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A STUDY OF MEASLES VACCINE STORAGE CONDITIONS AT BELLARY DISTRICT

Aravind Karinagannavar¹, Bellara Raghavendra², Wahid Khan², Vandana Hiregoudar², T. Gangadhara Goud²

¹Dept of Community Medicine, Pushpagiri Institute of Medical Sciences and Research Institute, Thiruvalla, Kerala, India

²Dept of Community Medicine, Vijayanagar Institute of Medical Sciences, Bellary. Karnataka, India

E-mail of Corresponding Author: draravindmbbs5@gmail.com

ABSTRACT

Background: The vaccine must be stored at refrigerator temperature 2°–8°C. Reconstituted vaccine should be used immediately. There would be loss of potency and complications such as Toxic shock syndrome if used beyond 6 hours of reconstitution. The weakest chain is Primary health Centres and Subcenters. WHO recommends that nothing should be stored in refrigerator other than vaccines but it hardly happens. **Objective:** To assess the storage conditions of measles vaccine at all the PHC's of Bellary District. **Material and Methods:** A Cross sectional study was conducted from May 2010 to April 2011 at areas covered by 53 PHC/PHU of Bellary district. The data was collected by using pretested semi structured questionnaire. **Results:** All the PHC's/PHU's had maintained temperature 2-8°C and had temperature monitoring twice daily for measles vaccine. But only 26 PHC's had maintained temperature book till date. 30 PHC's/PHU's had proper placement of measles vaccine. **Conclusion:** All the PHC's/PHU's had maintained the vaccine at proper temperature but proper location of the measles was not satisfactory.

Keywords: Measles vaccine, Storage condition

INTRODUCTION

In 2002, the World Health Organization estimated that 1.4 million of deaths among children under the age of five were from vaccine-preventable diseases. With 100% immunization, and 100% efficacy of the vaccines, one out of seven deaths among young children could have been prevented.¹ Vaccination can contribute substantially to achieving the Millennium Development Goal of reducing the mortality rate among children under five by two thirds between 1990 and 2015. Measles is a leading cause of childhood morbidity and mortality accounting for

nearly half the global burden of vaccine preventable deaths. In 2007, there were 197000 measles deaths globally nearly 540 deaths every day or 22 deaths per hour.²

Measles vaccine must be shipped with refrigerant to maintain a temperature of 10°C or less at all times. Vaccine must be refrigerated immediately on arrival and protected from light at all times. The vaccine must be stored at refrigerator temperature 2°–8°C, but may be frozen. After reconstitution, measles vaccine must be stored at refrigerator temperature and protected from light. Reconstituted vaccine should be used

immediately. If reconstituted vaccine is not used within 6 hours, it must be discarded. There would be loss of potency and complications such as Toxic shock syndrome if used beyond 6 hours of reconstitution. The weakest chain is Primary health Centres and Subcenters. It is because of lack of proper logistics and lack awareness. WHO recommends that nothing should be stored in refrigerator other than vaccines but it hardly happens. In many health facilities many items like drinking water, food, laboratory items etc will be stored.

As no study has been done on storage conditions of measles vaccine in Bellary district an effort is made to study the same.

OBJECTIVES

To assess the storage conditions of measles vaccine at all the PHC's of Bellary District.

MATERIAL AND METHODS

Topography: Bellary district is spread from southwest to northeast and is situated on the eastern side of Karnataka state. In 2011, Bellary had population of 2,532,383 of which male and female were 1,280,402 and 1,251,981 respectively. Total area under Bellary district is of about 8,447 sq. km.³

A Cross sectional study was conducted from May 2010 to April 2011 in Bellary district. Bellary district has 7 talukas, in that 47 primary health centers (PHC) and 6 primary health units (PHU),

all of which were studied. Data was collected using a pretested semi structured questionnaire. It includes temperature at which vaccine is stored at PHC, Temperature monitor, maintenance of temperature book, storage of unused vaccines, Technical support when there is power cut and location for the vaccine within the refrigerator. Data was analysed using epi-info software version 3.4.3. Before the start of study Institutional Ethical clearance was obtained.

RESULTS

Study included 53 PHC's/PHU's, out of 53 PHC's/PHU's 5 PHC's/PHU's were recently upgraded and get vaccines from nearest PHC so only 48 PHC's/PHU's were studied. The study shows that all the PHC's had maintained temperature 2-8⁰c and had temperature monitoring twice daily. But only 26 (54.2%) PHC's had maintained temperature book till date. 42(87.5%) PHC's had kept unused vaccines separately. All PHC's had technical support when there is power cut more than 48 hours among them 4 had generator facility and remaining PHC's used to shift the vaccine to the nearest PHC. 30 (62.5%) PHC's had proper location of measles vaccine, in remaining PHC's T series vaccines and Measles vaccine were kept along with other things like culture media, food and all.

TABLE 1: STORAGE CONDITIONS OF MEASLES VACCINE

Variables	No. of PHC (n=48)	Percentage
Temperature		
2-8 ⁰ c	48	100
>8 ⁰ c	00	0
Temperature Monitoring		
Once daily	00	0
Twice daily	48	100
Maintained Temperature Record book till date		
Yes	26	54.2
No	22	45.8
Unused vaccine kept separately		
Yes	42	87.5
No	08	12.5
Technical support when there is a power cut		
Yes	48	100
No	00	0
If yes type of support		
Generator	04	8.3
Shift to nearby PHC	44	91.7
Proper location of measles vaccine		
Yes	30	62.5
No	18	37.5

DISCUSSION

Current study shows that all the PHC's had maintained temperature at 2-8⁰c and had temperature monitoring twice daily. But only 54.2% PHC's had maintained temperature book till date. 87.5% PHC's had kept unused vaccines separately. All PHC's had technical support when there is power cut more than 48 hours among them 4 had generator facility and remaining PHC's used to shift the vaccine to the nearest PHC. 62.5% PHC's had proper location of measles vaccine in remaining PHC's vaccine was with T series along with other things like culture media etc. Similar reports were found by studies conducted across the world to quote few a study conducted by Berhane Y et al., showed that, complete temperature record was observed in more than half of the centres. Vaccine storage in the refrigerator was not proper in three fourth of the centres⁴ and Grasso M et al., showed that, out of 52 primary vaccination offices inspected, around three fourth centres had a refrigerator for vaccine storage and other faulty

procedures, such as the storage of food and laboratory specimens in vaccine refrigerators and the storage of vaccines on refrigerator door shelves.⁵ This was also found in the present study, so the person incharge and the PHC doctors need to be orient about the importance of vaccine storage according to WHO standards and also not to keep any other items along the vaccines.

Pai HH et al. showed that the majority stored articles other than vaccines in their vaccine refrigerators. 25 clinics (39.7%) equipped their refrigerators with UPS (uninterruptable power system). But in our study only 4 PHC;s had this facility and also they discovered inappropriately high temperatures (> 8 degrees C) in 22% of all refrigerators.⁶ The main problem is lack of orientation to the health personal which was shown by Thakker Y et al., they showed that out of the 40 respondents, only 16 were aware of the appropriate storage conditions for the vaccines; eight had minimum and maximum thermometers but only one of these was monitored daily.⁷ So

there is a need reorient the health personal regarding importance of vaccine potency and the proper storage of the vaccine.

CONCLUSION

All the PHC's/PHU's had maintained the vaccine at proper temperature and also monitored the temperature twice daily, but the temperature book was not updated in many PHC's. And also many PHC's didn't have proper location of the measles vaccine and it was kept other things like culture media, food etc. So there is a need for reorientation of the staff regarding proper storage conditions of Measles vaccine.

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