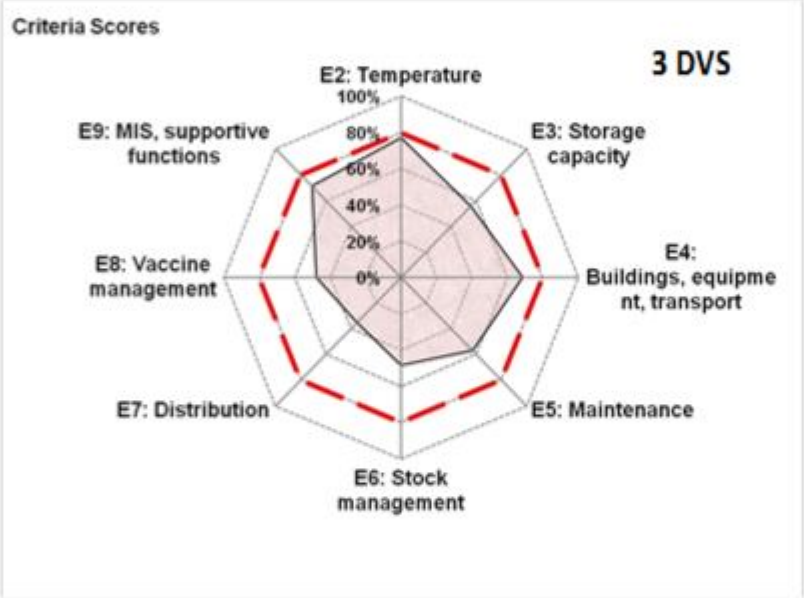


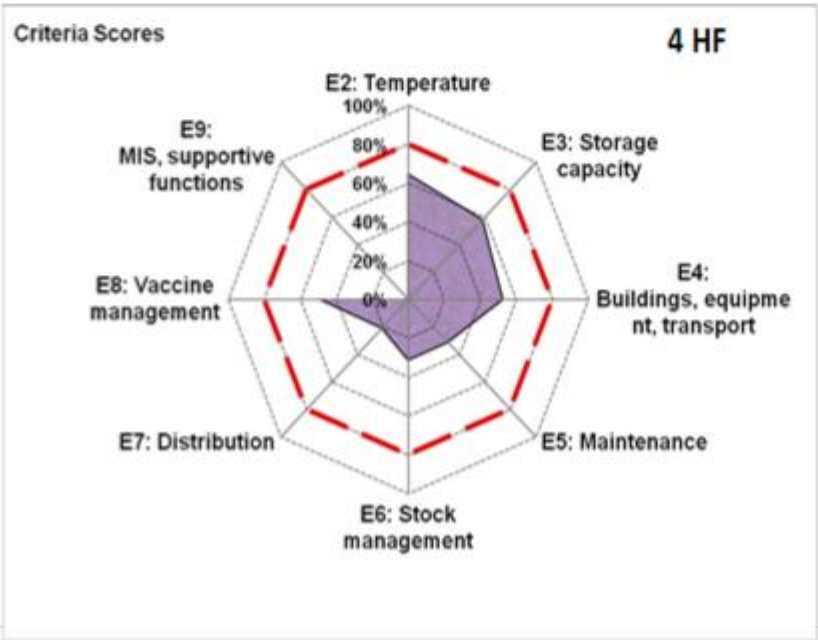
EVM Consolidated graphs for M.P. Gwalior Zone



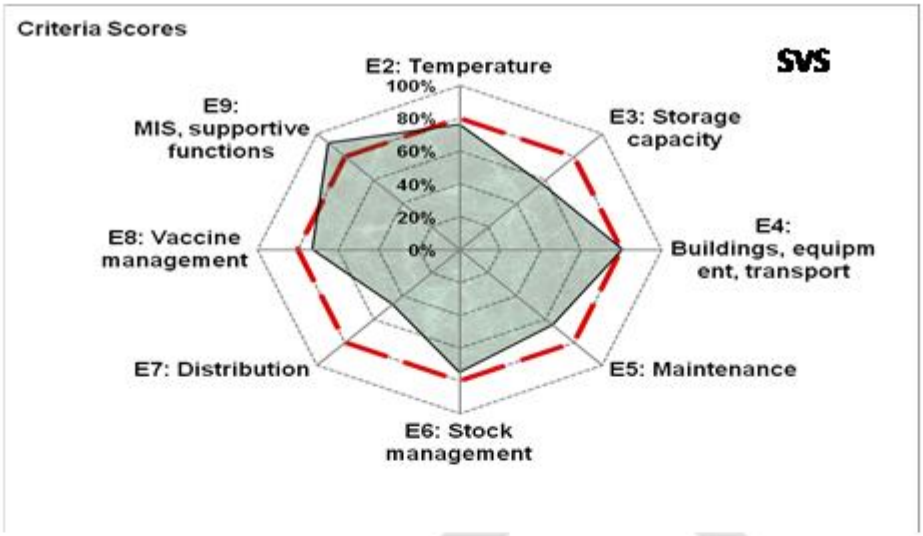


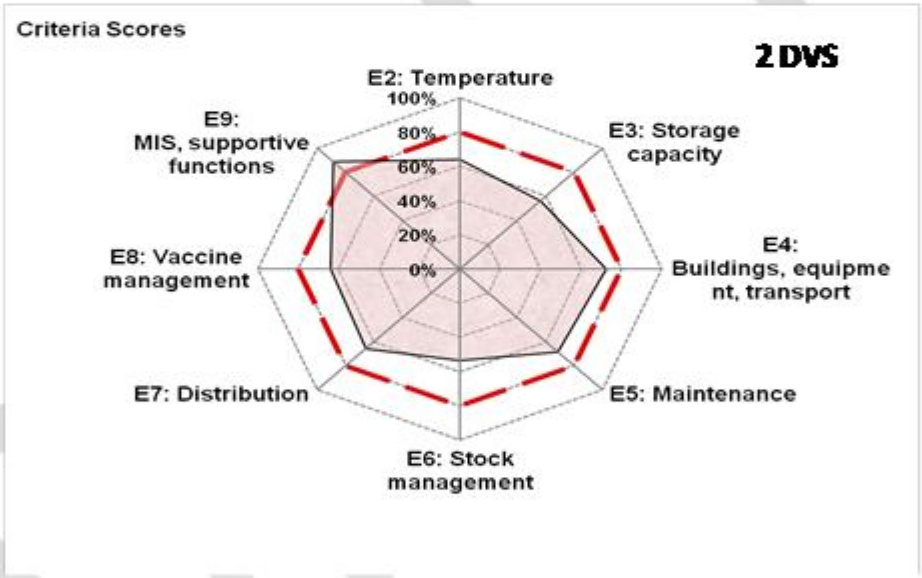
EVM Consolidated graphs for M.P.
Sagar Zone

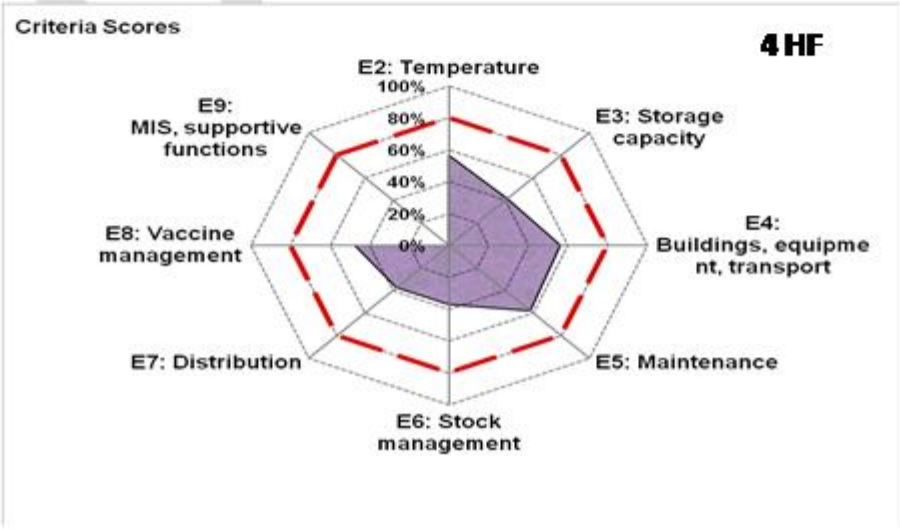




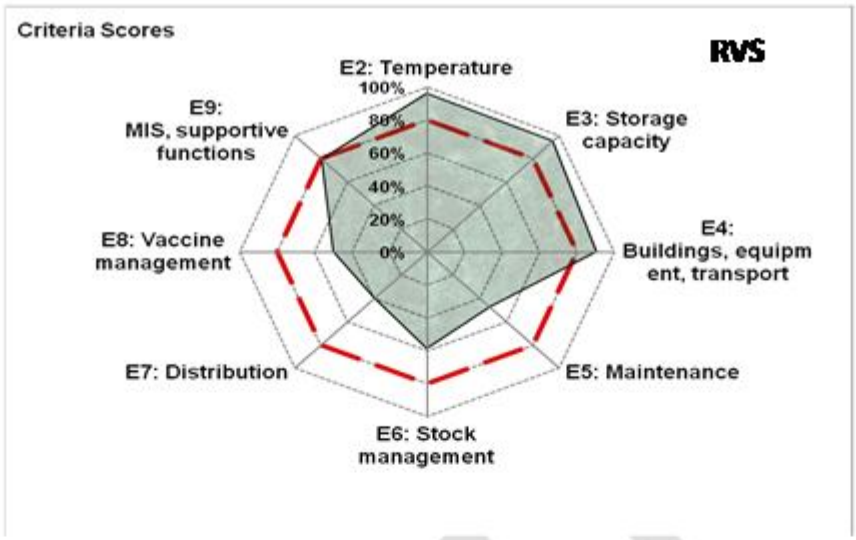
EVM Consolidated graphs for M.P.
Indore Zone

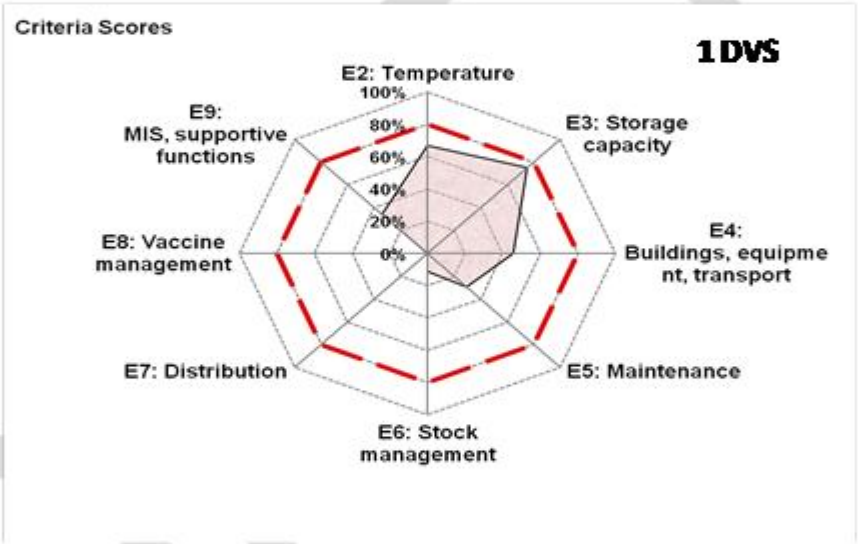


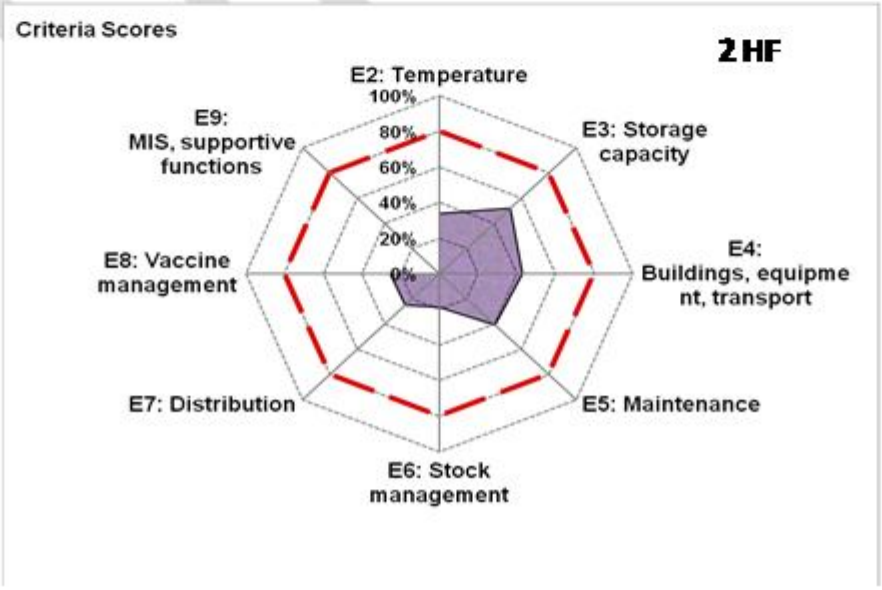




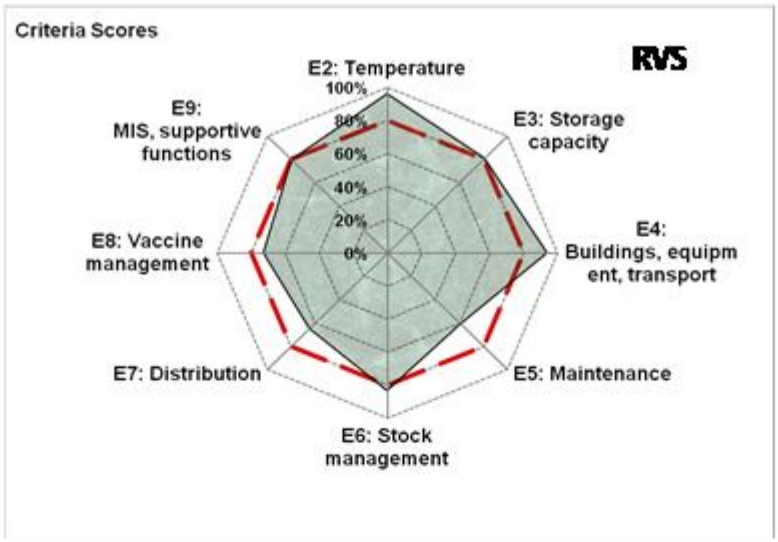
EVM Consolidated graphs for M.P. Ratlam Zone

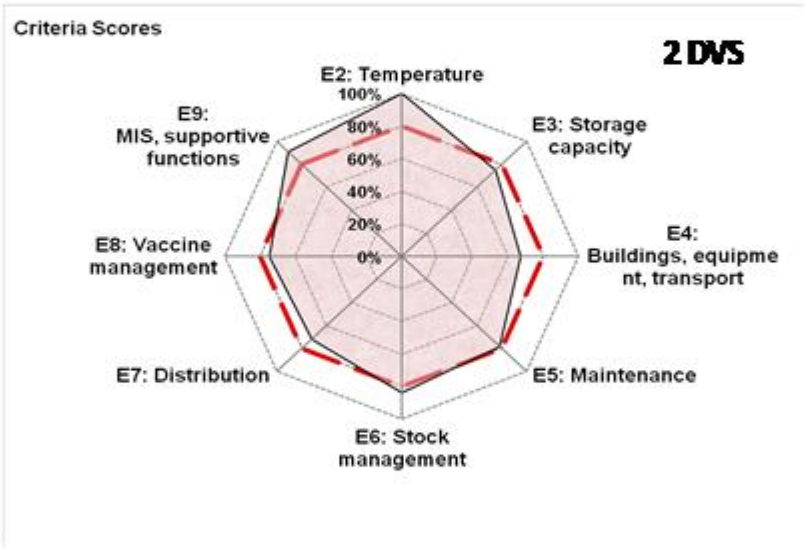


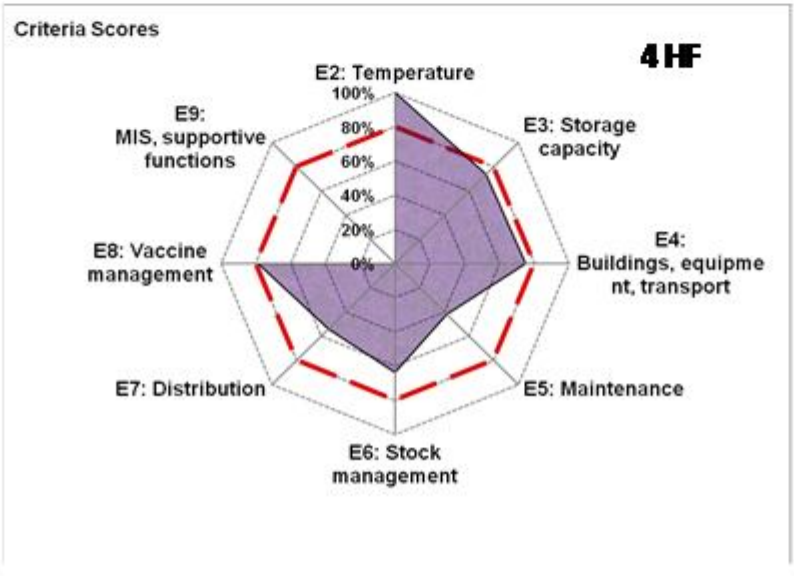




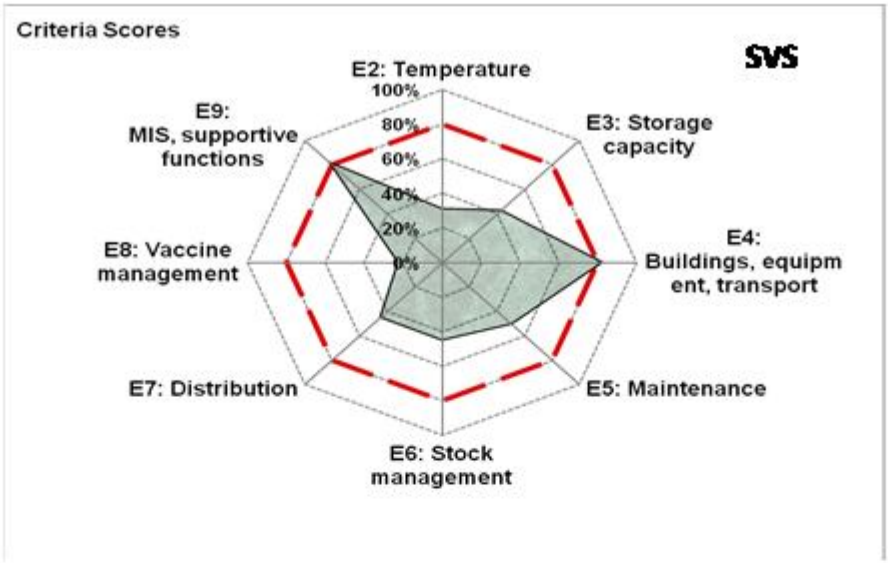
EVM Consolidated graphs for M.P.
Ujjain Zone

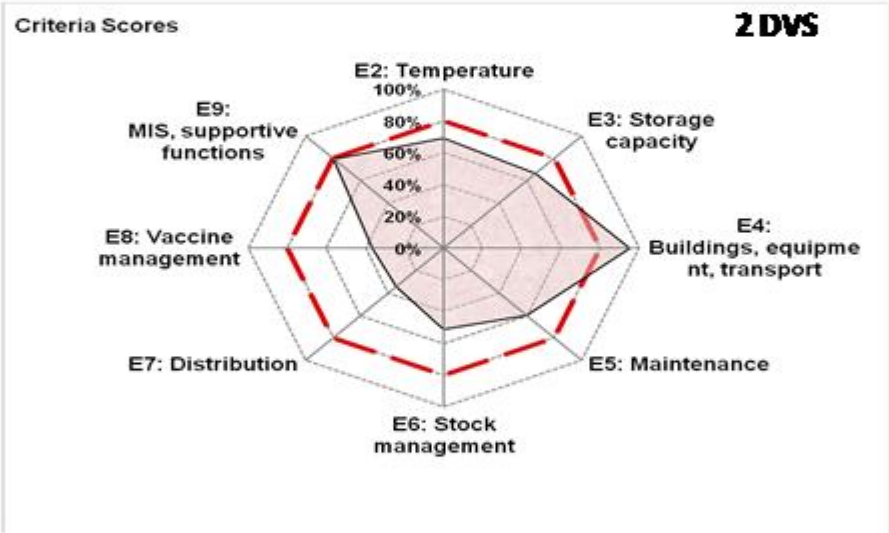


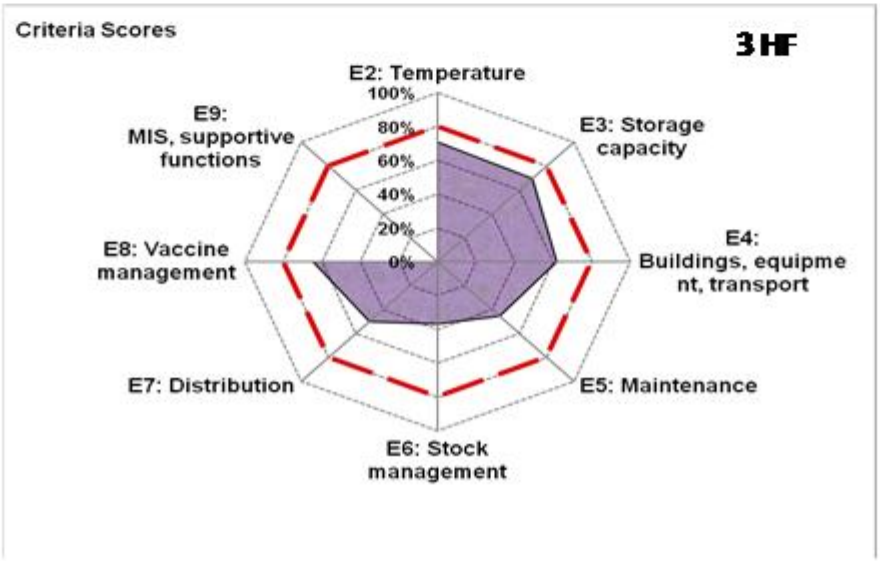




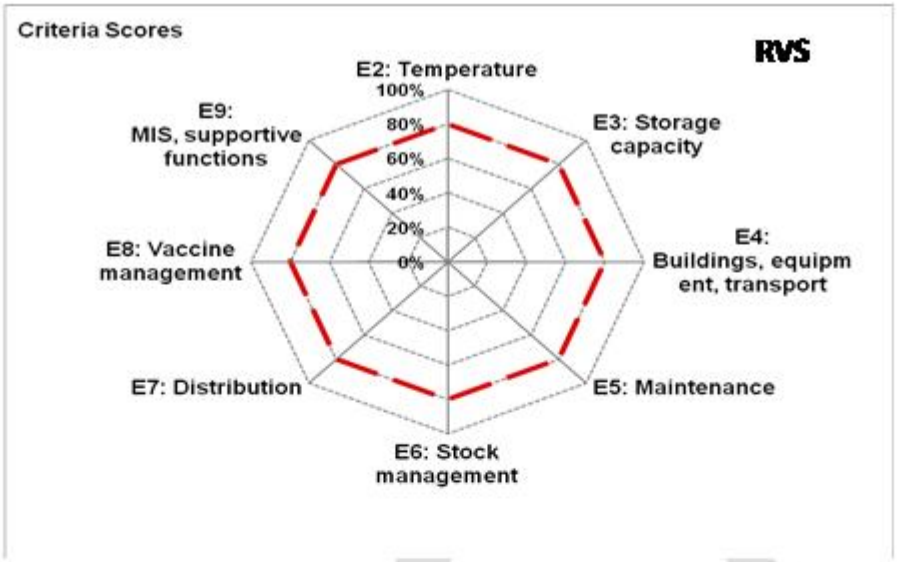
EVM Consolidated graphs for M.P.
Jabalpur Zone

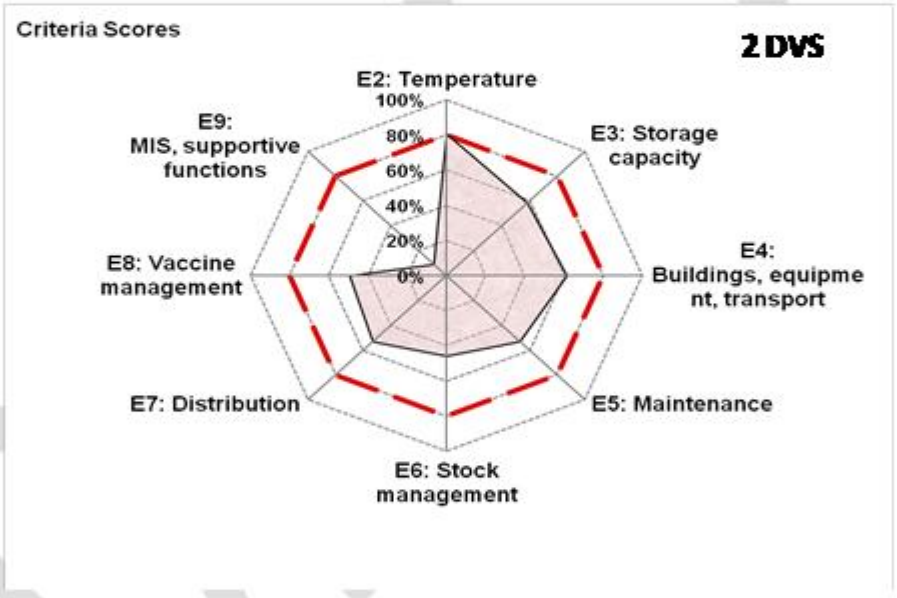


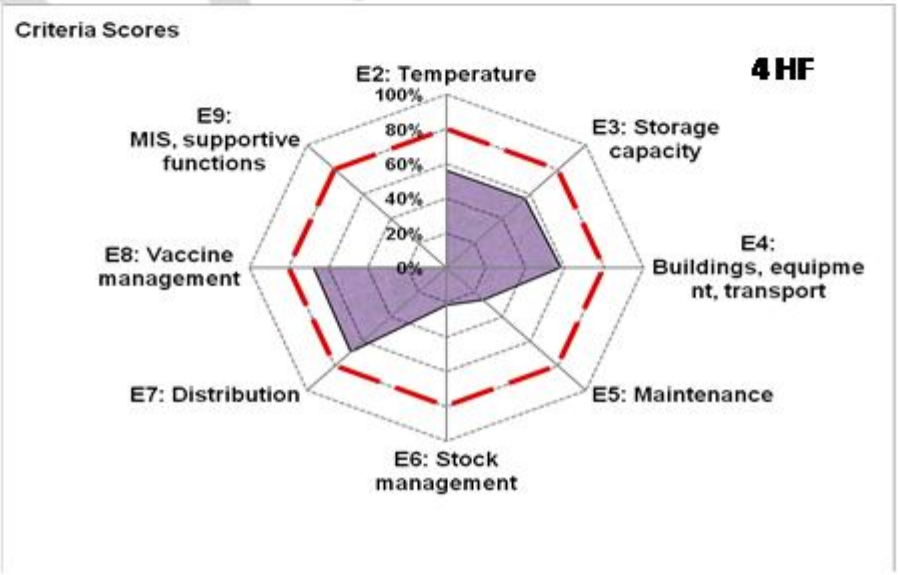




EVM Consolidated graphs for M.P.
Rewa Zone







Annexure I – Detailed performance score of EVM Assessment

		CRITERIA	E1: Vaccine arrival	E2: Temperature Monitoring	E3: Storage capacity	E4: Buildings, equipment, transport	E5: Maintenance	E6: Stock management	E7: Distribution	E8: Vaccine management	E9: MIS, Supportive functions
		No.	E1	E2	E3	E4	E5	E6	E7	E8	E9
SVS	Bhopal	1	48%	39%	17%	55%	15%	61%	85%	74%	66%
	Gwalior	1	48%	67%	86%	79%	39%	72%	11%	61%	82%
	Indore	1	72%	76%	57%	81%	65%	75%	47%	73%	92%
	Jabalpur	1	30%	31%	43%	83%	51%	45%	45%	23%	82%
	Average	**4**	50%	53%	51%	74%	42%	63%	47%	57%	81%
RVS	Ratlam	1	0%	96%	95%	91%	48%	59%	40%	50%	80%
	Ujjain	1	0%	96%	81%	94%	61%	83%	65%	73%	80%
	Rewa	1	0%	19%	0%	41%	0%	2%	0%	45%	0%
	Average	**3**	0%	71%	59%	75%	36%	48%	35%	56%	53%
DVS	Bhopal	3	0%	100%	50%	53%	63%	41%	55%	69%	74%
	Gwalior	3	0%	82%	56%	66%	50%	50%	33%	30%	64%
	Sagar	3	0%	77%	56%	69%	57%	48%	35%	48%	71%
	Indore	2	0%	64%	56%	72%	68%	53%	66%	64%	89%
	Ratlam	1	0%	67%	75%	46%	29%	11%	0%	0%	34%
	Ujjain	2	0%	100%	75%	67%	78%	84%	72%	75%	91%
	Jabalpur	2	0%	69%	67%	95%	60%	51%	34%	36%	80%
	Rewa	2	0%	81%	58%	61%	53%	46%	53%	49%	9%
	Average	**18**	0%	80%	62%	66%	57%	48%	43%	46%	64%
CHC & PHC	Bhopal	6	0%	93%	75%	88%	54%	44%	78%	73%	0%
	Gwalior	4	0%	58%	63%	62%	41%	47%	6%	57%	0%
	Sagar	4	0%	65%	58%	53%	31%	31%	21%	49%	0%
	Indore	4	0%	57%	42%	56%	58%	37%	38%	47%	0%
	Ratlam	2	0%	34%	52%	43%	41%	19%	25%	26%	0%
	Ujjain	4	0%	100%	74%	75%	42%	64%	54%	79%	0%
	Jabalpur	3	0%	71%	69%	62%	45%	37%	50%	65%	0%
	Rewa	4	0%	56%	56%	58%	26%	22%	69%	68%	0%
	Average	**31**	0%	67%	61%	62%	42%	38%	43%	58%	0%

Annexure J – Institution wise Supportive Supervision

Training/ Demonstration	**DVS –** Sehore, Singroli & Rewa	• Demonstration on how to do shake test • Demonstration and training of defrosting Ice pack conditioning • Trained on Correct way to calculate the temperature using thermometer • One more Thermometer supplied and how to conduct shake test • Photocopy of temp log book provided and storekeeper was provided training to on how to see temperature and to keep a record of it
	DVS – Seoni & Jabalpur	• Provided on the spot orientation of VVM status • Emergency contact details prepared & pasted on the wall.
	CHC- Shyampur, Budhni, Sukhtava, Suhagpur & Morar **PHC-** Umarkot	• Taught the use of Zero dose and exactly when it should be administered i.e. all the three should be administered within 24 hours of birth. • The proper way of Shake test ,VVM these process were taught
Records Maintenance/ Posters	**DVS -** Satna, Sagar, Tikmgarh & Damoh	• Temperature Records • One copy of vaccine calculation and vaccine storing capacity in litres in ILR is given and ILR storing capacity is explained
	DVS – Badwani	• Calculation of vaccine for SIA & routine Immunization. • Write down VVM and every issue Boucher
	CHC- Shyampur, Budhni, Sukhtava, Suhagpur & Morar	• Presentation of charts related to Safe disposal pit • How to maintain stock register (record of diluents, VVM status)
Vaccine Waste Disposal/Control	**DVS -** Satna	• Monovalent OPV of expiry Feb 2010 was removed from deep freezer and disposed as per guidelines.
	DVS – Jhabua	• Separated expired vaccine from the store and asked DIO to discard and dispose the vaccines
	PHC- Kulgarhi	• OPV vials are transferred in ILR
	RVS – Indore	• Clean condensing unit by blower
	RVS – Ratlam	• Started updating the records including of syringes in the stock register • Request is forwarded to DIO to start the process of write off for Condemnation

Repairing /Cleaning		
	DVS – Jhabua	• Complete makeover of the store with permission of with DIO and CMHO, support 6 labourers from market and got the room clean • Got the store ready to wok and make it completely new. • Handed over the tool kit to Ref. Mech. • Supervised to correct the electrical fitting
	CHC- Shyampur, Budhni, Sukhtava, Suhagpur & Morar **PHC**- Umarkot	• Stabilizer repair at site • power socket change • Cleaning of compressor • Cleaning of Door Gasket
	PHC- Angadh	• ILR gate hinge repair by refrigerator mechanic during team visit
	PHC- Bokrata	• Instructed refrigerator mech. To Collect solar refrigerator from Indore joint director already received and instruct to MO, install solar refrigerator after ILR and deep freezer transfer to the district for other PHC users.
	PHC- Umarkot	• Asked Mr. BMO to get the electric board repaired and get the equipment installed into the room and assigned Ref. Mech. • To perform the duty within a week.
	PHC- Unhel	• Repairing for CC room roof
	CHC – Jeerapur	• Suggested keep well maintain generator and connect to the cold chain room
	CHC- Sihora	• Set the temperature of thermostat • Electrician installed the exhaust fan. • Electrician fitted the electric main box properly & open wiring concealed on the spot. • Basket painted on the spot
	CHC- Maihar	ILR was connected through Voltage stabilizer

Annexure K – Walk-in Freezer Rooms and Cold Rooms (WIC & WIF)

S. No.	Position	WIC			WIF		
		Qty.	Capacity	Manufacturer	Qty.	Capacity	Manufacturer
1	Bhopal Division	2	16 m^3	A. Freeze King - 2003 B. Blue Star - 2010	1	33 m^3	Freeze King - 2005
2	Indore Division	2	A.33 m^3 B.16 m^3	A. Huray - 1986 B. Blue Star - Under Process	1	16 m^3	Blue Star - Under Process
3	Ujjain Division	1	33 m^3	Freeze King - 2002 1/1/2002	1		
4	Ratlam District	2	A.33 m^3 B.16 m^3	A. Huray - 1989 B. Blue Star - Under Process			
5	Jabalpur Division	2	A.33 m^3 B.16 m^3	A. Foster - 1986 B. Huray - 2008	1	16 m^3	Blue Star - Under Process
6	Gwalior Division	2	A.33 m^3 B.16 m^3	A.Foster - 1986 B. Blue Star - 2010	1	16 m^3	Freeze King - 2005
7	Rewa Division	1	16 m^3	Blue Star - 2010			
8	Sagar Division	1	16 m^3	Blue Star - 2010			

Annexure L – Status of Cold Chain equipment in MP

S.No.	Div.	Division / District	Total Focal Point	I.L.R.						Deep Freezer							Stabilizers			Generators
				Small	Lrg.	Tot.	Intr.	Repr.	Pack	Small	Lrg.	Tot.	Intr.	Repr.	Pack	Other	Tot.	O/o	Pack	
1	Bhopal	Bhopal J.D.	2	0	6	6				0	10	10	2		4		20	0	4	7
2		Bhopal	32	35	10	45				25	10	35					0	3	3	6
3		Sehore	21	29	4	33	8	1	2	31	6	37	8			2	54	28	0	8
4		Vidisha	15	45	6	51	4			37	9	46	5				0	2	0	6
5		Raisen	21	32	8	40	11			30	9	39	12				0	7	4	9
6		Hoshangabad	15	29	3	32			20	25	6	31			6	14	58	3	0	8
7		Betul	13	36	4	40	21		4	40	6	46	18		1	8	47	26		13
8		Harda	5	12	8	20	9	1		15	9	24	4				0			3
9		Rajgarh	17	23	4	27	11	1		23	4	27	9	3			0			12
Total			**141**	**241**	**53**	**294**	**64**	**3**	**26**	**226**	**69**	**295**	**58**	**3**	**11**	**24**	**179**	**69**	**11**	**72**
1	Indore	Indore J.D.	1	0	0	0			2	0	5	5			2		0	0	2	3
2		Indore	34	31	3	34				19	15	34					42	20	0	10
3		Dhar	48	56	5	61				55	8	63					0	10	0	20
4		Khandwa	20	19	3	22	1		2	20	2	22	4		2		0			8
5		Jhabua	46	50	8	58				49	7	56	30	2			90	24	0	2
6		Barwani	35	41	6	47				31	12	43				3	51	34	20	10
7		Khargone	40	45	7	52	6			40	9	49	6				0			5
8		Bhuranpur	13	17	2	19				14	2	16			1		0			1
9		Alirajpur	17	24	4	28				24	2	26					32			2
Total			**254**	**283**	**38**	**321**	**7**		**4**	**252**	**62**	**314**	**40**	**2**	**5**	**3**	**215**	**88**	**22**	**61**

S.No.	Div.	Division / District	Total Focal Point	I.L.R.						Deep Freezer							Stabilizers			Generators
				Small	Lrg.	Tot.	Intr.	Repr.	Pack	Small	Lrg.	Tot.	Intr.	Repr.	Pack	Other	Tot.	O/o	Pack	
1	Ujjain	Ujjain J.D.	1	0	0	0				0	0	0					0			1
2		Ujjain	28	37	7	44			5	24	14	38		4	3		53	45	2	28
3		Dewas	23	16	4	20	21					0					0			5
4		Shajapur	20	40	6	46	10	2	4	34	8	42	11	2			0			9
5		Mandosaur	22			0						0					0			7
6		Neemuch	11	22	5	27				19	9	28	1			10	35	6	0	7
7		Ratlam	27	27	8	35				22	10	32	15				42	24	0	7
Total			**132**	**142**	**30**	**172**	**31**	**2**	**9**	**99**	**41**	**140**	**27**	**6**	**3**	**10**	**130**	**75**	**2**	**64**
1	Sagar	Sagar J.D.	1	0	0	0				0	0	0					0			1
2		Sagar	30	55	11	66	30	2		51	6	57	13				0			7
3		Panna	14	30	4	34	12	2		25	8	33	13	2			0			7
4		Damoh	15	22	2	24	7	1		29	11	40	2	3			0			8
5		Tikkamgarh	17	30	4	34	9	1		27	9	36	5	2		11	49	17	0	7
6		Chattarpur	30	34	3	37	24			26	7	33	14			21	109	55	0	9
Total			**107**	**171**	**24**	**195**	**82**	**6**		**158**	**41**	**199**	**47**	**7**		**32**	**158**	**72**	**0**	**39**
1	Jabalpur	Jabalpur J.D.	1	0	0	0			5	7	6	13	13	2		0	0	0	0	2
2		Jabalpur	23	27	8	35				17	7	24	8			5	50	10	0	6
3		Seoni	22	36	2	38				32	11	43				5	109	0	0	9
4		Mandla	23	33	5	38				16	10	26	1	1		4	54	0	0	5
5		Narsinghpur	22	30	4	34	3			22	9	31	6				0	0	0	7
6		Katni	15	47	4	51	10	1		31	10	41	12	1			0	0	0	7
7		Chhindwara	45	55	5	60	16	2	1	36	10	46	17	1		3	83	7	0	13
8		Balghat	19	38	4	42	10	1		35	3	38	3	1			0	0	0	9
9		Dindori	10	14	7	21	1	1		12	8	20		1			0	0	0	7
Total			**180**	**280**	**39**	**319**	**40**	**5**	**6**	**208**	**74**	**282**	**60**	**7**		**17**	**296**	**17**	**0**	**65**

ANNEXURE to EVM Mission Report

S.No.	Div.	Division / District	Total Focal Point	I.L.R.						Deep Freezer							Stabilizers			Generators
				Small	Lrg.	Tot.	Intr.	Repr.	Pack	Small	Lrg.	Tot.	Intr.	Repr.	Pack	Other	Tot.	O/o	Pack	
1	Gwalior	Gwalior J.D.	3			0						0					0	0	0	3
2		Gwalior	32	29	7	36	7	1		23	6	29	12	1			67	5	0	7
3		Morena	14	26	5	31		1		23	4	27				33	55	0	0	6
4		Bhind	16	31	5	36	1			33	8	41	13	2			0			9
5		Ditia	13	20	3	23	2	2		17	6	23					0			7
6		Guna	21	27	7	34				22	11	33				45	70			5
7		Sheopur Kala	6	16	3	19	3	1	4	14	4	18	1		2		29	5	0	6
8		Ashok Nagar	11	19	3	22	3	1		17	5	22	2				0	5	0	4
9		Shivpuri	18	36	7	43	3	1		26	7	33	14	1			0	31	0	14
Total			**134**	**204**	**40**	**244**	**19**	**7**	**4**	**175**	**51**	**226**	**42**	**4**	**2**	**78**	**221**	**46**	**0**	**61**
1	Rewa	**Rewa J.D.**	**1**	**0**	**0**	**0**				**0**	**0**	**0**			**0**		**0**	**0**	**0**	**1**
2		Rewa	19	25	2	27	9	2		21	2	23	7	1			0	0	0	15
3		Satna	29	30	4	34	26	1		28	7	35	31			22	80	0	0	9
4		Shahadol	16	17	4	21	28	1		17	4	21	28	2	0		0	0	0	6
5		Umariya	13	12	2	14	11	2		12	2	14	12	1			0	0	0	5
6		Sidhi	18	27	3	30	18	2		27	7	34	18	2			0	0	0	10
7		Anupur	15	12	1	13	6	1		12	2	14	6	1			0	0	0	4
Total			**111**	**123**	**16**	**139**	**98**	**9**		**117**	**24**	**141**	**95**	**7**	**0**	**22**	**80**	**0**	**0**	**50**
Total for M.P. State			**1,059**	**1,444**	**240**	**1,684**	**341**	**32**	**49**	**1,235**	**362**	**1,597**	**369**	**36**	**21**	**186**	**1279**	**367**	**35**	**412**

Annexure M – Estimation of total storage space required at 8 RVS and 50 DVS

					BCG	Measles	DTP	HepB	TT	TT		OPV
Ref.	District	<1 year population	Expected Pregnancies	Nos. of EPI sessions per month	at birth	at 9 months	at 6, 10 & 14 weeks	at 6,10 & 14 weeks	Expected preg-nancies	10 & 14 Yrs	Total Required at +2 to +8 C	Total Required at -15 to -20 C
					Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs
D1	MORENA	50,285	55,314	192	18.4	134.1	335.2	268.2	147.5	134.1	**1,038**	**223.5**
D2	BHIND	42,864	47,151	150	14.4	114.3	285.8	228.6	125.7	114.3	**883**	**190.5**
D3	SHEOPUR	18,483	20,331	175	16.8	49.3	123.2	98.6	54.2	49.3	**391**	**82.1**
D4	GWALIOR	52,377	57,615	250	24.0	139.7	349.2	279.3	153.6	139.7	**1,086**	**232.8**
D5	DATIA	19,565	21,521	235	22.6	52.2	130.4	104.3	57.4	52.2	**419**	**87.0**
D6	SHIVPURI	46,696	51,366	335	32.2	124.5	311.3	249.0	137.0	124.5	**979**	**207.5**
D7	GUNA	31,648	34,813	168	16.1	84.4	211.0	168.8	92.8	84.4	**658**	**140.7**
D8	ASHOKNAGAR	22,319	24,551	217	20.8	59.5	148.8	119.0	65.5	59.5	**473**	**99.2**
R1	**Gwalior Division**	**284,238**	**312,662**	**1722**	**165.3**	**758.0**	**1894.9**	**1515.9**	**833.8**	**758.0**	**5,926**	**1263.3**
D9	TIKAMGARH	39,186	43,105	489	46.9	104.5	261.2	209.0	114.9	104.5	**841**	**174.2**
D10	CHHATARPUR	47,856	52,642	228	21.9	127.6	319.0	255.2	140.4	127.6	**992**	**212.7**
D11	PANNA	27,076	29,783	525	50.4	72.2	180.5	144.4	79.4	72.2	**599**	**120.3**
D12	SAGAR	63,410	69,751	373	35.8	169.1	422.7	338.2	186.0	169.1	**1,321**	**281.8**
D13	DAMOH	33,363	36,700	234	22.5	28.1	222.4	177.9	97.9	56.2	**605**	**148.3**
R2	**Sagar Division**	**210,892**	**231,981**	**1849**	**177.5**	**221.9**	**1405.9**	**1124.8**	**618.6**	**443.8**	**3,992**	**937.3**
D14	SATNA	60,723	66,795	482	46.3	57.8	404.8	323.9	178.1	115.7	**1,127**	**269.9**

ANNEXURE to EVM Mission Report

					BCG	Measles	DTP	HepB	TT	TT		OPV
Ref.	District	<1 year population	Expected Pregnancies	Nos. of EPI sessions per month	at birth	at 9 months	at 6, 10 & 14 weeks	at 6,10 & 14 weeks	Expected preg-nancies	10 & 14 Yrs	Total Required at +2 to +8 C	Total Required at -15 to -20 C
					Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs
D15	REWA	63,755	70,131	432	41.5	170.0	425.0	340.0	187.0	170.0	**1,334**	**283.4**
D16	SHAHDOL	27,599	30,359	220	21.1	73.6	184.0	147.2	81.0	73.6	**580**	**122.7**
D17	SINGROLI	31,137	34,250	220	21.1	83.0	207.6	166.1	91.3	83.0	**652**	**138.4**
D18	SIDHI	30,832	33,915	189	18.1	82.2	205.5	164.4	90.4	82.2	**643**	**137.0**
D19	UMARIA	16,167	17,784	311	29.9	43.1	107.8	86.2	47.4	43.1	**358**	**71.9**
D20	ANUPPUR	20,318	22,350	385	37.0	54.2	135.5	108.4	59.6	54.2	**449**	**90.3**
R3	**Rewa Division**	**250,531**	**275,585**	**2239**	**214.9**	**668.1**	**1670.2**	**1336.2**	**734.9**	**668.1**	**5,292**	**1113.5**
D21	JABALPUR	67,901	74,691	250	24.0	181.1	452.7	362.1	199.2	181.1	**1,400**	**301.8**
D22	NARSINGHPUR	29,828	32,810	252	24.2	79.5	198.9	159.1	87.5	79.5	**629**	**132.6**
D23	MANDLA	26,351	28,986	220	21.1	70.3	175.7	140.5	77.3	70.3	**555**	**117.1**
D24	CHHINDWARA	55,887	61,476	182	17.5	149.0	372.6	298.1	163.9	149.0	**1,150**	**248.4**
D25	SEONI	34,869	38,356	250	24.0	93.0	232.5	186.0	102.3	93.0	**731**	**155.0**
D26	BALAGHAT	46,414	51,055	156	15.0	123.8	309.4	247.5	136.1	123.8	**956**	**206.3**
D27	KATNI	32,846	36,130	197	18.9	87.6	219.0	175.2	96.3	87.6	**685**	**146.0**
D28	DINDORI	16,872	18,560	22	165.3	758.0	1894.9	1515.9	833.8	758.0	**5,926**	**1263.3**
R4	**Jabalpur Division**	**310,968**	**342,065**	**1529**	**146.8**	**829.2**	**2073.1**	**1658.5**	**912.2**	**829.2**	**6,449**	**1382.1**
D29	JHABUA	24,744	27,219	109	10.5	66.0	165.0	132.0	72.6	66.0	**512**	**110.0**

					BCG	Measles	DTP	HepB	TT	TT		OPV
Ref.	District	<1 year population	Expected Pregnancies	Nos. of EPI sessions per month	at birth	at 9 months	at 6, 10 & 14 weeks	at 6,10 & 14 weeks	Expected preg-nancies	10 & 14 Yrs	Total Required at +2 to +8 C	Total Required at -15 to -20 C
					Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs
D30	ALIRAJPUR	19,253	21,178	162	15.6	51.3	128.4	102.7	56.5	51.3	**406**	**85.6**
D31	DHAR	56,471	62,118	229	22.0	150.6	376.5	301.2	165.6	150.6	**1,166**	**251.0**
D32	INDORE	92,043	101,247	215	20.6	245.4	613.6	490.9	270.0	245.4	**1,886**	**409.1**
D33	KHARGONE	49,863	54,850	220	21.1	133.0	332.4	265.9	146.3	133.0	**1,032**	**221.6**
D34	KHANDWA	32,950	36,245	285	27.4	87.9	219.7	175.7	96.7	87.9	**695**	**146.4**
D35	BARWANI	35,724	39,297	177	17.0	95.3	238.2	190.5	104.8	95.3	**741**	**158.8**
D36	BURHANPUR	19,409	21,350	245	23.5	51.8	129.4	103.5	56.9	51.8	**417**	**86.3**
R5	**Indore Division**	**330,456**	**363,502**	**1642**	**157.6**	**881.2**	**2203.0**	**1762.4**	**969.3**	**881.2**	**6,855**	**1468.7**
D37	RATLAM	38,749	42,624	69	6.6	103.3	258.3	206.7	113.7	103.3	**792**	**172.2**
D38	MANDSAUR	37,368	41,105	79	7.6	99.6	249.1	199.3	109.6	99.6	**765**	**166.1**
D39	NEEMUCH	22,490	24,739	143	13.7	60.0	149.9	119.9	66.0	60.0	**470**	**100.0**
D40	UJJAIN	53,998	59,398	92	8.8	144.0	360.0	288.0	158.4	144.0	**1,103**	**240.0**
D41	SHAJAPUR	41,110	45,221	111	10.7	109.6	274.1	219.3	120.6	109.6	**844**	**182.7**
D42	DEWAS	42,118	46,330	91	8.7	112.3	280.8	224.6	123.5	112.3	**862**	**187.2**
R6	**Ujjain Division**	**235,833**	**259,416**	**585**	**56.2**	**628.9**	**1572.2**	**1257.8**	**691.8**	**628.9**	**4,836**	**1048.1**
D43	RAJGARH	40,334	44,367	230	22.1	107.6	268.9	215.1	118.3	107.6	**840**	**179.3**
D44	VIDISHA	38,809	42,689	171	16.4	103.5	258.7	207.0	113.8	103.5	**803**	**172.5**

ANNEXURE to EVM Mission Report

					BCG	Measles	DTP	HepB	TT	TT		OPV
Ref.	District	<1 year population	Expected Pregnancies	Nos. of EPI sessions per month	at birth	at 9 months	at 6, 10 & 14 weeks	at 6,10 & 14 weeks	Expected preg-nancies	10 & 14 Yrs	Total Required at +2 to +8 C	Total Required at -15 to -20 C
					Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs	Ltrs
D45	BHOPAL	63,295	69,625	207	19.9	168.8	422.0	337.6	185.7	168.8	**1,303**	**281.3**
D46	SEHORE	35,233	38,757	181	17.4	94.0	234.9	187.9	103.4	94.0	**731**	**156.6**
D47	RAISEN	36,462	40,108	190	18.2	97.2	243.1	194.5	107.0	97.2	**757**	**162.1**
D48	BETUL	42,246	46,470	225	21.6	112.7	281.6	225.3	123.9	112.7	**878**	**187.8**
D49	HOSHANGABAD	33,949	37,344	204	19.6	90.5	226.3	181.1	99.6	90.5	**708**	**150.9**
D50	HARDA	15,068	16,575	127	12.2	40.2	100.5	80.4	44.2	40.2	**318**	**67.0**
R7	**Bhopal Division**	**305,396**	**335,935**	**1535**	**147.4**	**814.4**	**2036.0**	**1628.8**	**895.8**	**814.4**	**6,337**	**1357.3**
N	**Madhya Pradesh**	**1,928,314**	**2,121,146**	**11101**	**1065.7**	**5142.2**	**12855.4**	**10284.3**	**5656.4**	**5142.2**	**40,146**	**8570.3**

Annexure N – Summary of Status at 18 DVS

Parameter	BHOPAL	SEHORE	HOSANGABAD	GWALIOR	SHIVPURI	GUNA	DAMOH	TIKAMGARH	SAGAR	BARWANI	ALIRAJPUR	JHABUA	UJJAIN	RAJGARH	JABALPUR	SEONI	SATANA	SINGROLI	SUMMARY
Vaccine store not shared	Y	Y	Y	Y	Y	Y	Y	Y	N	y	Y	N	N	N	Y	Y	Y	Y	**14**
Vaccine Store status Good	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y	Y	Y	Y	N	N	**13**
Repairing space available	N	N	Y	N	Y	N	N	N	N	N	N	N	Y	N	Y	Y	N	N	**5**
dry store not shared	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	Y	Y	Y	Y	**5**
Sufficient dry space	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	N	N	**13**
Vaccine Vehicles available	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	N	**14**
Manual temp records maintained	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	**16**
Generator working	Y	N	Y	N	N	Y	Y	Y	N	Y	N	N	N	Y	Y	Y	Y	Y	**11**
Is the DIO Posted?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	**18**
Infra structure support to DIOs		Y	Y	Y	N	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	N	N	**10**
Is there Vaccine Storekeeper	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	**18**
Refrigerator Mechanic	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	N	**14**
ILRS working	2	4	3	4	6	10	6	6	9	6	3	4	3	5	13	17	4	3	**106**
ILR awaiting repair	0	0	0	0	0	0	0	1	5	1	0	0	24	2	0	0	7	0	**40**
DF working condition	2	2	3	2	3	4	7	9	8	6	3	4	5	2	6	7	2	4	**77**
DF awaiting repair	0	0	0	0	0	0	0	1	0	0	0	0	30	0	1	0	0	0	**32**
Condemned equipment	0	0	0	0	28	0	6	9	35	46	0	54	5	5	3	3	43	1	**238**
Stabilizers working condition	2	4	7	6	9	10	6	11	12	12	6	5	8	5	10	13	3	6	**133**
Stabilizers awaiting repair	0	20	0	0	0	0	2	2	35	0	0	17	43	5	0	0	20	0	**144**
Stabilizers condemned	0	15	18	0	0	0	0	0	0	36	0	17	10	5	5	0	0	0	**106**

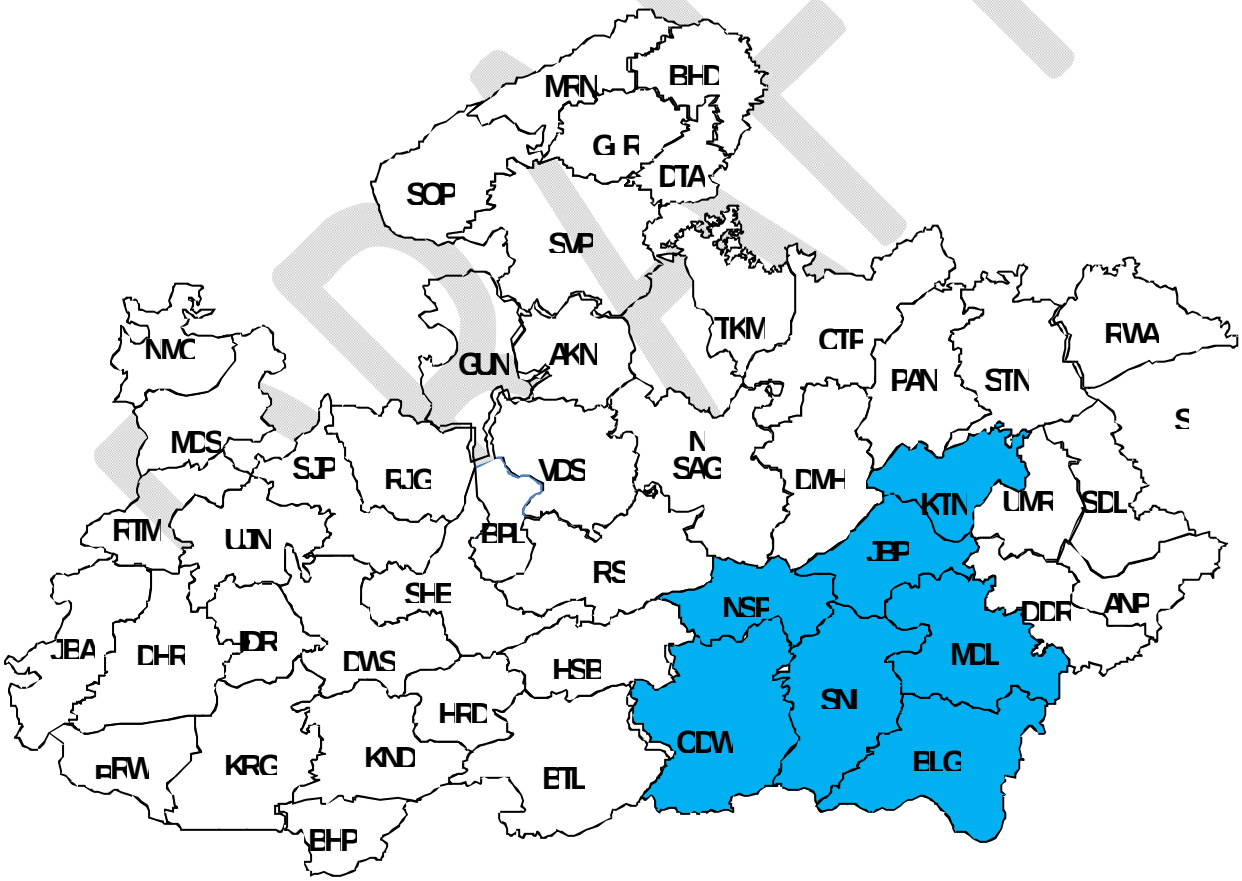
Annexure O – Summary Report of EVM Assessment in Jabalpur Division

The Effective Vaccine Management Assessment cum training of Jabalpur Division was conducted as a follow up of the EVM assessment of the state. The reasons for this were:

1) Most recommendations required action at Block level, District level and Divisional level
2) Need was felt for orienting all DIOs on Cold Chain and Vaccine Logistic Management
3) Active involvement was needed of the CMHO and Program managers for implementation of recommendations
4) Monitoring and supervision is required after implementation necessary for sustainable results.

Hence the Effective Vaccine Management assessment cum training was conducted in the Jabalpur division as a joint effort by UNICEF, Joint Director Health Jabalpur and Principal RHFWTC Jabalpur.

Dr. Hubbe Ali, Regional immunisation coordinator for Jabalpur division led the process with support of the other two persons trained in the Jabalpur division



The EVM assessment of Jabalpur Division was a 5 day activity. Total 18 Cold Chain stores comprising of 1 RVS, 6 DVS and 11 Health Facilities were assessed. Assessment period was from 1st November 2009 to 31st October 2010. The entire training was conducted by Divisional Immunization and CH Coordinator Jabalpur (Dr. Syed Hubbe Ali). The training was given to 15 participants who included the following:

1) 7 District Immunization Officers of Jabalpur Division
2) 1 senior Doctor from one of the District

3) 1 Divisional Program Manager Jabalpur Division
4) 1 Divisional Refrigerator Mechanic Jabalpur Division
5) 1 Divisional Storekeeper Jabalpur Division
6) 2 Divisional Logistic Managers
7) 2 District Ref. Mechanics

The 5 day activity was divided into following components

1) DAY 1 and DAY 2: Class Orientation and training
2) DAY 3 and DAY 4: Field assessment
3) DAY 5: Dissemination meeting

During Day 1 and Day 2 Class activity the following things were covered:

1) Pre-test
2) Theory and Practical sessions on Cold Chain and vaccine Logistic Management
3) Hands on Practice of assessment of RVS Jabalpur
4) Post test

For Field assessment on day 3 and Day 4, six teams were made. Each team comprised of one DIO and one DPM/DLM/Ref. Mechanic. Each team assessed 1 DVS and 2 Health Facility. The districts that were assessed were Katni, Mandla, Balaghat, Chhindwara, Dindori and Narsinghpur. The remaining two districts of Jabalpur Division i.e. Jabalpur and Seoni were not included as they were assessed during EVM Bhopal. Care was taken that no person working in parent district was sent to same district for assessment.

ASSESSMENT

All 9 Global criteria of EVM assessed

During the Field assessments following activities were done by each team:

1) Assessment was done in hard copies
2) Supportive Supervision provided on the spot
3) Corrective actions where necessary were taken
4) Cleaning of all stores where assessment was done
5) The CMHO of each district were given orientation for Cold Chain and Vaccine Logistic Management.
6) Training and skills for vaccine management imparted to storekeepers.

The dissemination meeting on Day 5 was headed by Joint Director Health Jabalpur division. Each team presented its findings in the following form:

1) Strengths
2) Weaknesses
3) Supportive Supervision provided
4) Recommendations

TEMPERATURE MONITORING

STRENGHT	WEAKNESS
Manual Temperature recorded at most places	Most storekeepers does not know how to read thermometer
	No standardized temperature record book
	No thermometer in some ILR and DF (e.g. DVS Chhindwara)
	No monitoring of temperature by BMO/MO
	No Emergency Vaccine Management plan at any site

No periodic defrosting

STORAGE CAPACITY:
Cold Store and Dry Store

STRENGHT	WEAKNESS
Cold Storage Capacity sufficient at all Health Facility (CHC and PHC)	Vaccine storage capacity for 3 month stock insufficient at DVS
	No dedicated dry storage space at all levels
	Vaccine not stacked properly in ILR at all levels
	Ice Packs are not proper stacked in Deep freezer

BULIDINGS AND TRANSPORT SYSTEM

STRENGHT	WEAKNESS
	DVS has to be shifted to new place at most sites
	Most of DVS Buildings beyond repair
	No dedicated vaccine vehicle at 4 out of 6 DVS
	Vaccine transported in buses
	Even where vehicle exist, they are in very poor condition

COLD CHAIN EQUIPMENT

STRENGHT	WEAKNESS
Sufficient Cold Chain equipment at CHC/PHC	CFC equipment still in use
	ILR converted Deep freezers being used
	Most equipments not attached to voltage stabilizers
	Non availability of Voltage stabilizers
	Number of condemned equipments lying at all DVS awaiting auction
	No separation of UIP vaccines with ARV
	Number of New pet packed equipments awaiting installation
	Generator connection not provided to all Cold Chain equipments

STOCK MANAGEMENT

STRENGTH:

1) Vaccine stock maintained at all sites
2) Diluents stock being maintained at all sites

WEAKNESS

1) No standardized stock register
2) No physical verification of stock
3) No knowledge of Maximum, Minimum and buffer stock
4) Poor micro planning

VACCINE DISTRIBUTION

1) Vaccine distribution haphazard (not as per micro plan)
2) No standard indent form, supply voucher, issue register
3) No knowledge of correct Cold box packing for distribution
4) No knowledge of "Bundling" resulting in mismatch of vaccines and diluents at all levels

TRAINING AND SKILLS

STRENGTH:

1) VVM knowledge good and practiced
2) Conditioning of Ice packs practiced

WEAKNESS:

1) No knowledge of Shake test
2) No knowledge of proper Cold box packing
3) No knowledge of keeping vaccines correctly in ILR and Ice packs in Deep Freezer

Supportive Supervision
PHC Saleemnabad Dist Katni

Before

After

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Knowledge and skills provided

Cold Box Packing

Training

The photos look distorted – pls correct them

The following activities were done as a part of supportive supervision"

1) All stores (where visit was made) cleaned and equipments properly placed
2) Proper electricity wiring made (eg. DVS Katni)
3) Dedicated Dry store space created at most places
4) Vaccines properly kept in ILR and knowledge of same provided
5) Thermometers provided in ILR and DF which were not having (eg. DVS Chhindwara)
6) Vaccine Emergency Plan made and displayed at all sites
7) Demonstration of Shake test and conditioning of ice pack provided
8) Knowledge of Defrosting provided
9) Correct method of placing vaccines in Cold box demonstrated

10) Knowledge about immunization waste provided

The following Recommendations were made:

1) Cold Chain Handling Training must for Storekeepers and Ref. Mechanic at all levels
2) Re-fitting of electricity lining at all sites
3) Provision of Voltage stabilizer
4) Auction of condemned equipments at the earliest
5) Dedicated vaccine van required at most DVS
6) Standardized Stock register, indent form, supply voucher, issue register required
7) Stock has to be managed as per Maximum-minimum stock management
8) Periodic monitoring of Temperature record
9) Repair of Buildings required at most DVS
10) Generator back up for all Cold chain equipment.

The joint Director Health Jabalpur took following actions immediately:

1) Decision has been taken to print all Standard Stock registers, indent forms, supply vouchers, issue registers and Temperature log books at divisional level and supply to districts
2) Decision to repair buildings at some DVS
3) Condemned equipment will be auctioned as early as possible
4) Cold Chain Handlers training will be scheduled at the earliest
5) Decision has been taken to install New packed equipment where needed

The results were entered in soft copy and district wise Spider Graphs were generated.