**Internship Training**
**At**
**Child Health**
**NHM Haryana**

**Study Title**

# PIE – Post Introduction Evaluation of PENTAVALENT Vaccine

In Yamunanagar and Palwal district of Haryana state

**SUBMITTED BY – Dr. Kamlesh Pathak**

**UNDER THE GUIDANCE OF**

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**POST GRADUATE DIPLOMA IN HOSPITAL AND HEALTH MANAGEMENT**
**NEW DELHI**
**2012-2014**

The certificate is awarded to

**Dr. Kamlesh Pathak**

In recognition of having successfully completed his Dissertation in the department of

**Child Health**

And has successfully completed his Project on

**PIE – Post Introduction Evaluation of PENTAVALENT Vaccine**
In Yamunanagar and Palwal district of Haryana state

**Date: 5th Feb.2014 to 5th May 2014**

**Organization: NATIONAL HEALTH MISSION,HARYANA**

He comes across as a committed, sincere & diligent person who has a strong drive & zeal for learning

We wish his all the best for future endeavors

**Training & Development**

**Zonal Head-Human Resources**

## Certificate from Dissertation Advisory Committee

This is to certify that **Dr. Kamlesh Pathak,** a graduate student of the **Post-Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision. He is submitting this dissertation titled "**PIE – Post Introduction Evaluation of PENTAVALENT Vaccine in Yamunanagar and Palwal district of Haryana state**" in partial fulfillment of the requirements for the award of the **Post- Graduate Diploma in Health and Hospital Management.** This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

12/5/14

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## Certificate of Approval

The following dissertation titled **"PIE – Post Introduction Evaluation of PENTAVALENT Vaccine in Yamunanagar and Palwal district of Haryana state"** at **"NATIONAL HEALTH MISSION (NHM) HARYANA"** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

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| Dr. Pankaj Gupta | |
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| Dr. Abhijit Chakraborty | 12/05/14 |

## TO WHOMSOEVER MAY CONCERN

This is to certify that **Dr. Kamlesh Pathak** student of **Post Graduate Diploma in Hospital and Health Management (PGDHHM)** from **International Institute of Health Management Research, New Delhi** has undergone dissertation at **National Health Mission (NHM) Haryana from** 5th February 2014 to 5th May 2014.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Dissertation is in fulfillment of the course requirements. I wish her all success in all her future endeavors.

12/5/14

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**INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH,**
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## CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **PIE – Post Introduction Evaluation of PENTAVALENT Vaccine** in Yamunanagar and Palwal district of Haryana state and submitted by **Dr. Kamlesh Pathak** Enrollment No. PG/12/035 under the supervision of **Dr. Abhijit Chakrabarty** for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from 5th February 2014 to 5th May 2014 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Signature

# FEEDBACK FORM

**Name of the Student:** Dr. Kamlesh Pathak

**Dissertation Organisation:** National Health Mission, Haryana.

**Area of Dissertation:** Routine Immunization.

**Attendance:** 97 %

**Objectives achieved:** ALL OBJECTIVES REGARDING THE PROJECT WERE ACHIEVED.

**Deliverables:** IMPACT OF THE PENTAVALENT VACCINE INRODUCTION WAS EVALUATED.

**Strengths:** HARD WORKING AND ORIENTED TOWARDS WORK.

**Suggestions for Improvement:** SHOULD CONDUCT EXTENSIVE LITERATURE REVIEW.
- SHOULD IMPROVE REPORT WRITING SKILLS.

**Signature of the Officer-in-Charge/ Organisation Mentor (Dissertation)**

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**Date:**
**Place:**

# AKNOWLEDGEMENT

***"Any accomplishment requires the grace of god as well as help and good wishes of many people and this work is not different."***

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I shall remain in debt to each and every person in NHM Haryana irrespective of their designations and verticals, who extended me all needed help, and suggestions throughout my.

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My words end to acknowledge the debt of my family. Thanks to Almighty for giving a place in this wonderful world and the opportunity called –LIFE.

**Place – Panchkula** **Dr. Kamlesh Pathak**

# ABSTRACT

A study for Post introduction evaluation of vaccine focuses on a range of programmatic aspects, such as pre -introduction planning, vaccine storage and wastage, logistics of administering the vaccine, and community receptiveness to the vaccine.

A study will be conducted to evaluate post introduction of pentavalent vaccine in the state of Haryana. The evaluation will be based on an analysis of primary data collected from the health facilities. A cross-sectional survey will also be conducted to assess the qualitative issues after the introduction of pentavalent vaccine regarding the staff training, cold chain management and open vial policy, supervision, monitoring, and community acceptance.

Quantitative analysis will be done for analyzing the previous DTP vaccine coverage and dropout rate with new vaccine to identify and implement quality care practices that lead to optimum utilization of the available resources with the view to improve Haryana's current Infant and Neonatal Mortality numbers.

This study will help to find out the gaps and issues in new vaccine introduction and provide evidence based recommendations for planning and improvisation of new vaccine introduction in Haryana or other state. It will also help to minimize the gaps when introduction of pentavalent vaccine in other state and improve planning and management of program.

It is a cross sectional study with random sampling in palwal and Yamunanagar district with 5-5 facility in each district. Semi structured questionnaire tool is used which was developed by WHO for Post Introduction Evaluation of new vaccine. Data collection will be done by interviewing key health provider like MO, Cold chain handler, LHV and ANM by document reviews and onsite observations. A questionnaire is used for community evaluation, by interviewing mother or caregiver of household.

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# ABBREVIATION

**UIP –** Universal Immunisation Program

**GAVI –** Global Alliance for Vaccine and Immunisation

**NTAGI** - National Technical Advisory Group on Immunization

**CHC-** Community Health Centre

**PHC-** Primary Health Centre

**SC –** Sub centre

**MO** – Medical officer

**ANM –** Auxiliary Nurse Midwife

**LHV-** Lady Health Visitor

# ORGANIZATION PROFILE

## A. Introduction

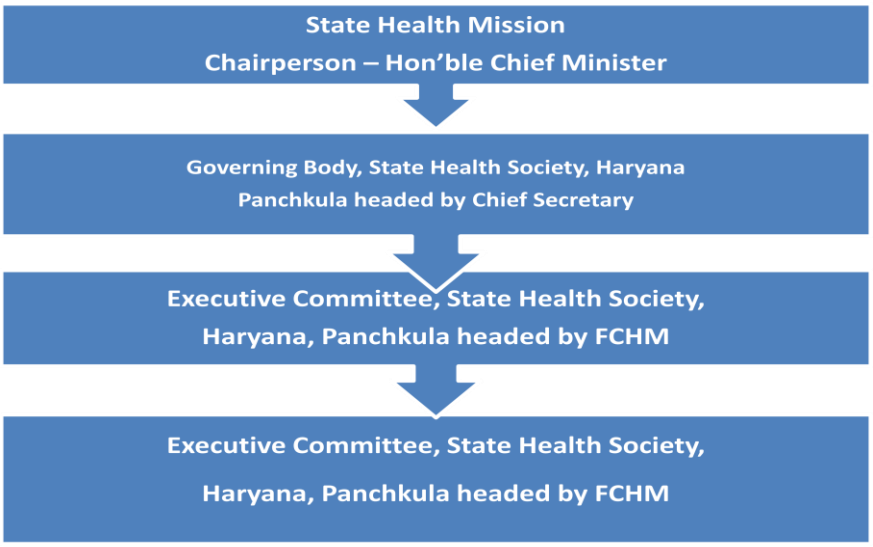
The Union Cabinet vide its decision dated 1st May 2013 has approved the launch of National Urban Health Mission (NUHM) as a Sub-mission of an over-arching National Health Mission (NHM with National Rural Health Mission (NRHM).

The National Rural Health Mission seeks to provide effective health care to rural population throughout the country. It aims to undertake architectural correction of the health system to enable to effectively handle increased allocations as promised under the National Common Minimum programme. It has as its key components provision of a female health activist in each village; a village health plan prepared through a local team headed by the Health & Sanitation Committee of the Panchayat. It aims at effective integration of health concern with determinants of health like sanitation & hygiene, nutrition, and safe drinking water through a District Plan for Health. As per mandate under NRHM the State Health Society has been reconstituted under the Chairmanship of Chief Secretary, Haryana adopting multi department approach and involvement of all stake holders.

 Mission – Mission of NRHM is to improve the quality of life of people by providing better Health Services. It strives to help people improve their productivity and reduce risks of diseases and injury in a cost-effective way.

 Vision--NRHM seek to establish long-term relationships with groups and individuals to enable them to continue to work to achieve optimal health. It delivers cost-competitive health promotion services with patient's satisfaction and accountability.

**Structure of State Health Mission**



**B. Some of functions and duties of health department:**

Health department has manifold functions and duties which are as under: - 1. Provide promotive, preventive, curative and rehabilitative services to the community through primary health care delivery system.

2. Provide equitable and quality health care at primary, secondary and tertiary level.

3. Extension, expansion and consolidation of rural health infrastructure.

4. Respond to the local community health needs and request.

5. It takes many steps for population stabilization.

6. Provide Reproductive and Child Health Services with the objective of reducing MMR & IMR.

7. Provide immunization services against vaccine preventive diseases of childhood as well as pregnant mothers against tetanus during child birth.

8. Provide Family Welfare Services.

9. Provide Essential Obstetric Care.

10. Enforcement of PNDT Act to prevent Sex Determination.

**C. Programme Implementation Plan for 2013-14**

State of Haryana has made steady progress in NRHM implementation during first phase of NRHM (2007-2012). State has now reached the stage from where it requires taking a leap forward. There has been considerable increase in the funds absorption capacity over the last few years, particularly after 2008-09. NRHM have however identified certain loose ends which need to be tightened up in the next phase. 2013-14 continues to retain the proposal of 2012-13, barring few structural changes necessitated by sub optional achievement in certain areas.

Program management needs a revamp both at state and district level. While on one hand state is averse to creating extra posts under NRHM but on the other this need people who can manage the program at district and sub district level. Community processes and main streaming of AYUSH have been weak areas. This year NRHM is proposing to link these two weak areas to strengthen both of them. It is proposed that MO (AYUSH) will function as community process manager at block level to look after ASHA, SMS, IBSY and HBPNC programs. AYUSH doctors otherwise well equipped to handle such programs have been underutilized. They will be paid extra honorarium for community process work.

ASHA program in Haryana has started moving; there has been increasing realization that if ASHA moves everything else would move along with it. There are two structural changes proposed this year in ASHA program: first, there will be an ASHA supervisor from among the best performing ASHA at PHC level who will be paid extra honorarium for the work and second, there will be increased honorarium for ASHA for ensuring service delivery to SC and BPL population. In 2013-14, proposing 3000 new ASHAs in rural areas according to population norms. It is also proposed to have ASHA in urban areas to provide much needed extension services in urban slums.

State has proposed a new weekly a new weekly Iron Folic Acid supplementation (WIFS) program for adolescent girls in college in all the district. This will supplement the effort of Indira Bal Swasthya Yojana (IBSY) for controlling anaemia in children and adolescents.

Analysis of expenditure in last few years has revealed that while salary component has been almost fully utilized, the expenditure in services and procurement has not been commensurate. In new PIP, it has been proposed to link honorarium with performance- there will be fixed component of honorarium which will be same as in last PIP plus a variable component which will be based on performance and can go up to 50 percent of the fixed honorarium. State has proposed to bolster its procurement wing to cut down delays in procurement.

**MANAGERIAL TASKS I DID WITH RESPECT TO THE DEPARTMENTS**

During the three months of working period in the office, I mainly co-ordinated for the various programmes of child health. Also, I was involved in below mentioned activities.

After one month of extensive training period, I did three district visits for supportive supervision of various child health programmes such as

- Essential newborn care supportive supervision in Districts narnaul, sirsa, yamunanagar
- Routine immunization supportive supervision in above all three districts.
- On job training to staff nurse and ANM on ENBCR.
- Data entry of all the finding then analysed the data and explain with higher authority of respective Districts person such civil surgeon, DIO.
- Quality assessment of Special newborn units in five Districts of Haryana which is also now the topic of my dissertation.

**LEARNINGS IN INTERNSHIP TIME**

1. I came to know about various health programmes managed by the organization.
2. Work culture in govt. organizations as we think, is not the same everywhere.
   In NRHM Haryana there is lot of pressure of work in most of departments.
3. This provided me an opportunity to field exposure.
4. I came to know the harsh reality of health conditions prevalent in Haryana state.
5. I learned the various programmes run by GOI regarding Child Health Programmes
   I got the training of
   Essential new born care,
   Routine Immunization,
   Home base new born care,
   IMNCI (integrated management of newborn child illnesses.
7. Research type activities are very less held in NRHM, Haryana. This project by me created a niche in NRHM to think about the involvement of Researchers & health managers in their organization.
8. I also attended review meetings of CMO & also aware with points discussed in IMR reduction. These provided me a lot of knowledge & a platform to learn.
9. Last but not the least, I came to know that career in public health management is not as easy task.

# INTRODUCTION

Haemophilus influenza type b (Hib) is a gram-negative bacterium that can be cause serious disease such as meningitis and severe pneumonia, primarily among young children. It was estimated to have caused 8.1 million cases of serious Hib diseases, and 371,000 deaths globally in the year 2000[1].In India, an annual estimated 2.4 to 3.0 million cases and 72,000 deaths in under-5 children were attributed to Hib diseases[1,2]. Hib is the leading cause of bacterial meningitis and second leading cause of bacterial pneumonia among young children, accounting for 40-50% of all cases of bacterial meningitis and 25-30% of all pneumonia cases.

The National Technical Advisory Group on Immunization (NTAGI) in India recommended the introduction of Hib vaccine in the Universal Immunization Program (UIP) in 2008[2]. Vaccination is a primary tool for prevention from severe Hib disease, and the WHO recommends that Hib-containing vaccines be included in all routine infant immunisation programs.

The combination vaccine against diphtheria (D), pertussis (P) and tetanus (T) is the core part of the childhood vaccination in India. In 2010, more than 85% of infants have received DPT vaccine, representing 109 millions of immunized children. The spread of this vaccine has led to a marked reduction in these infections worldwide[3]. WHO recommended addition of HepB vaccination in the Expanded Program of Immunization (EPI) in 1992, to ensure reduction in overall incidence of hepatitis B infection and to reduce chronic carriage in endemic zones. In 1998, it was followed by addition of Haemophilus influenza type B (Hib) vaccination considering the increasing burden of disease[4].

- With advent of various new vaccines for combating infectious diseases, promotion of combination vaccines seems essential for simplifying the increasing complexity of immunization program of any country. To ensure continuous availability and uninterrupted supply of safe and effective DTP, HepB and Hib vaccines, which are essential for smooth functioning and success of any immunization program created a motive for the vaccine manufacturers to

develop pentavalent combination vaccines. The pentavalent vaccine is a combination of five vaccines in one: diphtheria, tetanus, whooping_cough, hepatitis B and Haemophilus influenza type b.

**Introduction of pentavalent vaccine in India**

With the recommendation from National Technical Advisory Group on Immunization (NTAGI), the Ministry of Health and Family Welfare (MoHFW), Government of India (GoI), decided to incorporate pentavalent vaccine containing DTwP-HepB-Hib in Universal Immunization Program of India (UIP) in 2009. This incorporation of pentavalent vaccine was funded for the first two years of its introduction by a non-government organization; Global Alliance for Vaccines and Immunization (GAVI). These grants were meant for utilization of pentavalent vaccine in ten states namely; Andhra Pradesh, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Kerala, Karnataka, Punjab, Tamil Nadu and West Bengal and were expected to benefit more than 18 million children. This move of introduction of pentavalent vaccine in UIP was praised vociferously internationally, as India constitutes 34% of birth cohort in GAVI-eligible countries[6].

Haryana was the first state in North India and overall 3rd state after Kerala and Tamil Nadu to introduce pentavalent vaccine in Routine Immunization. The Pentavalent launch was done by Hon'ble Chief Minister on 21.12.2012 at 10.30 am at Haryana Niwas, Chandigarh. In this regard, a State media collaboration workshop was planned on 19.12.2012 at 10.30 am at Hotel Mountview, Sector – 10, Chandigarh for its wide publicity and sensitization of general public.

Immunisation Schedule in India

Pentavalent vaccine has been recommended for all infants in a three dose schedule. The first dose is scheduled at 6 weeks and the next dose is administered after a gap of at

least 4 weeks and the last dose is given 4 weeks later. The administration is based upon progressive birth cohort whereby all children who present for the first dose of DPT (DPT1) will be provided first dose of pentavalent vaccine. The infants who are already been immunized with DPT + Hep B shall complete their respective schedule.

| Age | Earlier Schedule | With Pentavalent Vaccine |
|---|---|---|
| At birth | BCG, OPV-0, Hep-B birth dose | BCG, OPV-0, Hep-B birth dose |
| 6 weeks | OPV-1, DPT-1, Hep-B1 | OPV-1, Pentavalent-1 |
| 10 weeks | OPV-2, DPT-2, Hep-B2 | OPV-2, Pentavalent-2 |
| 14 weeks | OPV-3, DPT-3, Hep-B3 | OPV-3, Pentavalent-3 |
| 16-24 weeks | DPT-B1, MCV-2, OPV-B1 | DPT-B1, MCV-2, OPV-B1 |

PIE is a post-introduction evaluation of the overall impact of the introduction of a new vaccine(s) on a country's national immunization programme. It focuses on a range of programmatic aspects, such as pre-introduction planning, vaccine storage and wastage, logistics of administering the vaccine, and community receptiveness to the vaccine. A PIE can rapidly identify problem areas needing correction within the immunization programme either pre-existing or resulting from the introduction of a new vaccine, and provide valuable lessons for future vaccine introductions.

# REVIEW OF LITERATURE

1. A study ON THE POST INTRODUCTION EVALUATION OF THE PENTAVALENT VACCINE IN ZAMBIA by WHO/AFRO IST East & Southern Africa, WHO/Zambia, UNICEF/Zambia, CDC, USAID, MOH Zambia in February 2-13, 2009. Finding of this study was Training for the liquid pentavalent vaccine was done before switch at all levels by cascade. Trainings went well. Training manuals not readily available at the sites. Not all members of the health facilities were trained. Adequate health education messages provided to community about pentavalent vaccine. Lack of awareness by mothers of the clinical symptoms prevented by vaccines. Wastage not calculated at any level.
2. NTAGI Subcommittee Recommendations on *Haemophilus influenzae* Type b (Hib) Vaccine Introduction in India subcommittee on introduction of Hib vaccine in universal immunization program, national technical advisory group on immunization, India. The committee noted that Hib diseases burden was sufficiently high in India to warrant prevention by vaccination. Hib vaccines have been demonstrated to be safe, both globally and in India, and extremely efficacious in all settings where they have been used. Hib vaccine fits into the UIP immunization schedule.
3. A study done on Dropout Rates After First Dose in a Two Dose Measles Vaccination at an Immunization Clinic in Northern India. Finding of this study shows that the dropout rate between three doses of DPT for the same time period in the clinic was 10% between first and second and 20% between first and third dose. The dropout rates for measles were higher as the gap between the two visits was usually around nine months. The dropout rate between third dose and booster dose of DPT (a gap of one year) was as high as 59% which is similar to that of measles.
4. A study on current status of vaccine against Diphtheria, Pertussis, Tetanus, Hepatitis B and Hib by Rushikesh P Deshpande and Balasaheb Ghongane in March 2014 shows PENTAVALENT vaccine was incorporated in UIP of India with the funding from GAVI in two state of India in 2011. The combination vaccine offers simplification of immunization schedule, reduced cost, better

acceptance and logistic benefits. With heavy load of disease in the resource-poor countries, urgent efforts were needed to provide these so easy-to-use vaccines to children residing in those areas and thus saving millions of lives. The pentavalent vaccine provides a golden opportunity to curb Hib disease and hepatitis B along with diphtheria, pertussis and tetanus in the developing countries.

5. Study done in urban area of Rohtak city in Haryana shows that drop-out rate indicates the system's inability to hold on to child once registered. The drop- out could be due to migrant nature of urban population. it also found that the importance of keeping immunization cards was even not well understood in urban areas, as cards of around one third (30.1%) of total children could not be traced by them.

# OBJECTIVE

**General Objective-**

- To study and evaluate the introduction process of the pentavalent vaccine in Haryana state.

**Specific objective-**

- To evaluate qualitative and quantitative data regarding the immunization programme and lesson learnt from pentavalent vaccine introduction in following areas.
  - Staff training
  - Cold chain and vaccine logistic management
  - Vaccine coverage and drop out
  - Immunization safety and waste disposal
  - Supervision and monitoring
  - Community awareness and acceptance of vaccines
- To give the evidence based recommendation after analysis data.

# METHODOLOGY

**Study design** – Cross sectional study

**Sampling Technique** – Random Sampling

**Data collection tool**- Pretested, validated, semi structured questionnaire developed by WHO for New Vaccine Post Introduction Evaluation Tool.

This tool contains 2 components –

First Component is a Questionnaire about Health Facility. Data collection will be done by interviewing key health provider - MO, Cold chain handler, LHV and ANM by document reviews and onsite observations.

Second component is Questionnaire for community evolution by interviewing mother or caregiver of household from each facility.

**Sample size-**

Selection of District - Districts was selected on the basis of performance in routine immunisation.(DHIS-2) The indicators are coverage, demographic, geographic and urbanisation.

| Parameter | Indicator | Source |
|---|---|---|
| **Coverage** | Pentavalent 3 | DLHS2 |
| | DPT3 | |
| **Demographic** | Total population size | Census 2011 |
| **Geographic** | Distance from state Hq | Google map |
| **Urbanization** | Proportion of urban pop | Census 2011 |

District selected for study was Palwal and Yamunanagar. In each district 5-5 facility was evaluated by interviewing facility staff and observation using standard questionnaires.

Yamunanagar is a capital of Yamunanagar district and situated on the bank of Yamuna River. Northern side of Yamunanagar District is adjoining to Himalaya and covered by Shivalik hills. Rest of the part of this District is almost plain. The peoples residing in this district are from different categories i.e. Industrialists, Businessman, Employees and Laborers. Yamunanagar had a population of 383,318, out of which males were 205,346 and females were 177,972 and the literacy rate is 95.72 per cent as per the census 2011. Yamunanagar has 4 blocks, 2 block PHCs, 18 PHCs and 112 Sub centres.

Palwal has a population of 100,528 as per census 2011. Males constitute 53.12% of the population and females 46.88%. Palwal has an average literacy rate of 70.32%, higher than the national average of 65.5%: male literacy is 78.92%, and female literacy is 67.87%. In Palwal, 19.95% of the population is under 6 years of age. Palwal has 3block, 20 PHCs and 89 sub centers.

**Data analysis-**

By Microsoft excel version 2007

The majority of data are drawn from the health-facility and caregiver questionnaire. The findings from the interviews at each level of the health service, and the observations at facility will be summarized to provide an overview of the vaccine introduction process. The collected data in the filled will entered into spreadsheets in excel, and then compile for the final analysis.

# RESULTS AND OBSERVATIONS

## Planning and introduction

In December 2012, Haryana government introduced pentavalent vaccine in whole state. According to WHO, 2.4 to 3.0 million cases of homophiles influenza b occurs in India with total deaths estimated to 72000 (Watt et al, 2009: NTAGI sub Committee 2009) Before Pentavalent vaccine, DPT vaccine were administered to the children below one year. Pentavalent vaccine will reduce the IMR by 4 percentages which will play a vital role to achieve national goal. Also pentavalent vaccine plays a very important role in the prevention of life threatening diseases in children and prevents children from multiple pricks of injection for DPT, Hep B and Hib. It has also lowers down the wastage factor of vaccine and syringe supplies.

In the interview at the facility level, there was no any official launch ceremony held at PHC, SC level but at CHC level SMO had launch event. A total of 95% respondents stated that there was no any changes in program and said introduction reduce some workload. All interviewee said that introduction process was a smooth in general. They stated that there was no resistance from the community at all.

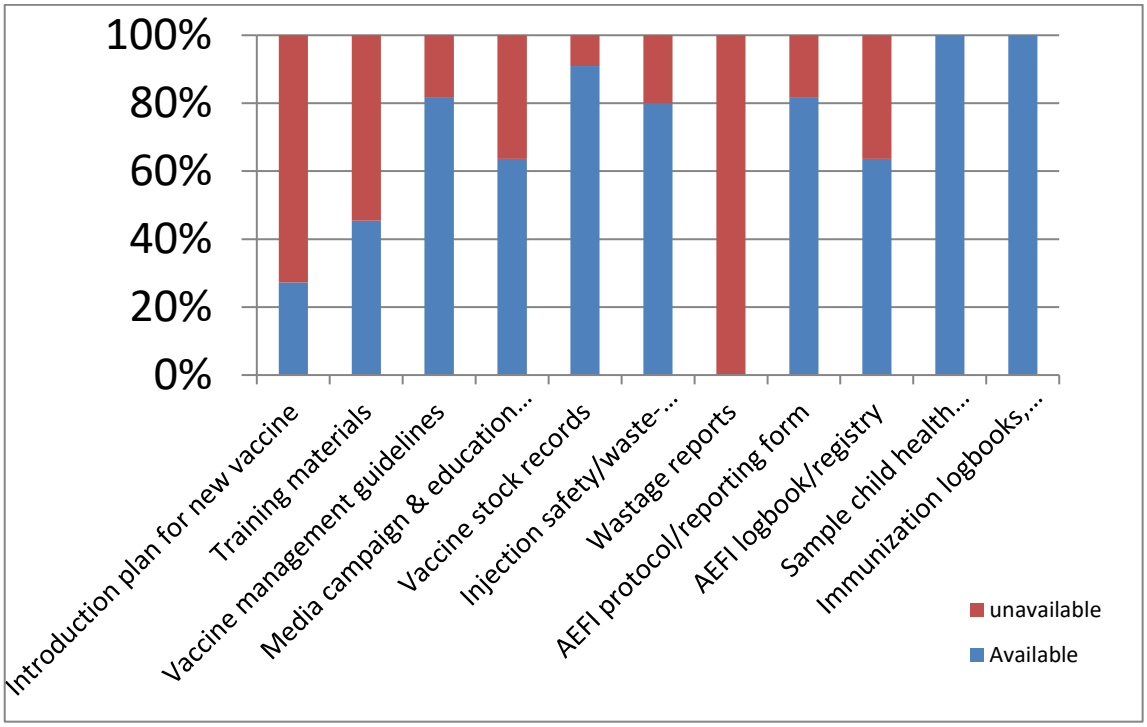



**Fig. 1- Availability of documents**

One issue faced during introduction planning was some PHCs in Palwal district got new vaccine one month late which led to postponement of scheduled date of the start of vaccination. Also, it was noted that some of the facilities don't have the copy of introduction plan, training material, and injection safety/ waste management protocols guideline. Wastage reports were not available at any facility as they don't know how to calculate the wastage report. AEFI register was not available at some facilities and also not maintained where it was available. Immunization logbook or register, immunization cards were available at every facility and maintained. Vaccine stock register was well maintained and available at every facility.

## Staff Training-

Training were planned and conducted for all categories of health staff before the introduction of pentavalent vaccine in the state program. These training were conducted in cascade manner: the district officials were trained at the state level workshop. The district officials trained health facility medical officers, who will train other category of health staff.

These training covered all the essential topics, such as the diseases prevented by the pentavalent vaccine, the vaccination schedule, vaccine administration, and potential adverse events etc.

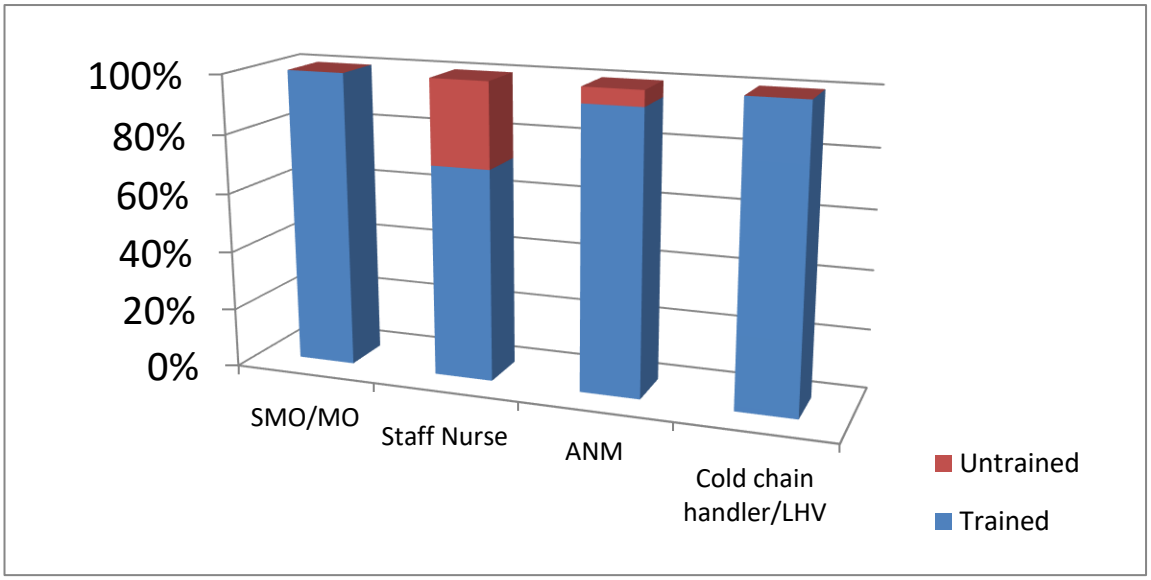



**Fig- 2 Staff training Yamunanagar**

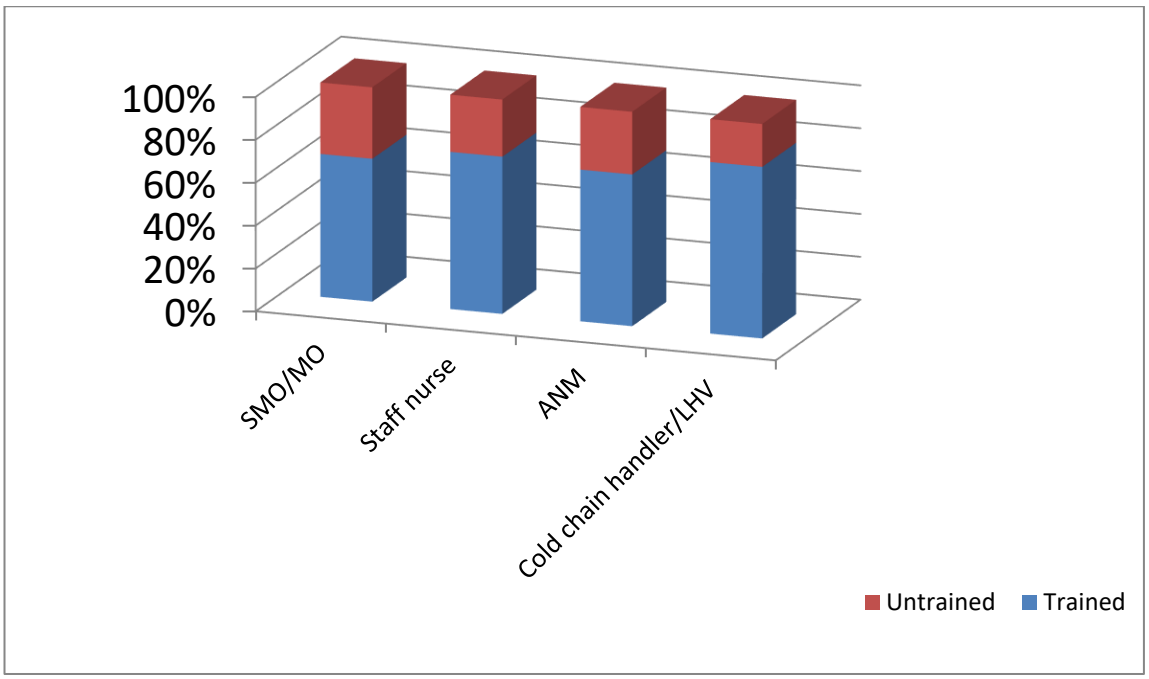



Fig.3. Staff training Palwal

In Yamunanagar district, most of the health facility staffs were trained for routine immunisation and new pentavalent vaccine except the staff nurses. Only about 60% of staff nurses were trained and know about the new pentavalent vaccine.

In Palwal district, nearly about 60% of all categories of health staff were trained.

ANM and cold chain handler are the main core active staffs which deal with the routine immunisation. When compare to these two graphs, it show that approximately 2/3$^{rd}$ of palwal staffs were trained and it affect the status of immunisation. This shows unsatisfactory performance in palwal district.

Most of the staff was aware about majority of the aspect of the pentavalent vaccine like open vial policy, storage, its side effects and treatment. Also some health workers were not providing all four key messages on immunisation to caregiver. This could be due to over workload or lack of reference material.

## Cold chain and vaccine logistic management-

There was adequate cold chain capacity to store all UIP vaccine and to accommodate pentavalent vaccine at all facilities. But the maintenance of cold chain equipments and handling was found to be inconsistent in Palwal, mainly due to lack of dedicated staff and slow response time for AMC.

The cold chain and logistic related issues identified were-

- Vaccine wastage rate was not monitored at any facilities in both districts.
- Staffs were aware about how to defrost ILR and Deep freezer but some facility were not doing defrosting regularly when needed.
- Cold chain temperature maintaining log book was maintained properly but the supervisory visits signature were not seen at most of the facilities.

Vaccine forecasting was done mostly on the basis of due list and the previous three months consumption of vaccines.

## Vaccine coverage and dropout-

The immunization coverage data were collected form health facility visited. Coverage data on DPT1 and DPT3 in April 2012 to March 2013 and first and third dose of pentavalent vaccine in April2013 to march 2014 were collected. Comparison data for these two periods indicates variable changes in coverage.

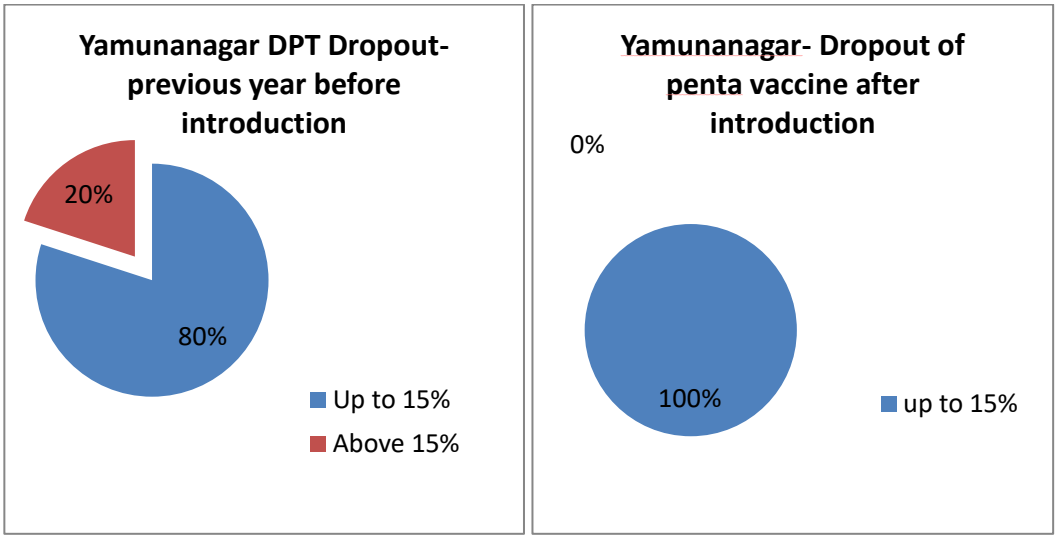



Fig. 4 Dropout comparison between DPT and Pentavalent vaccine- Yamunanagar

There was major change in the dropout rate of beneficiaries after introduction of pentavalent vaccine. In year 2012 to 2013, 20% facilities had dropout rate above 15%, which shows unsatisfactory performance. After introduction of pentavalent vaccine, dropout rate becomes improved and all facility dropout rates come under 15%.

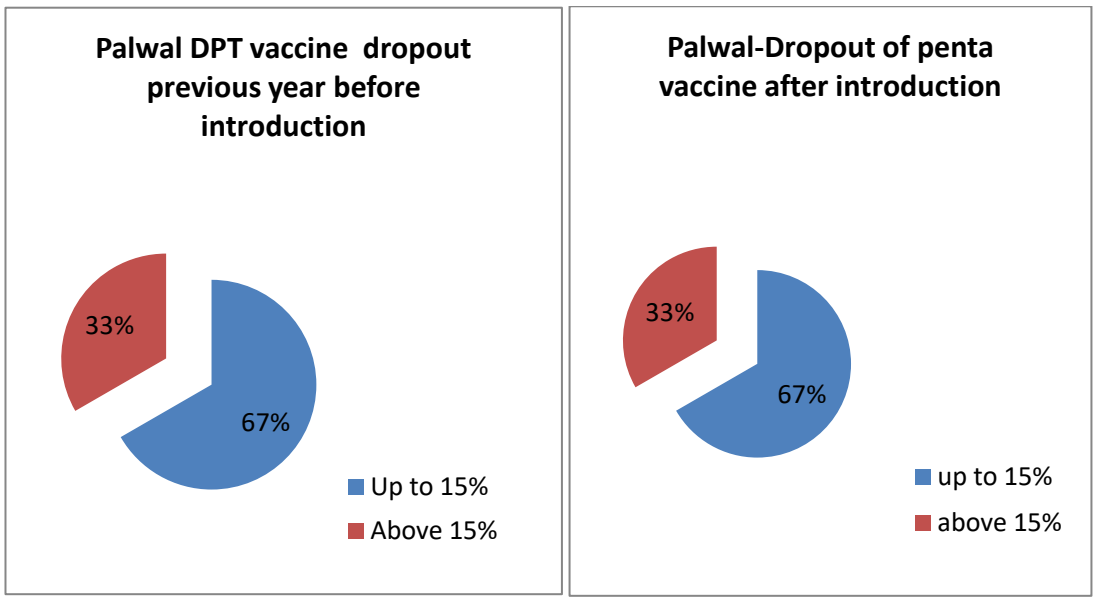



Fig.5 Dropout comparison between DPT and Pentavalent vaccine- Palwal

On the other hand, there were no any changes in Palwal district. Dropout rate was same after the introduction of pentavalent vaccine. In Palwal district, before and after introduction of pentavalent vaccine, 33% facilities had above 15% dropout rate which show continuous unsatisfactory performance.

In Yamunanagar district, most of the staff covered in training, which results to improvement in dropout rate. While in Palwal district, some staffs were not covered in training which has not gave fruitful results.

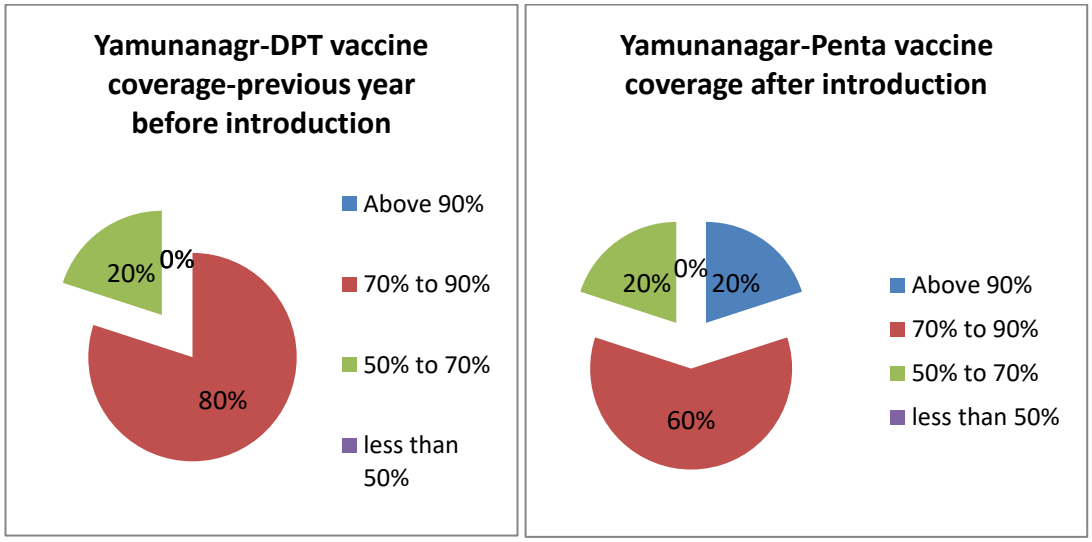



Fig.6 Coverage comparison between DPT and Pentavalent vaccine- Yamunanagar

In Yamunanagar, before introduction, 80% facilities had coverage of the DPT vaccine in 70% to 90% which was reduced after introduction of pentavalent to 60%. But 20% facilities improved their coverage above 90%.

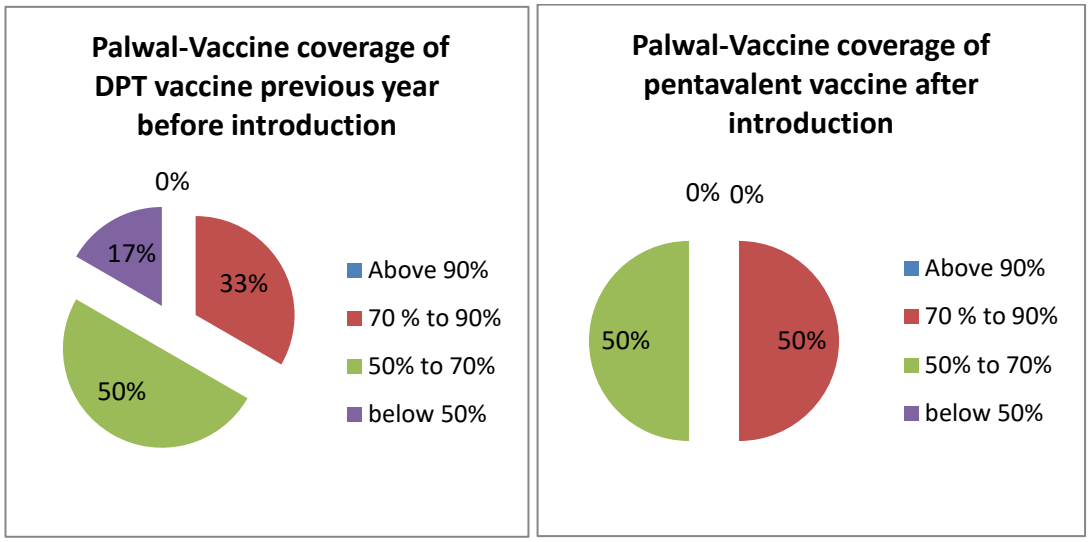



Fig.7 Vaccine coverage between DPT and Pentavalent vaccine- Palwal

In Palwal, before introduction of pentavalent vaccine, 17% facilities DPT coverage was below 50%. But after pentavalent introduction, it was reduced and the coverage rate was come between 50% to 70% and 70% to 90%. It shows the improvement in coverage rate in Palwal district.

When compare these districts, Yamunanagar and Palwal shows a good improvement in coverage rate, but still Palwal performance was not satisfactory. There was not any facility which has above 90% coverage rate. Many of the health facility staff was not aware about how to calculate coverage rate and dropout rates, which indicated the additional training on this point.

## Supervision and monitoring-

The mechanisms were at state level to monitor routine immunization performance through district monthly progress reports, block meetings etc. Also regular supportive supervision was being conducted by state consultants.

After the study, it has found that the supervisory visits by the Medical officers of the facility were not done regularly in most of the facilities. This results to low performance and productivity of the staff. Block meetings were held regularly but all the points were not covered in meeting.

## Immunization safety and wastage disposal-

Health staff was largely knowledgeable about immunization safety but few sub optimal waste disposal practice were observed. At every sub centre Hub cutter was used for collecting needle in immunization session. After the session AVD collect Open vial policy vials and the waste material which has to be disposed to PHC. At PHC, the needles were disinfected with the bleaching solution or gluteraldhyde and buried in to closed pit. The other waste material was collected by the outsourced BMW private agency.

In both district, BMW disposal system was doing well with the help of private agencies.

## Advocacy, social mobilization and communication-

State level media sensitization was conducted in October 2012 before the launch of new vaccine. State officials responded to the media queries. In workshop, all concern topics like Program Management, schedule of the vaccine, cold chain management, supplies and stock were explained and their systematic reporting was explained.

There were press releases, newspaper advertisements and radio promotion efforts for generating awareness in initial few weeks of vaccine introduction.

When asked to respondent they said that the promotional material was well distributed in the community. Banners were displayed at each sub centre, and ASHA worker distributed hand outs in community house to house.

## Community acceptance and awareness of the vaccine-

The pentavalent vaccine introduction led to the reduced number of pricks for prevention from 5 diseases, much to the satisfaction of both parents and health workers. There was awareness among caregivers about the pentavalent vaccine and largely accepted by the community including health workers, professional societies and government officials.

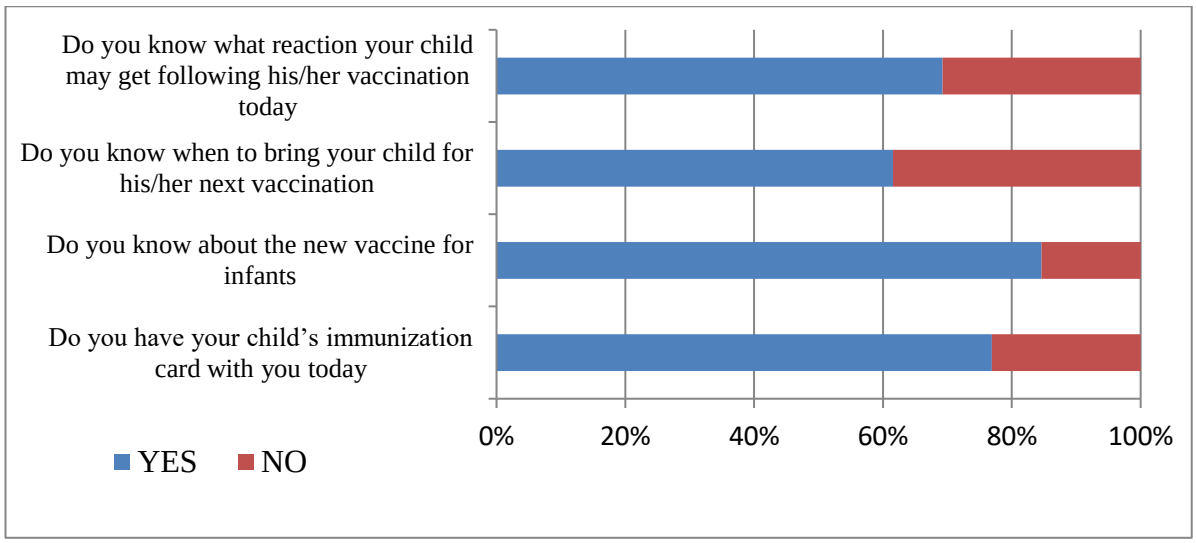



Fig.8 Yamunanagar Caregiver Response

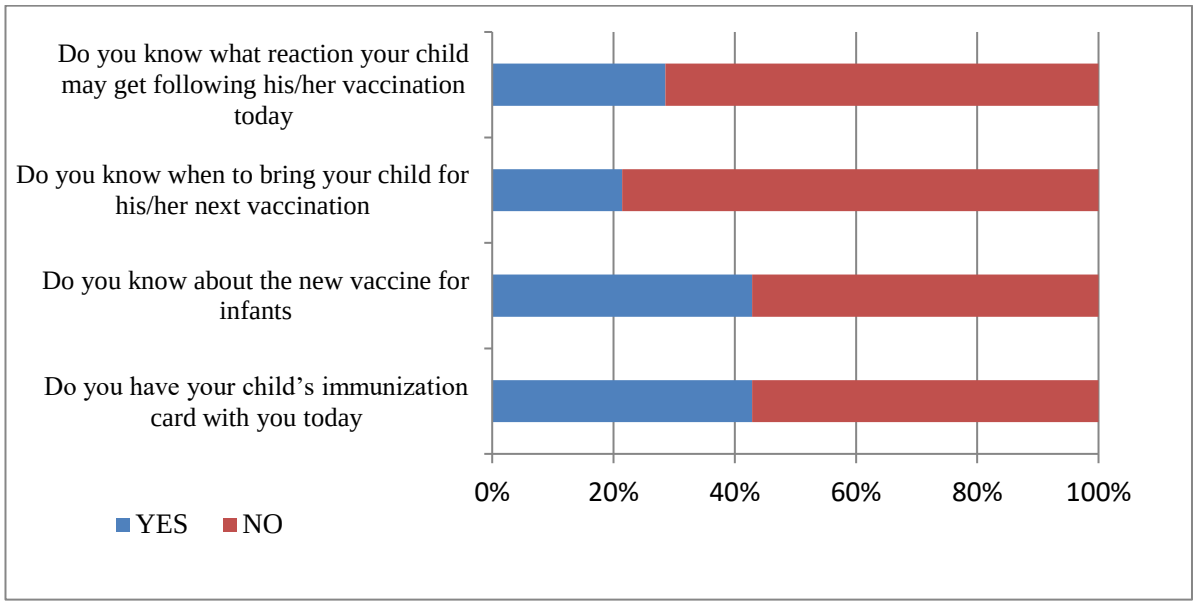



Fig.9 Palwal Caregiver response

After interviewing to caregiver in both district, In Yamunanagar 75% of the mother had child's immunization card while in Palwal district only 42% had immunization card. 85% people know about the pentavalent vaccine in Yamunanagar while in Palwal 42%. When they were asked when to return back for next vaccination, 62% respondent in Yamunanagar and 22% in Palwal district give yes answer. When they were asked about what are the reactions may get child after vaccination, 70% in Yamunanagar and 30% in Palwal district gives the positive answer. It shows the poor performance in Palwal district.

## Limitation-

Due to time constraint and limitations to study, only few facilities Medical officers, ANM, LHV were interviewed in Yamunanagar and Palwal district.

## Conclusions-

Overall introduction of pentavalent vaccine in Haryana state was a smooth process. Community awareness and acceptance for the new vaccine was great. After the introduction, vaccine coverage was increased when compared with the previous year. Chain cold system was good managed and well maintained in most of the facilities, this could be due to supportive supervision by the health consultants for routine immunization. Disinfection methods were properly followed for routine immunization by collecting waste material at PHC and the buried in closed pit or outsourced BMW.

Despite of these good things, there was some gaps in staff training, vaccine coverage and dropout, waste disposal system, immunization practices.

## Recommendations-

There is a need of training for the cold chain handler in both districts especially in Palwal district which has a poor performance. The entire cold chain handler should be trained. Only 70% of cold chain handler and LHV in Palwal district were trained. Also the new recruiter person for cold chain should be train.

Vaccine wastage report was not calculated at any facility. Medical officer should ensure that the staff could calculate wastage rate. Supervisory visits should make mandatory for medical officer especially in Palwal district, so the cold chain would be maintained regularly.

There is a need to consider the reasons behind the Dropout and rectify with the proper solutions. It might be due to migration, low awareness in community.

It has found that after introduction of pentavalent vaccine, coverage of the immunization was increase. This could be due to awareness in community through public promotion by media.

Some beneficiary does not have immunization card when they come at immunization session site. This could be due to card lost by the caregiver or card not given by the ANM. Most of the caregiver doesn't know about the reactions child get after the administration of vaccine and when to bring back for next vaccination. This shows the poor performance of the staff. So there is need of training for the staff about immunization practice.

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## *Questionnaire — health facility*

Date of interview: _____ Name of interviewer: _____

This questionnaire was conducted at:

☐ Health-facility name:_____

Type of health facility (check one):

☐ Health Centre/Clinic ☐ Health Post/Outpost ☐ Other (specify) _____

**Name(s) and title(s) of person(s) interviewed (please list all persons that you interviewed):**
EPI Senior Nurse/Health-care worker responsible for vaccinations (or their deputy) should be interviewed

*Name:*_____ *Title:* _____

*Name:*_____ *Title:* _____

*Name:*_____ *Title:* _____

**Contact details of most senior person:**

*Telephone:*_____ *E-mail address:* _____

**Documents to request at beginning of interview:** (check appropriate boxes)

| Document / data | Document received | Document reported to exist but not available at time of interview | Document unavailable |
|---|---|---|---|
| Introduction plan for new vaccine | | | |
| Training materials/reference documents utilized during new vaccine training | | | |
| Vaccine management guidelines | | | |
| Media campaign/social mobilization/education materials (Brochures, posters, pamphlets, etc.) | | | |
| Vaccine stock records | | | |
| Supervisor's book/site visit reports | | | |
| Injection safety/waste-management policy document | | | |
| Wastage reports | | | |
| AEFI protocol/reporting form | | | |
| AEFI logbook/registry | | | |
| Sample child health card/immunization card | | | |
| Immunization logbooks, monitoring forms, tally sheets, vaccine registries | | | |

| Abbreviation | | Health-Facility Questionnaire |
|---|---|---|
| | **PRE-IMPLEMENTATATION PLANNING** | |
| GEN | 1. Were you (interviewee) working at this health facility at the time of the new Vaccine introduction? | ☐ Yes ☐ No<br><br>**Interviewer:** If "No", try to get a staff member who was present when the new vaccine was introduced to participate. If not, continue with the interview although it may not be possible to answer all questions. |
| GEN | 2. When was the new vaccine first administered at this health facility? | (DD/MM/YYYY) _____ / _____ / _____<br><br>☐ Don't know |
| | **TRAINING** | |
| GEN | 3. Please describe health-facility staff training for the new vaccine introduction, if any. | How many people from this health facility were trained?<br>_____<br>Who from this health facility was trained?<br>_____<br>How many of them are still working at this health facility?<br>_____<br>How long was the training for health facility staff?<br>_____<br>What were the key topics covered in the training?<br>_____<br>Did the person from this health facility who was trained, train others in the health facility?<br>☐ Yes ☐ No ☐ Don't know<br><br>Was training conducted before vaccine introduction<br>☐ Yes ☐ No<br>If yes, how long before?_ _____<br><br>Was training conducted after vaccine introduction<br>☐ Yes ☐ No<br>If yes, how long after?_____<br><br>Who conducted the training for health-facility staff?<br>_____<br><br>Other comments on training_ _____ |
| GEN | 4. Are new vaccine introduction guidelines or educational and reference materials from the training available?<br><br>**Ask to see samples.** | ☐ Yes ☐ No ☐ Don't know |
| GEN | 5. Overall, were you satisfied with the training provided? | ☐ Yes ☐ No ☐ Don't know |

| Abbreviation | | Health-Facility Questionnaire |
|---|---|---|
| | **VACCINE COVERAGE** | |
| GEN | 6. What is the size of the target population for infant immunizations in this health facility? What is the source of this figure?<br>**Note:** *If not available for <1 year, get information for <2 or <5 years.* | <1 year of age:_ _____<br>Source of data _ _____ |
| GEN | 7. What formula do you use to calculate vaccine coverage? Include the source of the numerator (doses administered) and denominator (target population). | **Formula**<br>Numerator source_____<br>Denominator source_ _____<br>Correct formula used ☐ Yes ☐ No |
| GEN | 8. What was DTP-1 and DTP-3 vaccine coverage in the year before the new vaccine introduction?<br>**Note:** *Use year before new vaccine introduction or closest administrative period.* | DTP-1 _____ year _____<br>DTP-3_ _____ year _____<br>Calculate drop-out rate:<br>(DTP1 – DTP3)/DTP1 x 100 = _____% |
| GEN | 9. What is the coverage of the first and last dose of the new vaccine for the most recent administrative period? | New vaccine first dose (NV1) coverage<br>_____<br>New vaccine last dose (NVL) coverage<br>_____<br>Calculate drop-out rate:<br>(NV1 – NVL)/NV1 x 100 = _____% |
| GEN | 10. Is coverage of the new vaccine higher or lower than DTP? | New vaccine first dose versus DTP-1 coverage rates<br>____% Higher ____% Lower ☐ No change<br>New vaccine last dose versus DTP-3 coverage rates<br>____% Higher ____% Lower ☐ No change<br>★ **Key Finding: Percentage change in coverage rate** |
| GEN | 11. Is the drop-out rate for the new vaccine higher or lower than the DTP drop-out rate? | New vaccine drop-out rate versus DTP drop-out rate<br>____% Higher ____% Lower ☐ No change<br>★ **Key Finding: Percentage change in drop-out rate** |
| GEN | 12. How often do you report immunization data to the district? **Ask to see a report.** | |

| Abbreviation | | Health-Facility Questionnaire |
|---|---|---|
| GEN | 13. Have immunization registries/child health cards, etc. been updated to include the new vaccine? | Check box if updated<br>☐ Vaccine registry/logbook<br>☐ Child health card<br>☐ Tally sheets/district reporting forms<br>☐ Vaccine stock forms<br>☐ Other (specify) |
| GEN | 14. How many days a week does your site perform outreach immunization sessions, i.e. immunization sessions not conducted at the health facility? | ☐ Outreach not performed<br>_____ times per week |
| GEN | 15. Are outreach data collected separately? | ☐ Yes<br>☐ No |
| GEN | 16. Do you include the new vaccine in the outreach immunization sessions? | ☐ Yes<br>☐ No. If no, reason_____ |
| GEN | 17. What changes, if any, did you have to make to outreach sessions when you introduced the new vaccine? | ☐ No changes required<br>☐ More vaccine carriers required<br>☐ Increased number of outreach sessions<br>☐ Other changes (specify) |
| **COLD-CHAIN MANAGEMENT** | | |
| GEN | 18. What is the source of power supply for cold storage? | ☐ Check all that apply<br>☐ Cold storage box<br>☐ Refrigerator, kerosene<br>☐ Refrigerator, electricity<br>☐ Refrigerator, solar<br>☐ Refrigerator, mixed power source<br>☐ Other (specify)_ _____ |
| GEN | 19. The last time there was an interruption in your power supply, what did you do? | |
| GEN | 20. Discuss any changes you had to make in the cold chain before introduction of the new vaccine.<br>**Note:** *Try to distinguish cold-chain expansion/replacement of equipment that is part of normal cold-chain rehabilitation from changes specifically for the new vaccine.* | |
| GEN | 21. Were there any problems with the cold chain recognized after the introduction of the new vaccine? If yes, what were the problems and have the problems been addressed? If they have been addressed, how were they addressed? | ☐ No problems<br>☐ Inadequate space<br>☐ Frozen vaccine<br>☐ Malfunctioning refrigerators<br>☐ Power supply/fuel shortage<br>☐ Other (specify)<br>☐ How resolved?_____<br>★ **Key Finding: Percentage health facilities observed or reported problems with the cold chain** |

| Abbreviation | | Health-Facility Questionnaire |
|---|---|---|
| **VACCINE MANAGEMENT, TRANSPORT & LOGISTICS** | | |
| GEN | 22. Do you have immunization policy guidelines for vaccine management? If yes, have they been updated to include the new vaccine? Please provide a copy at time of interview. | ☐ Yes ☐ No |
| GEN | 23. How do you forecast vaccine requirements? | |
| GEN | 24. How did estimated requirements change following introduction of the new vaccine? | ☐ Yes ☐ No ☐ Don't know<br>If yes, why?_____ |
| PENTA | 25. What did you do with remaining quantities of DTP after introduction of the new vaccine? | **Check all mentioned**<br>☐ No policy<br>☐ DTP used until finished<br>☐ DTP to be sent to district<br>☐ DTP destroyed<br>☐ DTP to be sent to province/national level<br>☐ Other (specify) |
| PENTA | 26. Did you have a gap between using up DTP vaccine and receiving the new vaccine? If yes, for how long? | ☐ Yes ☐ No<br>If yes, how many weeks?_ _____ |
| GEN | 27. Have you had any vaccine expirations in the last six months? If yes, what did you do with the expired stock? | ☐ Yes ☐ No<br>If yes, action taken?_____ |
| GEN | 28. Have you had any vaccine with VVM in Stage III or IV in the last six months? If yes, what did you do with these vaccines? | ☐ Yes ☐ No<br>If yes, action taken?_____ |
| GEN | 29. Did you run out of any vaccines, including the new vaccine, or vaccines supplies in the past six months? | ☐ Yes ☐ No<br>☐ Yes, vaccines (specify)<br>☐ Yes, vaccine supplies (specify)<br>☐ No<br>If yes, how many weeks?_ _____<br>If yes, reason for stock out _____<br>★ **Key Finding: Percentage of health facilities reporting vaccine or supply stock out in last six months** |
| GEN | 30. Are vaccine orders/deliveries tied to injection supplies (i.e. bundling)?<br>**Note:** *Look at stock records to get this information.* | ☐ Yes ☐ No<br>Verified by checking stock records<br>☐ Yes ☐ No |

| Abbreviation | | Health-Facility Questionnaire |
|---|---|---|
| | **WASTE MANAGEMENT AND INJECTION SAFETY** | |
| GEN | 31. Did you have to make any changes to your waste-disposal system for introduction of the new vaccine?<br>If yes, explain. | ☐ Yes ☐ No<br>If yes, explain_____ |
| GEN | 32. Have you experienced any problems with your waste-disposal system?<br>**Observe site.** | ☐ Yes ☐ No<br>If yes, explain_____ |
| | **VACCINE WASTAGE** | |
| GEN | 33. What formula is used to calculate vaccine wastage and what is the source of the data.<br>**Ask for wastage report.** | ☐ Vaccine wastage not calculated<br>Formula:<br>Data source, numerator_____<br>Data source, denominator_____<br>Is formula provided correct?<br>☐ Yes ☐ No<br>Source of data:<br>☐ Stock books<br>☐ Summary sheets<br>☐ Other<br>★ **Key Finding: Wastage report on site? ☐ Yes ☐ No** |
| GEN | 34. What is the vaccine wastage rate of the new vaccine?<br>**Note:** *If vaccine wastage rate is unknown for new vaccine because PIE is done before administrative data are available, record anecdotal reports or attempt part-year calculation.* | New vaccine wastage (this administrative period)_____ % |
| PENTA | 35. What was the DTP wastage rate?<br>**Note:** *Use year before new vaccine introduction or closest administrative period.* | DTP wastage (administrative period)_ _____ % |
| PENTA | 36. Has the pentavalent vaccine wastage rate changed when compared to DTP wastage rate (last administrative period)? | New vaccine wastage rate versus DTP wastage rate<br>____% Higher ____% Lower ☐ No change |
| | **MONITORING AND SUPERVISION** | |
| GEN | 37. How many times in the past six months have you received a supervisory visit from district or regional level or from a partner agency? Was the visit documented?<br>**Ask to see the supervisory book, copy of last report.** | Number of visits _____<br>Is there a written report of the visit? ☐ Yes ☐ No<br>**Key Finding: At least one documented visit**?<br>☐ Yes ☐ No |
| GEN | 38. If yes, who visited, and what were the problems identified? | Who visited?_____ (job title)<br>Problems identified_____ |

| Abbreviation | | Health-Facility Questionnaire |
|---|---|---|
| **ADVERSE EVENTS FOLLOWING IMMUNIZATION (AEFI)** | | |
| GEN | 39. Do you have a system and written protocol for monitoring and reporting AEFIs for all vaccines? Please describe the procedure.<br>**Ask for a copy of the AEFI protocol and reporting form.** | ☐ Yes ☐ No<br>If no, why not?_____<br>★ **Key Finding: AEFI system/protocol in place?** |
| GEN | 40. Did you make any changes to the AEFI protocol specifically for the new vaccine? | |
| GEN | 41. Have you had any reported AEFIs for the new vaccine or another vaccine since the new vaccine was introduced?<br>**Note:** *Verify using AEFI log book/registry, if one.* | ☐ Yes ☐ No ☐ Don't know<br>If yes:<br>How many for the new vaccine? _____<br>How many for a traditional vaccine? (specify)<br>_____<br>What were the AEFIs?_____<br>How were they handled?_____ |
| **ADVOCACY, COMMUNICATION & ACCEPTANCE** | | |
| GEN | 42. Did you have an official launch ceremony at this health facility at the time of the new vaccine introduction?<br>**Note:** *What did it involve, was it successful, did it get much media coverage?* | ☐ Yes ☐ No ☐ Don't know<br>If yes, describe_ _____ |
| GEN | 43. Did this health facility provide any health education messages or materials to the community about the new vaccine at the time of introduction?<br>**Ask to see copies of materials.** | **Check all that apply**<br>☐ None provided<br>☐ Posters<br>☐ Brochures<br>☐ Health education sessions<br>☐ Public meetings<br>☐ Other (specify)_ _____ |
| GEN | 44. Did you experience any resistance from the community regarding the new vaccine? | ☐ Yes ☐ No ☐ Don't know |
| GEN | 45. Do you remember any media focus (e.g. on radio, television or newspapers) on the new vaccine? | ☐ Yes ☐ No<br>If yes, describe_ _____ |
| **HEALTH-CARE WORKER KNOWLEDGE (ask HCW, not head of health facility)** | | |
| GEN | 46. What is the immunization schedule for the new vaccine? | |

| Abbreviation | | Health-Facility Questionnaire |
|---|---|---|
| PENTA | 47. What antigens are included in pentavalent vaccine? | **Check if mentioned — don't prompt but can tell afterwards**<br>☐ Diphtheria<br>☐ Pertussis<br>☐ Tetanus<br>☐ Haemophilus influenzae type B (Hib)<br>☐ Hepatitis B (HepB)<br>List others mentioned_ _____ |
| GEN | 48. What disease(s) does the new vaccine prevent?<br>**Interviewer:**<br>For Penta ask about all five antigens<br>*Hib vaccine prevents some, not all.* | **Interviewer: Write exact response given**<br>_____<br>_____<br>_____<br>_____<br>_____<br>_____<br>★ **Key Finding: Percentage HCWs that knew what disease(s) the new vaccine prevents?** |
| GEN | 49. What information do you provide to parents before and after vaccination with the new vaccine? | **Check if mentioned — don't prompt but can tell afterwards**<br>☐ Name of the vaccine<br>☐ Diseases it protects against<br>☐ Benefits to the child and the family<br>☐ Vaccine schedule/when to return<br>☐ Normal side effects?<br>☐ What side effects they should return for<br>☐ Bring vaccination card<br>☐ Other health messages (specify)<br>Two or more mentioned? ☐ Yes ☐ No<br>★ **Key Finding: Percentage HCWs providing two or more accurate pieces of information to parents?** ☐ **Yes** ☐ **No** |

| Abbreviation | | Health-Facility Questionnaire |
|---|---|---|
| | **GENERAL IMPRESSIONS** | |
| GEN | 50. Were there any financial implications for the health facility involved in introduction of the new vaccine? | **Ask about the financial implications of each of the following:**<br>☐ Don't know<br>Cold chain ☐ Yes ☐ No<br>If yes, specify_____<br>Vaccine transport ☐ Yes ☐ No<br>If yes, specify_____<br>Wastage ☐ Yes ☐ No<br>If yes, specify_____<br>Communication materials/media ☐ Yes ☐ No<br>If yes, specify_____<br>Training ☐ Yes ☐ No<br>If yes, specify_____<br>Other costs? ☐ Yes ☐ No<br>If yes, specify_____ |
| GEN | 51. What effect has the introduction of the new vaccine had on your EPI programme? | **Please check one that best describes the introduction:**<br>☐ Improved the EPI programme.<br>Please explain_____<br>☐ Made the EPI programme worse.<br>Please explain_____<br>☐ No effect.<br>Please explain_____<br>★ **Key Finding: Percentage sites reporting that new vaccine improved the EPI programme?** |
| GEN | 52. In your opinion, was the introduction of the new vaccine a smooth process or problematic? Please explain. | Please check one that best describes the introduction:<br>☐ Very smooth. No problems<br>☐ Generally smooth, minor problems.<br>Please explain_____<br>☐ Somewhat smooth, some major problems.<br>Please explain_____<br>☐ Not smooth. Major problems.<br>Please explain_____<br>★ **Key Finding: Percentage sites reporting a smooth or very smooth introduction** |
| | **OBSERVATIONS AT VACCINATION SESSION** | |
| GEN | 53. Are (all) vaccines reconstituted correctly (e.g. measles, BCG, penta,) | ☐ Yes ☐ No ☐ Don't know<br>(N = unsafe practice) |
| GEN | 54. Are vaccines stored/handled properly during the session, e.g. clean, organized, vaccine vials outside carrier are in foam pad? | ☐ Yes ☐ No ☐ Don't know<br>(N = unsafe practice) |

| Abbreviation | | Health-Facility Questionnaire |
|---|---|---|
| GEN | 55. Are appropriate administration techniques observed (e.g. pentavalent intramuscular injection in the thigh) | ☐ Yes ☐ No ☐ Don't know<br>(N = unsafe practice) |
| GEN | 56. Are AD syringes used? | ☐ Yes ☐ No<br>(N = unsafe practice) |
| GEN | 57. Are needles recapped (look in safety box for capped needles)? | ☐ Yes ☐ No ☐ Don't know<br>(Y = unsafe practice) |
| GEN | 58. Are AD syringes disposed of in a safety box? | ☐ Yes ☐ No ☐ Don't know<br>(N = unsafe practice) |
| GEN | 59. Is the policy on use of the open multi-dose vial observed? | Date opened marked on vial ☐ Yes ☐ No<br>Open vial discarded at end of immunization session ☐ Yes ☐ No<br>☐ Other observation (specify)_ _____<br>☐ Unknown<br>(N = unsafe practice) |
| GEN | 60. Summary: How many unsafe practices, based on questions above, were observed? | Number of unsafe practices_____<br>★ **Key Finding: Percentage of sites with two or more unsafe practices observed** |
| **OBSERVATION OF VACCINE STORAGE AREA** | | |
| GEN | 61. Are all refrigerators clean and properly functioning? | ☐ Yes ☐ No |
| GEN | 62. Is there a thermometer inside the refrigerator? | ☐ Yes ☐ No |
| GEN | 63. Is the temperature inside the refrigerator currently between +2° and +8° C? | ☐ Yes ☐ No<br>What is the temperature?_ _____ |
| GEN | 64. Is there a log of refrigerator temperatures? | ☐ Yes ☐ No |
| GEN | 65. How often are temperatures recorded? | ☐ Twice daily ☐ Daily<br>☐ No records ☐ Other (specify) |
| GEN | 66. Are temperatures monitored and recorded on weekends and holidays?<br>**Note:** *Check specifically for holidays in _____(insert date of most recent holiday).* | ☐ Yes ☐ No ☐ Sometimes |
| GEN | 67. Are vaccines arranged as "First expiry, First out"? | ☐ Yes<br>☐ No If no, why not?_____<br>☐ Not applicable. Why?_____ |
| GEN | 68. Did you observe any expired vaccines? | ☐ Yes ☐ No<br>If yes, which vaccine and how many?_____<br>_____ |
| GEN | **For vaccines with a VVM**<br>69. Did the VVMs that you observed indicate that vaccine is usable, i.e. Stage 1 or 2 | ☐ Yes, all vaccines usable<br>☐ No, some vaccines Stage 3 or 4 (unusable)<br>Specify vaccine and proportion unusable<br>_____<br>★ **Key Finding: Percentage of health facilities reporting with any VVM in Stage 3 or 4.** |

| Abbreviation | | Health-Facility Questionnaire |
|---|---|---|
| GEN | **For vaccines with a VVM**<br>70. Are vaccines with VVM in Stage 2 arranged so that they are used first? | ☐ Y ☐ N ☐ Not applicable, no Stage 2 |
| GEN | 71. Are there spaces between the vaccine boxes/trays to allow air circulation? | ☐ Yes ☐ No |
| | **HEALTH COMMUNICATION** | |
| GEN | 72. Are any posters or other literature about the new vaccine noted in the health facility? | ☐ Yes ☐ No |
| | **STOCK ROOM** | |
| GEN | 73. Is injection equipment stored in good condition | Adequate space ☐ Yes ☐ No<br>Clean and dry conditions ☐ Yes ☐ No<br>Well organized ☐ Yes ☐ No<br>(i.e. easily accessible)<br>☐ Other observation (specify)<br>_____ |
| | **WASTE DISPOSAL** | |
| GEN | 74. How are used AD syringes being disposed of?<br>(If not observed, ask how boxes are disposed). | ☐ Safety box<br>☐ Open bucket<br>☐ Other<br>☐ Other observations |
| GEN | 75. How are used safety boxes disposed of?<br>(If not observed, ask how boxes are disposed).<br>**Note:** *Specify whether box is emptied and reused or destroyed with contents inside.* | ☐ Incinerator<br>☐ Pit-burned<br>☐ Pit-exposed<br>☐ Pit-buried<br>☐ Above-ground area<br>☐ Box reused<br>☐ Other observation |
| GEN | 76. Were discarded needles and syringes observed on the ground outside the facility? | ☐ Yes ☐ No |
| GEN | 77. Is waste-disposal site closed off? | ☐ Yes ☐ No<br>★ **Key Finding: Percentage of health facilities with clean, closed-off disposal sites** |
| GEN | 78. Describe any other observation of the disposal site. | |
| | **NOTES AND COMMENTS** | |
| | If you were unable to visit the cold store or dry store area, please mention reason.<br>Record any interesting positive or negative anecdotes or comments by health-care workers. | |

## *Appendix 2.3: Questionnaire — mother or caregiver*

Date of interview: _____ Name of interviewer: _____

Region: _____ District: _____ Health-facility name: _____

Interview mothers/caregivers whose child has just received the new vaccine (can also talk to a group of mothers wait to be vaccinated to get their impressions). Please modify questions as appropriate for the type of new vaccine introduced. Begin the interview by saying the following "I would like to ask you a few questions about the vaccines your child received today. The answers you give will help us learn more about how to introduce a new vaccine." (N.B. You may need someone conversant in the local language to ask the questions).

| | |
|---|---|
| 1. Do you have your child's immunization card with you today? If yes: May I please see it?<br>**Note:** *If pentavalent vaccine is not used, ask for Hib, Hep B, and DTP separately.* | **Use card to answer the following**<br>Card present ☐ Yes ☐ No<br>**Vaccines received today**<br>☐ Pentavalent ☐ OPV<br>☐ Measles<br>☐ BCG<br>☐ Other (specify)_ _____<br>**Card updated?**<br>☐ Old card (not updated to include new vaccine)<br>☐ Old card (with new vaccine written in by hand)<br>☐ New card (updated to include new vaccine) |
| 2. What vaccine(s) did your child receive today?<br>**Note:** *Check if answers correct by looking at vaccination card or, if card not available, verifying with clinic record.* | **Check one box**<br>☐ Names all vaccines (answer correct)<br>☐ Names some vaccines (partially correct)<br>☐ Does not know<br>☐ Mentions specific health benefit of vaccine (e.g. for _ Hib vaccine says, "got vaccine to prevent meningitis or pneumonia")<br>☐ Mentions general beneficial effects of vaccines, e.g. "my child got vaccines to keep him healthy"<br>☐ Other (specify) _____ |
| 3. Do you know about the new vaccine for infants?<br>**Note:** *Be country specific; give the time when the vaccine was introduced.* | ☐ Yes ☐ No<br>If yes, which disease(s) do they prevent?<br>☐ Does not know<br>☐ Answer correct<br>☐ Answer incorrect |
| 4. If yes to question 3. How did you receive the message about the new vaccine?<br>**Note:** *Radio, newspaper, television, health-care worker, friend,* | |
| 5. Do you know when to bring your child for his/her next vaccination?<br>**Note:** *If answer is no or yes but incorrect, please advise mother when next vaccination is due.* | ☐ Yes (answer correct)<br>☐ Yes (answer incorrect)<br>☐ No |
| 6. Do you know what reaction your child may get following his/her vaccination today?<br>**Note:** *This question is trying to differentiate between baseline knowledge and knowledge received at current vaccination session.* | ☐ Yes (answer correct)<br>☐ Yes (answer incorrect)<br>☐ No<br>**Interviewer:** *If answer is no or yes but incorrect, please advise mother of potential side effects, e.g. mild redness, pain, mild swelling at injection site, mild fever, drowsiness and irritability.* |
| 7. Other comments or observations. Record any interesting positive or negative anecdotes or comments by mothers. | |