

Original Research Article

Evaluation of the Efficiency of the Logistics Management of Vaccines and Consumables in the Health District of Fana

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Abstract: Vaccination is one of the most efficient public health interventions in developing countries with epidemiological facies dominated by communicable diseases. **Objective:** To evaluate the efficiency of the logistical management of routine EPI vaccines and consumables in the Fana health district from 01 December 2018 to 30 November 2019. **Results:** The efficiency of the health areas in monitoring the storage temperature of vaccines (+2°C to +8°C) was 94.54%. The district obtained a rate of 100% in the management of stocks of vaccines and consumables. As for the quality of the cold chain equipment, the average rate obtained by the health district was 96.81%. The rate obtained by the district was 100% in relation to the maintenance of the cold chain equipment. In stock management, the average rate recorded in the district was 97.27%. The district obtained a rate of 100% in the efficiency of the vaccine management system. The average rate obtained by the district was 96.59% in the correct use of diluents. In the implementation of the Policy on opened vials (PFE), the rate obtained by the district was 90.81%. During the period, the management is 89.18% for the control of vaccine losses. **Conclusion:** All the cold chain equipment used for vaccine storage (Churchill solar fridges and vaccine carriers) comply with World Health Organization standards.

Keywords: Efficiency, Logistics, Vaccines, Consumables, Fana.

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INTRODUCTION

Vaccination is one of the most efficient public health interventions in developing countries with epidemiological facies dominated by communicable diseases [1]. Vaccine and consumables are one of the essential resources, if not the main one, of the Vaccine Independence Initiative implemented since 1996 by the African States with the support of the European Commission and other partners of the Expanded Programme on Immunisation (EPI), notably UNICEF (United Nations Children's Fund) [2]. The EPI for Mali was launched in December 1986 by the President of the Republic. Thus the first EPI document (Expanded Programme on Immunisation) for Mali was developed and adopted by the development partners on 24 April 1986[3]. Through the Ten-Year Health and Social Development Plan (PDDSS), the Malian State has made the EPI a strategic programme that is at the centre of the sectoral health and population policy, which is implemented through the Health and Social Development Programme (PRODESS) [2]. These

objectives cannot be achieved without effective vaccine management [3].

OBJECTIVES

To assess the efficiency of the logistical management of vaccines and consumables of the routine Expanded Programme on Immunization (EPI) in the health district of Fana from 01 December 2018 to 30 November 2019, to evaluate the availability of vaccines and consumables and to assess the quality of the cold chain in the health district of Fana.

MATERIALS AND METHODS

Type of study

This was an analytical, cross-sectional, descriptive study related to the evaluation of the logistical management of vaccines and consumables of the Expanded Programme on Immunisation (EPI) in the Fana Health District extended over 12 months, from 01 December 2018 to 30 November 2019 inclusive. The sampling was exhaustive and involved 43 agents,

including 21 technical directors of community health centres (DTCs), 21 vaccinators from the 21 functional health areas and 1 EV officer from the CSRéf.

Inclusion criteria

All the functional Community Health Centres (CSComs) in the Fana health district carrying out immunisation activities and who agreed to participate in the study.

Non-inclusion criteria:

Non-functional CSComs were not included in the study.

Collection tools:

The information was collected using the following tools:

- An individual questionnaire for vaccinators
- An observation grid for cold chain equipment and vaccine management supports.
- A documentary analysis grid

Data collection and analysis techniques:

The techniques used are:

- Individual interviews with the people involved in the management of EPI vaccines and consumables
- Observation of vaccine management tools
- Documentary analysis

This information was entered and analysed in a previously established Excel file.

Dynamic cross-tabulations and graphs were generated for interpretation.

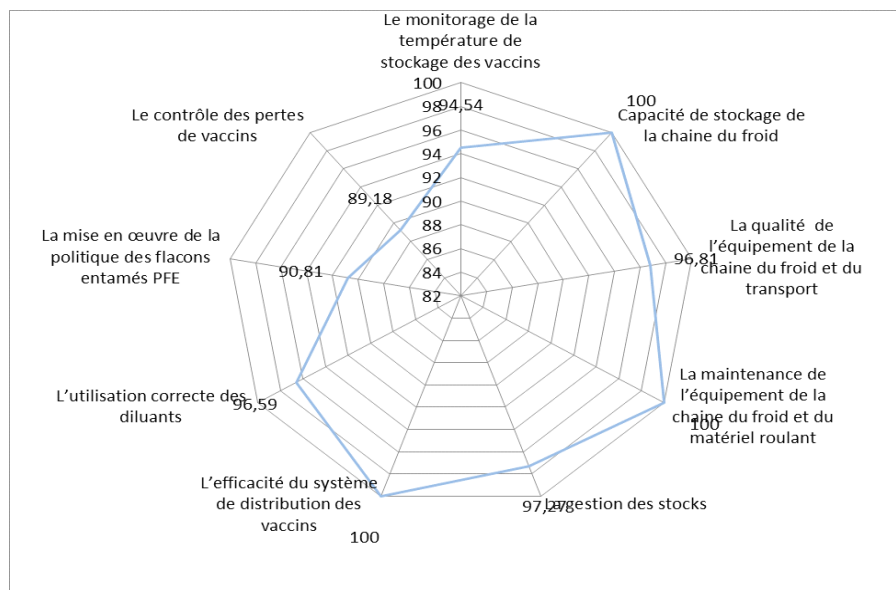
Variables:

The following variables were studied:

- Vaccine storage temperature monitoring;
- Cold chain storage capacity;
- The quality of the cold chain equipment and transport;
- Maintenance of cold chain equipment and rolling stock
- Stock management;
- The efficiency of the vaccine distribution system;
- The correct use of diluents;
- Implementation of the open vial policy;
- Control of vaccine wastage

RESULTS

Overall distribution of vaccine management variables in the Fana health district



The efficiency of the health areas in monitoring the storage temperature of vaccines (+2°C to +8°C) was 94.54%. The district obtained a rate of 100% in the management of stocks of vaccines and consumables. As for the quality of the cold chain equipment, the average rate obtained by the health district was 96.81%. The rate obtained by the district was 100% in relation to the maintenance of the cold chain equipment. In stock management, the average rate recorded in the district was 97.27%. The district obtained a rate of 100% in the efficiency of the vaccine management system. The average rate obtained by the district was 96.59% in the correct use of diluents. In the

implementation of the policy on opened vials (PFE), the rate obtained by the district was 90.81%. During the period, the management is 89.18% for the control of vaccine losses.

DISCUSSION

Monitoring of vaccine storage temperature

The rates varied between 60% and 100% with an average rate of 94.54%. This result is higher than that of a study carried out in Benin by Dr. Bernard A TOSSOU, whose theme is the evaluation of the management of vaccines and vaccine consumables in the Lokossa health zone, where he obtained 90% [4].

The storage capacity of the cold chain

The cold chain storage capacity for all the CSCCom in the health district is sufficiently adequate with a satisfaction level of 100%. This result is comparable to those of the study carried out in 2007 by DR Diarra, Study of vaccine management in 2007 in the Tomian health district, whose overall performance is 100% [5]. The quality of the cold chain equipment The average rate obtained in the health district was 96.81%. This rate is higher than that of Dr. Bernard, which obtained 72% [4]. The shortcomings noted concern the freezing capacity of the accumulators of certain CSCCom and the quantity of coolers and vaccine carriers to meet peak demands during mass campaigns.

Maintenance of cold chain equipment

The rate obtained by the district was 100%. This rate is higher than that obtained in the Union of the Comoros (77% for the central level), which is lower than the Union's 80% target [6].

Stock management

The average rate recorded in the district was 97.27%. This rate is higher than those obtained in the Lokossa health zone (67%) [4] and in the Union of Comoros (66%) at the regional level [6].

Correct use of diluents

The average rate obtained by the district was 96.59%: Our results are higher than those obtained by Dr Bernard 86% [4]. Implementation of the opened vial policy and control of vaccine wastage. The open vial policy, adopted by the WHO in 2000, is one of the key indicators for reducing vaccine wastage rates [1] The rate obtained by the district in implementing the open vial policy is 90.81%. This result is lower than that of Dr Bernard [4] who obtained 100% and higher than the 50% obtained in the WHO evaluation [6]. Our higher rates than those of the studies carried out by [4] and [6] can be explained essentially by the training on the efficient management of vaccines and consumables, on the preventive maintenance of cold chain equipment, on the formative supervision from which the district benefited, but also by the provision of all the health areas with approved solar refrigerators. Our wastage rate of 89.18%, which is lower than the WHO's 95% for vaccine wastage control, could be explained in part by compliance with the policy on opened vials, but also by the low attendance at the immunisation sites, especially in the advanced strategy. The average performance of the Fana health district in monitoring wastage is 89.18%, so the performance objective of 95% has not been achieved.

The WHO evaluation of vaccine management shows poor control of wastage (21% satisfaction) [6]. All the former Technical Directors of the Community Health Centres in the Fana health district have mastered the calculation of vaccine wastage rates and have integrated it into the calculation of needs. They have been trained in the DVD-SMT software which allows the calculation of EPI data.

Overall performance of vaccine management:

The average overall performance is 96.52%. It is clearly higher than that obtained by Dr. DIARRA in a 2007 study on vaccine management in the Tomian health district [5]. This good performance could be explained by the willingness of the political and administrative authorities, as well as the partners, notably UNICEF and WHO, to ensure the success of the Expanded Programme on Immunisation (EPI) activities through technical and financial support.

CONCLUSION

All the cold chain equipment used for storing vaccines (Churchill solar refrigerators and vaccine carriers) comply with WHO standards; There is a reliable source of energy (solar) for storing vaccines in the CSCCom of the Fana health district; Most of the agents responsible for managing vaccines at all levels know the storage temperature of the vaccines, the interpretation of the PCV and the policy on opened vials Existence of a vaccine movement book in all the CSCCom of the health district; Presence of continuous temperature records for the refrigerator (FRIDGE-TAG) for reliable control of the storage temperature of the vaccines in the cold chain; Some CSCCom lack adequate rolling stock for transporting vaccines and moving them into advanced strategies.

REFERENCES

1. Appui au Renforcement de l'indépendance Vaccinale en Afrique : Manuel de procédures pour l'approvisionnement et le Financement des vaccins et consommables par le circuit UNICEF document électronique <http://www.ariva.bf> ; 1- 7p.
2. Ministry of Health: Ten-year health and social development plan (PDDSS) 2014-2023 validated version
3. Ministry of Health: Training module for vaccinators, revised version in November 2011
4. Bernard, A. T. Evaluation of the management of vaccines and vaccine consumables in the Lokossa health zone
5. Diarra. Study of vaccine management in 2007 in the Tomian health district
6. Evaluation of effective vaccine management (EVM) in the Comoros: November 2012 report.

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