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Quality Assessment of Routine Immunization Services in Bidar District, Karnataka

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Abstract

Background and Aim: Routine Immunization remains the cornerstone in child survival initiative throughout the globe. The success of immunization program in field depends on the well trained health staff and availability of appropriate logistics at session site. This study was undertaken to focus on inspecting actual logistics availability, vaccination techniques and safety issues at Routine Immunization (RI) session sites of Bidar District Karnataka. **Methodology:** A cross-sectional study was done using a structured questionnaire. Data was collected from 19 RI session sites of Bidar District. **Results**: It was observed from study that AD syringe availability was adequate (94.7%). Functional Hub Cutter was available in (68.4%), Red and Black bag in (52.6%) and Vitamin A solution in (84.2%) session sites. Availability of vaccines was satisfactory except for Hepatitis B (84.2%). Vaccine storage conditions were appropriate (100%). The time of reconstitution was noted in (89.5%) session sites. Only in (68.4%) sessions ANM were cutting the Syringe with Hub Cutter immediately after use and in (26.3%) session sites all the four key messages were given to parents. **Conclusion:** The present study observed satisfactory immunization session organization in terms of logistics, cold chain maintenance and injection techniques.

Keywords: Routine immunization; Vaccine; Session sites; Logistics.

Introduction

Infectious diseases are one of the major causes of morbidity and mortality in children. One of the most cost effective and easy methods for child survival is immunization.

Immunization is unquestionably one of the most cost effective public health interventions available.[1] The vaccination of children with potent vaccine given at right age, at right interval, by right technique can avert many childhood illness there by reducing mortality and morbidity. In order to improve its accessibility to children worldwide, World Health Organization (WHO) launched the Expanded Program on Immunization (EPI) in 1974 with the intention to prevent seven of the most serious diseases in children.[2] The Government of India launched EPI in 1978 with objective of reducing mortality and morbidity from vaccine preventable diseases of childhood.[3] In spite of Immunization Programme operating in India since 1978, approximately 10 million infants and children remain unimmunized. Number is higher than any other country in the world.[4] Only 44%

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of infants receive full vaccination (all doses up to age of one year) and 5% of infants don't receive any vaccine in India.[5] The coverage and quality of routine immunization program still a hitch in developing countries like India. There are many reports indicating rising incidence of cases of disease and adverse events following immunization among vaccinated persons due to low potency of administered vaccines.[6]

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. This study was undertaken to focus on inspecting actual logistics availability, vaccination techniques and safety issues at Routine Immunization (RI) session sites of Primary Health Centres (PHC) of Bidar District.

Objectives

- To assess the quality of vaccination in the study area in relation to planning, vaccine-logistic availability, cold chain, injection safety and immunization waste management.

Materials and Methods

This study was conducted as part of project on Strengthening Routine Immunization Program. The authors of study worked as RI Monitors for Bidar District for Two talukas i.e. Bhalki and Bidar having 19 PHCs. This was a cross sectional study Conducted in Bidar district between 1st September 2011 to August 2012. A total of 19 session sites of PHCs were visited by authors. Data was collected as per the questionnaire prepared by WHO/ Government of India (2009) and analyzed using percentages and proportions.

Result

Out of 18 Primary Health centers 78.9% of Primary Health Centers had written plan for supervision of immunization sessions sites and 84.2 PHCs had ANM roster displayed in PHCs.In 84.2% centers,ILR and DF were correctly located (atleast 10cm away from the wall and direct sunlight and placed on wooden block). Regular update of temperature log book was seen in 84.2% of PHCs. Proper storage of vaccines in ILR and keeping of ICE pack in DF as per recommendation was seen in 78.9% of PHCs. Use of disposal pit to discard biomedical waste brought from session sites was seen in 78.9% of PHCs.

It was observed from the study that 94.7% session sites had 0.1ml and 0.5 ml AD syringes.84.2% session sites had Vitamin A solution. Functional hub cutter was available in 68.4% session sites while Red and Black bag and due list of beneficiaries was present in only 52.6% of session sites. Paracetomal tablets were present in all session sites.

Table 1: Programme management and cold chain issue at PHCs level (N=19)

Sr.	Different aspect	Yes	No
1	Supervision plan at PHCs	15(78.9%)	4(21.1%)
2	ANM Roster	16(84.2%)	3(15.8%)
3	Correct location of DF and ILR	16(84.2%)	3(15.8%)
3	Correct storage of vaccine in ILR	15(78.9%)	4(21.1%)
4	Temperature log book updated daily	16(84.2%)	3(15.8%)
5	Correct keeping of Ice pack in DF	15(78.9%)	4(21.1%)
6	Disposal pit	15(78.9%)	4(21.1%)

Table 2: Logistics Available at Session Sites (N=19)

S. No.	Logistics		Yes	No
1.	Auto Disable syringe	0.1 ml	18(94.7%)	1(5.3)%
		0.5 ml	18(94.7%)	1(5.3)%
3.	Red and Black bag		10(52.6%)	9(47.4%)
4.	Vitamin A Solution		16(84.2%)	3(15.8%)
5.	Due list of Beneficiaries		10(52.6%)	9(47.4%)
6.	Functional Hub Cutter		13(68.4%)	6(31.6%)
7.	Paracetamol tablets		19(100%)	0(0%)

Table 3: Vaccines Storage Condition n=19

S. No.	Vaccine Condition	Yes	No
1.	Vaccine placed in Zipper bag in vaccine carrier having 4 ice packs	18 (94.7%)	1(5.3)%
2.	Vaccine in Stage I&II VVM	19 (100%)	0
3.	Vaccines Vials with VVM	19 (100%)	0

Table 4: Vaccines/Diluents Available at Session Sites

S. No.	Vaccine	Yes	No
1.	BCG	18(94.7%)	1(5.3)%
2	OPV	19(100%)	0
3.	DPT	19(100%)	0
4.	Measles	18(94.7%)	1(5.3)%
5.	TT	19(100%)	0
6.	Hep B	16(84.2%)	3(15.8%)

Table 5: Injection Technique/Safety Issues (N=19)

S.N	Injection safety	Yes	No
1	Adequate quantity of reconstitution syringes	18 (94.7%)	1 (5.3)%
2	Time of reconstitution written	17 (89.5%)	2 (10.5%)
3	AD syringes used for injection	18 (94.7%)	1 (5.3)%
4	Correct site of DPT injection	19 (100%)	0
5	ANM not touching any part of syringe	19 (100%)	0
6	Functional Hub cutter	13 (68.4%)	6 (31.6%)
7	Four Key Messages	5 (26.3%)	14 (73.7%)

In 94.7% session sites vaccine were placed in zipper bag. In respect to cold chain maintenance, 100% sites shows VVM stage I or II.

OPV, DPT and TT vaccines were available in all the session sites (100%) where as BCG and Measles vaccines were available in 94.7% session sites. Hepatitis B was available in 84.2 % session sites.

Adequate quantities of reconstitution (5ml) syringes were available in 94.7% of session sites. The time of reconstitution was noted in 89.5% of session sites. In 94.7% session ANM were using AD syringes for injection. Selecting appropriate site and route of vaccination as per recommended was 100% accurate. Use of Hub cutter to cut used AD syringes was seen in 68.4% session sites. The one of the most important activity at session sites was giving the key message was seen in only 26.3% sites.

Discussion

Immunization is one of the most cost effective strategy in reducing childhood mortality and morbidity. Not all vaccinated children are immunized until unless there is sero-conversion.While there are various internal factors that operate in sero-conversion of individuals, which are not under control, there are many external factors such as maintenance of cold chain, which determine vaccine potency.

In our study all the centers (100%) used ILR exclusively for vaccine storage and were in good working condition. Our study findings were similar to that observed by Rao *et al* (98.6%);Goel *et al* (92.5%) and Doeki *et al* (78%) studies which had functional ILR.[7,8,9]

In our study temperature log book was maintained in 84.2% centers adequately. Our study findings were similar to that observed by Rao *et al* (94.2%) Mallik *et al* (55%)and Samanth *et al* (65%) of the centers have adequately maintained temperature charts.[7,10,11]

As per guideline, ice pack need to be stocked in criss-cross manner in DF.[4] This allow even distribution of temperature and proper preparation of ice pack. In our study criss cross arrangement of ice pack was seen in 78.9%.Similar observations were made in one-third of heath centers of Surat City.[12]

VVM concept conceived in 1997 was formally introduced for all UNICEF produced OPV vials in 1996 and slowly expanded to other heat sensitive vaccine.[13] VVM technology was introduced for heat liable vaccines with two fold intent: to reduce vaccine wastage and to identify heat damaged stock. In our study all the session sites vaccines were in usable condition i.e. stage I and II. Similar result were reported from various studies where vaccines were in usable condition.[9,14,15]

In our study due list of beneficiaries was available at 73.7% session sites. Similar results were reported (55%) in study by Tushat *et al* and by Santosh Biradar (65.2%).Around 9.7% of mothers lacked information about the session as reported by Manjunath *et al* in his study on maternal knowledge and perception about routine immunization.[16]

Regarding availability of vaccines at session sites ,DPT,TT and OPV were 100% and that of BCG and Measles was 94.7%. and was Hep B (84.2%).Similar results were reported by Santosh Biradar in a study done in Bijapur district.[17]

Its importance to use AD syringes and the reconstituted vaccine within stipulated time to have maximum benefit to beneficiaries and also minimum unwanted events after vaccination. In our study use of AD syringes was seen 94.7% session sites and time of reconstitution was seen in 89.5%.Similar result were reported in study done by Tushar Patel *et al* (61.4%) and by Santosh Biradar (89.1%)[14,17]

The four key messages given by ANM to parent regarding Vaccine given, its side effect, next due date for vaccine and keeping the immunization card safely and its important. In our study this was seen 26.3% of session sites.Simliar finding was seen in study done by Santosh Biradar (76.1%).[17]

Conclusion

The present study observed satisfactory immunization session in terms of management of cold chain at PHCs level and availability of logistics cold chain maintenance and injection safety at session site as reported in other studies. There is a scope for improvement in updating and maintaining due list of beneficiaries, use of hub cutter, proper handling of biomedical waste and giving Key message to beneficiaries so that drop out can be reduced.

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