

ORIGINAL ARTICLE

Assessing the Delivery and Effectiveness of a New Immunisation Training Initiative at District Level in Zambia

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ABSTRACT

Objectives: The objective of the study was to evaluate the effectiveness of the training initiative to identify the challenges of immunisation at the district level in Zambia. The secondary objective was to assess the immediate impact of the training on the perceived competence of trainees who attended the Mid Level Management (MLM) course on immunisation.

Methods: A needs assessment of the EPI programme in Zambia was conducted. Participants were assessed on their ability, competence, knowledge and skills in areas such as understanding the Reach Every District (RED) strategy, vaccine management, cold chain management, and immunisation monitoring. Based on these assessments, 12 areas were identified as of particular relevance, and the World Health Organisation MLM course manual was adapted to reflect them. Two groups of 25 participants were

assessed at two different time points with an interval of six months.

Results: There was a significant increase ($p < 0.05$) after training in the participants' perceived ability, competence, knowledge and skills in all the targeted areas except for understanding the RED strategy, capacity to supervise immunisation activities and immunisation coverage.

Conclusion: The two training groups showed significant improvement after training in perceived ability, competence, knowledge and skills in most targeted areas. To sustain high immunisation coverage, there is an urgent need to improve supportive supervisory visits and to have more frequent and regular MLM immunisation training workshops.

INTRODUCTION

Zambia is a landlocked country with a population of 12 million people¹. The country's health service delivery system consists of nine provincial administrative structures made up of 72 districts¹. The district health management teams oversee a

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Key words: Mid Level Management course, Immunisation, District challenges

total of over 1500 health centers². Further, a district health management team encompasses a district hospital and tens of health centers.

The Mid Level Management (MLM) course was developed by the World Health Organization (WHO)³ and has been used extensively in Africa for the past 15 years, and in Zambia for the past 7 years. The MLM course is designed to address the challenges of implementing the Expanded Programme on Immunisation (EPI) in developing countries⁴. However, delivery of the full version (24 modules) of the course is a challenge given the financial and time constraints in most resource poor countries such as Zambia.

The Ministry of Health, Child Health Unit (MoH-CHU), adopted and adapted the MLM course into an 11 module, 6 day course which addresses local challenges. However, this course has not been held since 2004 due to financial constraints.

Merck Vaccine Network-Zambia (MVN-Z) is a new partner funded by the Merck Company Foundation with the specific aim of improving immunisation training at MLM level. In January 2009, MVN-Z in collaboration with the MoH-CHU undertook a comprehensive needs assessment of the EPI programme in Zambia. Several challenges were highlighted, many of which were the same as those identified repeatedly in poorly resourced countries and for which the MLM modules were specifically developed⁵.

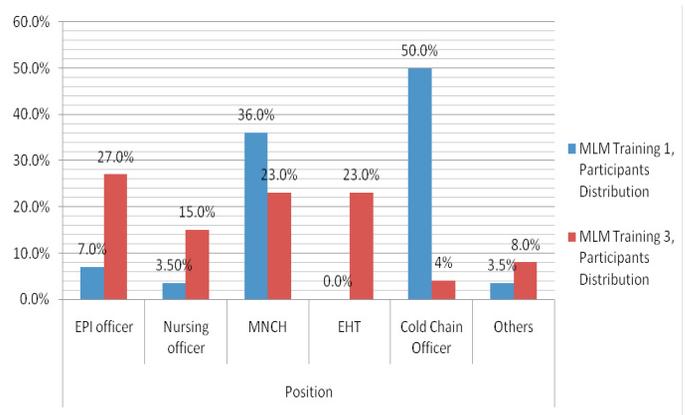
Objectives and context

The aim of the project was to evaluate effectiveness of the training initiative to address the challenges faced by districts in immunisation service delivery, and to assess its immediate impact on the perceived competence of trainees. It has been well recognized that capacity building of health workers in immunisation improves the overall immunisation service delivery with improved child survival.

METHODOLOGY

Participants: The project studied participants in the first and third MLM training courses (I and III) held as part of the MVN-Z training initiative. Participants for these courses predominantly came from poorly-performing districts, but with an admixture of trainees paired with well-performing districts. The health workers came from both provincial and district levels. Though the participants' positions were diverse, they were involved in EPI service delivery and included; Maternal and Child Health Coordinators, Cold Chain Technicians, Health Planners, Senior Nursing Officers, EPI Officers, Pharmacists, Environment Health Technicians (EHT) and Prevention Of Mother To Child Transmission Officers. Figure 1 summarises the distribution of the participants' work background in MLM-Training I and III. Cold chain officers were relatively over-represented in MLM-Training I (50%) as compared to 4% in MLM training III. The participants in MLM-Training III were generally well distributed amongst EPI officers (27%), Nursing officers and Environmental Technicians both at 23%.

Figure 1: Background work distribution of the participants in MLM-Training I and III



Procedure: A shortened version of the MLM course, consisting of 11 modules was developed by MVN-Zambia and MoH-CHU and delivered in 6 days³. In the needs assessment of the EPI programme, well, intermediate or poorly performing districts in Zambia were identified using a range of

markers of immunisation performance^{5,6}. A total of three MLM training sessions have so far been conducted in which all the poorly performing districts have been trained. In this communication, only results from Training I and III have been highlighted.

A pool of facilitators were identified (including officials from MoH-CHU, WHO, UNICEF, MVN-Z and Health Systems Support Programme), all of whom had different backgrounds and qualifications though with experience of immunisation training. A four day Trainer of Trainers workshop for the facilitators to refresh and upgrade their teaching skills was held.

Two independent observers were invited to the MLM training workshops; an educationalist, whose role was to assess the effectiveness of the training and a communications specialist tasked to comment on the communications elements in the training. Their observations are reported separately.

Measure of perception: A self completed on site report questionnaire was designed to measure the perceived ability, knowledge, skills and competence in 13 parameters as summarised in Table 1. The same questionnaire was administered both before the training commenced and at the end of the six day MLM training. The questionnaire consisted of statements concerning ability / knowledge / skill /

competence included in the training program (Table 1). Participants were required to tick against excellent, satisfactory or limited. Additional space was provided for any other comments.

Data analysis: As the data was not normally distributed, Wilcoxon test was used to establish if there was a significant difference in responses before and after the training program.

RESULTS

Nature of participants and response rates: There were 25 participants who attended the Training I; 8 from well performing districts and 17 from poorly performing ones. All the 25 participants completed the pre-training questionnaire, and 21 participants completed the post-training questionnaire. Of the 25 participants, 17 had received previous training (seminars, workshops) in immunisation while 8 had no previous in-service training. Training III had 26 participants, 10 of whom came from the well performing and 16 from the poorly performing districts. All the 26 participants completed the pre-training questionnaire and 24 participants completed the post-training one. 17 participants had received previous training in immunisation and 9 had not.

Comparison of pre and post training response: Medians for pre- and post-training measurements on the various aspects in the training with their respective p-values are summarised in Table 1.

Table 1: Pre- and post- training difference in ability, competence, knowledge and skills for MLM-Training I and III

Ability/competence/knowledge/skill	Median -Pre Training 1 (SD)	Median -Post Training 1 (SD)	P value for Training 1	Median -Pre Training 3 (SD)	Median -Post Training 3 (SD)	P value for Training 3
1. Understanding RED strategy	2.00 (0.69)	3.00 (0.48)	P=0.11	2.00	2.00	P=0.11
2. Ability to apply problem solving approach to immunization service	2.00 (0.52)	3.00 (0.46)	P=0.008*	2.00 (0.52)	3.00	P=0.002*
3. Knowledge and skills to increase immunization coverage	2.00 (0.58)	3.00 (0.22)	P=0.002*	3.00	3.00	P=0.001*
4. Ability to manage vaccines	3.00 (0.57)	3.00 (0.21)	P= 0.02*	2.00	3.00	P= 0.001*
5. Knowledge and skills to manage cold chain	2.00 (0.66)	3.00 (0.40)	P= 0.002*	2.00	3.00	P= 0.005*
6. Competence to ensure immunization safety	3.00 (0.64)	3.00 (0)	P= 0.01*	2.00	3.00	P= 0.004*
7. Knowledge and skills to plan immunization services to the community	3.00 (0.50)	3.00 (0)	P= 0.003*	2.00	3.00	P= 0.008*
8. Ability to manage integrated disease surveillance	2.00 (0.55)	3.00 (0.50)	P= 0**???	1.50	2.00	P= 0.012*
9. Competence to monitor immunization activities and manage data	2.00 (0.48)	3.00 (0.35)	P= 0.004*	2.00	3.00	P= 0.001*
10. Capacity to supervise immunization activities/ programs	3.00 (0.47)	3.00 (0.30)	P= 0.06	2.00	3.00	P= 0.001*
11. Ability to conduct immunization services assessment	2.00 (0.57)	3.00 (0.46)	P= 0.02*	2.00	2.00	P= 0.002*
12. Competence to monitor immunization activities	2.00 (0.61)	3.00 (0)	P= 0**???	1.00	2.50	P= 0*
13. Manage new vaccine introduction in EPI programme	2.00 (0.60)	2.00 (0.46)	P= 0.02*	2.00	2.00	P=0.11

*P<0.05

For either training, there was a significant increase after training in the participants' perceived ability, competence, knowledge, and skills in all the targeted areas with the exception of the following categories: *i)* Understanding RED strategy and Capacity to Supervise Immunisation Activities and Programs for Training I; *ii)* Understanding RED strategy and **Knowledge and Skills to Increase Immunisation Coverage** for Training III.

DISCUSSION

By applying a targeted strategy of delivering immunisation training to mid-level managers in Zambia, we have been able to demonstrate an immediate and significant impact of a focused 6-day training course. Participants have shown significant improvement in their perceived ability, knowledge, competence and skills over a wide range of areas in immunisation service management (Table 1).

Understanding RED strategy did not show significant improvement in either Training I or III. The facilitators who handled this section in the two trainings were different, suggesting that the facilitator was not the major factor in this lack of improvement.

The RED strategy, which was endorsed by the 10th Task Force for Immunisation in Africa in December 2002 and is now being implemented by approximately 65% of African countries, has five key operational components^{8,9}. They are; *re-establishing outreach, linking communities with service delivery, providing supportive supervision, ensuring monitoring for action, better planning and management of resources*. These elements are crucial in ensuring that all children eligible for vaccination are reached and therefore forms a fundamental part of the course. Since Red Strategy is pivotal in reaching every child eligible for immunisation, special attention should be given to this topic in future trainings.

Training III recorded a significant reduction in the perceived ability, **knowledge, competence, and skills to increase immunization coverage**. This component was handled by a new MLM facilitator who may have had less experience in delivering the

subject matter efficiently than in Training I. This emphasizes the need for regular MLM facilitators' orientation and trainer's workshops. However, an alternative explanation may be that the participants had previous training and further training did not enhance their perceived knowledge.

The overall immediate impact of the course on the participants was very positive. They gained and demonstrated impressive skills, for example in the *problem solving approach in immunisation service*. This is extremely helpful particularly because of the limited supportive supervision that exists currently. EPI Managers and service providers need to be able to identify problems and find solutions if the EPI programme in Zambia is to be sustainable.

The ability to manage vaccines, and the knowledge and skills of cold chain management is as important as problem solving. An effective vaccine delivery system is pointless if the vaccines are themselves inactivated as a result of poor handling and storage. Zambia's children can only be protected from the vaccine preventable diseases if they are immunised with potent vaccines, which should be administered in a timely and correct manner. Ensuring immunisation safety through proper handling and disposal by incineration of used needles and vial bottles is particularly important in view of the HIV/AIDS pandemic. The participants demonstrated competency in both these areas.

The participants appreciated the session on the introduction of new vaccines. The EPI in Zambia is planning to introduce Pneumococcal Conjugate and Rotavirus vaccines in the near future.

A potential weakness inherent in this study is that it relies on participants' self-report. We intentionally avoided subjecting participants to an examination-style of knowledge assessment in the form of pre- and post-training tests because of the concerns that this would demoralize the weaker adult participants⁷. Further, tests tend to skew assessment to measurement of factual knowledge. We used a non-

threatening method to assess participants' individual training needs coming into the course, and to assess and address their continuing training needs once they returned to their districts. Perhaps more importantly, what is yet to be shown is the participants' ability to apply knowledge and skills on the ground.

There is a high rate of development of innovations and new technologies in immunisation practices as was also noted in the MLM course evaluation for the period 2000-2004⁸. Regular and well organized MLM courses are indispensable in helping orientate and update EPI Managers at national, provincial and district levels, and to inform them of new strategies and techniques in planning and managing immunisation services efficiently with limited resources. This is particularly true given that there is a high health worker turnover and attrition rate.

CONCLUSION

Both training groups showed significant improvement after training in perceived ability, competence, knowledge and skills in most targeted areas. To sustain high immunisation coverage, there is an urgent need to improve supportive supervisory visits and to have more regular MLM immunisation training workshops. All participants found the modified MLM course to be relevant to their work as it updated them on new developments and helped to fill their knowledge gap. Our findings suggest that this method of delivering training will help to ensure a more efficient, complete and comprehensive implementation of the EPI programme in Zambia.

ACKNOWLEDGEMENTS

The authors wish to acknowledge the financial support of the Merck Company Foundation, and in particular Kris Natarajan, (Director, Global Vaccine Initiatives), for his technical and facilitatory support. We also thank Mr. Victor Sakala, Product Specialist, Merck Sharp & Dohme (Zambia) for his guidance and support from the inception of the project.

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