2013

COVERAGE ASSESSMENT
» SEMI-QUANTITATIVE EVALUATION OF ACCESS & COVERAGE

COVERAGE MONITORING NETWORK

Gogrial West County, South Sudan
October 25-November 3, 2013

ACKNOWLEDGEMENTS

ACRONYMS

ACF	Action against Hunger
ARI	Acute Respiratory Infection
BSFP	Blanket Supplementary Feeding Program
CMAM	Community Management of Acute malnutrition
C.I.	Confidence Interval
CSAS	Centric Systematic Area Sampling
CNVs	Community Nutrition Volunteers
CNWs	Community Nutrition Workers
GAM	Global Acute Malnutrition
M3	Median of three data point
M3A3	Average of medians of three data points
OTP	Outpatient Therapeutic Program
RUTF	Ready to Use Therapeutic Food
SAM	Severe Acute malnutrition
SC	Stabilization Centre
SMART	Standard Methodology for Assessments and relief Transitions
TFC	Therapeutic Feeding centre
TSFP	Targeted Supplementary Feeding Program

EXECUTIVE SUMMARY

Coverage was investigated using the SQUEAC methodology in October 2013. This investigation did not provide an estimate of program coverage due to lack of access to significant portion of the villages under the program's catchment area. But the investigation at stage one found that:

- The program is well run with good outcomes in terms of cure rate, length of stay, defaulting, and mortality. The program manages to identify 2945 children in the period October 2012 to September 2013 well before they deteriorate, early detection from facility side and good health seeking behavior from community side helped achieve this.
- RUTF is well accepted and self-referrals and peer-to-peer referrals to the program are significant portions of admission into the program. Both program and SAM knowledge are very high, contributing to increased admission into the program. Overall, program is well accepted by community.

The following identified barriers to program coverage need to be addressed:
- The facility-based Community Nutrition Workers' (CNW) and Community Nutrition Volunteers' (CNVs) catchment areas are large, in terms of both number of households and geographic area, which hampers exhaustive case finding. The CNVs are not actually based in the communities, they work from the health facility. This was identified by previous coverage assessments as a key barrier that limits optimal coverage. Therefore, recruiting community based volunteers from each village who will conduct community level screening and referrals should be a priority to increase access and coverage.
- The program failed to use key community figures, traditional doctors, and existing MoH community based IYCF volunteers. The program should consider using these influential figures to mobilize and sensitize the community about the program. Specifically, the program should train traditional healers about SAM and how to screen for SAM using MUAC so that they can referee SAM case to the health facility.
- Default rates are higher during land preparation and planting season, as well as flood season. Therefore, the program should devise ways to accommodate these seasons either by conducting mobile clinics or giving the full dose of treatment for one or two months. This will decrease the burden on families during these seasons and will decrease defaulting.
- The fact that CNVs screen for both moderate and severe acute malnutrition has created considerable confusion between the program and the community. This works well where there is a supplementary feeding program to treat moderate acute malnutrition (MAM) as these children get treated. However where MAM services are not available, parents of MAM children are told that their children are fine and are sent home. This is undermining the CNVs in the community and misunderstanding at the community level of the program entry criteria. The issue was raised in both previous and current SQUEAC surveys. Therefore, there is need to solve this problem in a way that the community understands and accepts including training of CNVs to only screen for SAM if the CMAM program only addresses SAM and not MAM.
- The highly centralized nature of the program means some villages are very far from services. The program should consider using mobile teams to reach far villages.

CONTENTS

1. INTRODUCTION

Gogrial West County consists of 9 payams; Alek South, Alek North, Alek West, Gogrial, Kuac North, Kuac South, Riau, Akon North and Akon South. The county covers an estimated area of 6400 km^2 with 583,975 persons[1].

ACF established a TFC in Alek in May 2006 triggered by the results of an assessment that revealed critical levels of GAM. The Community Management of Acute Malnutrition (CMAM) based approach was adopted in 2007 with the opening of four OTP sites in Keet, Panliet, Alek and Malual Ayuen. Currently, Alek, Ngapathian, Panlet, Mayom, Atukuel, Keet and Ayuen Payams (localities) are managed by permanent OTP sites in the primary health care unit in their respective region. Alek has a Stabilization Centre to treat SAM with complications. The program interventions include nutrition treatment, food security, WASH and nutrition surveillance.

During the fifth population census, the population of the county was estimated at 583,975. The SMART survey conducted by ACF-USA surveillance team in April 2011 showed that the GAM and SAM rates based on weight for height z score using WHO standard were 22.3 % (18.9 - 26.0 95% C.I.) and 4.4 % (3.0 - 6.4 95% C.I), respectively.

To continually monitor and evaluate the performance of the nutritional intervention, ACF did two coverage surveys using area sampling method of Centric Systematic Area Survey (CSAS) and Bayesian coverage survey method SQUEAC methodologies in January 2009 and October 2011, respectively.

Results of the CSAS survey on 2009 yielded a **Point Coverage of** 46.7% (95% CI = 28.3% - 65.7%) and **Period Coverage of** 75.4% (95% CI = 63.1% - 85.2%). Lack of knowledge about the existence of the OTP services, target population's health seeking behavior (wide spread use and influence of traditional healers as opposed to modern medication), high opportunity cost for carers, rejection of referred cases by facility, shame to attend the program (stigma), limited accessibility of parts of the catchment areas, limited incentives for caretakers (they used to get incentives to attend the program (program used to distribute mosquito nets, soap, water containers and mats, but it is not in place at the time of the CSAS investigation), stock outs and Community Nutrition Workers (CNWs) complaints about lack of lunch allowance, raincoats, gumboots and broken down bicycles were some of the barriers to access and sup-optimal coverage identified by the survey. The survey found the coverage result acceptable and encouraging when it is considered from the key limitations of the program at that time: lack of community screening at some village and the relative short period stage at which the program start operating. To achieve higher coverage the survey recommended a regular and continuing community level screening at all villages of program's catchment area; increased education to the population to address the impact of traditional healers on coverage levels; introduction of community based volunteers into the outreach component to boost coverage and increase access, make the program sustainable and lessening the burden on Community Nutrition Volunteers (CNVs); refresher training for CNWs and CNVs on community mobilization, measurements and knowledge of cut off points; introducing TSFP;- and improving monitoring and evaluation by regularly analyzing OTP data (especially spatial analysis of where the admissions are coming from). The survey indicated the sample excludes some of the villages due to their extreme inaccessibility.

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[1] Results of the fifth Census.

The SQUEAC investigation in October 2011 found a coverage level of 44.7% (95% CI = 34% - 56%). This result used point coverage to arrive at the final level of coverage. The observed coverage level is similar to the findings of 2009 for point coverage. High awareness of malnutrition, knowledge and acceptability of the services by communities, high performance indicator across the program and high quality of service were identified as attributers and boosters of the program. Poor health seeking behavior due to availability and use of traditional healers, weak community mobilization component due to lack of outreach in parts of the program area, distance, RUTF stock outs, rejection and poor knowledge of malnutrition were identified as critical barriers limiting access and achieving higher coverage level. This SQUEAC investigation recommended: strengthening community mobilization specifically by preparing exhaustive village mobilization plan per OTP catchment area and an even spread of volunteers into all villages by placing community based volunteers per village; make the mobile OTPs permanent to cope up with huge number of case load; increase the number of CNWs per OTP site; step up outreach activities during the hunger gap to admit more children, to meet need and counter the impact of distance on coverage and access, standardize and sustain motivation for volunteers; continue on the job mentoring and assistance; consider BSFP during the hunger gap to reduce caseload;- and strengthen the linkages of CNWs and CNVs.

With the intention of following up on the recommendations listed in previous coverage assessments to assess whether barriers have been addressed and if coverage improved, ACF conducted a third coverage investigation on this program between October 22, 2013 and November 4, 2013. Having this as objective ACF partnered with South Sudan Nutrition cluster and Coverage Monitoring Network to get the cluster trained and help other partners acquire the skill to continually monitor their program.

2. OBJECTIVES

This investigation's overall objectives are to strengthen routine program monitoring and increase program coverage of ACF OTP program in Gogrial West State and to train South Sudan Nutrition Cluster on SQUEAC methodology and its various components so that the cascade this into their programs. More specifically, the coverage exercise aimed to:
1. Develop specific recommendations based on survey/investigation outcomes to improve acceptance and coverage of the nutrition program;
2. Enhance capacities of key Nutrition Cluster partners and MoH technical staff in South Sudan to undertake a coverage survey using the SQUEAC methodology;
3. Identify barriers to access to OTP services so that reforms can be made to the program's mode of implementation;
4. Estimate the overall coverage of OTP program

3. METHODOLOGY

SQEAC is a semi-quantitative method that uses the Bayesian method and Bayesian probability theories, rather than the usual frequency method to generate coverage value. A Bayesian approach is the explicit use of external evidence in the design, monitoring, analysis, interpretation and reporting of a scientific investigation. A Bayesian approach is:

- more flexible in adapting to each unique situation
- more efficient in using all available evidence
- more useful in providing relevant quantitative summaries than traditional methods

The SQUEAC investigation is based on the principle of triangulation. This means that data need to be collected and validated by different sources and different methods. The exercise ends when there is redundancy; i.e. no new information is gained from further investigation using different sources or methods. SQUEAC achieves its efficiency by using a three stages approach: the development of the **Prior**, the development of the **Likelihood** and the generation of the **Posterior**. The first two stages aim to identify potential barriers and provide two individual estimations of coverage.

During the *Prior* building process, existing routine data which have previously been collected and compiled are combined with qualitative data to produce a coverage "picture". Building the *Prior* provides a projection of coverage levels for both the entire target area and also specific areas suspected of relatively high or low coverage within the program's target zone. The *Likelihood* is built with data collected during a wide area field survey in randomly selected villages. The selection of cases during wide area survey uses active and adaptive case finding method to identify all cases in the selected village. The last stage, the generation of the *Posterior,* combines the two initial stages and provides the overall coverage estimation, including Credibility Intervals (C.I), by taking into account the "strength" of each component of the equation. The *Posterior* is calculated using the Bayesian calculator.

However, due to flooding of significant portions of the villages within program's catchment area, this process did not proceed to stage two and three.

4. RESULTS

4.1. STAGE 1

The objective of Stage One was to identify areas of low and high coverage and the reasons for coverage failure using routine program data or easy-to-collect quantitative and qualitative data. The following routine program data were collected and analysed according to SQUEAC framework:

- Admissions overtime
- Standard program monitoring data: proportion of exits discharged as cured, who died during treatment, non-responders and those who defaulted during treatment
- Distribution of MUAC admissions
- Length of stay in treatment before discharge as cured
- Length of stay before default

4.1.1. PROGRAM ADMISSIONS (with and without smoothing)

Figure 1 shows the number of admissions over time for the period October 2012 to September 2013. Since there was considerable weekly or monthly variation in the number of admissions (blue line on Figure 1 with picks on January, March, May and July and minimums on December, February, and May) smoothing was done using the method of *moving averages* to the data to clearly observe seasonal and trend components after containing random noises. M3 (red line) and M3A3[2] (light green line) are results of the admission data overtime after smoothing it for median and averages of median for three consecutive periods, respectively.

Figure 1: Admissions for the period Oct 2012-Sep 2013
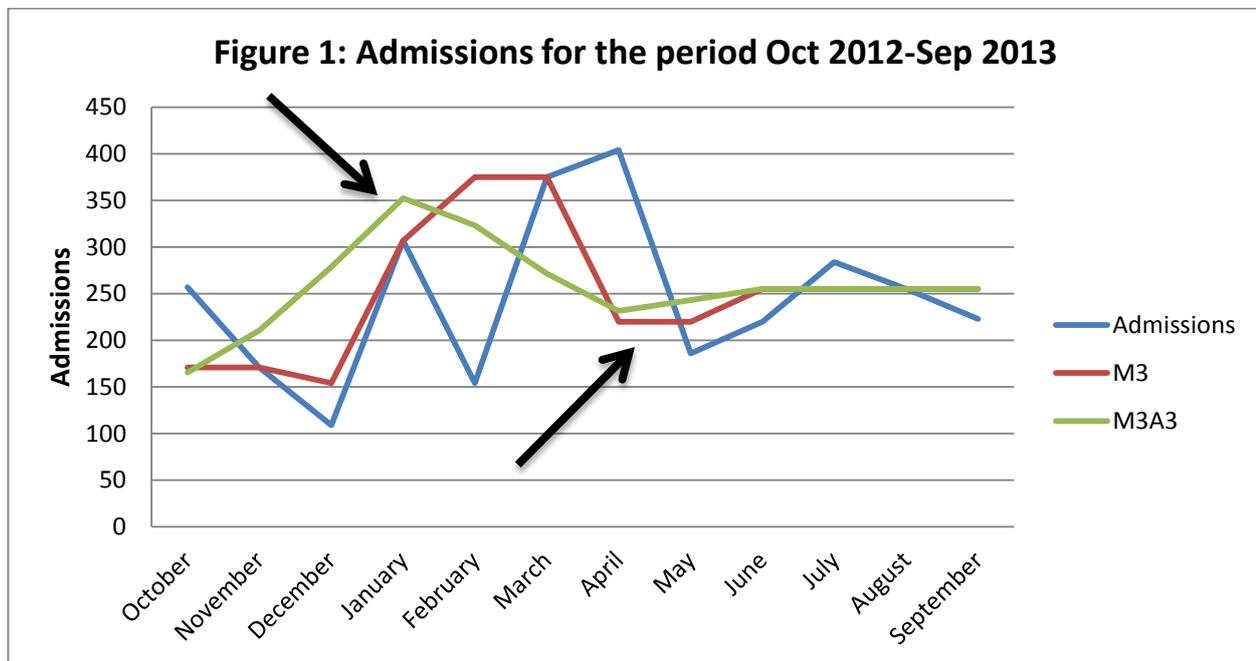
The pattern of admissions (red line on Figure 1) shows a sharp decrease of admissions in the first 3 analysis months. This coincides with the final and main harvest time (October), end of the rainy season (October), flooding period (October to December) and diarrhoea, malaria and ARI (from locally produced disease and critical events calendar) suggesting that the program may be capable of responding to changes in need. There are competing explanations for the pattern of admissions seen between October 2012 and January 2013:

a) By end of October communities would have harvested most of their crop. As food security indicators are early indicators of problem of malnutrition (i.e. there is lag time to observe the impact of food security failure or success on overall nutritional condition), the overall nutritional condition of the population in general and children in particular will continue to improve resulting in a sharp decrease in admissions. Moreover, flooding brings increased access to fish which may contribute for this trend. Therfore, the decrease in admission of cases reflects the program responds to needs on ground.

b) On the other hand, flooding cuts-off significant number of villages and disease may contribute to the deterioration of nutritional status in children which may imply the caseload may not decrease as suggested by the trend. Harvest and fish availability may contribute to decrease in admissions but not to the extent of the observed decline in admission as some may find it difficult to travel due to flooding. In this scenario the program may not respond to needs on ground

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[2] M3 is a median of three consecutive months' admission data. A second smoothing was done on the Medians (M3A3). M3A3 data are smoothed by taking the medians of sets of three successive data points (M3).Smoothing is done to hide the random 'noise' component and help reveal the seasonal and trend components of the time-series

The SQUEAC investigation reported here addressed this issue and found that (b) is a more credible explanation. An analysis of the number of CNVs and their catchment area established that part of the communities were not covered by the program meaning that there was no community level screening neither by CNVs or CNWs at any point in time whether there was flood or not. This confirms that the program responds to areas where it is covering but this does not reflect the far to reach and uncovered areas. Further, this trend was observed across all facilities. Specifically, those facilities which are not affected by flood have the same trend as those with majority of their villags cut-off by flood.

From January to March Admissions sharply decreased. The period is the main dry season as well as land preparation period for next season harvest. March specially is the month just before the rainy season. Qualitative investigations found that people will concentrate on farm activities and do not have time to take their children to treatment. The decrease in admissions in this period shows that the program did not meet need as it should. From April to June and admission slightly increased and remained stable afterwards until September. This period is the hunger season. The increase in admission reflects facility responds to its changing environment.

4.1.2.   ADMISSIONS BY SERVICE DELIVERY UNIT

In order to spot potential low and high coverage areas, admissions were analysed by service delivery unit (i.e. health facility – Figure 2).

Figure 2: Admissions overtime by facility (October 2012-September 2013)
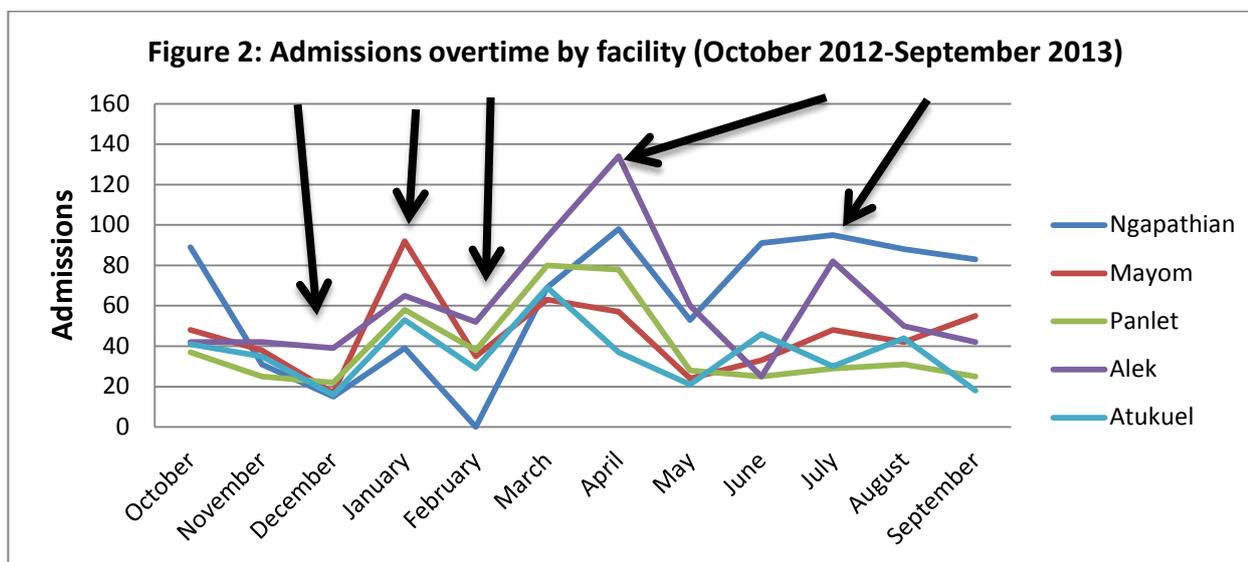
Similar trends that reflect the seasonality across facilities were observed. After October there was a decline in admissions in all facilities. October is harvest month. The decline in admissions in the following months reflects the decrease in caseload due to improved food security at household level. Admission increased in January, the start of the dry season but declined in the following month. In March, at the end of the dry season, admissions were high across all facilities then decreased again in April to June. After June admissions increased until September. The increase in admissions is attributable to the fact that June to July is the hunger gap period. In general, admissions reflect seasonality. In the background of all this is RUTF supply break down which may affect the level of admissions. Interviews showed that from January to March and June to September, there was a supply shortage, usually for two weeks. Since the shortage is for a narrow period of time, this did not affect the admission trend.

Figure 3 shows the total number of admissions by facility. This was done to detect potential disparities and non coverage. Alek and Ngapathian have the highest number of admissions as compared to the rest. There were no pronounced low admissions. Due to lack of population figures at catchment area level, comparisons were not made. Paniet and Alek were programs

with a TSFP component. The relatively lower number of cases in Panliet was partially explained by the availability of the TSFP services, helping children from deteriorating into SAM.

Figure 3: Admissions by facility (October 2012-September 2013)
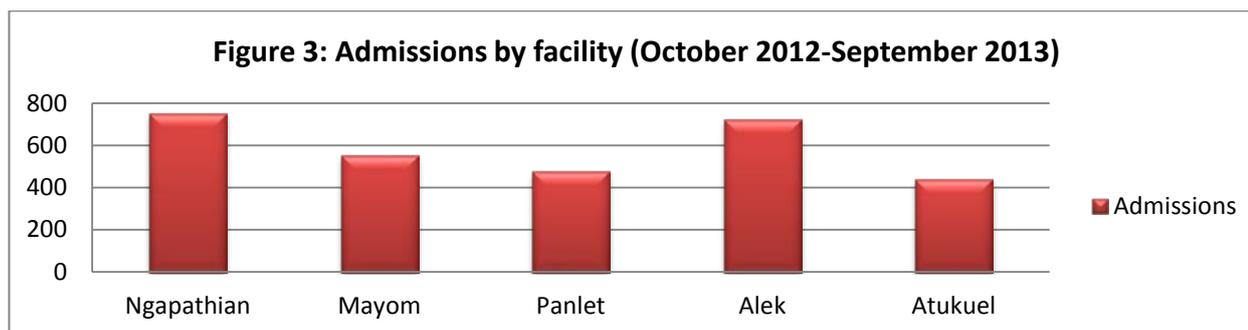
4.2. MUAC AT ADMISSION

To identify whether the program detects severe acute malnutrition in the community in a timely manner or not, MUAC data at admission were analysed for each facility as well as for the entire program.

Late admissions are children who were malnourished but not in the program for considerable period of time. Late admission means more children in outpatient and inpatient care, longer treatment period, and elevated number of deaths (poor program performance or efficacy). This will result in bad image for the programs' ability to treat children, which may lead to more late presentations and admissions and a cycle of negative feedback.

Admissions into the program use two criteria. Screening conducted at the community level using MUAC. If the child's MUAC is <12.5cm the child will be referred by Community Nutrition Volunteers (CNVs) into the OTP program otherwise the child will be considered as normal. When individuals arrive at facility (referred or otherwise), program staff assess each individual for malnutrition; this includes taking anthropometric measurements, recent history, and a full medical examination. On top of that child will be measured using height board and weighing scale. If the child is found to be below <-3z score child will be admitted into OTP. Based on this double screening result, the health worker will determine the appropriate course of treatment depending on whether the individual is moderately or severely malnourished. If a child does not meet one criterion, WFH or MUAC, he will be admitted into the program using the other criterion. Similarly oedema is used to screen children for SAM. For MAM children Panlet and Alek facilities have a TSFP program, others do not have that. In those facilities with a TSFP program, moderate cases will be referred to such, for others carers will be told child is healthy.

Figure 4 shows the MUAC at admissions for 801 admissions between May and September 2013. It shows most admissions were captured before reaching a MUAC level of 11.5 (close to the program admission criteria). Similarly, as we go right of the histogram we observe rapid decrease in numbers of admission with lower MUACs (i.e. short tail of lower MUAC admissions (10.9-10cm and 9.9-9.0cm) and zero low critical MUACs (<89mm). The Median MUAC at admission lies in the interval above 11.5cm. Most admissions happened above 115mm MUAC level. These are malnourished according to WFH and not to MUAC.

Figure 4: Distribution of MUAC at admission for the period May to September 2013
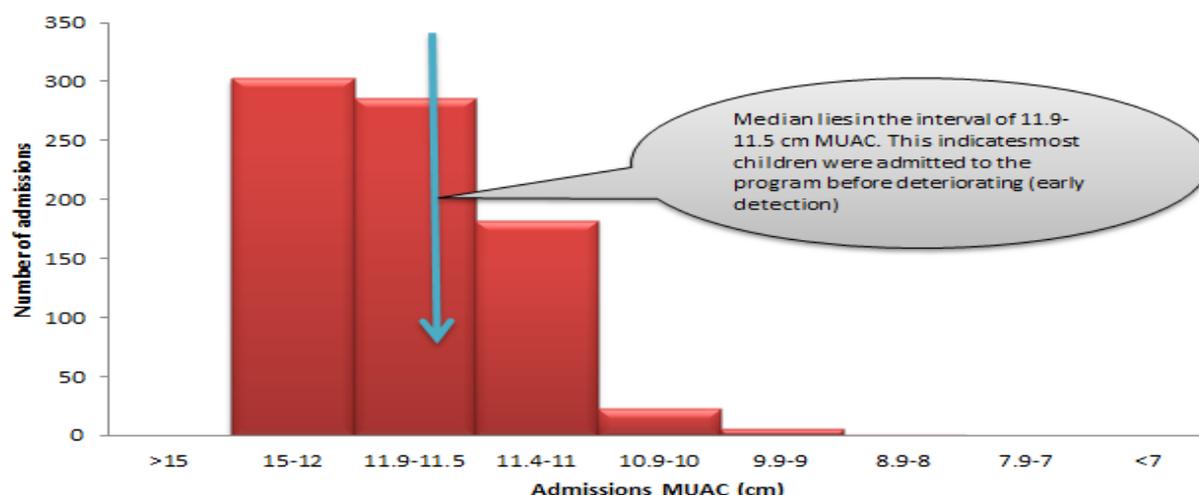
It is important to note here that the population under study is a typical population where prevalence of malnutrition based on MUAC and prevalence based on Z score show a remarkable difference, whereby the prevalence of SAM by Z-score is much higher than by MUAC. A review of admissions for the past 5 months before the survey showed that no child was admitted with a MUAC <11.5cm and healthy according to Z-score (>-3Z score).

To conclude, the observed distribution of MUAC at admission is consistent with timely case finding and recruitment by the program and/ or timely recognition of SAM and timely treatment seeking by carers. It is also consistent with high temporal coverage (i.e. frequent screening) of case finding activities.

4.3. PROGRAM PERFORMANCE INDICATORS (PROGRAM EXITS)

Quantitative data were collected on the outcome of all activities in the OTP program, and standard indicators for nutritional interventions were calculated. This enabled the effectiveness of program activities to be monitored and related to coverage. Trends in outcomes/exits were monitored to identify any changes in the number of deaths, defaults or non-cured cases and to indicate areas that require further investigation. Table 1 summarizes program outcomes from October 2012 to September 2013.

Table 1: PROGRAM PERFORMANCE INDICATORS, TAI'Z, APRIL 2013 TO SEPTEMBER 2013

Indicator	Number	Percentage	SPHERE
Recovered	2278	83%	>75%
Death	5	0%	<5%
Defaulter	218	8%	<15%
Non responder	228	8%	<10%

The data are consistent with a well-performing therapeutic feeding program. The observed death, default and non response rates are well within international norms for therapeutic feeding programs.

Low rates of mortality and non response are usually associated with good program coverage. This may be due to the ability of the program to find and recruit cases in a timely manner.

4.3.1. ANALYSIS OF DEFAULT OVERTIME

Figure 5 below shows that the cure is consistently above 75% and the default rate is below 15% for most part of the year. Nevertheless, default was above 15% in November which is the flood and harvest period and April and June which are times of land preparation.

Figure 5: Standard program monitouring data for the period October 2012 to September 2013
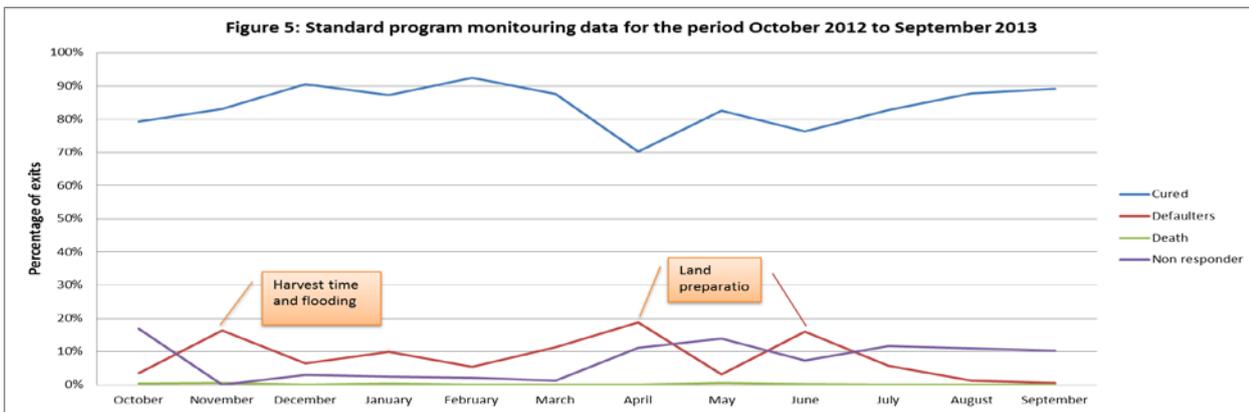
4.3.2. ANALYSIS OF DEFAULTERS BY FACILITY

Figure 6 shows default rate over time by facility. Rates were calculated for each facility taking all exits for the facility as a denominator. This was done to detect whether default is acceptable across all facilities or there are pockets with unacceptably high defaulter rate. The observed distribution of default for Alek, Mayom, Ngapathian are well within the SPHERE standards rate, all below 15% across time. However, Atukuel and Panlet have high number of defaulters. For both facilities the defaults were during flooding in November and land preparation times in April, June and July. This was confirmed by further investigations of defaulter date and interviews. Of the total defaulters, 45% (n=99) were from Panlet and 29% (n=64) were from Atukuel.

Figure 6: Defaulter rate per facility over time over time (October 2012 to September 2013)
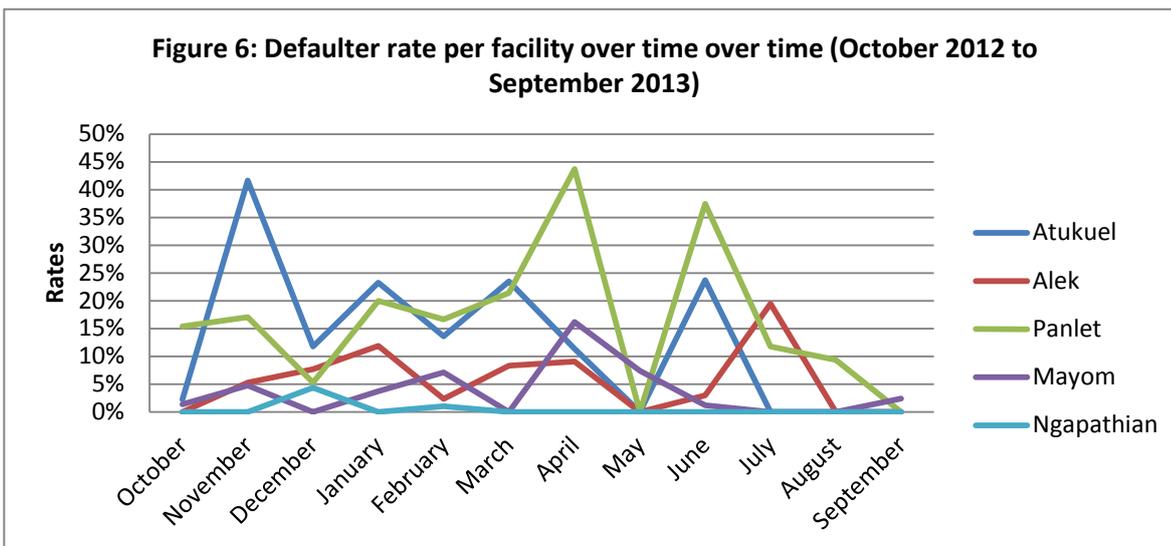
4.3.3. LENGTH OF STAY AT DEFAULT

It is known that some defaulters will be current cases and some defaulters will be recovering or recovered cases. Beneficiaries that default early in the treatment episode are likely to be current cases whereas beneficiaries that default later in the treatment episode are likely to be recovering cases. In order to understand whether there is a serious defaulting problem, a plot of the number of visits before default was tallied for those facilities with a serious default problem. Results show that most defaulters have been in the program for quite a long time. Most were in the program for more than 2 months. The median length of stay before default is 11 weeks, indicating most have stayed for a long period of time in treatment and might already be cured. Beneficiaries that default later in the treatment episode are likely to be recovering cases. Hence, default is not a serious problem affecting coverage.

Figure 7: Length of stay before default for Mayom and Panlet facilities
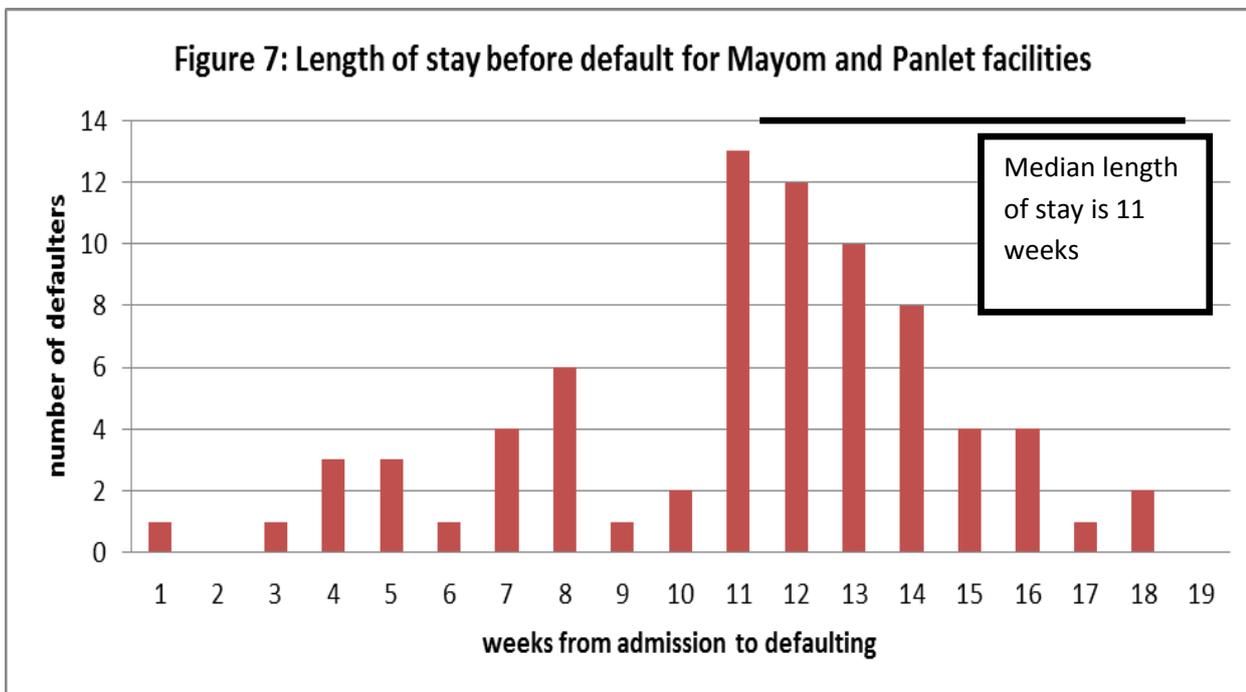
4.3.4. HOME LOCATION OF DEFAULTERS

Mapping of the home locations of defaulting cases can identify potential problems with proximity to services and other barriers to service access and uptake that may be spatially distributed. Defaults were mainly from Panliet (45% of the total defaults in the entire program) followed by Atukuel (29%). Other facilities did not have a default problem. Due to this Panliet was selected for an in-depth review and investigation of defaulters.

The main investigation was done by locating the distance of defaulters' home location. The findings conclude that defaulters are late defaulters; main cause of default is season (cultivation period) than distance. This is because defaulters from far off and near places defaulted on the same day, despite their location. This was mainly due to cultivation work and land preparation. Particularly, it is worthy to note that many visit the health facility from far away villages, traveling as far as 18 hours to get to the clinic, for a considerable period of time before they default. See annex two and Table 2 for details.

Table 2. Defaulters home location distance and season of default

SN	Default Month	Distance of home location of defaulters who defaulted in the same month (in Hours)	
1	March	2,18,18	A child as far as 18 hours defaulted on the same month and same day
2	April	3,3,2.5,4	Similar variation and yet defaults happen on the same month and day
3	June	4,3.5,5,3,5,0.5,1.5,0.7,3,5,0.75,6,5,4,1.5,3.5, 0.2,4,3.25,0.8,3	A near distance child (20 minute) and 6 hours far child defaulted on same month and day
4	July	1.3,5,2,2,2,2,11.0.5,0.2,3.5,3.5,17	A child as near as 20 minute and another one 17 km away defaulted on same month and day
5	August	2,3	

4.3.5. DEFAULTER TRACING

Defaulter tracing was not possible since most of the villages with defaulters were flooded and unreachable at the time of the survey. In Panliet facility catchment area teams were able to find three defaulted cases. The reason for their default was:

- A mother who followed treatment for 7 weeks said workload and agricultural labour demands forced her to quit the treatment. She said she was well treated at facility.
- A mother who followed the treatment for 11 weeks said she was tired of coming back and forth for three months and decided to quit as she did not see the end of this treatment coming. She said the treatment should take less time.
- The mother who followed up the program for 8 weeks said workload and opportunity cost forced her to stop. On top of that she said she lost the card and quit.

4.4. LENGTH OF STAY IN PROGRAM

Examining the duration of the treatment episode provides useful information about the program coverage. Programs with long treatment episodes tend to be unpopular with beneficiaries and suffer from late treatment seeking and high levels of defaulting (both of which are failures of coverage).

Section 4.2 above established that the program is characterized by early treatment seeking and early detection of cases. Nevertheless, analysis of defaulters indicates that defaults are late defaulters, staying for considerable time in program.

Figure 8 shows the Length of stay for cured discharges for the period of April-September 2013. The pattern of cured discharges shows a typically high number of exits as cured around the programs standard length of stay (8 weeks), with few exits up to 6th week. Up to 6th week only 6% of the children were discharged as cured, in the 7th week, 8% were discharged as cured, a significant increase from previous 6 weeks combined, in the 8th week, 26% of the discharged as cured were exited, a threefold increase from week seven. The median lies at eight week. Programs with high coverage have median length of stay of 8 weeks or below. In that regard, the program has an acceptable length of stay. But the observed distribution suggests children may be staying unnecessarily longer in the program which is contributing to default (see annex 2) and higher opportunity cost for both the program and carers. The cases in this program are detected very early in their sickness. This implies that they should get well early and we should see a lower median length of stay.

Figure 8: Length of stay in treatment before cure (April-September 2013)

Median Length os stay is 8 weeks. This means half of the children were discharged after 8 weeks. The median is acceptable length of stay. However, the distribution of discharge indicate most exited as cured beyound 7 week and most importantly at the 8th week. This shows problems in discharge.
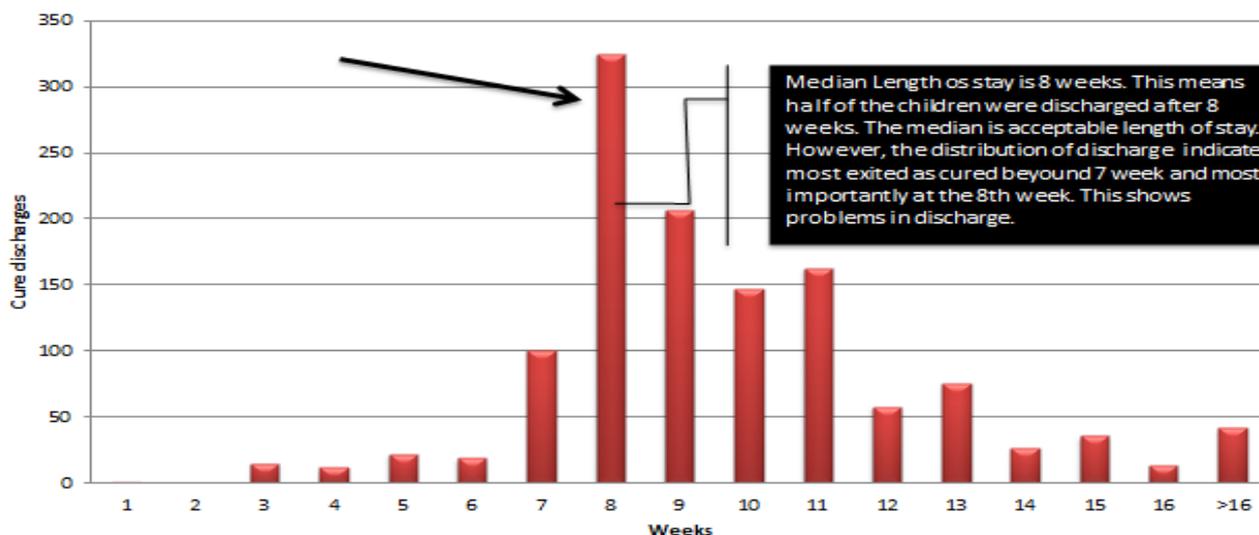
4.5.   SUMMARY OF QUALITATIVE INVESTIGATION

Semi-structured interviews were conducted with key informants including Community Nutrition Workers, Community Nutrition Volunteers, community leaders and carers of children in the program. Additionally, informal group discussions were conducted with mothers and fathers in the community. Two types of semi-structured interviews were done: in-depth interviews and case histories. Eighteen qualitative interviews were done at various locations and facility. It is important to note here that we should use the qualitative information with caution and should not over read it. This is because teams were unable to access significant parts of the catchment area to come up with all inclusive conclusions. That said, efforts were made to make it as representative as possible.

4.5.1.   COMMUNITY NUTRITION WORKERS INTERVIEWS

Semi-structured interviews with Community Nutrition Workers (CNWs) in their facility took place with four CNWs in Panliet, Atukuel, Alek and Mayom facilities. The purpose of these interviews was to investigate case finding activities, understanding of admission and discharge criteria and whether coverage levels are impacted by the way the program is implemented.

Questions about case finding activities and source of referral revealed the following information:

Exhaustive Case finding: The CNWs interviewed believed that case finding is exhaustive in the areas that are covered by Community Nutrition Volunteers (CNVs) but there are gaps in those far away and hard to reach areas. They further explained the entire case finding:

- CNVs are allocated a village which they visit.
- CNVs are not community based. They are facility based.
- Some beneficiaries have to travel as much as a day travel to reach facilities and get services.
- Flooding and cultivation period seriously limit outreach activities as many villages will be totally inaccessible.
- All CNWs believe that they know the protocols and how to administer treatment. They have been trained by ACF repeatedly on CMAM implementation.
- Primary Health Care Unit health workers screen children who visit the facility for other treatment.
- Community is aware of SAM. Moreover, they know that it can be treated by the program and that the treatment is both free and effective.
- In Atikuel CNWs reported that community screening is not done in distant villages

Routine screening: The CNWs stated that the health facilities have a plan in place for the CNVs that work in that facility that plans their visit to villages to screen children for malnutrition and conduct other related tasks (i.e. follow up). Each facility has a movement plan that clearly states: the name of the village, the distance of the village from the facility, scheduled date for visit and the responsible CNV (See annex 3). CNVs will do outreach based on their schedule by travelling from village to village. This is done routinely and continuously. Despite the above well planned and well ordered community outreach activities, significant number of villages per each facility are not covered because there are only 5 CNVs per facility. For instance for the Mayom facility, a single volunteer is responsible for a Boma[3]. There are five CNVs covering five Bomas. One Boma has 46 villages, while the others have 38, 23, 18 and 42 villages. The ratio of CNV to villages is 1:46 1:38, 1:23, 1:18 and 1:42. On average a CNV will cover 33 villages,

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[3] A Boma is a government recognized administration level which is bigger than a village and lower than a Payam. A single Boma is comprised of several villages.

more than a village a day 7 days a week which is unrealistic, given the distance and transportation problems, and the fact that CNVs cannot work 7 days a week.

Referrals: Most children are referred to the program by the CNVs followed by carers of sick and/ or thin children bring their children to the facility (self-referral) and through screening by facility staff.

Questions about *program logistic* revealed the following information:
RUTF and Medicines: RUTF stock outs are strongly associated with low program coverage. Stock outs were reported by all CNWs, but these were for brief periods of time. In general, multiple problems and opportunities with SAM program logistics were reported:
- ACF continuously delivers RUTF and routine drugs to facility door, except brief periods when there is a shortage in the supply pipeline.
- Repeated stock outs were reported across all interviewed facilities. Nonetheless, the shortages are for brief period i.e. usually less than 10 days. In Panliet such RUTF shortages were reported for months March, June, August, September and October. For Mayom in January and February a shortage of RUTF was reported (a week for each). In Atukuel and Alek Supplies were reported for August, July and September.
- Routine drugs were not available for Mayom in the period May-October 2013; while Paniet reported Amoxycillin stock out from September-October 2013.

Questions about the *workload associated with program activities* revealed the following information:
- Some CNWs reported that their workload had remained stable and that ACF provides bi-weekly monitoring and supportive supervision which helped to address any work load issues in most facilities.
- Panliet is one of the two facilities that provide TSFP services (the other being Alek). The CNWs in Panliet reported that delivering both OTP and TSF services increased their workload, the waiting time for care takers, the dissatisfaction of care takers, and resulted in quarrels between the facility staff and care takers.

Questions about the *awareness of SAM and the SAM program* revealed the following information:

Causes of SAM: CNWs reported the causes of SAM to be:
- Flooding: when cattle and men migrate, children will be deprived of their basic staple-milk-and this causes malnutrition.
- Diseases like diarrhoea, ARI and measles
- Cultural believes that deprives children of certain foods, for example not giving eggs to children
- Lack of food
- CNWs of Atikuel make a distinction about causes of malnutrition based on community's perception. There are three types of malnutrition: **Ad***oor*, ***Challa*** and ***Thiang***. ***Door*** is the most popular and it is caused when a child is not feed well. It happens gradually and it is visually identifiable as child becomes thin. This is treatable at facilities using OTP treatment. ***Challa*** happens when a breast feeding mother steps on the footsteps of a woman who slept (having sex) with her husband. The signs and symptoms are child will have diarrhoea and the disease is acute/fast. This is treatable by herbal doctor. ***Thaing*** happens when a woman has sex with a man (including her husband) while breast feeding her child. Having sex during breast feeding is culturally inappropriate. Diarrhoea is the sign of ***Thiang***. It is treatable by herbal doctor alone. ***Thiang*** is associated with strong stigma.

Questions regarding ***wrong referrals from CNVs, and extent of rejection*** revealed the following information:

Problem of rejected referrals and case definition: All interviewed CNWs reported a large number of children referred by CNVs are healthy and had to be rejected. The Mayom CNW estimated that 5 out of 15 CNV referred children are actually malnourished. In Alek too many children who are referred by CNVs were found to be healthy and in Paniet the day before these interviews, they turned away 15 children as they were healthy. In Atikuel mothers directly come to the facility to get their children screened. Around 100 to 200 of these self-referrals a month were healthy children. The program has made efforts to explain why these children are healthy and encouraged the mother to return if her child became sick.

The SQUEAC investigation revealed multiple explanations for rejection of referrals:

- CNVs generally refer all children with a MUAC cut off of point of less than 12.5 to the health facility. At the health facility the CNWs double screen these children using both MUAC and Z scores. If there is no TSFP program to treat moderately acutely malnourished children, children who have a MUAC level between 11.5 and 12.5 and a Z score above -3Z-score will be sent home as healthy.

- As next sections will show, RUTF is quite popular and carers want their children to be in the program. This resulted in large number of healthy children coming to the program to get screened. This naturally leads to a large number of children turned back as healthy.

- Quantitative data review established that there was no child with a MUAC level below 11.5 and a Z score above -3 admitted into this program in the past six months. In contrast, all admitted children were with a Z score below -3 (MUAC being above or below 11.5cm). This finding from the records prompted a visit to OTP sites in order to further investigate their admission criteria. The research question was: **do they screen by MUAC at community level and by Z score alone at facility level? and to establish whether this was a systematic or random error** It was found that they used both criteria at facility level with the exception of one facility that reported to only use WHZ and sometimes measure MUAC if the child looks too thin or unwell. Further discussions found that a child who is malnourished by MUAC but healthy by z score measures is a rare phenomenon as the prevalence level by MUAC is much lower than that of z score. There is no unified referral and admission system in South Sudan and double screening may have caused some of the rejections.

Questions regarding ***defaulters*** revealed the following information:

Causes of default: CNWs reported the causes of default to be:

- Flooding: In Panliet, where 45% of total defaulters are from, from June to August default is high, specially, those villages beyond the river like Apoku and Wunbut that are totally cut-off so they cannot access the health facilities. Similarly default occurs in Alek's catchment area due to flood.

- Cultivation time: In both Panliet and Atikuel, the two facilities with major default problems and account for 75% of all defaults, during the cultivation season in June

and July, most of the care takers will default as they are busy with farm work. The same is true for Alek, but the scale is not as big.

- Traditional practices: In Panliet catchment areas, it is a custom for mothers to give their child to grandmothers after completion of breast feeding. Grand mothers are usually unwilling to continue nutrition treatment and there for the child defaults.
- Stock out of supplies: In Alek and Mayom facilities CNWs reported that stock outs are causes of default.
- Assumed recovery of child: In Alek CNWs reported that mother will stop continuing treatment when they found out that the child is getting better.
- Distance: In Atikuel distance was mentioned as a main reason of defaulting.

Follow up of defaulters and absentees: In general defaulter tracing is usually done by CNVs in all interviewed facilities. In Atikuel CNWs reported that they do follow up and defaulter tracing for those places that are accessible. Both Mayom and Paniet do defaulter tracing. In contrast, absentees are not followed up or recorded.

Questions regarding ***CNWs and CNWs morale*** revealed that their morale is good. Nevertheless, they reported they need water tanks, umbrellas during rainy season, certificates of recognition to motivate them more, tables and chairs (Atikuel), bikes, gumboots and hats and more payments (Alek).

Questions about the ***presence of stigma towards the malnourished*** revealed that:
- Fathers feel ashamed to have a malnourished child as they are owner of many cattle. However this shame was not too wide spread and not strong enough to prevent them from bringing their children to the program. This was reported by the CNW in Mayom.
- CNWs working in Atikuel and Alek facilities reported the stigma against those with ***Thaiang***. As described above, it is usually associated with a mother having sex with her husband or another man while breast feeding. If Thiang happens, it is very difficult for carers to reveal it and come forward and get treatment for their children.

4.5.2. COMMUNITY NUTRITION VOLUNTEERS INTERVIEWS

As described before, each facility has 5 Community Nutrition Volunteers (CNVs) that cover the entire catchment area. These are attached to the health facility rather than based at the community. Semi-structured interviews with CNVs in their facility took place with three CNVs in Panliet, Atukuel and Mayom facilities. The purpose of these interviews was to investigate the interface between community level workers and the program and between the community and the program.

Questions about case finding activities, communication with CNWs, awareness about program and understanding of admission criteria and source of referral revealed the following information:
- **Case finding method, communication and understanding of MUAC cut-off:** All volunteer understands that their role as being responsible to mobilize the community members to bring their children to the health facilities when the children are sick, conduct MUAC screening at community level, and to refer them to the clinic. The CNVin Panliet makes decisions on which child to measure **by just observing** the child's physical situation. The CNV in Atikuel applies a central location screening of all children. In contrast, the CNV responsible for Mayom has a specific case finding method. She asks people in the community "*have you seen any sick or too thin child in this community?*" she then screens these children. Regarding the admission criteria, the Panliet and Mayom facilities CNVs said "*as far as children are in yellow or red, they refer them to the OTP*". However, the CNV from Atukuel was not able describe the exact method of screening and referral. She said "Red (MUAC) is for small children and yellow for older children".

Volunteer visit villages and contact the beneficiaries twice every other week, i.e. four times every month in Panliet or on weekly basis for Atikuel. They are in contact with the clinic staff almost every day. They check those referred by them from community to confirm whether they are admitted or not. All provide referred children with a written slip so that they will be accepted at the facility.

- **Explanation for referred beneficiaries:** in Panliet, mothers will be told to go to the OTP centre but they will not be told the child is malnourished as this will imply the mother did not give sufficient care for her child. However, Mayom and Atikuel CNVs will inform the mother that he child is malnourished and she should take him to the OTP centre for treatment. One issue arises when the child is screened at the health facility and they are found to be moderately malnourished but there is no treatment program for MAM in place. The chid will then be sent home. This creates a problem between the CNVs, the program and the community due to mixed and conflicting messages, and this undermines the respect and trust of the community in the CNVs and prigram.
- **Acceptance of SAM program:** All of the CNVs reported positive acceptance of the SAM program in their communities. The program is well accepted and RUTF is well regarded as a treatment for malnutrition. Panliet and Mayom CNVs stated that the community calls

program *Pan Akimatam* meaning "Hospital for groundnut". CNVs stated that the community believes that: *"this program cures children sickness which cannot be cured with ordinary clinic."* The name of malnutrition in community is *Adoor.*

Questions about follow up of ***absentees and defaults*** revealed the following information:

- **Follow up of defaulters**: Atikuel CNV said she follows up defaulted children when the child's home is near and accessible, for distant villages this cannot be done.   Similarly, the Mayom CNV does regular follow up and tracing of defaulted children. In Panliet, where default is a major problem, the CNV said he heard that default happens but he did not witness this in his catchment area.
- **Follow up of absentees**: There is no follow up when children are absent. In general, across interviewed facilities, follow up of some scale is done for defaulters but for absentees little is being done.
- **Reason of default**: the Panliet CNV believes **distance** and **flood** are the major reasons that cause default such as in Pakoor village which is some 15km away. Mayom CNV stated women **work load** and **stock out of RUTF** are the main causes of default in her area. Atikuel's CNV stated **mothers' sickness** and **unwillingness** are the reason for default in Atikuel area.

Questions regarding presence of **stigma** revealed that being a mother of a malnourished child is not something the community holds with high esteem but at the same time it is not so strong and discriminatory to prevent mothers to bring their children to treatment. When the program first stared, mothers used to hide their children, but this changed quickly once the effectiveness of the SAM program had been demonstrated.

Use of **community influential people** for community mobilization: All of CNVs interviewed said they do not use key community leaders such as religious leaders, traditional leaders and traditional healers, to mobilize the community. The Atikuel CNV reported that she uses churches to send across community mobilization messages.

Questions about **CNVs morale** revealed that the morale of the CNVs was good. The general sentiment can be summarized by this quote from a CNV working in Atikuel: 'I like the program as I see children get cured every day. Community is willing to contribute something for having their children referred and be in the program'.

Questions about **their recommendation** to make the program even better revealed the following information:

- To make their work easier, especially for **far away villages**, they need transport.
- To access **flooded** areas they have requested to be provided with gumboots.
- A continuous **provision of RUTF** should be maintained as **stock outs** are causing mothers to turn back after sacrificing their time and travelling long distances to get the services.
- The Panliet CNV suggested having a Stabilization Centre in Panliet. He also said some villages are **very far** and solution should be designed to reach these areas.

4.5.3.   FOCUS GROUP DISCUSSIONS HELD IN COMMUNITY

Six focus group discussions (FGD) with community members took place in Panliet, Mayom and Atikuel Payams. These discussions aimed at investigating knowledge of SAM and the treatment program in the general population. Attempts were made to make these discussion groups representative of the whole catchment area. This was done by selecting middle distance villages and far away villages as well as by varing the type of groups involved: women only interviews and mixed group interviews. In Panliet the community insisted that the discussions should include men rather than women only discussion, which the team accommodated.

The FGDs revealed the following information:

Mixed-sex discussion groups: One mixed-sex group discussion (n=13) was held in Paleng village of Panliet Payam. The village was a mid distant village (5 km far from facility). The participants identified common diseases in their area as: Diarrhoea, Malaria, ARI and malnutrition. They mentioned diarrhoea as the most serious and common disease especially from April to June. They stated that weight loss is a sign of SAM and that in their language malnutrition is called *Challa* and it is most common in children between 6 months to 4 years of age. However they failed to mention the causes of malnutrition. They stated that SAM was treatable and could be treated at the Panliet OTP first and if treatment failed then by the local traditional healer. They emphasized that SAM was treated by OTP program in Panliet facility; while other illnesses are treated at the Primary Health care Unit in the same compound. Each participant in the FGD identified a SAM case in their community who has been treated by the program. They stated that the SAM program cures children in a very short period of time. They knew that children get RUTF for SAM and CSB for a less severe condition. They sated that RUTF is only meant for malnourished children. They stated that previously they were not clear about *Challa* and its treatment but now they know due to the teaching from CNVs.

In Wac Jang[4] the team held one male group discussion (n=7). The participants stated that they know the CNVs and can identify them by name as they visit their villages twice a month and know about MUAC screening even though no one from their community is doing community screening or anything related to the program. They stated the following issues needed to be addressed: to find ways to

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[4] After several trials to get access to farthest village, this was selected as those who considered farthest are completely cut off by flood. Hence, the findings should be interpreted with caution due to a possible road side bias for this result (this holds true for Panliet Payam only).

access those 'five villages cut-off by flood' to continue treating the children in the program; establish a village level disease, including malnutrition, surveillances team to continuously monitor and report; supply the village with fishing hooks to make the best use of the current floods and improve access to food for the children; flood has already caused crop damage and they may need support in the coming season; and open more treatment centres in faraway villages where there is need.

Another mixed-sex group discussion was held in Diang Aleweli village of Mayom Payam, which is 3 hours away by walking from Mayom facility. Participants' did not mention malnutrition as a disease. After repeated questioning and being shown a picture of a malnourished child, they recognized it as *Thiang*. They mentioned those who have *Thiang* are those between 1 year and 5 year old children. They stated that *Thiang*[5] is treated by herbalists or traditional Doctors. This group did not know the SAM program and when shown a MUAC tape but could not identify what it was, but when shown RUTF they did recognize it but could not say what it was for. They stated *Thiang* happen between October and December, the period with the lowest stock of food in their area. They stated that it is caused by a fruit that appears at this time of the year.

Female only IDGS: Three female group discussions were conducted in Wabion village of Mayom Payam which is 10km far from Mayom Facility, Anyieny Agaldit village of Atikuel Payam which is 19km far from Atikuel facility and Atikuel Mayam village of Atikuel Payam which is just next door to Atikuel facility.

The IDG in Wabion (n=13) stated that the community considers malnutrition as a diseases, "one of the most serious diseases in their community", and knows the causes of malnutrition which are lack of food and not breast fedding the child well. Malnutrition is called in the community '*Adoor*'. They stated that SAM was treated by OTP programs either at Mayom or Gogrial facility; screening is done by health professionals at mentioned facilities when they go there for any sicknesses, otherwise there is no screening at their community level since June 2012. The women stated that children are given RUTF (they call it *Atom*), a medicine to treat malnutrition. They stated that they know children who have malnutrition but are not getting this treatment due to distance (acceptable distance for them is 2 and half hour one way) and rejection at the facility if they went there as the facility would say they are healthy while they know they are sick. They stated that the only place to treat this condition is facilities, there is no traditional healer. They reported that before June 2012 they used to have a mobile team which they did not have now. They stated that the mobile team should continue so that malnourished children far from the health facility can be treated.

One female only IDG (n=9) was done in Anyeny Agaldit (19km far). This group did not refer to malnutrition as a disease. When shown a picture of a SAM child all participants recognied it as malnutrition. They stated that they call it '*Kalira*' or '*Challa*'. They stated that *Challa* is treatable either at Gorgial Hospital, Atukuel, or by a traditional doctor. In their community there is no community level or mobile team screening. They refer each other to the health facility when they see malnourished children.

Another female IDG was done in a village adjacent to Atikuel facility (n=12) at Mayam village. The women stated that malnutrition. "Adoor", as a disease and that they both traditional medicine and the health system to treat their children.

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[5] As described in qualitative interview, Thiang highly stigmatized the mother.

4.5.4. COMMUNITY LEADER AND TRADITIONAL DOCTOR INTERVIEWS

In depth structured interviews with community leaders and traditional healer was conducted in Wabion and Wubir villages of Mayom Payam. The purpose of these interviews was to investigate the interface between community level health practitioners and the program and between the community and the program. Both villages were far villages where coverage was suspected to be low and outreach weak.

Interviews with community leaders and traditional doctor revealed the following information:

Teacher and Boma leader: He knew of the program, specifically that mobile teams used to come and find cases in villages (in November 2012) and conduct home visits and measure the circumference of the upper arm. He also was aware that RUTF is the product used to treat malnourished children. He also knew when the OTP days were and how to measure and identify malnourished children. He heard about the program from government and ACF. He used to sensitize the community last year, but not now as the program is not working in their village. He said when mothers go to the facility to get screened they repeatedly get rejected, while he knew the children were sick.

Traditional Doctor: One traditional doctor reported that he is the only practitioner for his community in the past 30 years[6]. He stated that both nutrition programs and primary health care facilities are very far from them. He identified SAM as *Adoor* and showing using body language and signs as to how a SAM child looks like. He said he treats *Adoor* and all other diseases. He knows about the SAM program but has not seen them in his village. *While working in this village a woman come with IYCF IEC materials and informed the team that she teaches the community about infant and young child feeding and caring practices. Even If the CMAM program is not working in this village, government's health and nutrition volunteers are already active there and can be used to screen for SAM.*

4.5.5. BENIFICIERY INTERVIEWS

Three interviews were done at Panliet, Mayom and Alek Payams. These interviews revealed the following information:

Knowledge of SAM: the mother from Panliet did not exactly mention what malnutrition is. She stated that if a child's appetite failed, if their weight is decreasing and if they could not be treated by normal clinic he should be taken to the ground nut hospital to get cured. Mothers from Mayom and Alek knew what malnutrition is what the causes and symptoms are.

Means of referral and information: The mother from Paniet went to the primary health care unit for treatment whereas the mothers from Mayom and Alek heard about the program from the community and brought their children to the OTP site for screening. The three of them heard about the program from other carers.

Explanation from CNWs and CNVs: All were told proper messages from OTP staff as to what the treatment is and the kind of care they should give for their children. They also felt respected and treated well at the OTP.

Perception about CMAM: Program is highly regarded by all respondents as well as community.

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[6] This person is highly respected in the community. He is not only a traditional doctor but also a community leader.

5.   STAGE 2 AND 3

The investigation could not proceed to stage two and three due to significant number of villages being cut-off by flood at the time of the survey. Even if all villages are accessible the findings of stage 1 quantitative section dictates that weighing scale and height board should be used for active and adaptive case finding. The limited number of training participants would have prevented the exercise from proceeding to subsequent stages-due to increased man/woman power needed. However, for the
sake of training the cluster members, Mayom was selected and simulated exercises were done on stage two but again this did not proceed to stage three due to a very low case load at the time of the survey. The period of the survey was when the caseload is very low as it is immediately after harvest time. This reason alone would have prevented the teams from proceeding to stage two and three.

Barriers and boosters identified at stage one were summarised and triangulated by source and method in Table 3 and 4 below:

Table 3: Triangulation of barriers for access and coverage

Name of barrier	Facility	Source	Method	Rank (strong barrier 1)
Cultural barrier	Paniet	O	I	5
Mother's perception (child is well)	A	O	I	5
Poor follow up of absentees	M,P,At	O,O,V	I,I,I	5
Confusion on discharge criteria	M,P	O,O	I,I	5
Stigma	A,M,P,M,M	O,O,V,V,V	I,I,I,I,I	5
Lack of case finding method	P,A	V,V	I,I	5
High opportunity cost for mothers	M	V,B	I,I	5
Poor use of key stakeholders	At,M	V,L	I,I	5
Explanation of rejection (reactions/compensations)	M,M,M,At,M	O,O,O,V,V	I,I,I,I,I	5
Perception about program	M	L	I	5
Lack of community level screening	M,A,M	L,C,C	I,FGD,FGD	2
Health seeking behaviour does not meet program strategy	M,M	C,C	FGD,FGD	5
Distance	M,P,P,P,P,P,At	C,L,O,O,V,V,V	FGD,I,I,I,I,I	4
Interface between community and program	M,M	C,C	FGd,FGD	5
Lack of opportunistic screening	P	B	I	5
Interface between program and beneficiaries	P	C	FGD	5
Long length of stay	P,P	C,B	FGd,I	5
Pipeline shortage of plumpynut	P,A,P,M,P,M,P,M,P	C,O,O,O,O,B,B,B,V,V	FGD,I,I,I,I,I,I,I,I,I	5
Flooding (causing default)	P,P,P,P	C,O,V,V	FGd,I,I,I	3
No community based volunteers	P,P,M	C,O,Q	FGD,I,I,I,Q	1
Relapse	M,P	C,O	FGd,I	5
Misconception about the program (food)	M	C	FGD	5
Impact of seasonal workload	At,P,P	O,O,V,B	I,I,I,I	5
Workload on staff (long waiting hour)	P,At,I	C,L,O	I,I,	5
Key to abbreviations in Table 5	Facility P=Paniet At=Atukeuel A= Alek M= Mayom N= Ngapathian	O=OTP staff V=Volunteer B=Beneficiary C=Community L=Leader	Q=Quantitative data extraction I=Key informant interviews FGD=Group discussion	

Table 4: Triangulation of boosters for access and coverage

Name of Booster	Facility	Source	Method
Protocol compliance (Standard of care)	P,M,P	B,B,B	I,I,I
Impact of stigma is minimum	P	B	
Willingness to travel distances to get services	A	B	I
Good understanding of role (CNVs)	P	V	I
Strong sensitization by CNVs	P,M,A,At	V,V,V,V	I,I,I,I
CNVs have screening method	At	V	I
Late defaulting	Quantitative finding		
Good service (Meeting and exceeding SPHERE)	All facilities except Paniet		
Knowledge about malnutrition	M.Mat,P,A,M,P,M	L,C,C,B	I,FGD,FGD,I
Knowledge about program	M,M,A,L,P,P,P,L	C,C,B,C,V	I,FGD,I,I,I,I,I
Health seeking behaviour	M,P	C,C	FGD,FGD
Perception about the program	M,P,M,P,A,P,P,At,m	C,C,C,B,B,B,V,V	FGd,I,I,I,I,I,I,I,I,I
Peer referrals	M,M,At<a<p	C,B,O,B,B	FGD,I,I,I,I
Opportunistic screening	M,P,A,A	C,O,O,B	FGD,I,I,I,I
Community referral by CNv vs referral	P,P,At,P,A	C,C,O,O,O	FGD,I,I,I
Referral Slips used	At<A,P,M,A	O,O,V,V,V	I,I,I,I,I
Strong referral linkage+treatment component	At	C	I
Defaulter tracing in place	P,M	O,O	I,I
Good communication (CNV + facility)	At,M,P,p,M,at	O,O,V,V,V,V	I,I,I,I,I,I
Trained staff	P,M,At	O,	i
Supervision	P,M	O	O
Absentees training	At	O	I
Knowledge about admission criteria	M	O	I
Follow up by CNVs on admission	P,At	Vv	II
Key to abbreviations in Table 4	Facility P=Paniet At=Atukeuel A= Alek M= Mayom N= Ngapathian	O=OTP staff V=Volunteer B=Beneficiary C=Community L=Leader	Q=Quantitative data extraction I=Key informant interviews FGD=Focus group discussion

6. DISCUSSIONS

Irrespective of the limitations of this investigation due to access to significant portions of the program area, the SQUEAC team believes to have e reliable evidence as to what is working and what is not in this program. This knowledge was triangulated (table 5) with results of previous coverage surveys.

Table 5: Comparisons of progress in addressing barriers which were identified in previous surveys

SN	Barrier	CSAS 2009	SQUEAC 2011	SQUEAC 2013	Remark
1	Not using traditional healers to refer malnourished children	√	√	√	Not yet addressed
2	Program unknown	√	X	X	This barrier was addressed
3	High opportunity cost for carers	√		√	
4	Rejection by facility	√	√	√	A consistent problem
5	Shame to attend program	√	√	√	Still exists but is weaker
6	Poor knowledge about malnutrition	√	√	X	This barrier was addressed
7	Poor access to parts of the program due to distance and flood	√	√	√	A consistent problem
8	Limited incentives for care takers	√	X	X	Community do not need incentive now
9	Significant parts of the program area not covered by either outreach (CNVs) or community based volunteers	√	√	√	A consistent problem
10	Stock outs	√	√	√	A consistent problem

As can be seen in Table 5, key barriers that were pointed out by previous coverage surveys were identified by the current investigation as barrier albeit some have been addressed. Most importantly, the barriers that were identified as most critical in this survey were in fact key limiters of access and coverage in the previous two surveys.

Even though Table 3 lists many barriers to access and coverage of the OTP program, the SQUEAC team, through an in-depth review of each barrier impact, identified that some barriers had a stronger impact on access and coverage than others. For instance, stock outs were one of the strong barriers that were identified during qualitative investigations. Nonetheless, stock outs of RUTF were for a maximum of two weeks. This created inconveniences but did not prevent the community from coming to the program or lead them to default. If this persists, it will have a long term impact on coverage levels, but at this stage they are not strong. The same

holds true for distance. Village mapping of admissions showed cases coming from near and far villages even up to a day travel. Good awareness of the SAM program and positive perception towards it means these barriers are unlikely to have been a major barrier to coverage. For instance, analysis of defaulters as previously discussed revealed that defaults happen due to season rather than distance as many who were from afar villages were following up treatment until cultivation season. When the season of cultivation come both near and far children defaulted.

In contrast to this, weakness in outreach in general and unavailability of community based volunteers in distant villages is found to be a serious barrier to access and coverage. Flooding, seasonality and lack of community level screening by CNVs in parts of the program area are serious barriers to coverage. All these factors were clearly mentioned in previous coverage surveys.

On a positive note, boosters which were reported by previous coverage surveys were maintained. The program was well run with very good outcomes in terms of recovery, length of stay, defaulting and death rates. This was witnessed in previous and current SQUEACs. Program awareness is high and all the communities have a high opinion about its service. ACF's long term presence meant a continuous support for the program. This was reflected in virtually universal acceptance of the program and recognition of its curing capacity as well as in significant number of self and peer-to-peer referrals. Moreover, overstretched, facility based CNVs are conducting an exhaustive and continuous community mobilization and sensitization in villages which are in their reach. Outreach is strong with a clear time table for parts of the program. They have managed to admit 2945 children in one year time. Case finding was timely too, children reach program well before they are too sick, relieving a lot of burden for carers and program staff.

7. CONCLUSIONS & RECCOMENDATIONS

Coverage was investigated using the SQUEAC methodology in October 2013. This investigation did not provide an estimate of program coverage due to lack of access to significant portion of the villages under the program's catchment area. But the investigation at stage one found that:

- The program is well run with good outcomes in terms of cure rate, length of stay, defaulting, and mortality. The program manages to identify 2945 children in the period October 2012 to September 2013 well before they deteriorate, early detection from facility side and good health seeking behavior from community side helped achieve this.
- RUTF is well accepted and self-referrals and peer-to-peer referrals to the program are significant portions of admission into the program. Both program and SAM knowledge are very high, contributing to increased admission into the program. Overall, program is well accepted by community.

The following identified barriers to program coverage need to be addressed:
- The facility-based Community Nutrition Workers' (CNW) and Community Nutrition Volunteers' (CNVs) catchment areas are large, in terms of both number of households and geographic area, which hampers exhaustive case finding. The CNVs are not actually based in the communities, they work from the health facility. This was identified by previous coverage assessments as a key barrier that limits optimal coverage. Therefore, recruiting community based volunteers from each village who will conduct community level screening and referrals should be a priority to increase access and coverage.
- The program failed to use key community figures, traditional doctors, and existing MoH community based IYCF volunteers. The program should consider using these influential

figures to mobilize and sensitize the community about the program. Specifically, the program should train traditional healers about SAM and how to screen for SAM using MUAC so that they can referee SAM case to the health facility.

- Default rates are higher during land preparation and planting season, as well as flood season. Therefore, the program should devise ways to accommodate these seasons either by conducting mobile clinics or giving the full dose of treatment for one or two months. This will decrease the burden on families during these seasons and will decrease defaulting.

- The fact that CNVs screen for both moderate and severe acute malnutrition has created considerable confusion between the program and the community. This works well where there is a supplementary feeding program to treat moderate acute malnutrition (MAM) as these children get treated. However where MAM services are not available, parents of MAM children are told that their children are fine and are sent home. This is undermining the CNVs in the community and misunderstanding at the community level of the program entry criteria. The issue was raised in both previous and current SQUEAC surveys. Therefore, there is need to solve this problem in a way that the community understands and accepts including training of CNVs to only screen for SAM if the CMAM program only addresses SAM and not MAM.

- The highly centralized nature of the program means some villages are very far from services. The program should consider using mobile teams to reach far villages.

ANNEX 1: SEASONAL, CRITICAL EVENTS AND DISEASE CALENDAR

Event	October	November	December	January	February	March	April	May	June	July	August	September
Rains	▒						▒	▒	▒	▒	▒	▒
Dry Season				▓	▓	▓	▓					
Flooding	█	█	█									▒
Land Preparation				█	█	█	█					
Harvest	█											█
Hunger Gap										█	█	▒
Malaria	█	█	█									
ARI	█	█	█	█								█
Diarrhea			█	█	█	█						
Shortage of RUTF (Community)	█			█	█	█			█	█	█	█

ANNEX 2: DISTANCE OF DEFAULTED CHILDREN'S HOME AND DATE OF DEFAULT-PANLIET FACILITY

Village name	Walking Distance from facility (hr)	Length of stay in program (weeks)	Date of default (D/M/Year)	Remark
Malek	2	3	21/3/2013	
Wunkeetch	18	3	21/3/2013	Defaulted in March
Wunkeetch	18	3	21/3/2013	
War diot	3	8	15/4/2013	
Wun Dhiet	3	8	25/4/2013	
Wundhiot	3	8	25/4/2013	Defaulted in April
Hai	2.5	12	25/4/2013	
Maker Ayook	4	7	18/4/2013	
Abieth	4	16	27/6/2013	
Adeer	3.5	9	13/6/2013	
Manghok	5	13	13/6/2013	
Dut Kuach	3	14	13/6/2013	
Wac Jang	5	10	13/6/2013	
Maluel	0.5	10	13/6/2013	
Mayanlon	1.5	10	13/6/2013	
Malek Akol	0.7	11	13/6/2013	
Dut Kuach	3	13	20/6/2013	
Agang thii	5	12	13/6/2013	
Adaltik	0.75	12	13/6/2013	Defaulted in May
Amut Tioch	6	15	27/6/2013	
Mangok	5	13	13/6/2013	
Abieth	4	15	27/6/2013	
Anguoth	1.5	12	20/6/2013	
Wur-dhok	3.5	11	27/6/2013	
Lueth Lual	0.2	10	13/6/2013	
Majok Ayuel	4	7	27/6/2013	
Nguet Agoor	3.25	8	20/6/2013	
Mayom	50 minutes	8	20/6/2013	
Makar Ayok	3	7	13/6/2013	
Mabior Kot	1.35	10	11/7/2013	
Thurakhoon	2	12	11/7/2013	
Awei Ngok	2	12	11/7/2013	Defaulted in June
Makuac Pagong	2	12	11/7/2013	
Wur-riong	11	12	11/7/2013	
Gor Dior	0.2	12	11/7/2013	
Adeer	3.5	10	11/7/2013	
Adeer	3.5	10	11/7/2013	
Wun-but	17	14	5/7/2013	
Makuac Pagong	2	4	1/8/2013	Defaulted in July
Ruom Biak	3	6	1/8/2013	

ANNEX 3: WEEKLY COMMUNITY MOBILIZATION PLAN OF CNVs

Names of Villages	Distance from the OTP	Population coverage	Scheduled date for visit	Active CNV responsible
Hagem	2	838	November 30, 2012	Akael Deng bol
Tillie	2	269	December 14, 2012	
Apal Nhom	2	237	November 23, 2012	
Angeeth	7	368	7 Dec 12 & 28 Dec 12	
Panbar	7	271	July 13, 2012	
Panbarl	7	382	June 23, 2012	
Lirlh Nhom	8	259	July 6, 2012	
Woolirl	8	274	June 22, 2012	
Biang Amajong	2	992	July 28, 2012	Akael Tong Lorlh
Nhom Agak	2	269	November 16, 2012	
Malbiang Kiir	5	987	July 27, 2012	
Dhabaan	2	962	November 9, 2012	
Yirr	7	973	March 23, 2012	
Majak Amel	7	276	March 30, 2012	
Karl	9	281	April 28, 2012	
Hangak door bi	2	464	March 16, 2012	John Hanbak Bol
Biang Alorl	5	953	August 3, 2012	
Angarl	5	247	June 15, 2012	
Habior	8	270	March 9, 2012	
Dhaar	5	288	August 18, 2012	
Rom Kiir	7	137	April 27, 2012	
Angaiagar	7	226	August 17, 2012	
War waar	9	247	March 2, 2012	
Malrh-Hgak	5	479	March 4, 2012	Samuel Dok Yel
Biaa apaar	5	988	October 19, 2012	
Majaak	7	992	October 12, 2012	
Madaal	7	269	October 5, 2012	
Panaairia	8	279	February 3, 2012	
Angeeth	8	970	February 10, 2012	
Wakiir	10	216	February 17, 2012	
Alabamal	9	228	August 24, 2012	
Rom piar	7	291	September 28, 2012	
Daang Kaan	9	237	June 8, 2012	
Malbiang Real	9	137	December 7, 2012	
Abrr Kari	8	983	February 24, 2012	
Hanbar Diing W	5	964	September 7, 2012	
Harial Tinh	9	968	December 7, 2012	Madal Piol Agaap
Hgam Lorh	9	276	May 11, 2012	
Biang Haleel	5	997	September 21, 2012	
Panrra	9	264	May 25, 2012	
Dhabaan	9	917	December 21, 2012	
Angiia	9	189	May 18, 2012	
Majak Real	9	212	September 14, 2012	
Lorlh Daag	5	218	June 1, 2012	
Habari	7	137	November 2, 2012	

ANNEX 4: Training Participants

Name	Organization.	e-mail/telephone
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