

Integrated data monitoring and referral systems for community-based management of acute malnutrition (CMAM) in Mozambique



CHILDREN, FOOD SECURITY
AND NUTRITION

CASE STUDY:
MOZAMBIQUE

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Children, Food Security and Nutrition Thematic Area

Millennium Development Goal Fund

Development of case study on

Integrated data monitoring and referral systems for Community-based management of acute malnutrition (CMAM) in Mozambique

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By Mae Tortajada Suils

1. Abstract

One of the objectives of the “Delivering as One” initiative of the United Nations, financed by the Millennium Development Goal Fund (MDG-F) was to expand the Community-based management of acute malnutrition (CMAM) programme, what is known as the Nutrition Rehabilitation Programme (or Programa de Reabilitação Nutricional (PRN)).

The PRN envisions the treatment of severe acute malnutrition (SAM) without complications on an outpatient basis with to the use of Ready to Use Therapeutic Foods (RUTF), in addition to inpatient treatment for SAM with complications and outpatient treatment for moderate acute malnutrition (MAM).

To this effect, the Ministry of Health (MOH) approved the Volume I of a new protocol for the PRN covering children from 0-15 years of age, in August 2010.

This marked the expansion to the whole country with a series of regional trainings of trainers that reached district level.

However, there are a few challenges that have arisen:

- 1) The update of the Health Information system (SIS) by the Health Information Department (DIS) started just before the launch of the new PRN protocol. All monitoring tools need to be approved before they can be used. So, due to the timing, the PRN tools and indicators are not yet within the SIS.
- 2) The lack of long term availability of funds for reproduction of recording and reporting tools and job aids such as forms, reference tables as well as supply of supplements such as RUTF, therapeutical

milks and CSB. This has led to the use of different versions of tools through the country and a delay on the training coverage. Consequently, information reaches province level in different formats making it almost impossible to enter it into the PRN database.

- 3) Standard quality trainings throughout the country for clinical as well as monitoring purposes, depend on cascade training from provincial level, are carried out on an ad hoc basis depending on the availability of funds.
- 4) Ensuring quality scale up of community involvement.
- 5) Ensuring standard recording and reporting monitoring throughout the country.

As a consequence of the different versions of tools as well as the lack of trained staff, there are no data on the PRN available at central level for 2012. Information reaches province level in different formats making it almost impossible to enter it into the PRN database.

The transition to the new protocol for PRN is still taking place but monitoring of the new protocol has not yet reached all the health units running PRN.

Also, the community involvement for the community management of acute malnutrition (CMAM) has only been properly developed in a few districts and has still to be replicated to the rest of the country.

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Acronym	Definition
CCR	At Risk Child consultation
CHW	Community Health Workers
CMAM	Community management of acute malnutrition
CSB	Corn Soy Blend
DHS	Demographic and Health survey
DIS	Health information department
DPS	Provincial Health Department
EGPAF	Elizabeth Glaser Paediatric Aids Foundation
HDI	Human Development Index
HC	Health Centre
IDS	Demographic and Health survey (DHS)
IYCF	Infant and young children feeding
JP	Joint program
MAM	Moderately acute malnutrition
MDG	Millennium development goal
MICS	Multiple indicator survey
MOH	Ministry of Health
MUAC	Mid upper arm circumference
NEP	Centre of provincial Statistics
NGO	Non governmental organizations
NID	Identification number
PRN	Nutrition rehabilitation program
RUTF	Ready to use therapeutic food
SAM	Severe acute malnutrition
SDSMAS	District services for Health, women and social services
SIS	Health Information System
SMI	Mother and Child Health
TARV	Antiretroviral treatment
TDA	Outpatient treatment
TOT	Training of Trainers
UN	United Nations
UNICEF	United Nations International Children's Fund
WFP	World Food Organization
WHO	World Health Organization

2. Introduction

2.1. Introduction of main research theme and historical background

The main research theme is the monitoring of the Nutrition Rehabilitation Program. To understand why this case study has been chosen, a bit of history on the treatment of acute malnutrition is needed.

In many countries, the treatment of Severe Acute Malnutrition (SAM) takes place in dedicated feeding centres and during emergency situations. In Mozambique the treatment of SAM has always been integrated within the regular health system, making it a unique example.

Traditionally, treatment for SAM took place as inpatient treatment in hospitals for up to a month. Children were treated with specially formulated therapeutic milks or locally made ones based on milk, oil and sugar (LOA). However, coverage was low and many children were discharged too early or abandoned treatment since inpatient treatment was not an option for parents who could not leave their homes for several weeks. Also, risk for cross infections were high and mortality rates for inpatient were above international standard (10% as per *Sphere* standards).

In 2004 Ready to Use Therapeutic Foods (RUTF) were introduced for the treatment of malnutrition, with the result that children with SAM but without medical complications could be treated as outpatients. Only children with complications remained in the hospital for a shorter period of time and continued treatment as outpatients as soon as the medical complications had been addressed. The Ministry of Health (MOH) started revising the program for Nutritional Rehabilitation (PRN) and in 2006

introduced the Community based Management of Acute Malnutrition (CMAM), starting as a pilot in Nampula.

Save the Children supported the Nampula province health authorities, and specifically the district health authorities of Ribaué, Memba and Erati, from 2008 to 2011 with the introduction of outpatient treatment with community involvement, for severe acute malnutrition. They trained health facility staff and community volunteers and leaders and provided technical support for the implementation of the draft versions of the new protocols for inpatients as well as outpatients. In this process, the protocols were revised and improved.

In addition to the implementation of the new protocols, Save the Children supported the district and provincial health authorities with the revision of the recording and reporting tools and with the pilot testing of these tools.

In CMAM, Community Health Workers (CHW) screens children for acute malnutrition in the communities. Any child found to be malnourished is referred to the nearest health centre. The term CMAM has not been well accepted in Mozambique because it suggested that the management of malnourished children is only carried out in the communities, whereas it is initiated in a health centre on an outpatient bases, and with follow up by the health centre. Therefore, instead of CMAM, the programme is named Programa de Reabilitação Nutricional (PRN), i.e. Nutritional Rehabilitation Programme. Thus, the CMAM will henceforth be referred to as PRN.

In Mozambique, outpatient treatment with RUTF for SAM (without complications) was first introduced in Maputo City. The first target group were children living with HIV as many were

malnourished. It was soon mainstreamed for the treatment of all children with SAM in 2007.

In June 2007, a joint global statement by the World Health Organization (WHO), the World Food Programme (WFP), the United Nations Standing Committee on Nutrition (SCN) and UNICEF highlighted new evidence that about three-quarters of children with severe acute malnutrition – those who have a good appetite and no medical complications – can be treated at home with highly fortified, ready-to-use therapeutic foods (RUTFs) See Reference n 5

Moderate Acute Malnutrition (MAM) was initially only dealt with through nutrition counselling to the mothers but the World Food Program (WFP) introduced Corn Soy Blend (CSB) to be used regularly in the districts which are not in an emergency situation. However, while the geographical areas of support have been expanding, WFP does not support treatment of MAM with CSB in all provinces and all districts, thus where there is no CSB, Plumpy¹ nut is used for MAM children. Therefore, the new protocol

(Volume I 2010) recommends treating both SAM and MAM children as outpatients with RUTF and where CSB is available, use it for MAM treatment.

As the treatment of Malnutrition has always been integrated within the regular health system, the Nutrition Rehabilitation programme (PRN) is an integrated programme within the regular health system; the main aim of the PRN is to reduce the number of deaths due to SAM as well as to reduce the incidence of SAM by improving early detection, referral and treatment of children with MAM through five components:

¹ The best known RUTF in Mozambique is Plumpy nut (peanut-based paste, with sugar, vegetable fat and skimmed milk powder, enriched with vitamins and minerals; provide 500 kcal, and it can be used for up to 24 months after the date of manufacture without refrigeration) as described on the Nutriset website. The RUTF used in Mozambique is partially imported and partially procured from a local producer.

- (1) active case finding and referral at the community level,
- (2) inpatient treatment for SAM with medical complications,
- (3) outpatient treatment for SAM without medical complications,
- (4) outpatient treatment for MAM,
- (5) Nutrition education at the community and health centre levels.

But to assist on this transition, from inpatient to outpatient treatment of malnutrition, all nutritional protocols had to be updated. The revision of the PRN manual now covering children from 0-15 years of age using the lessons learnt from the pilot in Nampula Province, started in 2005 and completed in 2010, with new reporting forms and databases that compose the whole monitoring system for acute malnutrition.

The Volume I for PRN (for children 0-15) was approved by the MOH in 2010 but the monitoring forms, databases and malnutrition indicators were still pending approval as well as integration into the “Modulo basico”, the national health reporting system, by the Department of Health Information in the Ministry of Health.

Volume II (for adults) is currently being elaborated.

2.2. Statement of problem, and its justification

From the start in 2007 of integrating the PRN activities into the general health system, there have been many notable successes such as the finalization and approval by the MOH of the new PRN protocol in 2010 and the development of a new system for monitoring program outputs and

results. Also the lack of parallel programs by partners; the majority of funds are channeled through MOH even though most nutrition products such as therapeutic milks, RUTF and CSB+ are purchased by donors on request from MOH. Currently all the support goes under the PRN program for the MOH and the clinical partners have coordination meetings with MOH to plan for PRN.

However, the problem that arises with the implementation of the new protocol is the lack of data at central level. The implementation of the monitoring system ran parallel to the clinical implementation but, as it is a new program, the monitoring system was not yet well established and till date no data on malnutrition is available at central level.

The efforts to improve the functioning of the monitoring system have been considerable, but there is a need to study the flow of information to be able to identify bottle necks in the system and possible solutions to improve them. This study will assist other countries currently scaling up the CMAM programs and encountering similar problems on the implementation of the monitoring system.

2.3. Aims of the case study

Following the Terms of Reference, the study aims to follow-up on the implementation of the monitoring system for the PRN by:

- Describing how the nutrition information system for the PRN has been designed and implemented in Mozambique and to document the development of PRN monitoring tools, including:
 - Individual- and program -level monitoring forms, described per level of implementation;

- a database to track admissions and outcomes at provincial level;
- A database to manage the stocks of RUTF, CSB Plus and therapeutic milks.

- Examining how these tools assist in monitoring the flow of information (between different parts of the health system, and between providers and patients), and how this data is being utilized for monitoring, evaluation and systems planning.
- Evaluating how nutrition information tools have impacted the program's efficiency in managing PRN and how it has improved the integration of PRN into the health system.

3. Background and Context

3.1. Situational context

Mozambique has got a population of just under 23 million inhabitants, of which about 17 per cent are under five years of age. More than half the population (55%) lives in poverty¹. In 2008, under-five mortality was 141 per 1,000 live births. By 2011, this had reduced to 97 per 1,000. During the same period, infant mortality rates also reduced from 95 to 64 per 1,000.

Mozambique ranked 184th out of 189 countries for the Human Development Index (HDI) in 2011.

Table 1 Health context 2008/2011

Indicator	MICS 2008	DHS 2011
Mortality (<5 years)	141 ⁰ / ₀₀	97 ⁰ / ₀₀
Mortality (<=1 year)	95 ⁰ / ₀₀	64 ⁰ / ₀₀
Low weight prevalence	18%	15%
Chronic malnutrition	44%	43%
Acute malnutrition	4%	6%
Vitamine A Children (< 5 years)	72%	100%

In 2008, 16 per cent of newborns had a low birth weight (under 2,500 grams). Chronic under

nutrition rates have remained stubbornly high for many years; 44 per cent in 2008 and 43 per cent in 2011. However, acute under nutrition rates are relatively low, with 6 per cent in 2011. There has been more improvement in child health and nutrition indicators in rural areas than in urban areas. There are also marked differences between provinces, with chronic under nutrition prevalence ranging from 55 per cent in the northern province of Nampula to 23 per cent in the province of Maputo (Figure 1).

▪ The place of nutrition in Government systems and structures

As described by Possolo, Novele and Arts (2012) (see reference n 1) the Ministry of Health has a Nutrition Department under the National Directorate of Public Health, which is responsible for policy and protocol development as well as the planning and oversight of nutrition activities at all levels. The treatment of acute malnutrition

is mainstreamed into regular health services (both during and outside of emergency situations).

The responsibilities of the Nutrition Department are divided in five main areas 1) Nutritional Surveillance; 2) Nutrition Education; 3) Prevention and Control of Under nutrition and Micronutrient Deficiencies; 4) Nutrition and HIV and Tuberculosis; and 5) Nutrition and Non Communicable Diseases.

At present, the Nutrition Department manages 6 programs:

1. Nutrition Rehabilitation Programme
2. Micronutrient Supplementation Programmes / deworming in preschool
3. Nutrition and HIV and Tuberculosis
4. Infant and Young Child Feeding (IYCF)
5. Food fortification
6. Health and Nutrition Promotion and School Nutrition

2011

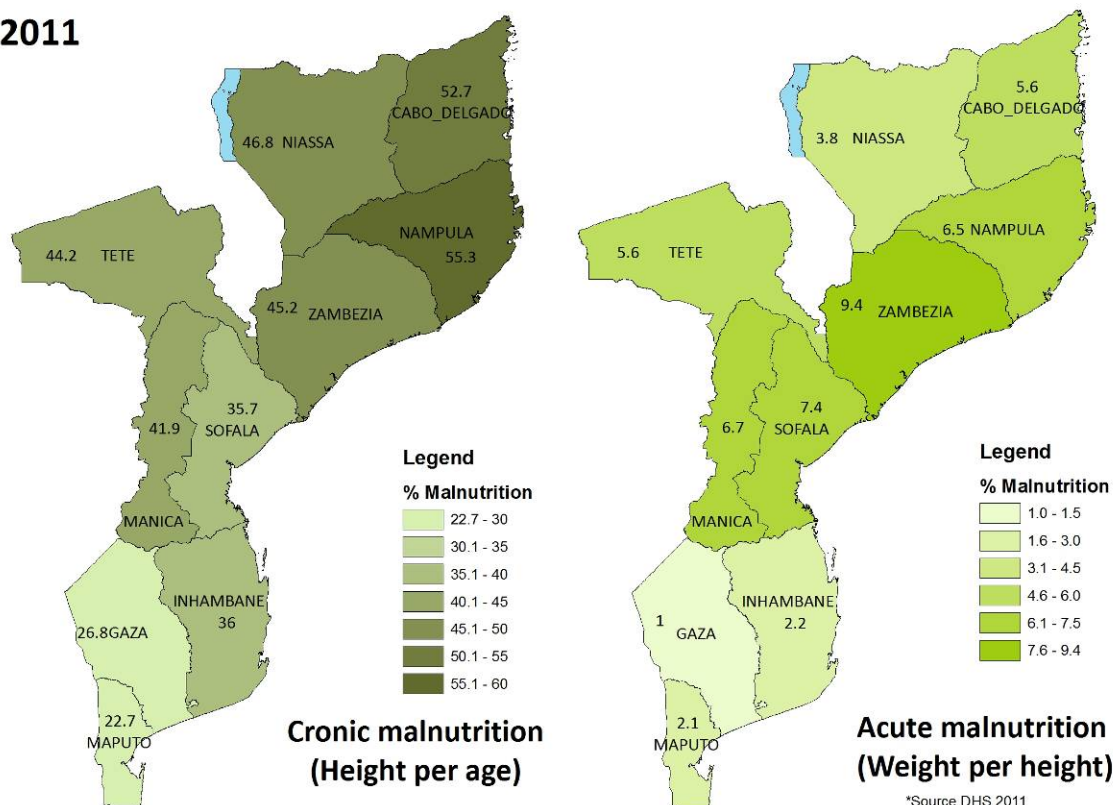


Figure 1 Malnutrition in 2011 per province

3.2. MDG-F Joint Programme: aim, design, rationale, focusing on research theme of the case study

The United Nations in Mozambique, under the “Delivering as One” initiative formulated a 5.5 million USD Joint Programme (JP) financed by the Millennium Development Goal Fund in response to the effect of rising food prices on vulnerable people in Mozambique.

Table 2 JP Main outputs

JP on children, food security and nutrition. MDG-f
Output 1: An effectively functioning and expanded system to treat severely and moderately malnourished children is operational in programme areas by the end of 2011.
Output 2: An effective way of delivering key preventative interventions to children <5
Output 3: An effectively functioning and expanded system to promote improved and diversified diets and knowledge on nutrition included in IYCF.

The overall objective was to improve health, food security and nutrition, particularly related to children within the nutrition thematic window. From the three outputs (Table 2), the first one covered the expansion of the PRN system.

The contribution of the MDG-F was utilized for training of health professionals in the use of the revised M&E tools, and for the reproduction of some of the tools and job aids, as well as for technical assistance.

Even though the expansion of the PRN took place in 2011, the lack of data at central level during 2012 points to existing issues with the implementation of the monitoring system. The MDG indicator for under nutrition in children under 5 years of age is insufficient weight for age. Preliminary data from the 2011 DHS survey indicates an average of 16% indicating that Mozambique is on track to reach this millennium goal. However, with 43% and 6% chronic and acute malnutrition, respectively, the problem of

malnutrition is not yet solved and a focus on chronic and acute malnutrition is warranted.

3.3. Literature review pertinent to the case study topic

The main literature for this case study is obviously the project documents. These consist of the 2009 project plan, evaluations and protocols. In addition, secondary data such as national surveys, health databases planning documents have been assessed. The complete list can be found in section **Error! Reference source not found.** together with other tools and interviews used during the study.

3.4. Conceptual framework / Theoretical basis

The theoretical flow of information as described in the PRN protocol has been used as the conceptual framework. The study follows the implementation levels (from health post up to national) to ascertain the performance of the monitoring and referral system. There is specific focus on all the forms/tools used and how these tools facilitate the flow of information between different parts of the health system and between providers and patients, and how this data is being utilized for monitoring, evaluation and planning (see figure 2).

As described by Possolo, Novele and Arts (2012) once a person has been screened for acute malnutrition, community health workers (CHW) refer them to the health centres using a standardized referral form that includes the Mid upper arm circumference (MUAC) measurements, information about oedema, and any other notable signs of acute malnutrition. Because CHW are not operating yet in the whole country, the first screening is done during weight monitoring at the health centres. If the child’s weight is faltering

he/she is referred to CCR. Health staff then conducts further diagnostic tests to ascertain if the person has acute malnutrition. If the person has Severe Acute Malnutrition (SAM) with complications, they are referred to the nearest inpatient facility, where their treatment is tracked using the “multicard” (*multicartão*). At the end of each month, health staff reports the admissions and discharges using the inpatient monthly reporting form. If the person has SAM without complications or Moderate Acute Malnutrition (MAM), they are admitted into the outpatient program, and his/her information is recorded in the PRN register book. The caretaker is given a malnutrition treatment card that contains important information regarding the treatment including a log of the medicine/products, such as RUFT, given and an indication of when the person should return to the health centre. The name of the community health worker is also included on the card, and the person is advised to seek the CHW when they return home. At the end of each month, health staff fills in the outpatient monthly reporting form and sends it to the district health office, where they are compiled and sent to the provincial health office.

4. Research Design: Methods and Procedures

4.1. Methodological steps: site, sample, procedures

This case study used a combination of direct and indirect data gathering, mainly primary data collection from key informants. The study was divided in three phases:

▪ Desk Review

During the desk review, two different set of documents were studied, those related directly to the implementation of the Joint Program in

nutrition and food security, and documents specific for the PRN. (See annex 8.4) .

▪ Primary data collection

Primary data collection took place in Maputo through key interviews covering stakeholders.

Additionally field visits in Maputo city, and Nampula province, covering health centres and community referral in one of the pilot districts in Nampula. As well as key interviews district health offices, provincial health offices and all the clinical partners and organizations providing technical assistance to the Nutrition department of the MOH. For these interviews authorization was provided at central level and the visits were always accompanied by provincial or district health officers.

▪ Analysis and Reporting

The information collected was cross checked with other stakeholders given that all quantitative data comes from the stakeholders; there was no quantitative data collection during this study, it was only qualitative data gathering.

4.2. Instrumentation (outline of surveys, interview protocols, etc...)

This study took place in two provinces, Maputo city and Nampula Province; 5 health centres/hospitals were visited as well as interviews with two Community Health Workers (CHW) and activists in Erati district.

The information gathered during the field work and primary interviews was mainly qualitative; it was based on a framework checklist that covers all the steps in the development and implementation of the Monitoring system including the development of the PRN system in Mozambique and reasons for the transition

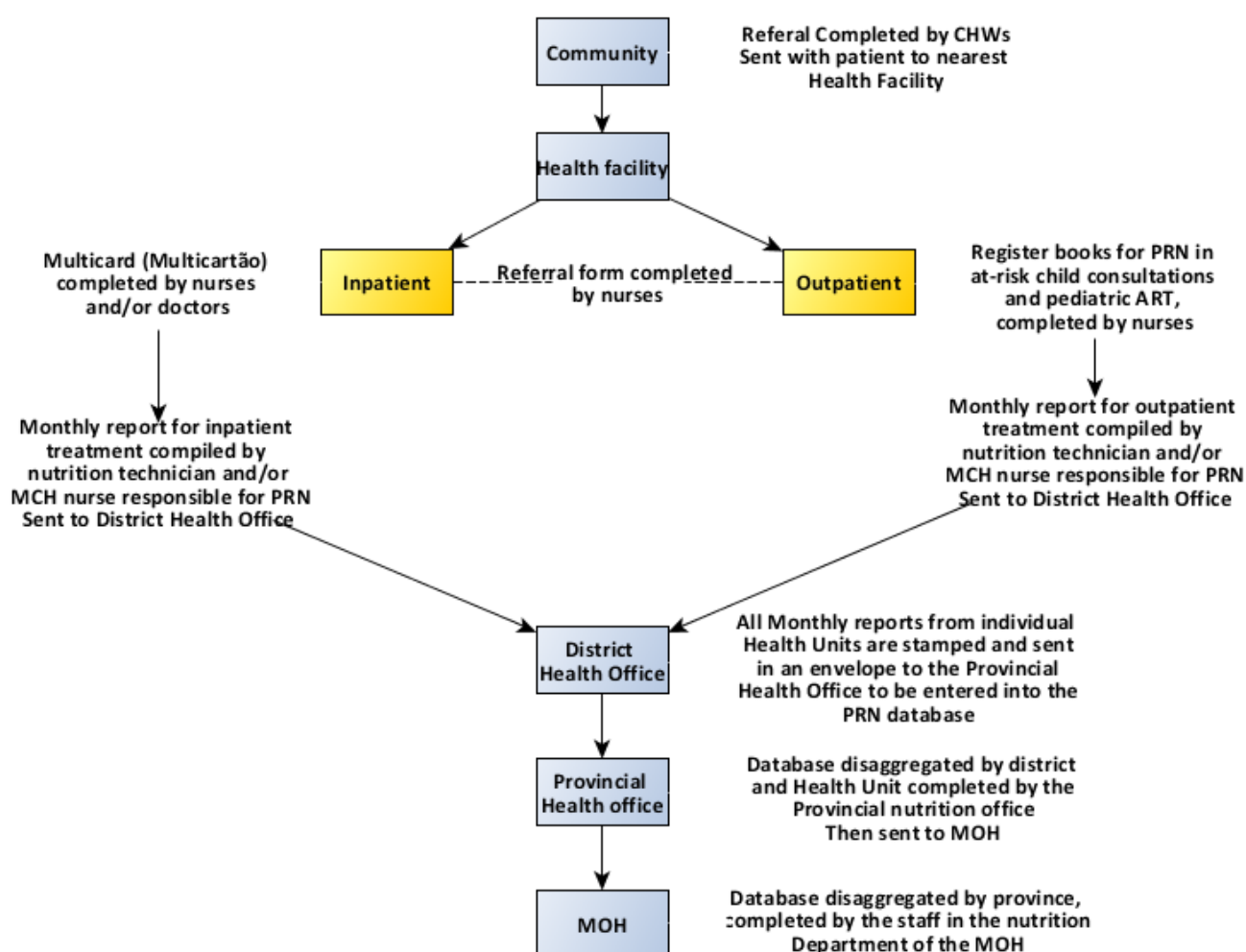


Figure 2 Current flow of the monitoring system.

Original diagram from article by Possolo, Novele and Arts and from Vol II PRN Manual

between the old and the new PRN protocol, the current situation regarding the use of the new monitoring forms per level of implementation and the flow of information between health facilities and central level and between health practitioners and patients, the level of training of

practitioners in the PRN, integration in the national health information system and the management of stock.

A check list can be found in annex Instruments / Interview protocols / Checklist in Annex 8.2

4.3. Data collection

Data collection took place in the second phase during the field visits in health units in Maputo city and Nampula province through observation and through interviews with key informants.

The lists of key informants are provided in annex 8.3 together with the checklist used as an interview protocol and the list of documents reviewed during the desk study

5. Results / Key findings

In this chapter, the findings are presented per implementation level. Likewise, the monitoring forms and available data are described and discussed for each level. The five levels are:

1. Community
2. Health Centre
3. District Health Office
4. Provincial Health Office

5. MOH

5.1. Community

As indicated in the Volume 1 of the PRN manual, Community Health Workers (CHW) and Community Activists (CAs), volunteers trained from the communities, screen children aged 0 to 15 years and refer malnourish children to the nearest Health centre with a nutritional rehabilitation program. The screening involves weighing the children and measuring the mid upper arm circumference (MUAC) with coloured tapes which indicate the severity of the malnutrition according to the colour, checking for oedema, and looking for signs of wasting. Screening is also carried out annually during the National Health Week (NHWs). There are two rounds of NHWs, one of which includes screening for malnutrition.

Those found to be underweight are referred with a specific referral form Figure 4 to the nearest health centre. Active community involvement facilitates dissemination of health messages and ensures early referrals, when the disease process is at a less advanced state and still relatively easy to treat. Many traditional healers now also recognise and refer those patients back to the CHW and community leaders act as activists, mobilizing people to use the CHW.

Referral form

Standardized form that includes the mid upper arm circumference (MUAC) measurements, oedema, and any other notable signs of malnutrition. When not available, the CHWs were found to write the whole referral on a plain piece of paper (see Figure 4). In certain cases they even accompany the mothers to the health unit. So the lack of these forms does not normally hinder their referral work.

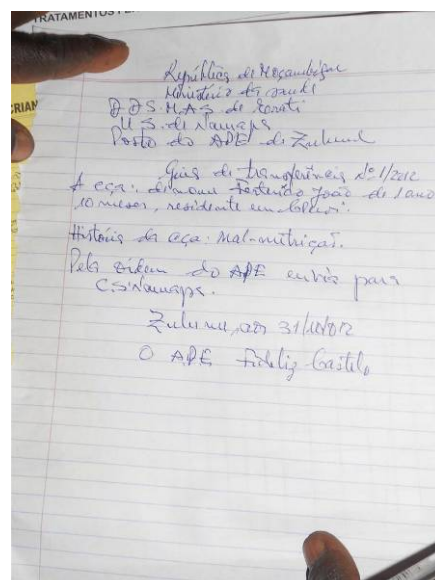


Figure 3 Community referral form by hand

Ficha de Referência da comunidade para a Unidade Sanitária

Referência N.º	Data da referência ____/____/20__
Provincia	Distrito
Localidade	Comunidade/Bairro
Ponto de Referência do Doente	
Nome da pessoa encaminhada	Idade
Sexo (F/M)	Nome do acompanhante
PB cm	Presença de edema (S/N)
Referência para	
Motivo de referência	
Encaminhado por	
Categoria	

Figure 4 Community Referral form

The experience of Nampula Province showed that it is possible to develop a close link between health professionals and community groups. Monthly meetings at the District health department SDSMAS are conducted involving health professionals and community groups, to discuss relevant health issues where the CHW receive a medical kit and referral forms to assist them with their work. The success of the community referral component is possibly due to the continuance of these monthly meetings. However, whenever the SDSMAS staff allocated as focal point are transferred the whole system falters. Without supervision the monthly meetings

do not take place and the flow of information stops.

The replication of the community referral component has not yet taken place in the whole country; it is in fact only taking place in a few districts so most children are detected at the health centre during the routine check up. There are not yet enough funds for the training of CHW, traditional healers and leaders in the communities as indicated in the PRN protocol.²

5.2. Health centre (HC)

Children referred via the community or found underweight during the monthly check up are sent to the at risk consultation, in the nearest health centre, for proper screening. Those found to be severely malnourished with complicating factors such as oedema or wasting are referred to the nearest health centre with inpatient facilities.

5.2.1.1. Inpatient

Patients with SAM and additional complicating factors are treated as inpatients with therapeutic milks (F75 and F100). Once they have recovered from their complications, they are transferred back to outpatient treatment to complete their recovery at home with regular check ups at the health centre.

The monitoring for PRN at inpatient uses three forms (Other Monitoring forms 8.1):

1. the multiscard to keep track of the progress of the patient,
2. the daily summary and
3. the monthly summary that feeds directly into the PRN database

All patients admitted for inpatient treatment are registered in the hospital inpatient book where the disease/reason for treatment is indicated such as severe acute malnutrition and/or related complications such as oedema or dehydration.

If the child is suffering from acute malnutrition, their follow up should be registered on the multiscard for acute malnutrition.

1. Inpatient individual health card, called the "Multicartão or Multiscard for acute malnutrition

This card is used to track the progress of the patient while hospitalized with malnutrition. It already existed previous to the development of the new PRN protocol; it registers all nutritional information for the patient as well as the weight curve and daily treatment and performance.

However, the multiscard was not in use in any of the centres visited. Either for its complexity, the lack of time needed to fill it out, lack of staff trained in the use of these and in other cases lack of stock. In Maputo, the health department of the city communicated that there would not be more stock available, so the health centre staff interviewed never used them nor requested them.

In some centres in Nampula it was not even known, or was found in the wrong consultation rooms. Consequently, children with malnutrition were only registered as inpatients with a clinical process but and there was no registration of their development, for the anthropometric measurements and food intake, while hospitalized. The only registration was the number of days they remained hospitalized and reason for discharge in the inpatient register book.

2. Daily summary form

² Please see Training protocol in annex 8.5

The daily summary form indicates the number of children discharged and the reason for discharge on a daily basis in order to facilitate the compilation of the monthly report.

The daily summary form was also not in use in any of the health centres visited. In some cases the DPS had not received the forms or was using the electronic copies from an older email where the daily forms were not yet in use.

3. Monthly reporting form

It indicates discharges and mortality rates performance for inpatient care (disaggregated by age) and per health unit; it should go from the health facility to district and provincial health officers so as to feed into the PRN database at provincial and, ultimately, central level.

There were different versions, of the old and the new monitoring forms found in the health centres

visited. If there is no nutrition focal person allocated to inpatient care, the monthly summary for PRN was not filled. In general, there was no awareness, not even at the Provincial Health Department (DPS), from where to get the information for the monthly summary. In older versions of the PRN protocol it was indicated to get information from the multiscard while newer version indicates the inpatient registry book. However, due to this lack of awareness, in most cases they are still looking for a PRN book for inpatient treatment or alternatively they are using the PRN book for outpatient as the inpatient registry.

But even without the new forms there is a monthly summary going to the statistics department from the health centres. Although in most cases it only indicates the number of children hospitalized for malnutrition in any given month.



REPÚBLICA DE MOÇAMBIQUE
Ministério de Saúde

RELATORIO MENSAL – TRATAMENTO DA DESNUTRIÇÃO NO INTERNAMENTO CRIANÇAS DOS 0 AOS 14 ANOS

NOME DA UNIDADE SANITÁRIA		RELATÓRIO PREPARADO POR	
CÓDIGO DA UNIDADE SANITÁRIA		PROVINCIA	
NOME DO SECTOR DA UNIDADE SANITÁRIA		DISTRITO	
DATA DO RELATÓRIO		MÊS/ANO	

Grupos etários	Nº Total de Crianças com Desnutrição Aguda Grave (saídas)					Estado de HIV (C)			
	Curados (B1)	Abandonos (B2)	Óbitos (B3)	Transferidos para outra US (B4)	Total (B) B = (B1+B2+B3+B4)	Positivo (C1)	Negativo (C2)	Desconhecido (C3)	Total C = (C1+C2+C3)
< 6 meses									
6 – 59 meses									
5 – 14 anos									
TOTAL									
Fórmula para cálculo de indicadores de desempenho	(B1/B)*100	(B2/B)*100	(B3/B)*100	(B4/B)*100					
Proporções de saídas									

Figure 5 Monthly form for inpatient PRN treatment

Once a child is discharged from inpatient, he/she is referred for outpatient treatment with the provision of RUTF.

5.2.1.2. Outpatient

The follow up of outpatient treatment is carried out during the 'at-risk child' consultations (*Consulta de Criança de Risco* or CCR). Children exposed to HIV or with malnutrition are checked routinely at CCR.

Patients with SAM who have good appetite and no medical complications are treated on an outpatient basis with RUTF, while patients with MAM are treated either with RUTF or CSB Plus, depending on what is available at the health centre.

There are various forms for the monitoring of patient information and patients (please see annex 8.1):

1. Malnutrition treatment card
2. PRN register book for children 6-59 months / PRN register book for children 5-15 years
3. Daily summary
4. Monthly summary

As outpatients they are all registered in the PRN register book and given a Malnutrition treatment card that stays with the patient for future reference.

1. Malnutrition treatment card *Cartão do Doente Desnutrido*

It is given to the care giver to keep track of treatment and appointment dates for follow up at

the health centre. When available it is given to the patient at triagem or CCR. The name of the community health worker is also included on the card, and the person is advised to see the CHW when they return home.

Although there are different versions of the malnutrition treatment card, some of them without the NID/protocol number for the patient, in general it is used, even when the health centre does not have any, they use other cards to facilitate the flow of information between health provider and patient.

2. PRN register book for outpatient care; SAM and MAM

This book is used for the follow up of patients to check on their improvement over 7 visits. It indicates if the patients are cases of SAM or MAM, their anthropometric characteristics and the supplement they get such as CSB, when available, or Plumpy nut. It also includes the reason for discharge.

This book has undergone many changes since its development and these are not always reflected in the versions in use at the health centres. Older versions are even called the 'Plumpy Nut book', giving the wrong idea to the nurses. The disadvantage was apparent when, due to lack of RUTF (or Plumpy Nut as it is often referred to in Mozambique), patients remained unregistered in the book. This misconception creates a break in the monitoring of several months at a time; in the health centres visited, children were only registered as the number of consultations for malnutrition in the month, without registering their progress.

Figura 1 do Livro de Registro do PRN: Crianças dos 6 aos 59 meses

Nº de ordem manual	Nº de NIC	Informações do doente	Idade (mês/ano)	Sexo	Estado do Tratamento (circular)	Proveniência	1ª visita	2ª visita	3ª visita	4ª visita
		Nome do doente:				<input type="checkbox"/> Caso novo <input type="checkbox"/> Retornado do TD I <input type="checkbox"/> Abandonado que retornou	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -
		Nome da acompanhante:								
		Nome da comunidade:								
		Contacto:								
		Nome do doente:				<input type="checkbox"/> Caso novo <input type="checkbox"/> Retornado do TD I <input type="checkbox"/> Abandonado que retornou	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -
		Nome da acompanhante:								
		Nome da comunidade:								
		Contacto:								
		Nome do doente:				<input type="checkbox"/> Caso novo <input type="checkbox"/> Retornado do TD I <input type="checkbox"/> Abandonado que retornou	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -
		Nome da acompanhante:								
		Nome da comunidade:								
		Contacto:								
		Nome do doente:				<input type="checkbox"/> Caso novo <input type="checkbox"/> Retornado do TD I <input type="checkbox"/> Abandonado que retornou	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -
		Nome da acompanhante:								
		Nome da comunidade:								
		Contacto:								

Figura 2 do Livro de Registro do PRN: Crianças dos 6 aos 59 meses

5ª visita	6ª visita	7ª visita	Alta	Instruções de preenchimento do Livro de Registro do PRN
Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data total: Quantidade total recebida: Indicar: <input type="checkbox"/> Curado <input type="checkbox"/> Abandonado <input type="checkbox"/> Óbito <input type="checkbox"/> Retornado para o tratamento <input type="checkbox"/> Transferido para outro sector ou Unidade Sanitária	Nº Sequencial: No início de cada mês, inserir o número 1 para o primeiro doente que se apresenta, inserir o número 2 para o doente que se apresenta a seguir, e assim sucessivamente até o final do mês. Registrar a sequência para cada caso novo que se apresenta no início do mês seguinte. Nº de NIC: Inserir o número do NIC atribuído ao doente. Nome do doente: Registrar o nome completo do doente. Nome da acompanhante: Registrar o nome da pessoa que está na companhia do doente na Unidade Sanitária. Comunidade: Registrar o nome da comunidade onde reside o doente. Idade: A idade do doente deve ser expressa em meses para crianças dos 6 aos 59 meses. Sexo: Registrar o sexo do doente (masculino ou feminino). Motivo de internamento: Indicar o motivo que levou o doente a ser tratado, fazendo um círculo em volta dos seguintes números: 1 e 2. 1. Criança com DAI 2. Criança com DAIH Proveniência: Indicar com um "X" se se trata de uma nova admissão ou de uma readmissão devido a uma das razões listadas. Visitar: O livro de registro tem sete campos de visita, nos quais serão preenchidas as informações sobre o estado nutricional do doente sempre que estes visitar em Unidade Sanitária. Data: Neste campo escreve-se a data em que o doente se apresenta na Unidade Sanitária para ser atendido. Tipo de suplemento: Neste campo escreve-se o tipo de suplemento, se é MAQ ou ATPU. Quantidade: Registrar a quantidade de suplemento recebido na data da visita à Unidade Sanitária. Se for ATPU, a quantidade será expressa em colheres, e se for MAQ, a quantidade será expressa em quilogramas (kg). Peso: Neste campo escreve-se o peso do doente de acordo com a medição feita pelo profissional de saúde. O peso deve ser expresso em quilogramas (kg). Estatura: Registrar a estatura do doente depois de medido no estômago (altura ou comprimento). Para as crianças menores de 5 anos a estatura deve ser expressa em centímetros (cm). Peso/estatura: Registrar o índice de peso para a estatura de acordo com as tabelas de peso-para-estatura. PDI: Neste campo escreve-se o primeiro braquel do doente, de acordo com a medição feita a este. Estado de HIV: Para doentes com estado desconhecido, deve-se fazer o seguimento do teste nas visitas seguintes. Alta: Neste campo deverá registar-se as seguintes informações: Data total: O tempo em que o doente permaneceu em internamento ou suplementação (nº de dias). Quantidade total recebida: Registrar a quantidade total de ATPU ou MAQ que o doente recebeu durante o tempo que esteve em internamento ou suplementação. Indicar a categoria de alta: Pondo um círculo na opção certa, se o doente curou, morreu, abandonou, etc. e a data de ocorrência. Nota: No fim de cada folha preenchida, o responsável pelo preenchimento do livro deve assinar no campo providenciado.
Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data total: Quantidade total recebida: Indicar: <input type="checkbox"/> Curado <input type="checkbox"/> Abandonado <input type="checkbox"/> Óbito <input type="checkbox"/> Retornado para o tratamento <input type="checkbox"/> Transferido para outro sector ou Unidade Sanitária	
Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data total: Quantidade total recebida: Indicar: <input type="checkbox"/> Curado <input type="checkbox"/> Abandonado <input type="checkbox"/> Óbito <input type="checkbox"/> Retornado para o tratamento <input type="checkbox"/> Transferido para outro sector ou Unidade Sanitária	
Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data total: Quantidade total recebida: Indicar: <input type="checkbox"/> Curado <input type="checkbox"/> Abandonado <input type="checkbox"/> Óbito <input type="checkbox"/> Retornado para o tratamento <input type="checkbox"/> Transferido para outro sector ou Unidade Sanitária	
Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data: Tipo de a uple mento: Quantidade: Peso (kg) (cm) P/C (DP) (cm) Estado de III IV (circular) + -	Data total: Quantidade total recebida: Indicar: <input type="checkbox"/> Curado <input type="checkbox"/> Abandonado <input type="checkbox"/> Óbito <input type="checkbox"/> Retornado para o tratamento <input type="checkbox"/> Transferido para outro sector ou Unidade Sanitária	

Figure 6 Screen capture of the PRN book

3. Daily summary form for out patient treatment

It indicates the number of children, disaggregated by SAM or MAM and by age, admitted, and discharged on a daily basis to facilitate the monthly report.

The daily form was not in use in any of the health centres visited as happened with the inpatient daily form; however, it was only recently sent to the provinces so it is a new form not yet distributed to all health centres.

At the end of each month, the health staff fills in the outpatient monthly reporting form and sends it to the district health office, where they are compiled and sent to the provincial health office.

4. Monthly reporting form per health unit

As with the monthly reporting form for inpatient care, it indicates admissions, discharges and performance for outpatient care. It is sent from the health centre to district and provincial health offices where it should feed the PRN database.

This form provides a summary for the month per health centre.

This monthly summary is supposed to come out of every consultation room with a PRN book. That was not single nurse is in charge of summarizing all PRN books in the centre. However, it is often the case that the nutrition focal point fills up all the monthly summaries for PRN, gathering all the PRN books when available or any other entry book like the one for paediatrics or entries for that consultation whenever they did not fill the PRN book. The monthly summary forms are then sent to the district. This situation creates extra work and brings gaps in the monitoring when the nutrition focal point is not in attendance.

In health centres with a person trained in the new PRN protocol, it is possible to do in the job training for the daily filling of the pRN registry book but at the moment it relies on that persons feeling of responsibility over the task. Consequently the quality of data management varies from person to person and from health centre to health centre since there are no terms of reference specifying this transfer of information or pressure from the program to ensure there is on the job training. Currently not everybody filling the book has been properly trained; in most cases the trained nurse just gave some indications to fill the main boxes. Some of the boxes, such as the reason for discharge, normally remained unfilled. In most cases, if the person nominated as focal point is not around, patients are not registered in the PRN book. This situation is slowly changing with cascade trainings but there should be stronger incentives to fulfil this task as well as a clear appointment of responsibilities for the task.

The new protocol for PRN is not yet running in the whole country which is the reason for many of the shortcomings on the monitoring system. At the moment the regional trainings covered up to the district capitals through a Training of Trainers (TOT) approach. The cascade training is taking place in all the provinces depending on availability of funds from clinical and development partners.

Even though there are problems with lack of trained staff, mistakes or omissions in data entry and lack of new protocol forms, there is monthly information, although of questionable quality, coming from the health centres to the district health office.



REPÚBLICA DE MOÇAMBIQUE
MINISTÉRIO DA SAÚDE

RELATÓRIO MENSAL – TRATAMENTO DE DESNUTRIÇÃO EM AMBULATÓRIO CRIANÇAS DOS 6 MESES AOS 14 ANOS

NOME DA UNIDADE SANITÁRIA		RELATÓRIO PREPARADO POR	
CÓDIGO DA UNIDADE SANITÁRIA		PROVINCIA	
NOME DO SECTOR DA UNIDADE SANITÁRIA		DISTRITO	
DATA DO RELATÓRIO		MÊS/ANO	

Grupos etários	Doentes no início do mês (A)	Admissões (B)			Total Admissões B=(B1+B2+B3)	Saídas do Programa (C)					Total Saídas do Programa C=(C1+C2+C3+C4+C5)	Total de doentes que transitam para o mês seguinte D=(A+B-C)
		Casos Novos (B1)	Referidos do TDI (B2)	Abandonos que Retornam (B3)		Curados (C1)	Abandonos (C2)	Óbitos (C3)	Referidos para TDI (C4)	Transferidos para outro sector ou US (C5)		
1 6-59 meses DAG												
2 6-59 meses DAM												
Sub-total 6-59 meses												
3 5-14 anos DAG												
4 5-14 anos DAM												
Sub-total 5-14 anos												
TOTAL												
Fórmula para cálculo de indicadores de desempenho						C1/C*100	C2/C*100	C3/C*100	C4/C*100	C5/C*100		
Proporção de saídas 6-59 meses												
Proporção de saídas 5-14 anos												

Figure 7 Screen capture of Monthly form for outpatient treatment

reporting in the old protocol, thus creating the need to summarize those entries for the old protocol while at the same time sending the forms for the new protocol as they are.

The role at district level, namely forwarding monthly summaries from the Health centres, is still not clear for many districts. There are many district summaries in the old and new formats sent to the Province. Districts without the presence of a nutrition focal point fail to send anything at all. In some provinces, like Maputo city, the forms are sent directly from the health centre to the DPS.

Ideally, based on the “Modulo basico³” for all health information, in the future the district office will enter the information directly in the database to be forwarded to the DPS thus simplifying data management and allowing for feed back to the health centre in the district.

³ Modulo basico: computer based program integrating all national health information.

Prior to the new PRN protocol, at the district health office there was a district summary from all the health units with a PRN protocol in place in the form of one inpatient report and one outpatient report. However, for the new PRN protocol all data has to be disaggregated per health centre in order to be entered into the database.

Thus, the role of the districts at the moment is to gather all the monthly summaries from the health centres offering PRN services within the district and forward it to the provincial health office. Due to the lack of materials and lack of people trained in the new protocol, many health units are still

Tools	Community	TDI	TDA	SDMAS	DPS
Reference form	X				
Multicard		X			
Inpatient report		X			
PRN book			X		
Malnutrition treatment card			X		
Monthly report		X	X		
Database					X

Figure 8 Summary of monitoring forms

5.4. Provincial health Department (DPS)

To facilitate data analysis, a new PRN database was built allowing for disaggregation by districts and health facilities. The database provides graphs illustrating the development of the figures and treatment outcomes for children aged 0-15 years in two different databases, one for inpatients and one for outpatients.

The provincial health authorities (DPS) have got the mandate to coordinate the planning, implementation and monitoring of interventions in the health sector.

Thus the role of the DPS on the monitoring of PRN, and that of the nutrition focal point at the moment is to enter all the information that arrives from the districts into the new PRN database and sending it to the MOH.

Three people were trained per province on the monitoring of the PRN protocol, mainly on the data entry and use of the database: the nutrition focal point at the DPS, a person from the statistics department and the Maternal and Child Health nurse. However, at the time of the monitoring training in the first semester of 2011, the databases were not yet ready. The DPS received them later, the last version around June 2012. At present, no provincial office is sending information on the PRN database developed for

that purpose. All the information is sent in previous databases not specifically built for the new protocol of the PRN and with data summarized by district, not by health centre.

There seem to be a number of challenges for the proper use of the new PRN database:

- The co-existence of several different reporting forms create confusion and difficulties: the monthly forms that arrive from the districts are in many cases in the wrong format, some of them are still sending monthly summaries due to miscommunication, or using old formats for those that have not yet received the new ones.
- The long period of time between training and reception of the final database: even though people were trained, it is difficult to remember without practising. It took several months to receive the last version.
- Staff transfers: some of the people trained already left their workplace, now all the responsibility falls on the nutrition focal point at the DPS.
- Level of computer literacy of the nutrition provincial officers: even though it is a simple enough database, if there are problems in the use of filters for the database or on the creation of folders to organize data in the computer, it becomes difficult to search for the current database or even to enter data properly.
- There are different versions of databases and it is not always clear which is the last version: In Maputo the database is already outdated since Maputo currently counts with 7 districts and the database only features three (although it should not be a problem since

PRN - Programa de Reabilitação Nutricional - Base de dados do TDA						CASOS NOVOS (B1)		REFERIDOS DO TDI (B2)		ABANDONOS QUE RETORNARAM (B3)		SAÍDAS DO PROGRAMA (C)				
Nº do m	Provincia	Distrito	Mês	Unidade Sanitária	Grupos etário	1. Crianças com DAC	2. Crianças com DAM	1. Crianças com DAC	2. Crianças com DAM	1. Crianças com DAC	2. Crianças com DAM	Curados (C1)	Abandonos (C2)	Óbitos (C3)	Referidos para TDI (C4)	Referidos para outro sector ou US (C5)
1	Nampula	Cidade de Nampula	Janeiro	Hospital Central de Nampula	6 aos 59 meses											
1	Nampula	Cidade de Nampula	Janeiro	Hospital Central de Nampula	5 a 14 anos											
1	Nampula	Cidade de Nampula	Janeiro	Hospital Militar de Nampula	6 aos 59 meses											
1	Nampula	Cidade de Nampula	Janeiro	Hospital Militar de Nampula	5 a 14 anos											
1	Nampula	Cidade de Nampula	Janeiro	Centro de Saúde 25 de Junho	6 aos 59 meses											
1	Nampula	Cidade de Nampula	Janeiro	Centro de Saúde 25 de Junho	5 a 14 anos											

Figure 9 Screen capture of PRN database to track admissions and outcomes for outpatients

data is disaggregated by health centre). Currently all the provinces are using an older version with summaries per district even though it only provides the number of discharges and mortality due to malnutrition, not enough to do proper monitoring of the PRN. But given the different versions of monthly summaries received at the DPS, this is their only option to register data from the whole province. Only very few of the forms arriving at the DPS (in Nampula 10%), could be fed to the new PRN database as they come per health centre in the new format. All the others are in older versions of the forms or as monthly summaries by district.

- Lack of clear communication: there has been letters at different levels informing of the new situation, and the need to use new forms for the monitoring of PRN but the lack of follow up makes the achievement of any results difficult. There should be clear terms of reference for the nutrition focal points at provincial and district levels as well as systematic and frequent supervision and follow up in between all levels in order to ensure that the persons involved assume the responsibility for the monitoring of the PRN.

5.5. MOH

The MoH is responsible for the management of health facilities in the country as well as the drafting and revision of protocols and guidelines.

Case study on Integrated data monitoring and referral systems CMAM

- Lack of feed back: Currently the monthly information from individual health units is to be entered into the PRN database. Traditionally the SDSMAS would make a monthly summary but nowadays all the entering falls on the nutrition person at the DPS. Any feed back directly to the health centre from the DPS becomes much more difficult. At the moment the situation is made easier because due to lack of materials the new protocol is only recorded at the capital district towns but still there is not enough capacity at the DPS to follow them all up. It is recommended that, once district focal points have been trained in the new monitoring instruments, the database is filled out at district level and sent to the province and from there to MOH.

Given all those reasons, the nutrition focal point at the DPS is placed in an impossible situation.

He/She receives pressure from MOH to get all information on the PRN database but at the province most of the information received cannot be fed into the database (summarized data by district instead of disaggregated by health centre or data on older versions of the forms cannot be entered)

Thus all nutrition protocols and forms are the direct responsibility of MOH.

MOH approved the first PRN protocol Volume I for children from 0-15 but the monitoring forms

were still to be approved by the Department of Health Information. Volume II for adults is still being developed so information on adult treatment for PRN is not requested at the moment pending approval of the protocol, even though there is already collection of this data by the nurses at CCR, mother and child health and ART. WFP is already implementing the adult protocol with CSB supplementation so they compile this information and send it every three months to MOH.

The only information demanded by the Nutrition department is the PRN for children from 0-15 years of age in both the outpatient and inpatient forms.

Parallel to the implementation of the PRN, the nutrition department requested the integration of the forms and indicators to measure malnutrition into the new Health Information System called “Modulo Basico”. Traditionally, a large part of the nutrition information system was run as a parallel information system to the national health. However, with the update of the HIS, MOH allows fewer parallel reporting systems. Therefore, all tools need to be approved before they are used.

However, the monitoring forms and databases are still pending approval due to turn over of HIS staff involved in the approval process as well as communication gaps between the Nutrition Department and the Health Information Department

5.6. Stock management

Supply chain management capacity for the PRN at different levels is limited. Stock-outs of RUTF and therapeutic milks are often reported. In most cases, it is due to inadequate forecasting and communication between the different levels (health facility-district - province-central level). The weak and often late reporting of numbers of

children treated is a major contributor to the forecasting challenges, as well as the lack of a clear division of labour for stock forecasting. Everything is assumed to happen at central level.

Thus the nutrition department, due to lack of information in recent years, is obliged to estimate the need for stock on therapeutic milks and RUTF based on total population figures and prevalence of malnutrition in population from 0-15 years of age, with the consequent errors of estimation by individual provinces.

MOH at Central level sends a three monthly amount of supplies to the provincial deposit that is then distributed to the districts based on a distribution plan. This is drawn by the DPS based on the malnutrition figures they get for the whole district, always leaving a buffer stock at the provincial deposit in case of individual stock out.

The deposits use the monitoring forms developed by the central department for medicaments where there is listing of all entry, exit and remnant stock. The stock is then distributed from the district deposit to the pharmacies at the individual health units where there is no control of stock. All the receipts for medicaments and, in this case therapeutic milks or RUTF, are kept but there is no idea of the needs, forecasting or the remnant and no use of the form provided. In some of the visited health centres, the staff was not even familiar with the stock management form. When a health centre runs out of stock, they send a request to SDSMAS or DPS who authorises the deposit to release the stock until it ends. There is no forecasting at the deposit to request stock from central level prior to the stock out. The stock received every three months is distributed until finished. When finished the deposit may inform DPS.

The Stock database was developed for the monitoring of stock; even though it is mentioned as an outcome in the 2011 study by Possolo, Novele and Arts, it was never implemented.

6. Discussion

6.1. Limitations of the study

Due to time constraints this study was only carried out in two provinces with limited visits to Health centres, some in urban and some in rural areas. Thus the data gathered is qualitative in nature.

Even so, as the implementation of the monitoring system for the PRN protocol has not yet been expanded to the whole country, many of the findings reflect this transition rather than a weakness in the monitoring system.

6.2. Strengths and weaknesses

Strengths

There are a number of strengths in the new PRN monitoring system:

- Development of the new **PRN protocol** for malnutrition started in 2005 and was completed in August 2010 with the approval of the Minister of Health. The new WHO growth standards (2006) and updated international treatment guidelines have been incorporated in the revised protocol.
- All databases for the screening of children are **disaggregated** by district and by health centre as inpatients and outpatients. Also included are automatically generated graphs that indicate the nutritional situation at province level allowing for a level of

analysis that was not available before. It all follows the disaggregation at health centre level of the “*Modulo basico*” for easy integration into the national health information system.

- New, more user friendly tools
- The new PRN protocol for adults (Volume II) is in process following the same guidelines as Volume I for children.

Weaknesses:

- Most of the tools, forms and databases were only finalized in the middle of the current year, so people trained did not get the new materials at the time of training but several months later, and could not implement what they learned straight away. In some cases the new materials arrived even 6 months to a year later. Another consequence of the late development of the tools is the different versions of registry books or even databases that can be found in the provinces. Every province has been replicating materials at different times depending on the support/assistance by the clinical partners, so different versions of the forms have been used in parallel.
- There are still some changes taking place in the PRN manual even though the forms are already final. One of them is the flow chart of information (Figure 2) as it still states that a monthly summary should take place at district level. Although SDSMAS should be gathering the monthly reports and entering them into the database, in which case the protocol entry is correct.

- Trainings in cascade did not keep the same quality and quantity required. In many cases and due to the lack of materials the new protocol has not been implemented until recently, at least on the monitoring part, so even the people trained were not keeping up to date with the new forms.
- Many people trained have been transferred already so there is need for regular refreshers.
- Lack of designation of roles and responsibilities or lack of clear terms of reference. Every person in charge of the PRN protocol, at any level needs to be responsible for the follow up or training of their colleagues, more so at the DPS and SDSMAS levels where frequent follow up is required to ensure that quality data arrives in a timely manner.
- In the case of the database, the responsibility has been diluted between the nutrition focal point, SMI nurse and the person for the statistics department. All of them attended the training on monitoring, but at the end of the day there can only be one person responsible. In most cases the responsibility remains with the nutrition focal point since that is the person in constant contact with the nutrition department in MOH but it will not be possible on the long run to remain so, the responsibility to fill the database should be at district level following the lead of “Modulo basico”

6.3. Implications and recommendations for future programmes/sustainability

Although in each province, several people have been trained, this has not yet reached all health facilities in these provinces, which has led to the difference in versions of monitoring forms and level of staff training. Even so, there is need to reinforce the roles of key points in the monitoring chain.

Due to decentralization most of the responsibility falls at province level, thus the provincial nutrition focal point should have clear terms of reference to implement the PRN in the province and to be the ultimate person accountable for it. Consequently, on the short term, adequate supervision and support systems should be in place to facilitate the work of the nutrition focal point. This recommendation falls in line with the findings during the CMAM conference in Addis Ababa 2011. Reference n 27:

- ***Clear roles and responsibilities do need to be agreed at all levels and institutionalised.*** Not only for the DPS, but also for the nutrition focal points at SDSMAS to be responsible for the training of staff and ensuring that the PRN runs properly.
- The necessity for **intensive supervision of CMAM implementation** so as to ensure quality *Reinforcement of new skills, troubleshooting of issues arising and giving feedback on performance are all critical elements of supportive supervision, particularly when a new programme is being rolled out. In Ghana, initial high intensity supervision after initiation of CMAM in a given district is identified as the determinant of good adherence to the treatment protocols and good motivation*

of staff. As the programme progresses, it will be possible to reduce the intensity of supervision and fit it into existing district mechanisms However, such intensity is hard to maintain with resource challenges (particularly for transport). Thus, on the short term it is recommended to implement **mentoring on the job at province level to strengthen program ownership and incentivate adherence and responsibility.**

- **Also the need for feed back, the flow of information goes only in one direction.** *In Mozambique, insufficient capacity, commitment and lack of understanding of the importance of reporting are reported as issues and a separate training on monitoring and evaluation has been started as a result. It is not surprising that those collecting information are not committed if they see no action taken as a result of the data. Training in this instance may not be enough. The whole functioning of monitoring systems, including analysis, feedback and performance review needs to be made clear to the people involved.*
- **Rapid dissemination of information about the latest monitoring guidelines.**
So as not to have different versions of forms

On the long term, all the needs in terms of training of staff, stock and forms should be estimated for a whole year based on the list of all the centres in the country implementing PRN found in the database. So even though there are not enough funds to ensure the implementation of the PRN in the whole country at the same time, it is possible to implement an organized approach for the scale up in order to search for funds where

there are gaps rather than getting requests at an ad hoc basis.

Also on the long term, **follow up with the DIS** and its provincial and districts staff to make sure that the agreed changes are implemented”.

6.4. Conclusion

In principle, the CMAM system has been found to be well documented and planned, in particular the Volume I being a solid and clear document. However, the implementation of new protocols always presents constraints; in this case the monitoring seems to run far behind the clinical implementation.

The tools used are partly for the follow up of patients and partly for the collection of data on patient flow and treatment outcome. Forms such as the community referral form or the malnutrition card facilitate the movement of patients through the system but their lack does not represent lack of information for the monitoring system. Also, it was noticed that whenever there was lack of these forms, health staff managed to provide alternatives to facilitate their work.

In this line, the main tools for monitoring purposes at national level are the monthly reports from inpatient and outpatient treatment, and the final PRN database where those forms are finally registered per health centre. These monthly reports are taken from the PRN registry book or the inpatient card on a monthly basis by the nutrition focal point. Data up to this level exists. The bottle neck comes on the transition from daily data to monthly data per health centre. This lack of monthly data is due to lack of trained staff and lack of proper forms at the centres, which is a consequence of the transition between the two

protocols and the different levels of implementation in the country.

The cascade trainings are still taking place in the country and in time all health centres with PRN will have trained staff and materials. At that point it will be possible to demand uniformity on the data collection and to extend the entering into the database at district level rather than at provincial level.

However, even though the main problem falls on the lack of training and lack of materials, there is also lack of pressure for the correct implementation of the PRN monitoring system. MOH relies on the decentralization of the country and delegates the responsibility to the provincial health departments that are overwhelmed with the different information they receive. In theory the integration of PRN in the “Modulo Basico” will provide the extra pressure to get the information. However, this process may still take a long time and currently responsibility or ownership for the monitoring of PRN seems to be diluted.

6.5. Significance of the Study

This study took place after the approval of the PRN protocol but during the first phase of implementation, before the monitoring system of the PRN reaches all the health facilities. As such it helped to bring awareness to bottle necks already in the system and possible solutions. The problems arising with the implementation can help other countries facing similar situations.

Also, due to the study, the communication between the nutrition department and the DIS has moved forward. There is now close contact between the technical assistance at the nutrition department and the DIS to bring all the monitoring forms into the Modulo Basico. All 14 indicators, developed by the Nutrition

department with close participation of all clinical and development partners, will be included as well.

7. References

1. *Field Exchange. Emergency nutrition Network. Issue 43. July 2012. Article on CMAM in Mozambique. By Edna Germack Possolo, Yara Livia Novele Ngovene and Maaïke Arts*
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3. *Final project report for Fanta. Strengthening Provincial Health Systems to Implement the Mozambique Nutrition Rehabilitation Program in the Context of HIV Sub-agreement 4001-SC-00, under the Food and Nutrition Technical Assistance (FANTA-2) Activity; Cooperative Agreement No. GHN-A-00-08-00001-00 by Tina Lloren, Regional Nutrition Advisor and Vasconcelos Muatcalene, Program Manager, Save the Children*
4. *Final evaluation of UN Joint Program. Children, Food Security and Nutrition. Mozambique. MDG-f by Mae Tortajada Suils. 2012*
5. *<http://www.who.int/nutrition/publications/severemalnutrition/978-92-806-4147-9/en/index.html>*
6. *MICS. Multiple Indicators Cluster Survey. National statistics institute/UNICEF*
7. *Preliminary data for the Health and Demographic Survey (DHS) Ministry of Health /National statistics institute 2011. final report to be launched early 2013.*
8. *A synthesis of lessons. Prepared by the Emergency Nutrition Network (ENN). CMAM conference, Addis Ababa, 2011.*


8. Annexes

8.1. Other Monitoring forms

Figure 10 Multicard for treatment of acute malnutrition

Figure 11 Daily summary for inpatients

Figure 12 Daily summary for Outpatients


 REPÚBLICA DE MOÇAMBIQUE
 MINISTÉRIO DA SAÚDE
 Resumo diário da Unidade Sanitária – Programa de Reabilitação Nutricional - Tratamento da desnutrição em ambulatório (TDA).

Província _____ Distrito _____ Unidade Sanitária _____ Mês _____ Ano _____

Razão do Tratamento:


1) 6-59 meses DAG 2) 6-59 meses DAM	3) 5-14 anos DAG 4) 5-14 anos DAM
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Mês (dias)	Admissões/Readmissões																Saídas																											
	Doentes no início do mês				Casos Novos				Referidos do TDI				Abandonos que Retornam				Curados				Abandonos				Óbitos				Referidos para TDI				Transferidos para outro sector ou US											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
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Fonte de dados: Livro de Registo do PRN.

Data: ____/____/____ Compilado por: _____ Assinatura: _____

Figure 13 Card for the patient with malnutrition

<p style="text-align: center;">CONSELHO ÚTIL LEMBRE-SE SEMPRE:</p> <p>O Plumpy nut (ATPU) e CSB-Plus são medicamentos para o paciente desnutrido e não uma comida para toda a família!</p> <p>Data de alta: ____/____/201__</p> <p>Peso: _____ Estatura: _____</p> <p>Peso/Estatura (DP): _____</p> <p>IMC: _____</p> <p>IMC/Idade (DP): _____</p> <p>PB: _____</p> <p>Observações: _____</p> <p><u>Instruções para preparação do CSB para cada refeição:</u></p> <ul style="list-style-type: none"> Misturar 100gr de CSB, equivalente a uma chávena de chá (quantidade por refeição) com uma pequena quantidade de água (morna ou fria). Mexer essa mistura para dissolver bem e retirar-bolhas de ar. Aquecer a parte água numa panela. Só quando a água estiver a ferver é que adiciona o CSB. Mexer bem para evitar a formação de grumos. Deixar a papa ferver lentamente durante 5 a 15 minutos, mexendo sempre. Não cozinhar por mais de 15 minutos para não perder as vitaminas. 	<p> MINISTÉRIO DA SAÚDE PROGRAMA DE REABILITAÇÃO NUTRICIONAL</p> <p>Província: _____</p> <p>Distrito: _____</p> <p>Unidade Sanitária: _____</p> <p>Nome do doente: _____</p> <p>NID/NIT/Código PTV: _____ N.º de ordem: _____</p> <p>Idade: _____ Sexo (F ou M): _____</p> <p>Nome do Acompanhante: _____</p> <p>Suplementação alimentar para DAM:</p> <p>CSB <input type="checkbox"/> ou ATPU <input type="checkbox"/></p> <p>Tratamento em Ambulatório para DAG: ATPU <input type="checkbox"/></p>	<p style="text-align: center;">FORNECIMENTO DO ATPU ou CSB</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Data</th> <th>Peso (Kg)/PB</th> <th>Tipo e Quantidade Suplemento</th> <th>Observações/assinatura</th> </tr> </thead> <tbody> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> <tr><td>____/____/201__</td><td></td><td></td><td></td></tr> </tbody> </table>	Data	Peso (Kg)/PB	Tipo e Quantidade Suplemento	Observações/assinatura	____/____/201__				____/____/201__				____/____/201__				____/____/201__				____/____/201__				____/____/201__				____/____/201__				____/____/201__				____/____/201__				____/____/201__				____/____/201__				____/____/201__				____/____/201__				____/____/201__				____/____/201__				<p>Data de entrada: ____/____/201__</p> <p>Peso: _____</p> <p>Estatura: _____</p> <p>Peso/Estatura (DP): _____</p> <p>IMC: _____</p> <p>IMC/Idade (DP): _____</p> <p>PB: _____</p> <p>Observações: _____</p> <p>Estatura: comprimento ou altura.</p> <p>P/E (DP): Desvio padrão para crianças de 6 aos 59 meses.</p> <p>IMC: Índice de Massa Corporal usa-se para crianças/adolescentes dos 5-18 anos e idades superiores.</p> <p>IMC/idade (DP): Para adolescentes de 5-18 anos, depois de calcular o IMC, verifique na tabela de classificação o DP.</p> <p>PB: Perímetro Braquial para as mulheres grávidas e lactantes (primeiros 6 meses pós-parto) e pacientes crónicos que não consigam ficar de pé.</p>
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8.2. Instruments / Interview protocols / Checklist

Item	Description	Institution
Historical transition for PRN / CMAM in Mozambique	The process of introduction of a new protocol with the use of Plumpy nut, the transition in protocols, integration within the Health system and challenges.	UNICEF FANTA Nutrition Department Clinical/development partners
Development of materials	Transition from the old system and development of new protocols and forms Current situation	Nutrition department FANTA Clinical/development partners
Use of New materials	Reception at the centres of the new materials or even if they know about the new materials Which protocol they are following, the inpatient and outpatient forms	Health centres DPS Clinical partners
Training	How many health staff have been trained in every one of the health facilities visited If they have been trained in the new protocol or still on old protocols How the cascade training is working / TOT	Health centres UNICEF WFP Nutrition department Clinical/development partners
Flow of information	At the health centre, follow several patients to assess the possible existence of parallel systems Assess the performance of the staff in terms of daily and monthly summaries	Health centres DDS DPS DIS
Data consistency	Assess the consistency of data between the raw data and the district, provincial and national data	Health centres DPS DDS DIS
Community referral system	People trained in the communities Use of referral forms	Communities Health centres DDS
Indicators	Development of nutritional indicators Integration of malnutrition indicators in the national health system Reporting	FANTA UNICEF MoH ▪ DIS ▪ Nutrition dept.
M&E	Training on new M&E protocols in 2012, Who was trained, how is the implementation Use of database Possible bottle necks	MoH FANTA UNICEF Clinical/development partners DIS
Stock	How the restocking with therapeutical milks, CSB and plumpy nut works Periods in the year where they run out Current situation Use of Database	Health centres DPS

8.3. List of interviewees

1. UNICEF. UN organization in charge of this study and working closely with MoH on PRN (CMAM) and data management
2. Nutrition department at MoH
3. Health information Department (DIS) at MoH
4. FANTA. Organization working as the technical assistant to MOH, DPS and DDS, assisting in the development of the PRN protocol and nutrition indicators, currently working on the Volume II of the PRN protocol
5. Partners such as Save the Children, Elizabeth Glaser Paediatric AIDS Foundation (EGPAF), ICAP and Friends for Global Health, CHASS-SMT
6. World Food Program (WFP)
7. Provincial Health department (DPS) in Nampula and Maputo
8. District health Department (SDSMAS) in Erati district
9. Community CHW/ACs

8.4. Relevant supporting policy guidance / documents

The original project documents for the JP in Nutrition and food security provided the following documents:

- Project document for the JP in Nutrition and food security (2009)
- Mid-term evaluation (2011)
- Final evaluation (2012)
- Consolidated improvement plan (Nov 2011)
- MICS (Multiple indicator study) (2008)

- DHS (Demographic and health survey) (2011)

Specifically for the PRN or programme for nutritional rehabilitation the following documents have been made available:

- Case Study CMAM (Oct 2011)
- Volume I. PRN protocol (2012)
- Nutrition indicators (2012)
- In patients and Outpatients databases (2012)
- All forms used in the PRN such as (inpatient form, outpatient, monthly summary, daily summary, registry books, community referral forms...) (2012)

8.5. Training materials / Packages for the PRN

The complete PRN training includes four “packages” and a complementary training on HIV and nutrition at the community level:

1. The training for the facility-based health workers lasts five days, and covers 10 modules plus a pre- and post-test:

- 1) Introduction to PRN
- 2) Definition and measurement of acute malnutrition
- 3) Criteria and procedures for admission
- 4) Outpatient treatment for SAM
- 5) Inpatient treatment for SAM
- 6) Protocols for infants under 6 months or children > 6 months that are less than 4 kg
- 7) Protocols for MAM
- 8) Planning and logistics
- 9) Monitoring and evaluation
- 10) Community mobilization

2. The training for community-based health workers lasts two days and covers 13 topics:

- 1) Introduction to the training
- 2) Malnutrition: definitions, causes, consequences, local names, common illnesses, taboos/ myths
- 3) General overview of the PRN program
- 4) Roles and responsibilities of the CHWs and other stakeholders
- 5) Referral protocols
- 6) Community participation
- 7) Home visits
- 8) Addressing barriers that prevent caretakers from accessing services
- 9) Informing the community about PRN
- 10) How to measure bilateral oedema
- 11) How to measure MUAC
- 12) How to fill in the reference form
- 13) How to do nutrition education and demonstrations of enriched porridges for young children

3. Training for community leaders and traditional healers is conducted separately for each group, and lasts one day per group. The topics and methods for facilitation are largely the same, except that the traditional healers learn how to detect oedema, and the community leaders learn how to map their communities.

- 11) Introduction to the training
- 12) Malnutrition: definitions, causes, consequences, local names, taboos and myths
- 13) General overview of the PRN program
- 14) Roles and responsibilities of the leaders, traditional healers, and other stakeholders
- 15) Referral protocols for the CHWs
- 16) Community participation
- 17) Home visits
- 18) Addressing barriers that prevent caretakers from accessing services
- 19) Informing the community about PRN
- 20) Key concepts for nutrition education

- 21) How to measure bilateral oedema (traditional healers)
- 22) How to map your communities (community leaders)

4. Training for provincial-level health staff on monitoring, evaluation, planning and logistics is a hands-on, three-day training to teach provincial-level health staff the tools and databases for the PRN program. Each participant practices entering data and interpreting results on his/her computer. The facilitator can also choose to conduct a two-day training in Microsoft Excel since participants need to know basics to manipulate the databases.

9. In addition to the standard PRN training package, a special training on community-based nutrition and HIV for CHWs and home-based care volunteers was added to the community-level training-of-trainers in Gaza and Zambezia Provinces. The MOH Nutrition Department plans to continue this HIV-nutrition training as part of the community-level PRN training.

9. Potential target journal

To be decided by Department of Nutrition (MOH) together with UNICEF and the steering committee for the MDG-f

ⁱ Ministry of planning and Development, 2010, Third National Poverty Assessment 2008-2009