

## Original Research Article

# Evaluation of session sites of routine immunization program in Damoh district of Madhya Pradesh

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### ABSTRACT

**Background:** Vaccination is one of the most effective disease prevention strategies and the success of immunization program in the field depends upon the availability of appropriate vaccines, logistics and proper vaccination practice of health workers. This study was undertaken to assess actual vaccines and logistics availability, vaccination practices and safety issues at session sites of Damoh District of Madhya Pradesh.

**Methods:** Cross-sectional observational study was done using a structured questionnaire. Data was collected from 36 session sites of Damoh District of Madhya Pradesh.

**Results:** The availability of AD syringe of 0.1 ml and 0.5 ml was not adequate. Functional hub cutter was available in 30(83.3%) session sites. Zinc tablets were found only at 32 (88.8%) session sites. Due list of beneficiaries was maintained only by 33 (91.6%) ANMs and 26 (72.2%) ASHA workers. BCG was available in 20 (55.5%) and IPV in 27 (75%) sessions. Vaccine storage conditions were not appropriate in 2 sessions sites. Time of reconstitution was written on reconstituted vaccines in 30 (83.3%). Date and time of opening vial was written in 32 (88.8%) session sites. Only in 28 (77.7%) sessions ANM were cutting Syringe with Hub Cutter. Four key messages were being delivered to parents in only 16 (44.4%) sessions and only in 22 (61.1%) sessions ANM was advising the care giver to wait for 30 minutes after vaccination.

**Conclusions:** There was satisfactory organization of immunization session in terms of availability of logistics and cold chain maintenance but unsatisfactory in terms of vaccination practice.

**Keywords:** Vaccine, Routine immunization, Session site, Cold chain

### INTRODUCTION

Vaccine preventable disease can be prevented by vaccination and immunization. Disease burden due to these diseases is high. These diseases cause premature death, disability and malnutrition in young children.<sup>1</sup> Vaccination has been the most effective medical strategy to control infectious diseases. Vaccination is estimated to save at least 2-3 million lives every year. Vaccine is an immune-biological substance designed to produce specific protection against a given disease. It stimulates the production of protective antibody and other immune mechanisms.<sup>2</sup>

In May 1974, WHO officially launched a global immunization program, known as Expanded Program on Immunization (EPI) to protect all children of the world against six vaccine preventable childhood diseases namely diphtheria, whooping cough, tetanus, polio, tuberculosis and measles. The Government of India launched EPI in 1978 with objective of reducing mortality and morbidity from vaccine preventable diseases of childhood.<sup>3</sup> The program was revised and renamed as Universal Immunization Program (UIP) in 1985 focusing more on infants and pregnant mothers.<sup>4</sup>

In spite of the immunization programme operating in India since 1978, approximately 10 million infants and children remains unimmunized. Number is higher than any other country in the world.<sup>5</sup> Only 44% of infants receive full vaccination (all doses up to age of one year) and 5% of infants don't receive any vaccine in India.<sup>6</sup>

It was realized that merely providing vaccine just to achieve targets without giving adequate attention to quality of immunization services doesn't guarantee a reduction in disease morbidity & mortality. Primary Health Centre (PHC) is a key place for implementing routine immunization program and storage of vaccines. For successful implementation of routine immunization service all its components – planning of immunization sessions, cold-chain and logistics management, Reports, Supervision etc. should be carefully looked into. This requires an evaluation.<sup>7</sup> The success of immunization program in field depends on the availability of appropriate logistics and proper training of health workers. These have impact on not only in improving the coverage and reducing dropouts but also in improving the quality of vaccination.<sup>8</sup>

The quality of vaccines is also one of the important factors for success of immunization program which in turn depends on proper storage and handling of vaccines. If vaccines are stored outside the recommended temperature for considerable time, its potency will be adversely effected thereby reducing protection from vaccine preventable diseases. The loss of potency depends upon the temperature and duration of exposure.<sup>9</sup>

All the health facilities which provide health services and have cold chain facilities for storage of vaccines such as hospital, immunization clinics, postpartum centres, community health centres, district hospital, medical college are designated fixed sites for immunization under UIP. Vaccination services should be provided every day or once a week on fixed day. These centres provide quality immunization services, maintain good records and ensure high level of satisfaction. Fixed sessions mainly provide services in urban area or bigger village where the community health centres are located. Fixed sessions do not have area responsibility. People come to fixed centers voluntarily. Hence the coverage of fixed centres is limited, slum population is left out and fixed sessions are not accessible to most of rural population therefore it is essential to provide immunization through "outreach sessions". Under UIP; outreach sessions are organized on fixed day. Health workers organize at least one session per month for every one thousand population.<sup>1</sup> With this back ground the study was carried out to assess the availability of vaccine and logistics, Cold chain practices, Vaccination practices and safety issues at Routine Immunization session sites of Damoh District of Madhya Pradesh.

## METHODS

This cross sectional study was conducted between June 2016 to September 2017 as a part of project on

Strengthening Routine Immunization Program run by Community Medicine Department of Bundelkhand Medical College Sagar in association with UNICEF Bhopal. Damoh is a district in Bundelkhand region in Sagar Division of Madhya Pradesh with an area of 7306 square kilometers and population of 1264219 (2011 census). The district is served by a district hospital, seven community health centers and fourteen primary health centers The authors of the study worked as RI Monitors for Damoh district of Madhya Pradesh. A total of 36 session sites of the district were visited by the authors. Data was collected as per the questionnaire provided by UNICEF and analyzed using percentages and proportions.

## RESULTS

It was observed that 34(94.4%) session sites had 0.1 ml AD syringe, and 30(83.3%) session sites had 0.5 ml AD syringe. Functional hub cutter was available in 30 (83.3%) session sites, but it was observed that only 28 (77.7%) ANM were cutting Syringe with Hub Cutter immediately after use. It was also observed that the Due list of beneficiaries was maintained only by 33 (91.6%) ANM and 26 (72.2%) ASHAs whereas 10 (27.7%) ASHAs were found mobilizing beneficiaries without the due list. Paracetamol tablets, ORS Packets, IFA Tablet were available at all 36 (100%) session but Zinc Tablets were found only at 32 (88.8%) session sites (Table 1).

OPV, measles vaccine, measles vaccine diluents, DPT and TT vaccines were available in all the 36 (100%) session sites where as BCG vaccine and BCG diluents were available in 20 (55.5%), IPV was available only at 27 (75%) session sites due to irregular supply. Hep B vaccine was not available at any session site because it was being given only at institution in case of institutional delivery (Table 2).

It was observed that at 34 (94.4%) session sites vaccines were placed in zipper bag/box, at 35 (97.2%) session sites vaccine were in stage I & II VVM but at all 36 (100%) session sites Vaccine Vials were found with VVM and open vaccine vials were within 28 days from date of opening (Table 3).

Adequate quantities of reconstitution (5 ml disposable) syringes were available in 36 (100%) session sites. The time of reconstitution was written on reconstituted vaccines at 30 (83.3%) session sites and the date and time of opening vial was written at 32 (88.8%) session sites. In all the sessions 36 (100%) ANM were using AD syringe for injection. In the present study only in 28 (77.7%) sessions ANM were found cutting the syringe with Hub Cutter immediately after use. All the four key messages were given to caregivers only at 16 (44.4%) session sites and at 22 (61.1%) session sites the ANM was advising the care giver to wait for 30 minutes after vaccination. The ANM was using black and red bag for segregation of waste only at 27 (75%) session sites (Table 4).

**Table 1: Logistics available at session site (n=36).**

S. No.	Logistics	Yes (%)	No (%)
01.	Auto disable syringe	0.1 ml	34 (94.4)
		0.5 ml	30 (83.3)
02	5 ml reconstitution syringe	36 (100)	00 (00)
03	Blank RI card	28 (77.7)	08 (22.2)
04	Red and black bag	28 (77.7)	08 (22.2)
05	Vitamin A solution	35 (97.2)	01 (02.7)
06	Due list of beneficiaries	With ASHA (Mobiliser)	26 (72.2)
		With ANM	33 (91.6)
07	Functional hub cutter	30(83.3)	06 (16.6)
08	Paracetamol tablets	36 (100)	00 (00)
09	ORS packets	36 (100)	00 (0)
10	IFA tablet	36 (100)	00 (00)
11	Zinc tablet	32 (88.8)	04 (11.1)

**Table 2: Vaccines/diluents available at session site (n=36).**

S. No.	Vaccine	Yes (%)	No (%)
01	BCG	20 (55.5)	16 (44.4)
02	BCG diluent	20 (55.5)	16 (44.4)
03	OPV	36 (100)	00 (00)
04	Penta	32 (88.8)	04 (11.1)
05	DPT	36 (100)	00 (00)
06	IPV	27 (75)	09 (25)
07	Measles	36 (100)	00 (00)
08	Measles diluent	36 (100)	00 (00)
08	TT	36 (100)	00 (00)
09	Hep B	00 (00)	36 (100)

**Table 3: Vaccines storage condition (n=36).**

S. No.	Vaccine Condition	Yes (%)	No (%)
01	Vaccine placed in zipper bag/box in vaccine carrier having 4 ice packs	34 (94.4)	02 (5.5)
02	Vaccine in stage I & II VVM	35 (97.2)	01 (02.7)
03	Vaccines vials with VVM	36 (100)	00 (00)
04	Open vaccine vials within 28 days	36 (100)	00 (00)

**Table 4: Injection technique/safety issues (n=36).**

S. No.	Injection technique/safety issues yes	Yes (%)	No (%)
01	Adequate quantity of reconstitution syringe available	36 (100)	00 (00)
02	Time of Reconstitution written for reconstituted vaccines	30 (83.3)	06 (16.6)
03	Date and time of opening vial written	32 (88.8)	04 (11.1)
04	AD syringe used for injection	36 (100)	00 (00)
05	Correct site of DPT injection	36 (100)	00 (00)
06	Syringe being cut with hub cutter immediately after use	28 (77.7)	08 (22.2)
07	Four key messages given to parents	16 (44.4)	20 (55.5)
08	ANM advising the care giver to wait for 30 minutes after vaccination	22 (61.1)	14 (38.8)
09	ANM was using black and red bag for segregation of waste	27 (75)	09 (25)

## DISCUSSION

It was observed from the study that 34 (94.4%) session sites had 0.1 ml AD syringe, whereas 30 (83.3%) session sites had 0.5 ml AD syringe. Functional hub cutter was available in 30 (83.3%) session sites, but only 28 (77.7%) ANM were cutting syringe with hub cutter immediately after use. In a similar study Biradar et al found that 44 (95.7%) session sites had 0.1 ml AD syringe, whereas all the session sites had 0.5 ml AD syringe. Functional hub cutter was available in 29 (63.1%) session sites.<sup>8</sup>

This study showed that due list of beneficiaries was maintained only by 33 (91.6%) ANM and 26 (72.2%) ASHA. 10 (27.7%) ASHA were mobilizing beneficiaries without due list. Paracetamol tablets, ORS packets, IFA tablet were available at all 36 (100%) session but zinc tablets were found only at 32 (88.8%) sessions whereas Biradar et al in their study reported that due list of beneficiaries was maintained by 30 (65.2%) session sites.<sup>8</sup> Patel et al in their study in rural areas of Gujarat observed that 54.5% Auxiliary Nurse Midwife (ANM) had maintained due list.<sup>6</sup>

In the present study it was observed that OPV, measles vaccine, measles diluents, DPT and TT vaccines were available in all the 36 (100%) session sites where as BCG and BCG diluents were available in 20 (55.5%), IPV were available only at 27 (75%) session site due to irregular supply, and Hep B was not available at any session and Hep B vaccine was being given only at institution in case of institutional delivery. Biradar et al reported that DPT, Measles and TT vaccines were available in all the 46 (100%) session sites where as BCG and OPV vaccines were available in 45 (97.8%) session sites. Hepatitis B vaccines were on hand in 44 (95.7%).<sup>8</sup> Patel et al in their study reported that only 50% of session sites had all the vaccines.<sup>6</sup>

In present study it was found that at 34 (94.4%) session vaccine were placed in zipper bag/box, at 35 (97.2%) vaccine were in stage I & II VVM but at all 36 (100%) session vaccines vials were found with VVM and open vaccine vials were within 28 days from date of opening. Biradar et al observed that in 44 (95.7%) session sites vaccines were placed in zipper bag. The vaccine vial monitor (VVM) showed that 44 (95.7%) of vaccines were in usable condition (stage I and II VVM). All the 46 (100%) session sites had vaccine vials with VVM labels intact.<sup>8</sup> Similar observations were made by Patel et al that in 98.8% of sessions cold chain issues like VVM for polio vaccine were satisfactory.<sup>8</sup> Goel et al in their study in Chandigarh in 2006 noticed that in 95% sessions Vaccine vials were kept in polythene bags and in 99% of session sites vaccine were in VVM in stage I and II.<sup>10</sup>

The present study showed that adequate quantities of reconstitution (5 ml disposable) syringes were available in 36 (100%) sessions' sites. The time of reconstitution was written on reconstituted vaccines in 30 (83.3%) and

date and time of opening vial written 32 (88.8%) session sites. In all the sessions 36 (100%) ANM were using AD syringe for injection. In present study only in 28 (77.7%) sessions ANM were cutting the syringe with Hub Cutter immediately after use, only in 16 (44.4%) session sites all the four key messages were given to caregivers and only at 22(61.1%) session ANM was advising the care giver to wait for 30 minutes after vaccination, ANM was using black and red bag for segregation of waste only in 27 (75%) sessions. Biradar et al found adequate quantities of reconstitution (5 ml disposable) syringes were available in 43 (93.5%) session sites. time of reconstitution was written on reconstituted vaccines in 41 (89.1%) session sites. In all the sessions ANM were using AD syringe for injection. Only in 26 (56.5%) sessions ANM were cutting the syringe with Hub Cutter immediately after use and in 35 (76.1%) session sites all the four key messages were given to parents.<sup>8</sup> Patel et al observed that time of reconstitution was written on vial in 61.4%. ANM was giving all 4 key messages after vaccination in 62.5% of session sites.<sup>6</sup>

## CONCLUSION

The present study concludes that immunization session organization was satisfactory in terms of Logistics, cold chain maintenance and injection practices as reported also in other studies. There is a scope for improvement in various other aspects of immunization services like uninterrupted and adequate supply of all vaccines, maintenance of due list, use of hub cutters immediately after vaccination, delivery of all four key messages to caregivers, proper segregation and disposal of waste material. Strengthening of immunization services also requires the right attitude and practice of health staff involved.

There should be training and retraining of health staff involved in immunization services at regular intervals with continuous supportive supervision.

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