Coverage SQUEAC
Bentiu - South Sudan, July 2018

CONCERN worldwide

unicef

> **Semi Quantitative Evaluation of Access and Coverage (SQUEAC) – Bentiu POC and Guit County**
>
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Figure 1: Group Work Exercise in Sector 4 OTP

ACTION AGAINST HUNGER

ACKNOWLEDGEMENT

LIST OF ACRONYMS

CMAM	Community-based Management of Acute Malnutrition
CNV	Community Nutrition Volunteer
CNW	Community Nutrition Worker
CWW	Concern Worlwide
IOM	International Organisation for Migration
LQAS	Lot Quality Assurance Sampling
MAM	Moderate Acute Malnutrition
MUAC	Mid Upper Arm Circumference
OTP	Outpatient Thereutic Programme
PHCC	Primary Health Care Centre
PHCU	Primary Health Care Unit
RUSF	Ready to Use Supplementary Food
RUTF	Ready to Use Therapeutic Food
SAM	Severe Acute Malnutrition
SMART	Standardized Monitoring & Assessment of Relief & Transitions
SQUEAC	Semi Quantitative Evaluation of Access and Coverage
TSFP	Therapeutic Supplementary Feeding Programme
WHO	World Health Organisation
WHZ	Weight-for-Height Z-Score
WFP	World Food Programme

UNICEF   United Nations International Children's Fund

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EXECUTIVE SUMMARY

In July 2018, a coverage assessment of the Targeted Supplementary Feeding Programme (TSFP) to treat Moderate Acute Malnutrition (MAM) and Outpatient Therapeutic Programme (OTP) to treat Severe Acute Malnutrition (SAM) was conducted in Bentiu Protection of Civilians Camp (PoC) and the Beyond Bentiu Response (BBR). The assessment used the SQUEAC (Semi-Quantitative Evaluation of Access and Coverage) methodology and covered services delivered by Concern Worldwide, Care International and World Relief.

The assessment identified the following coverage estimates[1]:

PoC	
SAM	82.8% (71.6%-90.0%
MAM	69.4% (60.3%-77.3%)
BBR	
SAM	63.5% (48.9%-75.6%)
MAM	73.7% (63.5%-81.8%)

The quantitative and qualitative data collection and analysis revealed a series of boosters and barriers to access, providing detailed information on what is positively and negatively affecting coverage.

Within the PoC, the discharge outcomes are within the Sphere standards, with the mean cure rate above 75% and defaulting below 15%. However, analysis of a sample of data from registers highlighted that there are gaps in reporting of data, and defaulting and non-response rates are likely higher than in the electronic data sets. In BBR, defaulting is higher, and the cure rate is lower, which is attributed to the longer distances to travel to OTP sites, insecurity and patchy CNV coverage in villages.

In both the PoC and BBR, there is high awareness of malnutrition and the programme however this is slightly higher within the PoC due to the network of CNWs and the regular screening. There are good health seeking behaviours across the communities, and caregivers travel to health facilities for care rather than use traditional medicines. Screening by staff at health facilities results in referral across to OTP sites in both the PoC and BBR. Within the PoC, there is strong community engagement through camp leadership and religious leaders, who are involved in regular meetings.

Within the PoC, there are gaps in screening, despite the active networks of CNWs, whereby children have not always been screened recently. This is partly due to the high population movement which also leads to defaulting, especially during periods of cultivation.

Selling of RUTF and RUSF is taking place within the camp, although measures to control this have been introduced. The lack of markets in BBR restricts the opportunities to sell nutrition commodities. However, given the Nuer culture of sharing, it is likely that sharing is taking place, this is reflected in the non-response rates seen across both the PoC and BBR.

Retaining cases is BBR can be more difficult as referrals often happen after a visit to a health facility and so treatment is often a one-off, and this is reflected in high level of

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[1] These coverage estimates were calculated using the single coverage estimator.

defaulting after the first visit. In BBR, patchy coverage of CNVs can result in gaps in screening however awareness of the programme and treatment seeking behaviour remains relatively high.

Many respondents living outside the PoC cited distance as a barrier to access, this was also seen in stage 3 responses. Since the establishment of mobile clinics however, the distances that caregivers are expected to walk have reduced significantly, and this also reduces the risk of insecurity when accessing sites.

Lack of male involvement and the high workload of mothers is a barrier to coverage across the PoC and BBR. Mothers living in the PoC are participating in activities such as firewood collection and making tea in the market, to generate income. It was shown however that the presence of another child (an older sibling) or family member who can take the SAM or MAM child to the OTP, or who can take care of other children has a positive influence on coverage.

Based on the findings of the assessment, a series of recommendations were formulated (a full list can be found at the end of this report):

- Training mothers how to take MUAC
- Increase messaging on IYCF and CMAM to men
- Screen all under-5s who enter the PoC
- Increase seasonal messaging around transferring to other OTP sites during periods of cultivation
- Advocate to local government that CNVs should be evenly distributed
- Train hygiene promotors in MUAC and basic nutrition
- Convert mobile sites in BBR to static sites

1.0 INTRODUCTION

Since 2014 Concern worldwide has been instrumental in providing lifesaving services to the most affected population in Bentiu PoC (Protection of Civilans Camp). Through support from UNICEF, WFP, OFDA, and Canadian/DFATD, Concern has been able to reach the most poor in Guit County by responding to WASH (Water, Sanitation and Hygiene), Shelter, NFIs (Non-food Items) and nutrition needs.

1.1 OVERVIEW OF THE AREA

Bentiu PoC Camp is located in Rubkona County, in Unity state. At the peak of December 2013 conflict Bentiu PoC was established in Rubkona County with an aim of accommodating approximately 50,000 IDPs (Internally Displaced Persons). As a result of vicious conflicts, climatic shock and economic decline in the Greater Unity State, Bentiu PoC experienced an influx of IDPs and is now currently hosting over 112,140 individuals (20,219 households) as per October 2017[1]. In addition, more than 100,000 displaced individuals have relocated to Bentiu PoC outskirts in Rubkona and Guit County.

The humanitarian crisis in South Sudan has deepened and spread as a result of multiple and interlocking threats, including armed conflict and inter-communal violence, drastic

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[1] Anthropometry and Retrospective mortality survey final report, March 2018, Concern Worldwide.

economic decline, diseases, and climatic shocks. According to 2017 Feb IPC report, food security situation in South Sudan was expected to continue deteriorating, with 4.9 million (about 42% of population) estimated to be severely food insecure (IPC Phases 3, 4, and 5), from February to April 2017. This was projected to increase to 5.5 million people, (47% of the national population) at the height of the 2017 lean season in July. The magnitude of these food insecure populations is at unprecedented level across all periods. Hunger and malnutrition have reached historic levels, with the food security situation at its most comprised level since the crisis commenced in 2013- the combination of conflict, economic crisis and lack of adequate levels of agricultural production have eroded vulnerable household's ability to cope. More than one million children under age 5 were estimated to be acutely malnourished, including more than 273,600 who are severely malnourished[2].

In Greater Unity, some counties are classified in Famine or high likelihood/risk of Famine. IPC report classified Leer and Mayendit are in Famine, while Koch is classified as Famine likely to happen. Panyijar was in Phase 4 (Emergency). Guit and Rubkona counties share common geographical location with the famine hit counties and there is high probability of spillage in terms of food insecurity and eventually famine[3].

1.2 MAP OF THE ASSESSMENT AREA

Protection of Civilians Camp
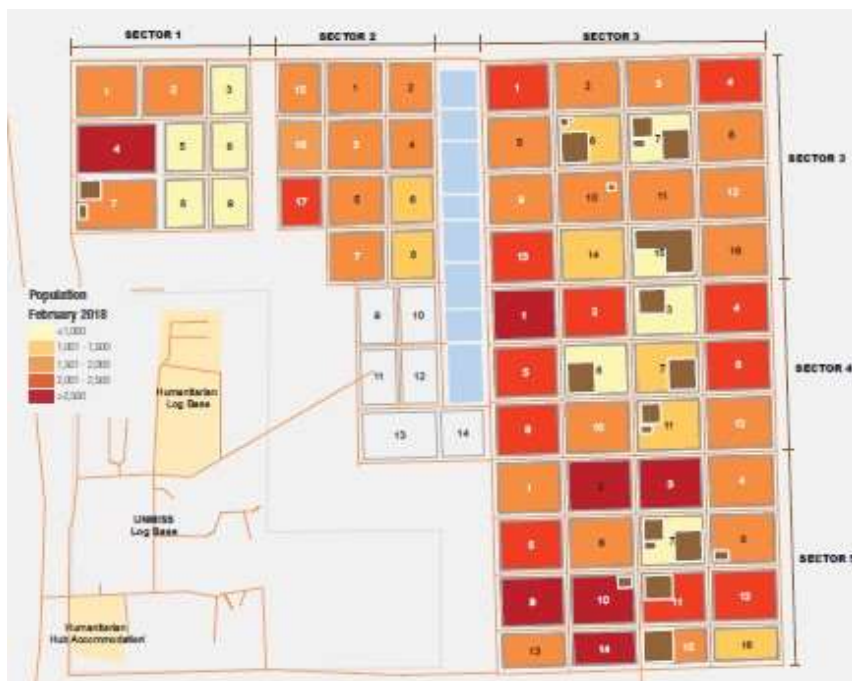
Figure 2: Map of Bentiu PoC[4]

Guit County

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[2] Ibid
[3] Ibid
[4] Bentiu Site Population Count, February 2018, IOM, South Sudan

Figure 3 depicts a map of Guit County, a red circle has been places on the three catchment areas of Nimni, Kadet and Kuach.
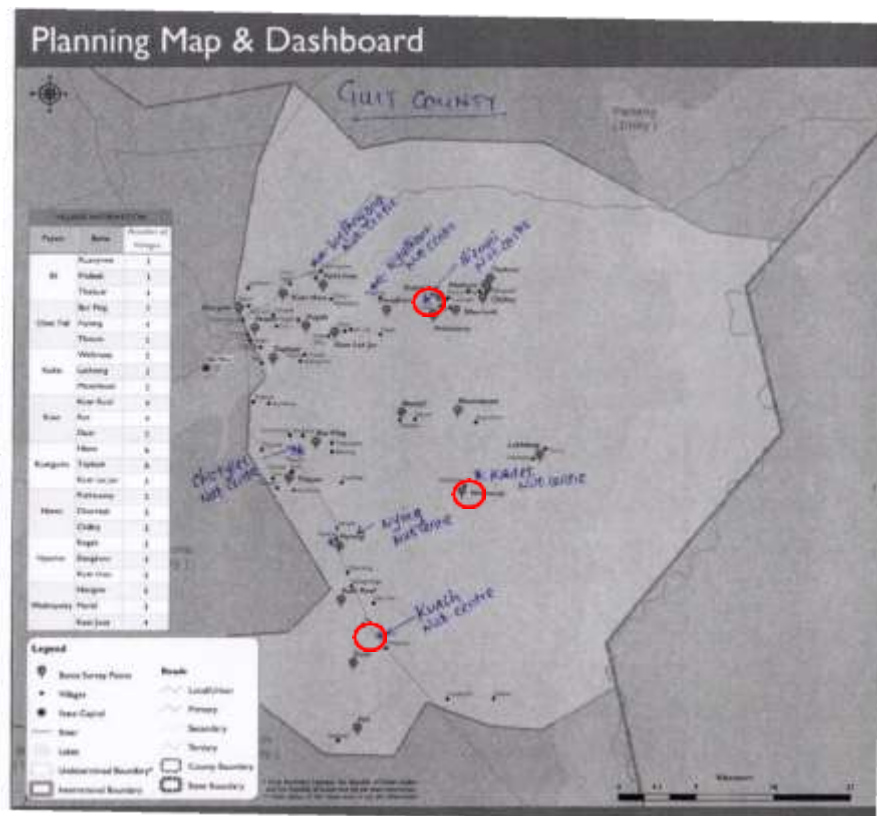
Figure 3: Map of Beyond Bentiu Response Area[5]

1.3 POPULATION

Bentiu PoC has an estimated population of 116,725[6] (58,554 male, 58,171 female) according to the May 2018 population count. The most recent available population count for Guit County is from 2013, and was 45,251[7], although this is likely to have changed. The population entirely consists of the Nuer tribe.

1.4 NUTRITION SITUATION

The most recent SMART survey available was conducted by Concern in March 2018, showing a GAM rate of 16.4% inside the PoC and 13.9% in BBR (using weight-for-height z-scores). The PoC GAM rate was above the WHO 'critical' threshold of 15%, whilst the BBR GAM rate was below 'critical', but also above the WHO 'serious' threshold of 10%. The WHO emergency threshold of 'critical' (>15%)[8] is exceeded inside the PoC, and in

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[5] International Organisation for Migration (IOM), Planning Map and Dashboard, Guit County, Unity State, 2013.
[6] International Organisation for Migration (IOM) headcount, May 2018.
[7] International Organisation for Migration (IOM), Planning Map and Dashboard, Guit County, Unity State, 2013
[8] WHO, 2003, "The management of Nutrition in Major Emergencies"

BBR, it is nearing the 15% threshold. Therefore, a continued investment in an effective nutrition response is required.

Table 1: Nutrition situation in the PoC and BBR

Survey		PoC		BBR	
		W/H z-score	*MUAC and/or oedema*	*W/H z-score*	*MUAC and/or oedema*
SMART – March 2018 (PoC conducted 26th November to 6th December 2017, Guit County 8-18th December 2017)	GAM	*16.4 % (CI 95%:13.8-19.3)*	*8.5 % (CI 95%: 6.1 – 11.7)*	*13.9% (CI 95% 10.4 - 18.5)*	*7.6% (CI 95% 5.4 – 10.7)*
	MAM	*13.2 % (CI 95%: 11.3-15.5)*	*6.9 % (CI 95%: 4.9-9.7)*	*11.1% (CI 95% 8.2 – 14.8)*	*6.8% (CI 95% 4.7 – 9.9)*
	SAM	*3.1 % (CI 95%: 1.9-5.2)*	*1.6 % (CI 95%: 0.8 – 3.1)*	*2.9% (CI 95% 1.5-5.5)*	*0.8% (CI 95% 0.2-2.5)*
SMART – June 2016 (PoC conducted May 10th-15th, 2016, Guit County April 19th-29th, 2016)	GAM	*17.9% (CI 95%: 15.3-20.9)*	*10.6% (CI 95%: 8.1-13.7)*	*20.9% (CI 95%: 8-14.1)*	*10.7% (CI 95%: 8-14.1)*
	MAM	*13.4% (CI 95%: 11.0-16.2)*	*9.2% (CI 95%: 7-11.9)*	*15.9% (CI 95%: 12.9-19.4)*	*9.2% (CI 95%: 6.9-12.3)*
	SAM	*4.5% (CI 95%: 3.2-6.4)*	*1.4% (CI 95% 0.6-3.1)*	*5% (CI 95%: 3.5-7.1)*	*1.5% (CI 95%: 0.6-3.3)*

1.5 NUTRITION SERVICES IN BENTIU POC AND GUI T COUNTY

In total within the PoC, there are 6 OTP sites within the PoC.

Table 2: Nutrition Sites within PoC

Location within PoC	Nutrition Partner
Sector 1 block 1 1	Care
Sector 2 block 12 2	World Relief
Sector 3 block 7 3	Concern
Sector 4 block 11 4	Concern
Sector 5 block 7 Sector 5 block 15	Care World Relief

In BBR, there are 7 OTP sites and 7 mobile sites supported by Concern Worldwide.

Table 3: Concern nutrition sites in BBR

	Name of OTP	Date established
Static	Nimni	March 2016
	Kuach	April 2016
	Kadet	March 2016
	Nyathoer	March 2018
	Wathnyoani	March 2018
	Chotyiel	March 2018
	Nying	March 2018
Mobile	Padhuony	March 2018
	Maala	March 2018
	Wichpuol	March 2018
	Wichluak	March 2018
	Zoreang	March 2018
	Bil	March 2018
	Wanglieth	March 2018

There have been no previous coverage assessments in Bentiu PoC or the surrounding area, and therefore this is the first of its type.

1.6 ASSESSMENT AREA

Within the PoC, the catchment areas are clearly defined according to sector, with each sector served by an OTP site. It was therefore decided by the assessment team to conduct the assessment of the entire PoC, to provide an overall coverage estimate of all the sectors.

In BBR there are a number of actors working, who have all been present for varying amounts of time. It was decided, due to time limitations and also because some OTPs had not had sufficient time to become established with Concern, that the assessment would be limited to the 3 static OTP sites where Concern has been established for the longest: Nimni, Kuach and Kadet. Catchment areas were defined by modifying and adding to existing village lists, using team members with extensive knowledge of the area.

1.7 OBJECTIVES

The principle objective of the SQUEAC evaluation was to assess the coverage of the CMAM programme, the factors affecting coverage, the barriers and boosters to access, and to develop recommendations for programme improvement. Furthermore, the consultant will develop the skills of key nutrition staff in conducting coverage surveys using SQUEAC methodology.

1.8 SPECIFIC OBJECTIVES

1. Map out coverage of OTP and SFP programmes in Bentiu Protection of Civilians Camp and in the Beyond Bentiu Response
2. Identify factors affecting uptake of OTP and SFP services in the PoC and BBR
3. Develop specific recommendations, based on assessment outcomes to improve acceptance and coverage of the programme

1.9 METHODOLOGY

The SQUEAC methodology[9] was chosen and adapted in order to determine coverage across Bentiu PoC Camp and Guit County, and to provide recommendations to improve coverage and a rich body of evidence to underpin them. The SQUEAC took place in the following stages:

Stage 1: An analysis of all quantitative data, collection and analysis of qualitative information and the identification of negative and positive factors effecting coverage.

Stage 2: Development and testing of hypotheses to confirm (or deny) assumptions related to areas of high or low coverage, and to ascertain whether coverage is uniform throughout each arm.

Stage 3: Wide-area surveys were conducted to determine coverage estimates of SAM and MAM services across the PoC and Guit County using Bayesian techniques.

The team consisted of a mixture of 3 women and 14 men. The core team was made up of 11 people, all working in either the Concern programme or with World Relief. For the wide area survey, 6 more enumerators were recruited in order to ensure all sampled villages could be reached in the given time.

The assessment took place over the course of four weeks from 12th June to 12th July 2018.

Although the assessment mostly took place without major problems, there were certain limitations that should be highlighted. Firstly, there were few women on the assessment team. Although there are no explicit limitations on men talking to women, it is likely that some of the data collected (particularly during the qualitative stage) was limited by often having an all-male team converse with female informants, as women are likely to feel intimidated by an all-male team of interviewers.

2.0 STAGE 1: QUANTITATIVE ANALYSIS

Quantitative data analysis of electronic data from Concern, Care and World Relief sites was performed and disaggregated for SAM and MAM, in the PoC and BBR. The period analysed was from April 2017 until April 2018, to allow the majority of cases analysed to have been discharged from the programme.

Additional data (such as length of stay, MUAC on admission, referral source) was collected additionally from registers and treatment cards. This was also used to verify electronic data. Not all hard copy data was available to teams (such as Care data and some data from Kadet OTP), and so, where possible, data was analysed over the course of three days. Due to the high number of admissions into the programme, it was not viable to analyse the entire data sets, and therefore a sample of data was analysed, this is detailed in table 4.

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[9] M. Myatt et al. 2012 Semi-Quantitative Evaluation of Access and Coverage (SQUEAC)/Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage (SLEAC) Technical Reference. Washington, DC: FHI 360/FANTA.

Table 4: Quantitative Data Analysis

Programme	Partner	Site	Amount of total sample	Dates	Number of admissions analysed
TSFP	Concern Worldwide	POC Sector 3	20% sample taken (every 5th admission)	April 2017-April 2018	209
TSFP	Concern Worldwide	POC Sector 4	10% sample (every 10th admission)	April 2017-April 2018	128
TSFP	World Relief	POC Sector 2	All admissions	April 2018	102
TSFP	Concern Worldwide	Nimni	10% sample	April 2017-April 2018	97
TSFP	Concern Worldwide	Kadet	10% sample	January 2018-April 2018	53
TSFP	Concern Worldwide	Kuach	10% sample	All admissions	80
OTP	Concern Worldwide	POC Sector 3	20% of admissions	April 2017 – April 2018	145
OTP	Concern Worldwide	POC Sector 4	20% of admissions	August 2017- April 2018	81
OTP	World Relief	Sector 2	20% of sample	April 2017-June 2018	117
OTP	Concern Worldwide	Nimni	All admissions into register analysed	October 2017-May 2018	261
OTP	Concern Worldwide	Kadet	-	-	-
OTP	Concern Worldwide	Kuach	10% sample analysed	April 2017-April 2018	105

2.1 SEASONAL CALENDAR

A seasonal calendar was developed using the knowledge of community members and programme staff. Responses provided, both in the PoC and in BBR, were combined as there are no differences between the two.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Climatic conditions												
Rainy season				I	II		III		II	I		
Dry season	II	II	I									
Economic activities												
Planting					II	III	I					
Harvest								II	III	II	I	
Non-agricultural labour		II	I									
Diseases												
Increase in GAM		II		III		II						
Malaria							II	III	II	I		
Diarrhoea			II	III	I							
Coughs	III	II		I								II
Key events (religious holidays, etc.)												
Christmas												II
Independence Day							I					

Figure 4: Seasonal Calendar

2.2 SEVERE ACUTE MALNUTR ITION TREATMENT: INS IDE PROTECTION OF CIVILIANS CAMP

2.2.1 Admissions Over Time
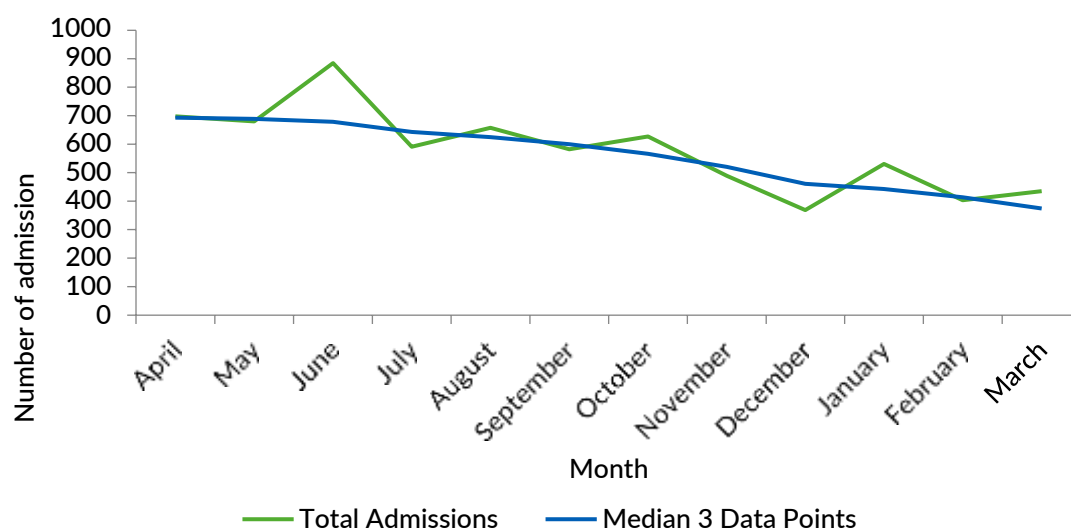
Figure 5: Admissions Over Time - OTP PoC

Initially there is a spike in admissions in May/June, which coincides with the beginning of rainy season and spikes in diseases such as malaria and diarrhoea. As the year continues, there is a gradual decrease in admissions, likely relating to the stabilisation of the nutrition

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situation in the PoC, and decreasing prevalence. The biggest decrease in admissions is seen in December, as operations slow down for the Christmas celebrations[10].

2.2.2 MUAC and Weight-for-height admissions

According to the South Sudan CMAM guidelines[11], children can be admitted with MUAC or Weight-for-Height Z-score (WHZ), and screening in the community should occur with MUAC. A small analysis of admissions was conducted, and this demonstrated that approximately 50% of admissions are with WHZ. Over the past year, there has been a gradual decrease in WHZ admissions in Concern sites (a study in October 2017 found 90% of admissions were through WHZ), as programme staff tried to address the balance, however the proportion remains high.
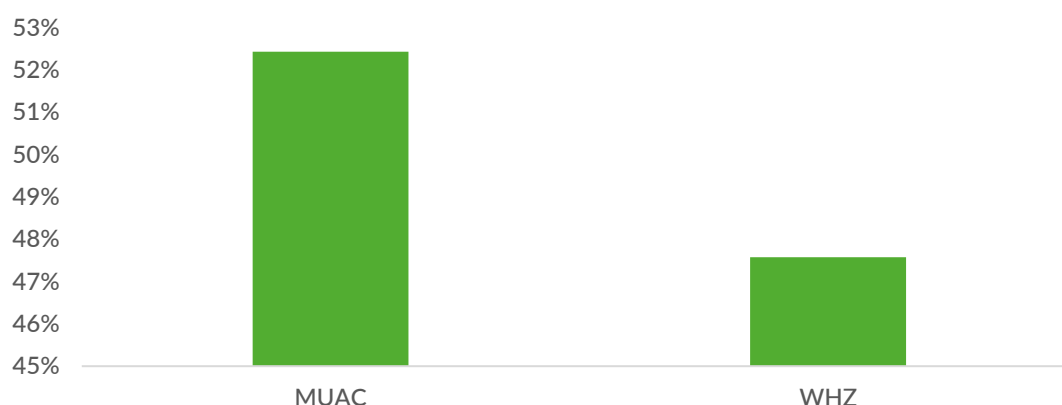
Figure 6: MUAC and WFH admissions - OTP PoC

2.2.3 MUAC at admission

An analysis of MUAC at admission was conducted for those who are admitted by MUAC. The majority are admitted at 114mm and the median MUAC on admission is 113mm; this indicates that they are admitted as early SAM cases into the programme. However, it is more likely to be this high because they are transferred as dropped cases from the SFP programme. It could also be that OTP staff are tightening the MUAC slightly to qualify the child as SAM. Additionally there is some digit preference noted at 110mm where there is a spike in admissions.

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[10] The blue line, Median 3 Data Points, is where medians of sets of three successive data points have been taken, in this case an admission in a given month. The results are then smoothed by taking the arithmetic means of sets of three successive smoothed data points. The more times you apply a moving average, the more smoothing is applied to the data. This allows for a greater long term analysis of admissions. This way we can see variations over the data period without the abnormal fluctuations distorting the data set.
[11] The Republic of South Sudan, Community Management of Acute Malnutrition, CMAM Guidelines, December 2017.
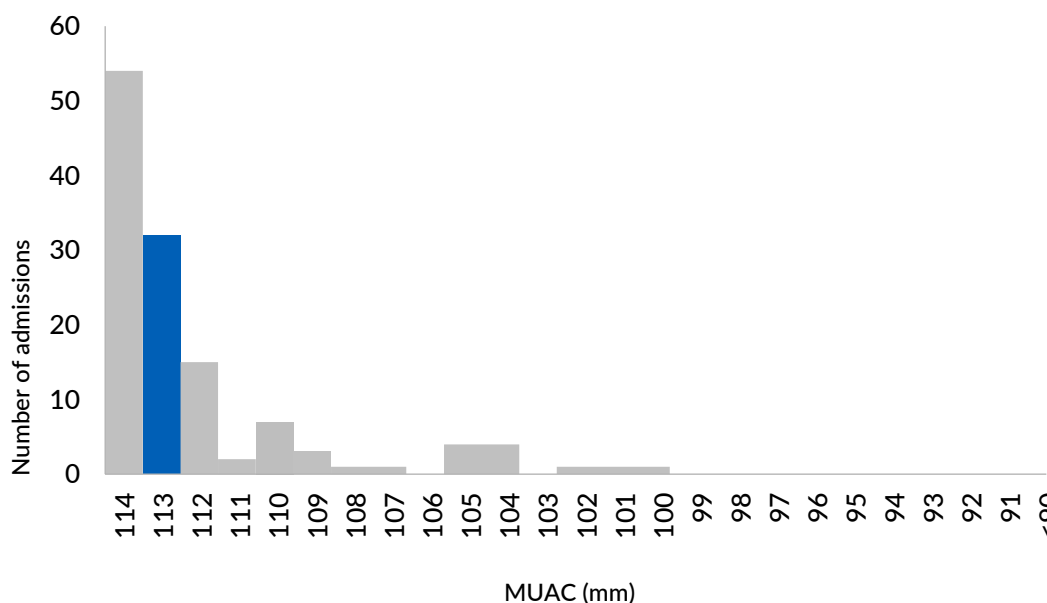
Figure 7: MUAC on admission - OTP PoC

2.2.4 Discharge Outcomes – trend and per OTP

Discharge outcomes are an important indicator of performance that allows us to see what proportion of cases recover after treatment.
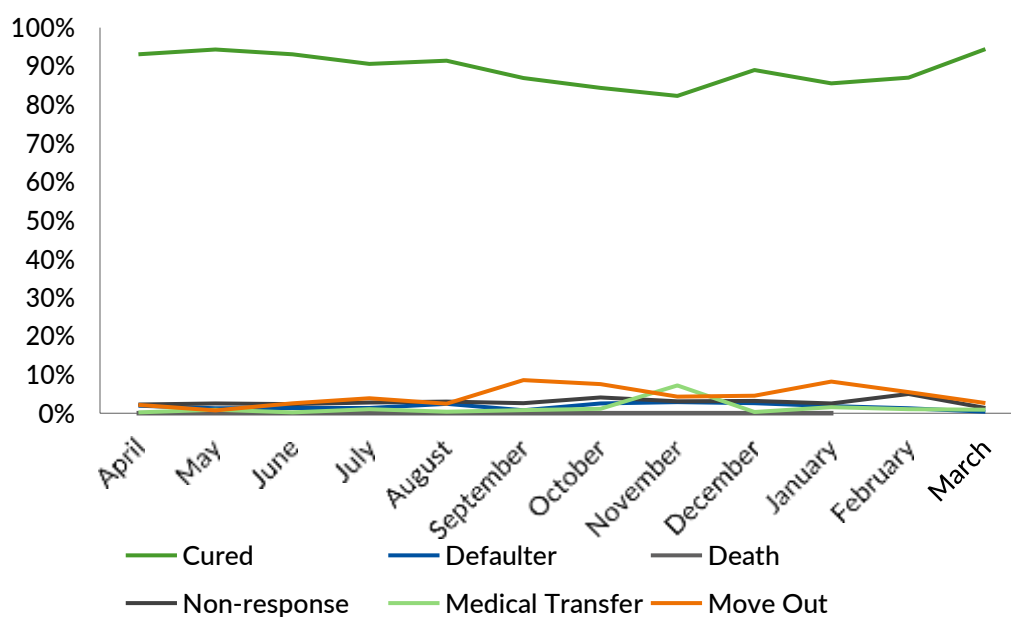
Figure 8: Discharge Outcomes over time - OTP PoC

The mean cure rate of all OTPs in the PoC is 90%, which is above the Sphere standard of 75%[12]. Defaulting rates are at an average of 1.8%, which is acceptable (below the Sphere standard maximum of 15%). However when move-out rate is included, this increases to

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[12] http://www.severemalnutrition.org/sites/default/files/Interim-guidelines-integrated-mgmt-SAM-South-Sudan-Dec2009.pdf

6%. The death rate is acceptable at 0.03%, (below the Sphere standard maximum of 10%) and the non-response rate is 3%.

When analysed per OTP site, there is some variation across the sites. Given the comparative homogeneity of the PoC, it is expected that discharge outcomes are similar across all OTPs, and therefore disparities are related to reporting.
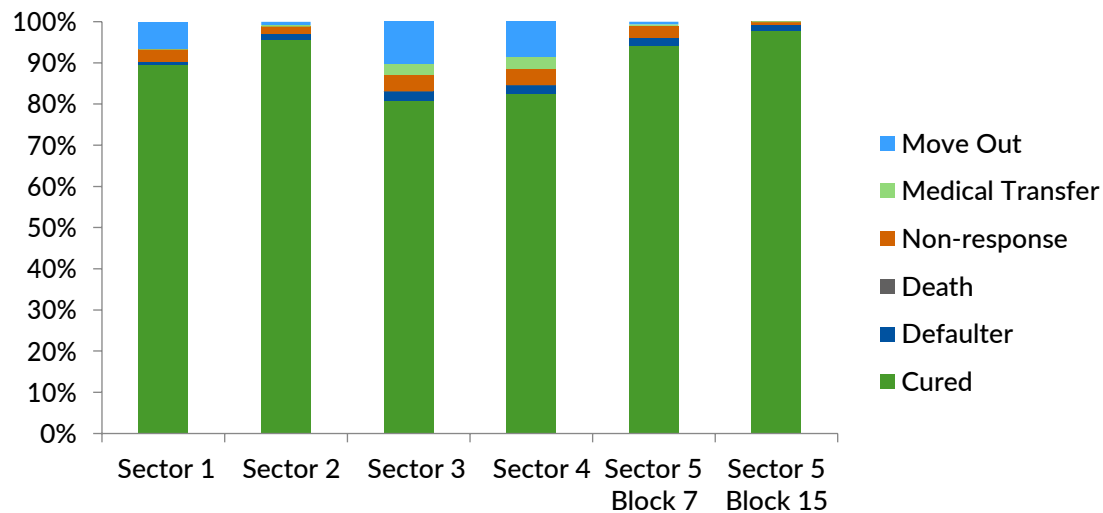
Figure 9: Discharge Outcomes by OTP site - OTP PoC

It was noted that, in registers, there was several incorrect recordings of outcomes, for example not recording a defaulter after 2 missed visits, and cases staying too long in the programme. In addition, given the level of movement in and out of the PoC, it was expected that defaulting would be higher, and thus it was decided to conduct a further analysis of discharge outcomes. Sufficient data was only available for Concern sites on the days of quantitative data analysis, however it is likely that data in the other sectors reflects this. As a 20% sample for sector 3 was taken (April 2017-April 2018, n=145), and a 20% sample for sector 4 (August 2017-April 2018, n=81), it is important to reflect that this is not exhaustive and necessarily a true reflection of the programme. It is nonetheless an indication that there are issues with data quality and reporting.

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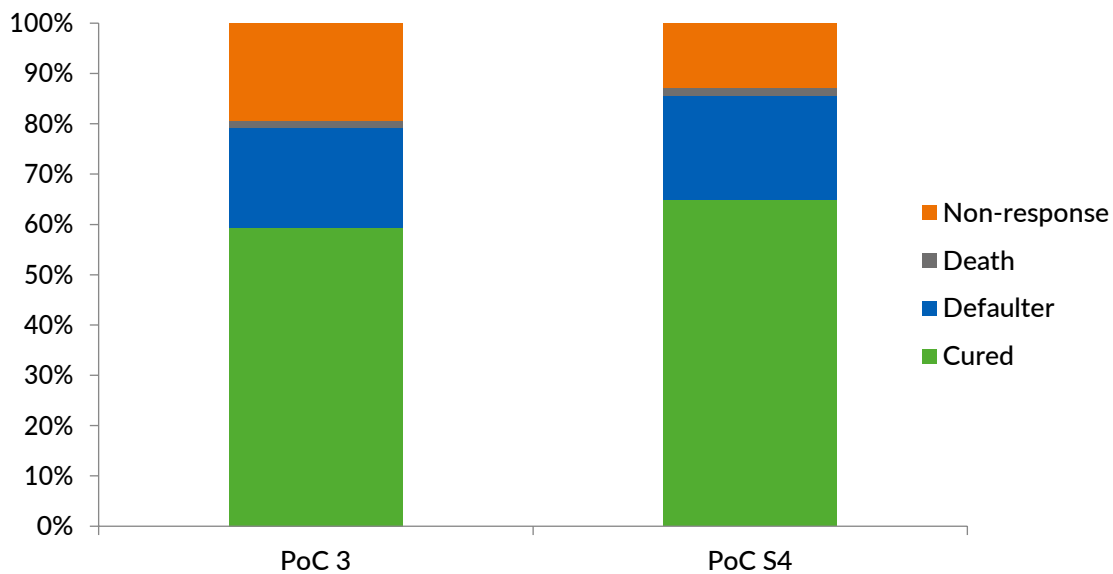
Figure 10: Register Discharge Outcomes - OTP PoC

Non-response rates are much higher than indicated in the electronic data sets. Due to incorrect reporting of cases, whereby the length of stay should be recorded as a non-responder rather than cured (for lengths of stay of over 90 days). This is probably because the child has not received the sufficient dosage of RUTF, either because the ration is reduced (through sharing or selling) or due to illness alongside that reduces absorption (such as diarrhoea). Defaulting rates are also higher than previously reported and above the Sphere standard of 15%, although they are not above the 'alarming' standard set in the South Sudan CMAM guideline of above 25%.

2.2.5 Length of Stay Cured

The median length of stay for cured cases is relatively short, a period of 4 weeks. This implies that treatment protocol for cured cases is being followed, resulting in a quick recovery, into TSFP. A number of cases have been recorded as cured after less than two weeks in the programme, as per the CMAM guidelines, a cured child should remain in the programme for two consecutive visits (weeks) before transfer to TSFP, and therefore stays of two weeks or less should not be seen. There are some cases which have a length of stay of over 12 weeks, but this exceeds the recommendation in the CMAM guidelines, whereby children should be discharged as a non-responder and referred for further tests at a health facility.
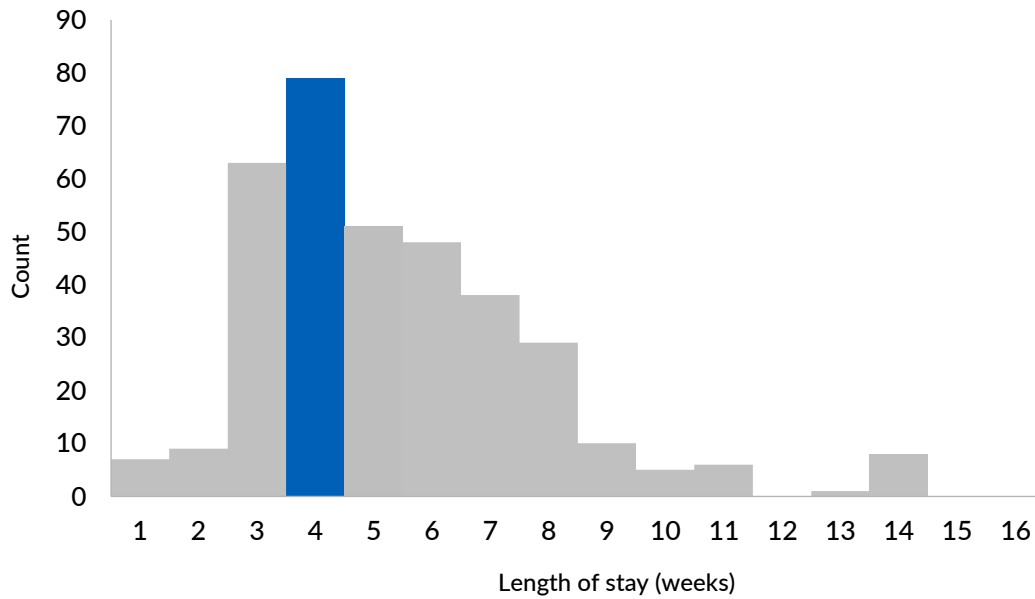
Figure 11: Length of Stay Cured - OTP PoC

2.2.6 Defaulting over time

As defaulting is a more significant problem affecting the programme than originally thought, a further analysis of the reported numbers (from electronic data) of defaulters over time was conducted.
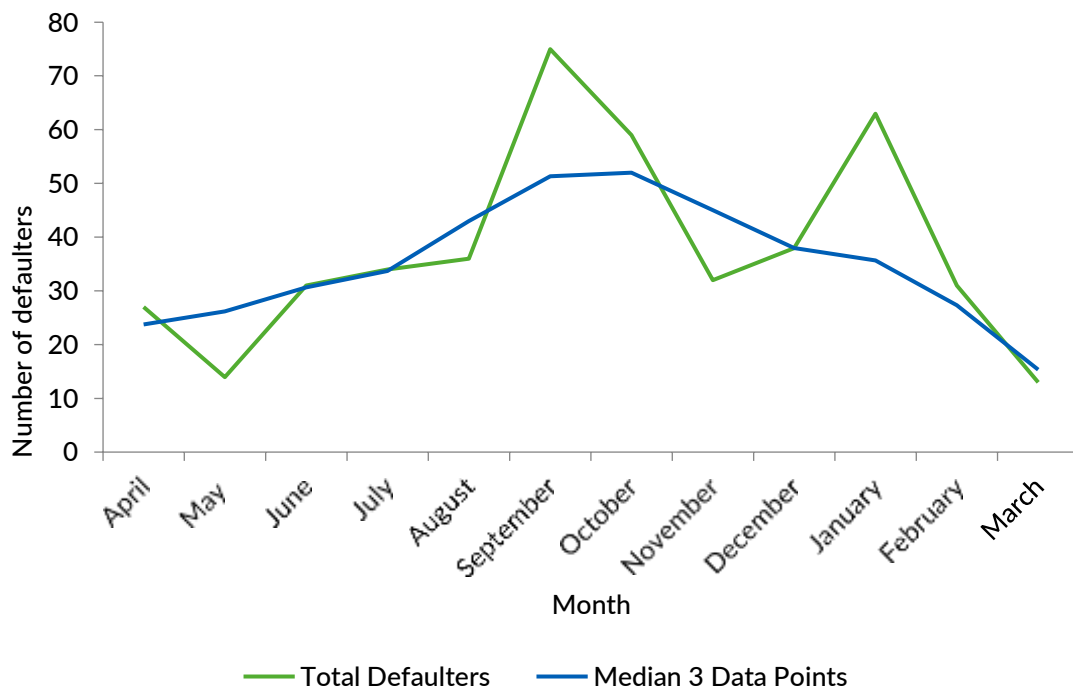
Figure 12: Defaulting Over Time - OTP PoC

There is a slow increase in defaulting during the rainy season as people move out of the PoC for cultivation (from June to August), this spikes in September, but decreases again in October once harvesting has taken place. There is an increase in defaulting in December, with the Christmas period. The numbers then decrease from January to

March as food stocks from the harvest reduce and there is more food insecurity. In addition, there were security incidents outside the PoC in March – April, likely resulting in less movement of the population outwards.

2.2.7 Weeks in programme before defaulting
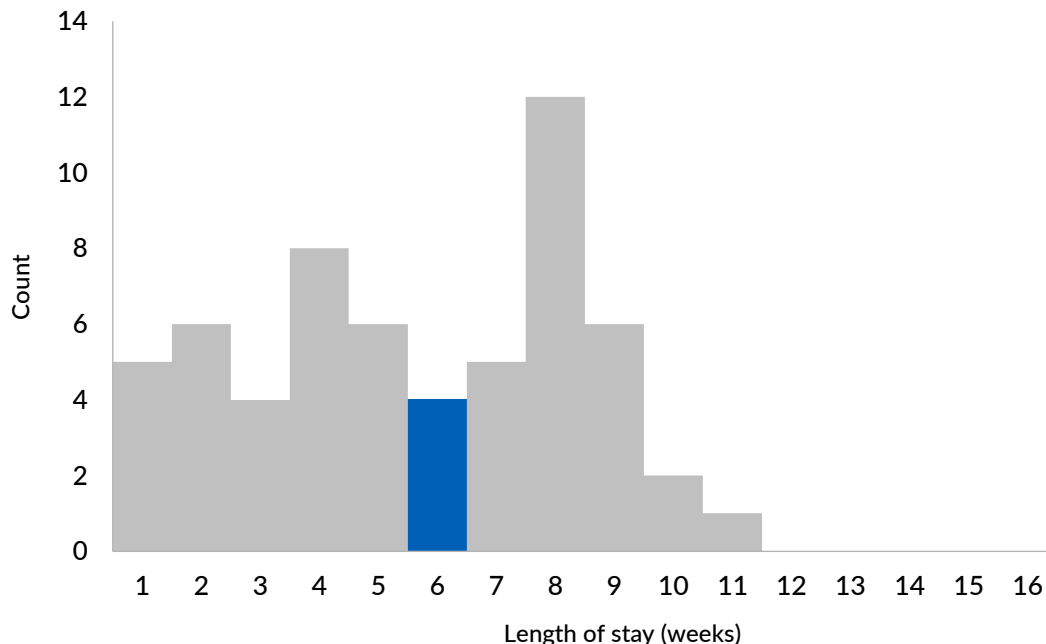
Figure 13: Weeks in programme before defaulting - OTP PoC

Figure 13 shows that the median length of stay before defaulting is 6 weeks, there is also a spike of defaulting at 8 weeks. This could indicate that mothers, after seeing an improvement in their child's condition, cease to go to the OTP. There are, however, many defaulters within the first 4 weeks of treatment (39%), indicating other reasons for defaulting such as movement in and out of the PoC.

2.2.8 Referral Source

Assessing the source of referral provides information on the pathway into the programme, and can tell us more about community awareness, CHW activity and screening in health facilities. Recording of this data is mixed, in the registers, the type of admission is usually recorded as new, transfer from SC/TSFP, readmission after default or relapse. In the OTP/TSFP cards, more information is given as to the source of admission. However this is not always the case, and on the most recent cards, the source had not been recorded accurately. Nonetheless, an analysis of OTP cards from Sector 3 (n=46) and Sector 4 (n=60) was performed.
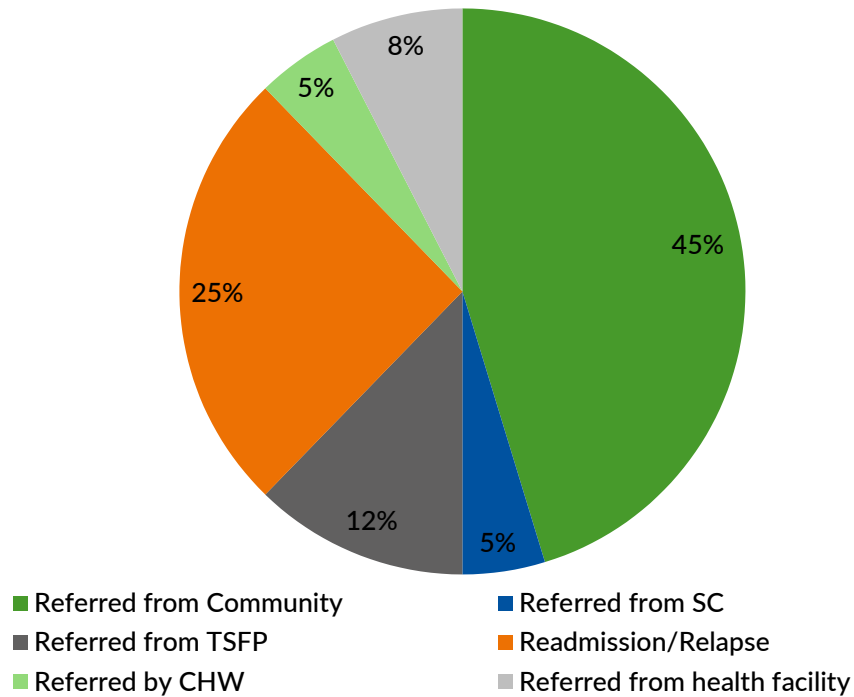
Figure 14: Referral Source - OTP PoC

Forty five percent of admissions are from the community, which is probably due to a mixture of referrals from CNWs and self-referral, it is unlikely that lead mothers are referring cases as they have not been taught to take MUAC measurements. Self-referrals are however discouraged by the programme as there have previously been issues with double registration of cases, however this has been mitigated by inking the child's finger which is a method proven to be effective (particularly in OTP, as the ink will last for at least 1 week). Five percent are referred by CHWs, although it is likely that there is a cross over between cases referred by CHWs and community referrals. Almost one in ten cases are referred by a health facility, demonstrating that they are conducting screening of under fives, a point confirmed through visiting a number of health facilities within the PoC. Twelve percent are referred from TSFP, which corresponds with high numbers of non-responders seen in figure 20.

2.3 MODERATE ACUTE MALNU TRITION TREATMENT: INSIDE PROTECTION OF CIVILIANS CAMP

2.3.1 Admissions over time
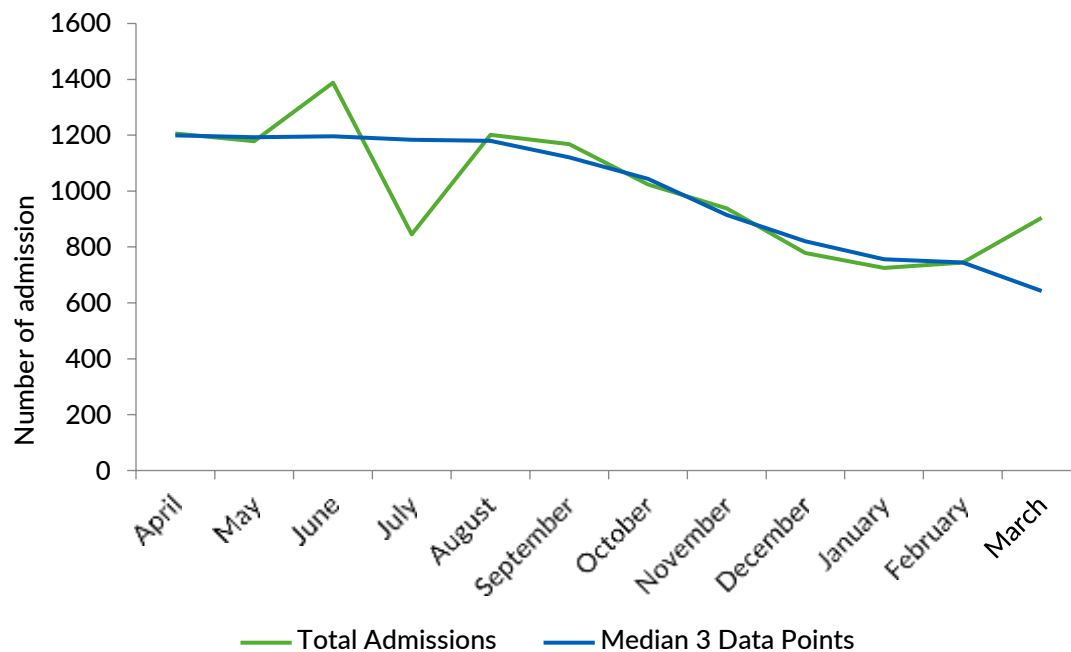
Figure 15: Admissions Over Time - SFP PoC

Admissions trends for SFP are similar to OTP, understandably, as they are part of the same programme. Initially there is a spike in admissions in May, which coincides with the beginning of rainy season, and spikes in diseases such as malaria and diarrhoea. During June and July, there is a sharp decrease in admissions, because of the onset of cultivation when there is movement outside of the camp to begin cultivation activities. As the year continues, there is a gradual decrease in admissions, likely relating to the stabilisation of the nutrition situation in the PoC, and decreasing prevalence.

2.3.2 MUAC and Weight-for-height admissions
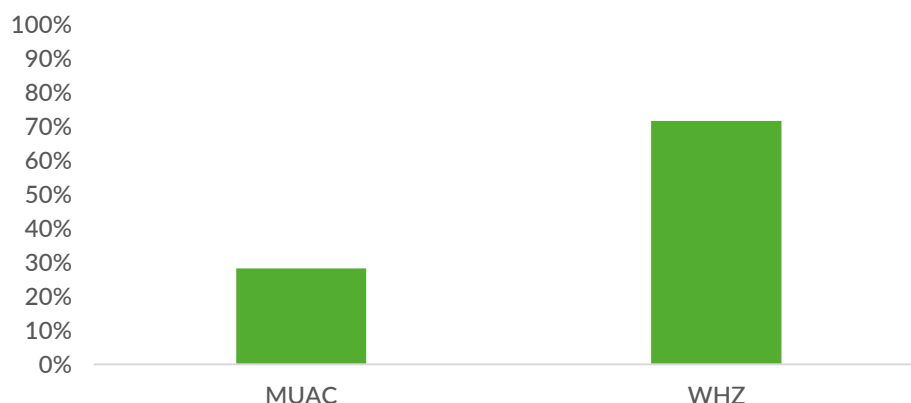
Figure 16: MUAC and WHZ admissions – SFP PoC

An analysis of the total number of MUAC admissions versus the total number of WHZ admissions was made. Seventy two percent of admissions are made on weight for height. This figure is surprising given that CNWs in the community are screening with MUAC only. Therefore, it is probable that these cases are screened with both WHZ and MUAC in the OTP site, and then admitted on WHZ over MUAC if they qualify. Given the push for increased admissions with MUAC, it is likely that this trend will decrease over time.

2.3.3 MUAC at admission
An analysis of cases that were admitted on MUAC was conducted (n=178).
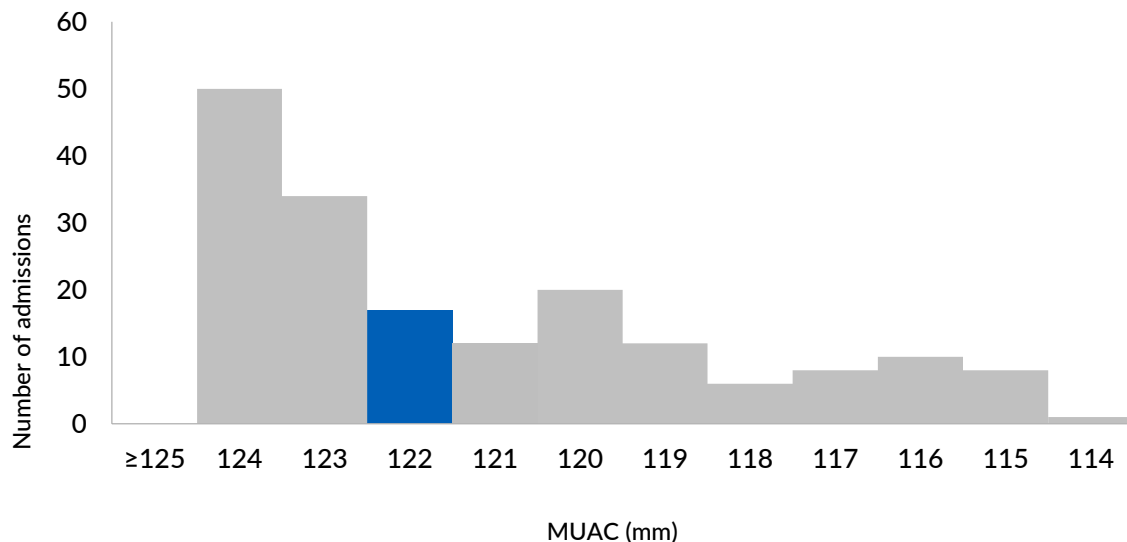
Figure 17: MUAC at admission – SFP PoC

The median MUAC on admission is 122mm, indicating early admission of these cases into the programme. Similarly to OTP admissions, there is a spike at 124mm indicating some tightening of the MUAC tape. Additionally, at 120mm, there is a small spike in admissions indicating a digit preference. There was also one incorrect admission at 114mm.

2.3.4 Discharge Outcomes
Discharge outcomes are an important indicator of performance that allows us to see what proportion of cases recover after treatment.

Figure 18: Discharge Outcomes over time – SFP PoC

The mean cure rate is 83%, which is above the Sphere standard of 75%[13]. Defaulting rates are 1.4%, which is also above the Sphere standard (below 15% threshold), however when move-out rates (11%) are included, this brings the average to 12.4%.
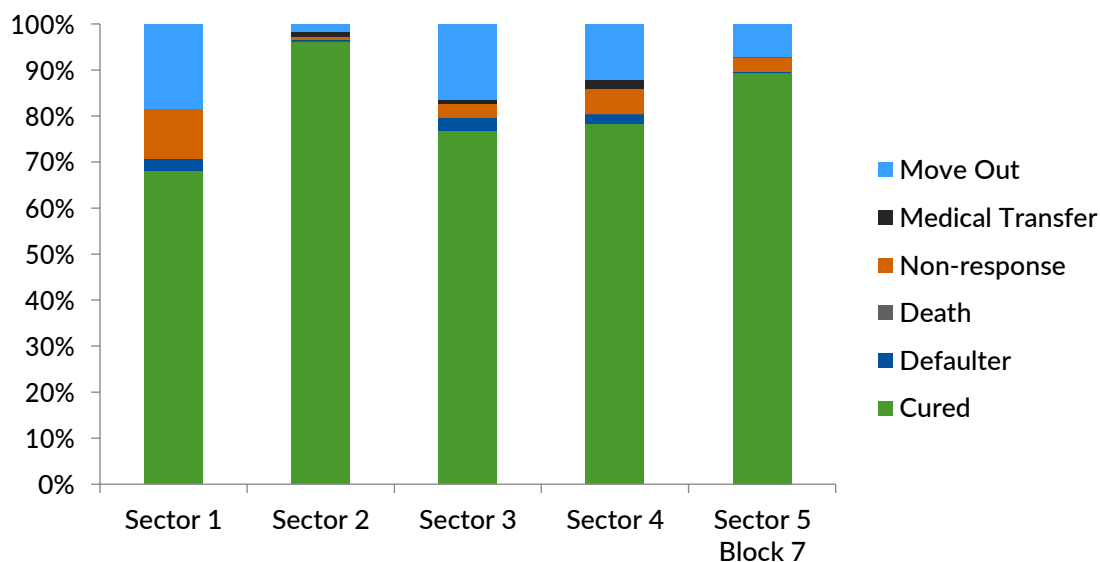
Figure 19: Discharge Outcomes by OTP site – SFP PoC

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[13] http://www.severemalnutrition.org/sites/default/files/Interim-guidelines-integrated-mgmt-SAM-South-Sudan-Dec2009.pdf

When analysed by OTP site, there exists some variation between OTP sites. Sector 1 OTP has the lowest cure rate (68%), and the highest non-response rate, indicating higher incidence of non conformity with protocol. Sector 3 and Sector 4 display similar levels of defaulting and non-response. Sector 2 displays the most positive discharge outcomes, although given the data from the other sites, more uniform discharge outcomes would be expected.

A further register analysis of registers from sector 3 (n=209) and sector 4 (n=128) demonstrates that there are disparities in electronic data and data from the registers. Defaulting is far greater, as is non-response, and there are disparities on reporting of move-out vs non-responders.
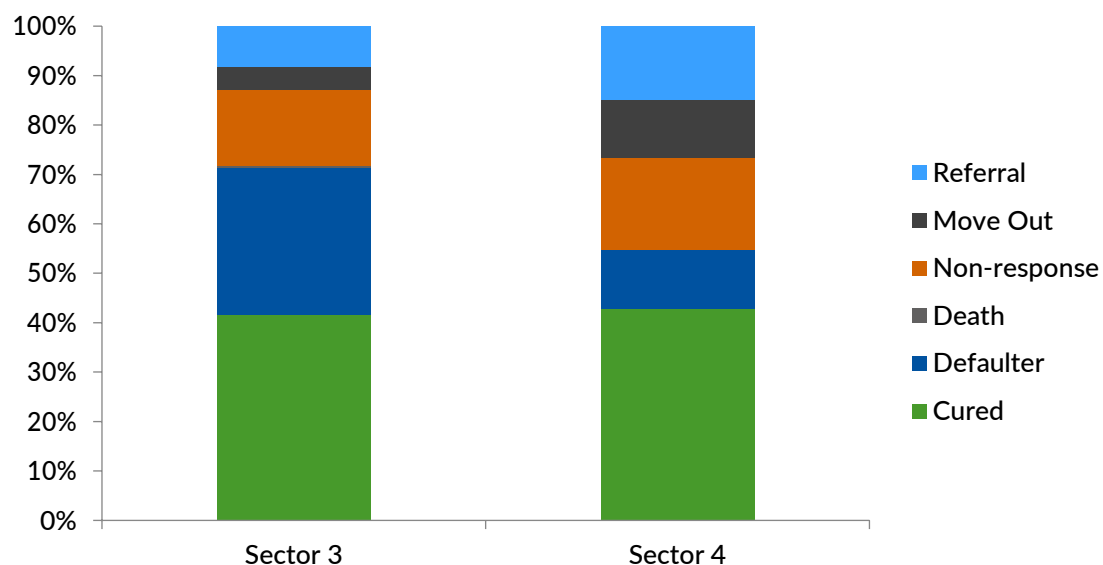
Figure 20: Register Discharge Outcomes – SFP PoC

2.3.5 Length of Stay Cured
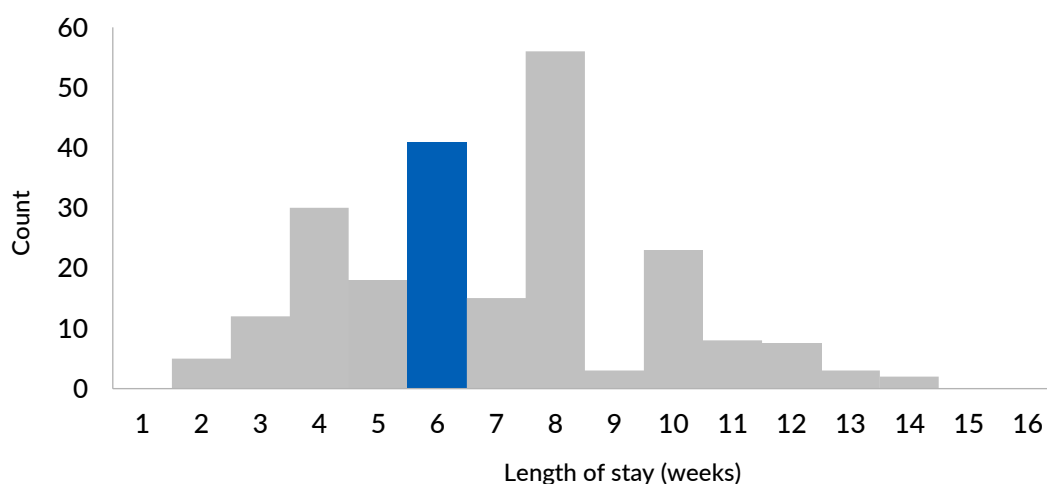
Figure 21: Length of Stay Cured – SFP PoC

From the Sector 3 and Sector 4 OTP data analysed, the median length of stay for cured cases is 6 weeks, which is an expected and acceptable level in a TSFP. It also corresponds with the previous guidelines minimum length of stay of 6 weeks. There are

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a number of admissions recorded at over 13 weeks, which have been incorrectly recorded as they are non-responders.

2.3.6 Defaulting over time
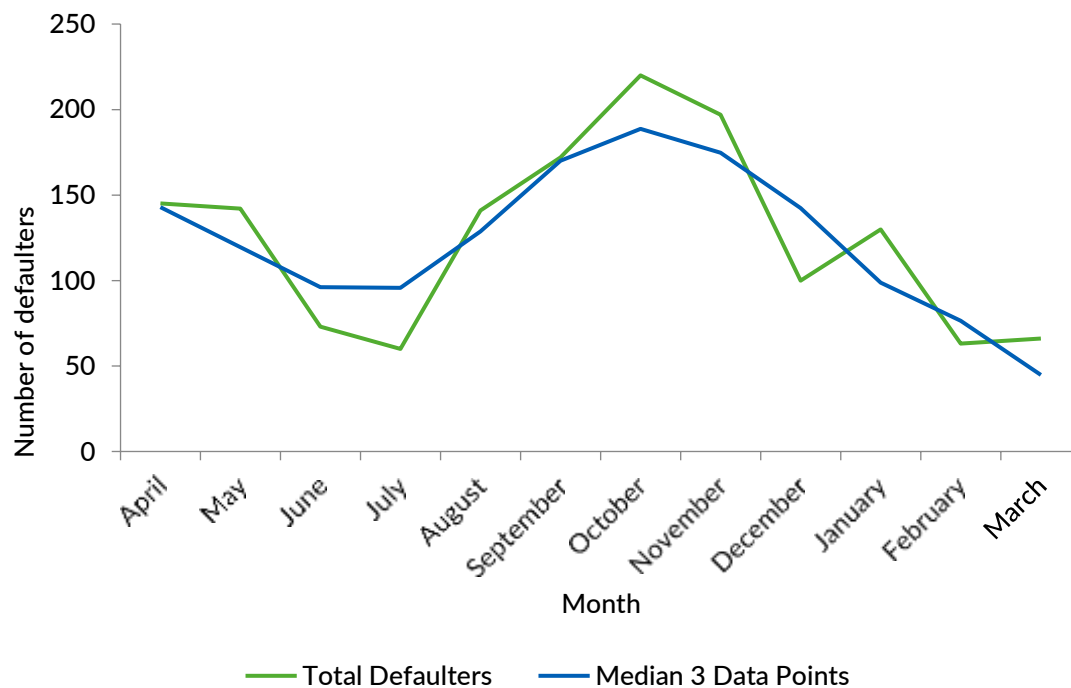
Figure 22: Defaulting Over Tie – SFP PoC

Defaulting over time was further analysed (defaulters and moved out cases combined), reflecting the seasonal calendar, with an increase in defaulting seen during planting and harvest seasons, and again during the Christmas period.

2.3.7 Weeks in programme before defaulting
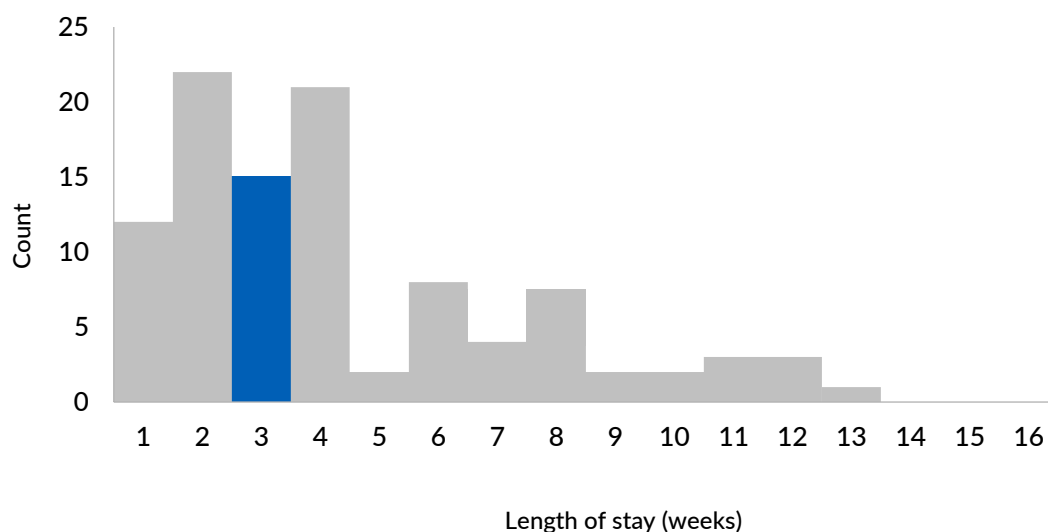
Figure 23: Weeks in programme before defaulting – SFP PoC

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The median length of stay before defaulting is 3 weeks, this is most likely attributed to population movement in and out of the camp, as demonstrated during defaulter tracing in the qualitative stage.

2.3.8 MUAC at Discharge Default
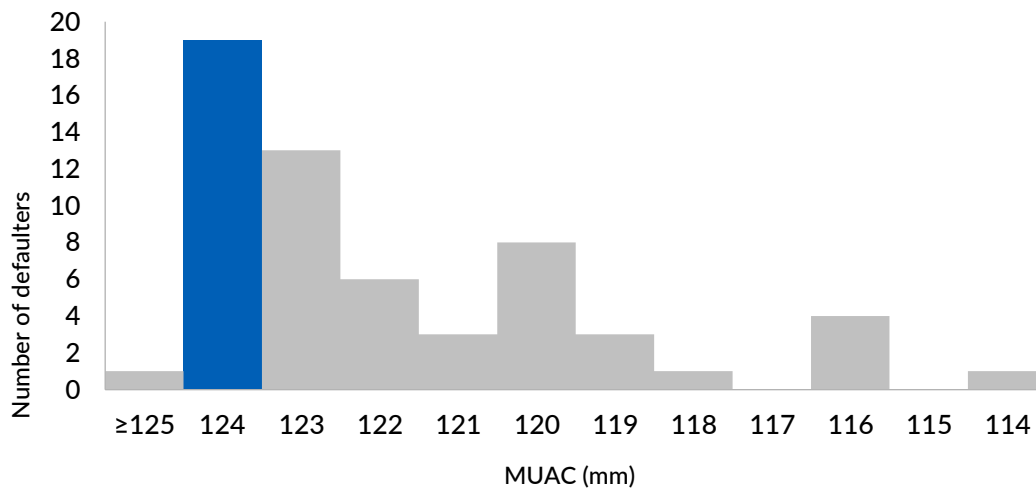
Figure 24: MUAC at discharge default – SFP PoC

An analysis of MUAC at default demonstrates that on the whole, cases are making at improvement, before defaulting, again suggesting that caregivers see this improvement and decide to discontinue treatment.

2.3.9 Referral Source
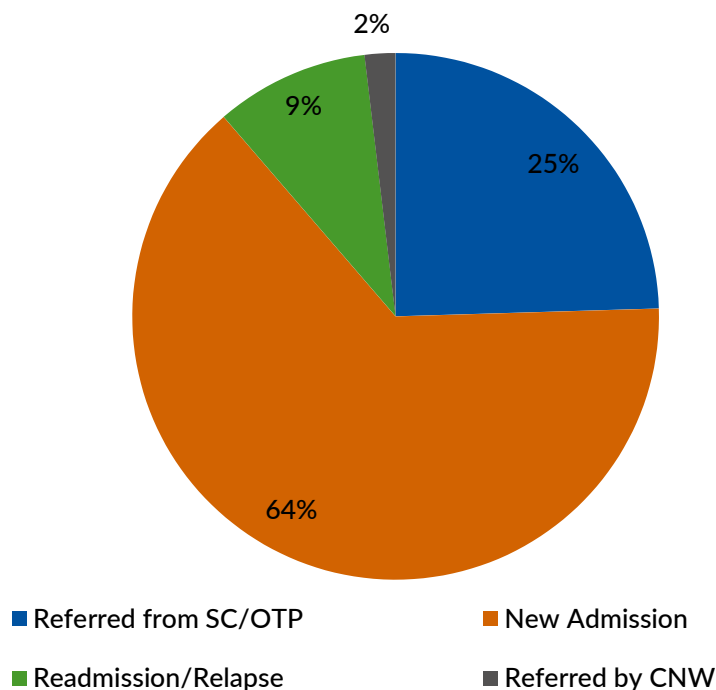
Figure 25: Referral Source – SFP PoC

The available referral data provides little information on how cases are actually referred into the programme. It would be expected that the number of cases referred by a CNW is higher, due to the screening in the community. Additionally, by indicating 'new admission' or 'relapse', there is little information on how these cases were identified.

2.4 SEVERE ACUTE MALNUTR ITION TREATMENT: BEYOND BENTIU RESPONSE

Due to the different operative contexts, of programming inside the PoC and in the rural communities outside the PoC, data analysis was conducted separately for the different components.

2.4.1 Admissions over time
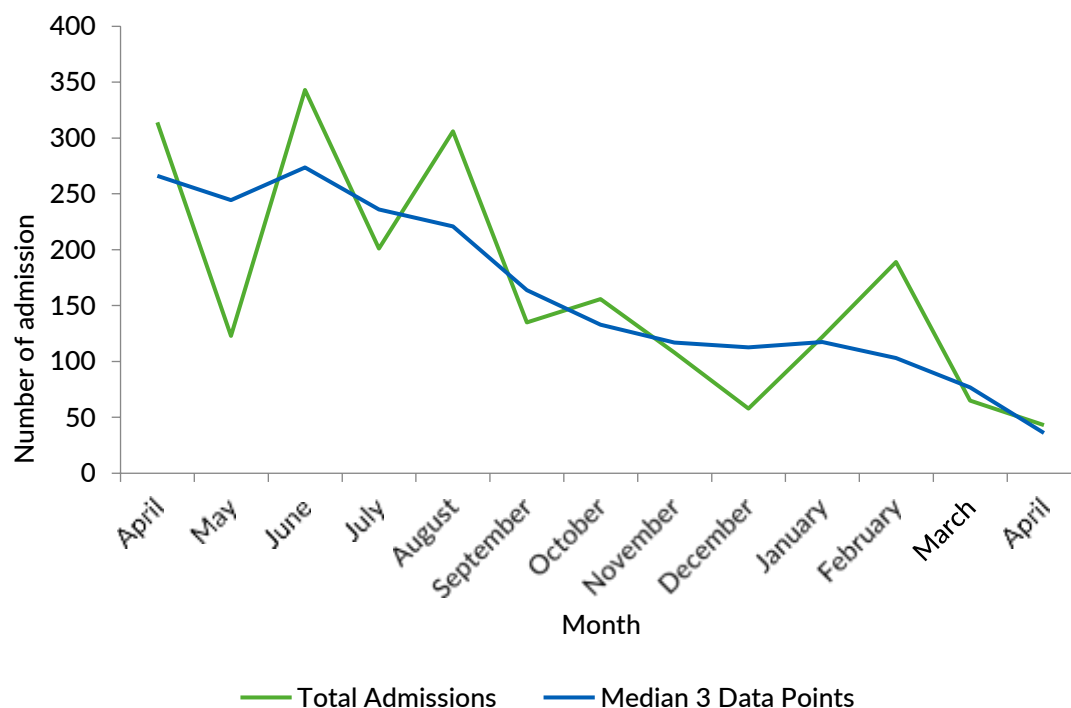
Figure 26: Admissions Over Time - OTP BBR

Admissions over time fluctuate considerably throughout the year. It would be expected for admissions to rise from April onwards, due to the onset of the hunger season, yet there was a large decrease due to a security incident affecting operations during this time. June to July signifies the cultivation season, thus explains the decrease in admissions from this time. From late August to December, the total admissions decrease as the harvests come in. Reflected in the data is the fighting that broke out in November 2017, closing OTP sites for one week, and also restricting the movement of the population.

2.4.2 MUAC and Weight-for-height admissions
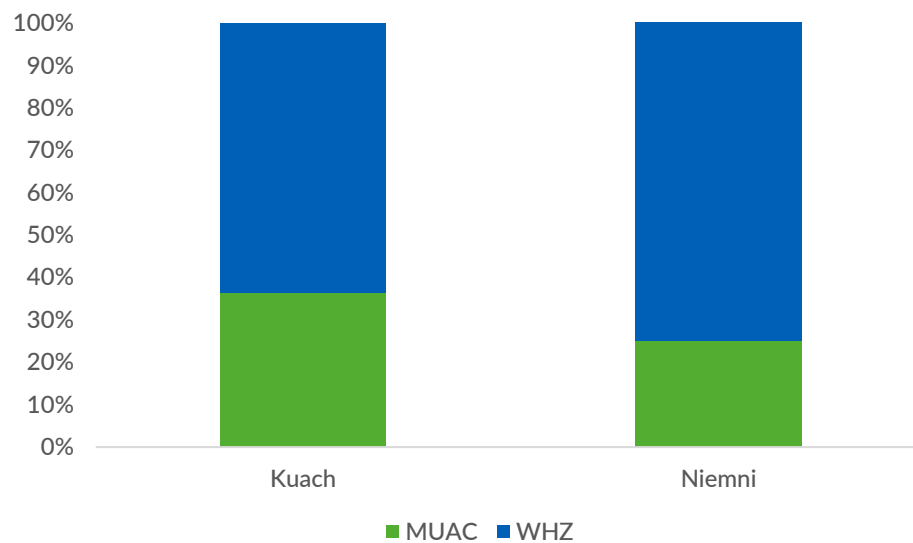
Figure 27: MUAC and WHZ admissions - OTP BBR

MUAC vs WHZ admission of the two of the three OTP sites demonstrates that the highest proportion of admissions are based on WHZ. As there is more emphasis on MUAC admissions, it is expected for this proportion to decrease slightly.

2.4.3 MUAC at admission
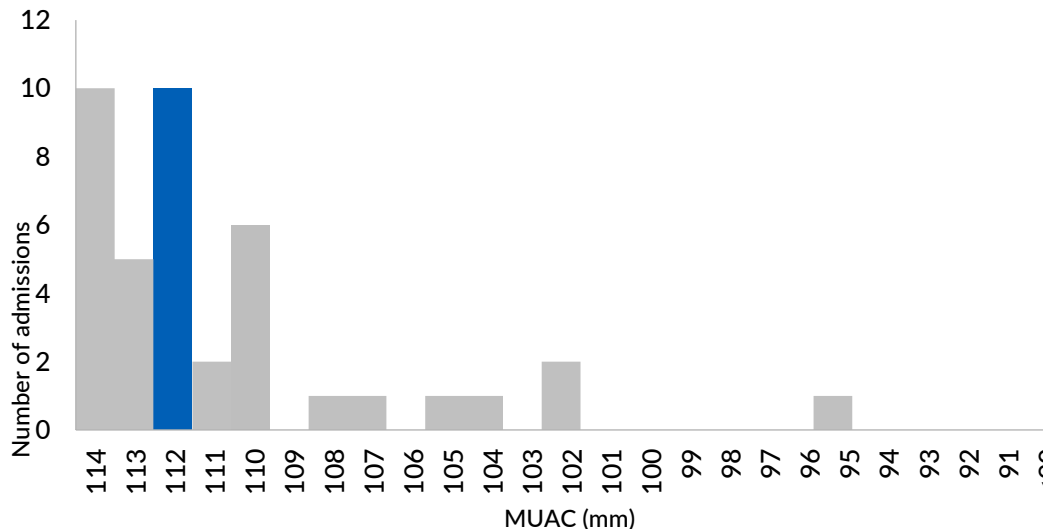
Figure 28: MUAC at admission - OTP BBR

The median MUAC on admission is 112mm, indicating that most cases are found in the early stages of SAM. There are a significant number of admissions at 114mm, suggesting that there may be incidence of OTP staff pulling the MUAC tighter to ensure the case qualifies as SAM. In addition there are a high number of admissions at 110mm, indicating a digit preference and probable incorrect readings.

Discharge Outcomes

Discharge outcomes are an important indicator of performance that allows us to see what proportion of cases recover after treatment.
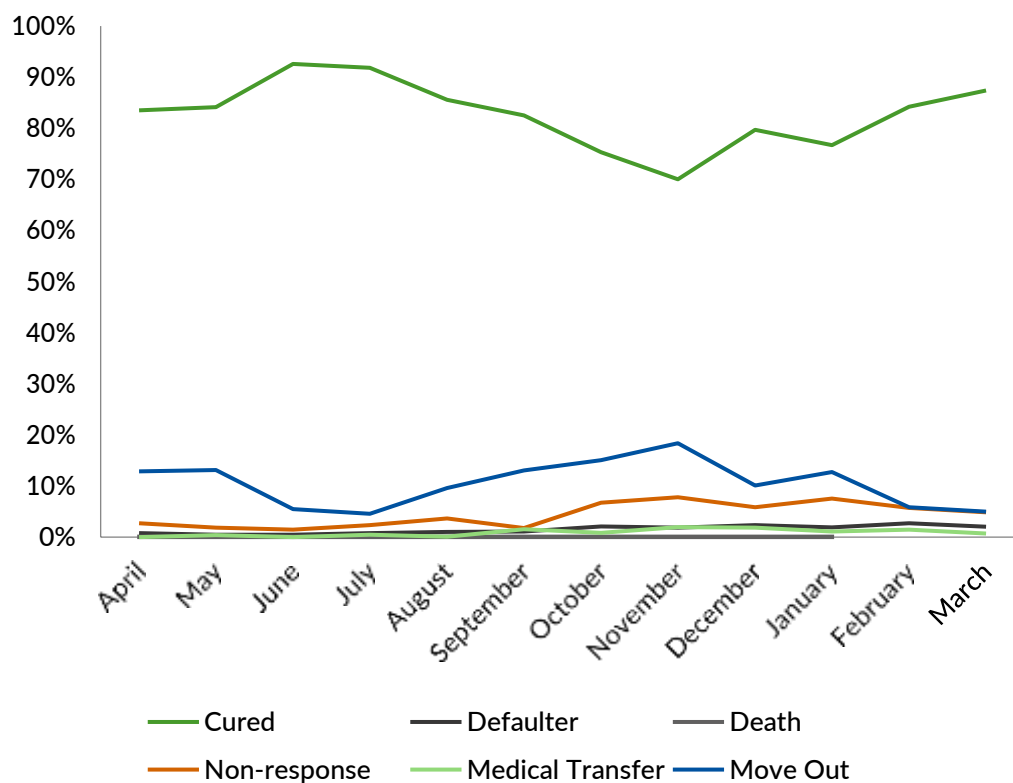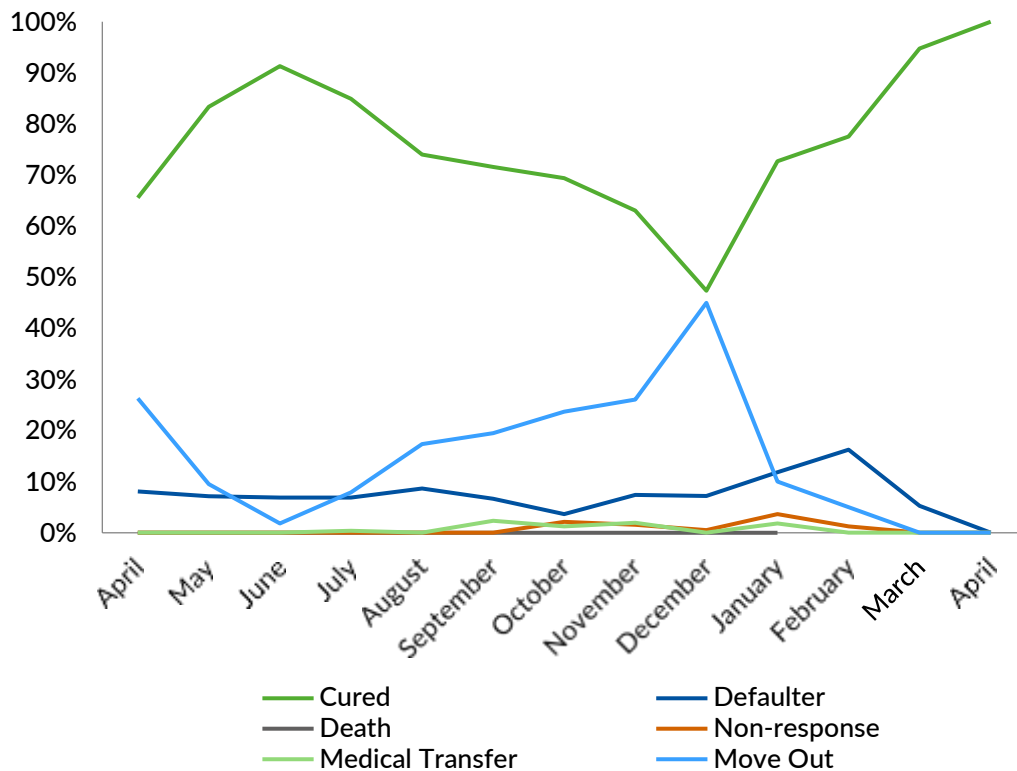
Figure 29: Discharge Outcomes over time - OTP BBR

The mean cure is 73%, which is slightly below the Sphere standard of 75%[14]. Defaulting is at an average of 7%, which is acceptable (below the Sphere standard of maximum limit 15%). However, the move-out value is much higher at 18%. The death rate is below the standard maximum limit of 10%.

The percentage of move-out cases increases from August, reaching its peak in December. This is partly due to the harvest, when there is sufficient food to feed the family. Fighting resulted in a dramatic spike in November, resulting in the movement of populations returning to the PoC and other areas. A spike in move-out in December coincides with Christmas celebrations, and a time that the OTP sites also reduced their activities.

It is highlighted that, due to insecurity during the reporting period analysed, the OTP sites were inaccessible. This resulted in the registers only being available for checking periodically, and therefore reporting taking place in bursts. Staff also had less supervision and therefore, more reporting errors are expected of this period.

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[14] http://www.severemalnutrition.org/sites/default/files/Interim-guidelines-integrated-mgmt-SAM-South-Sudan-Dec2009.pdf
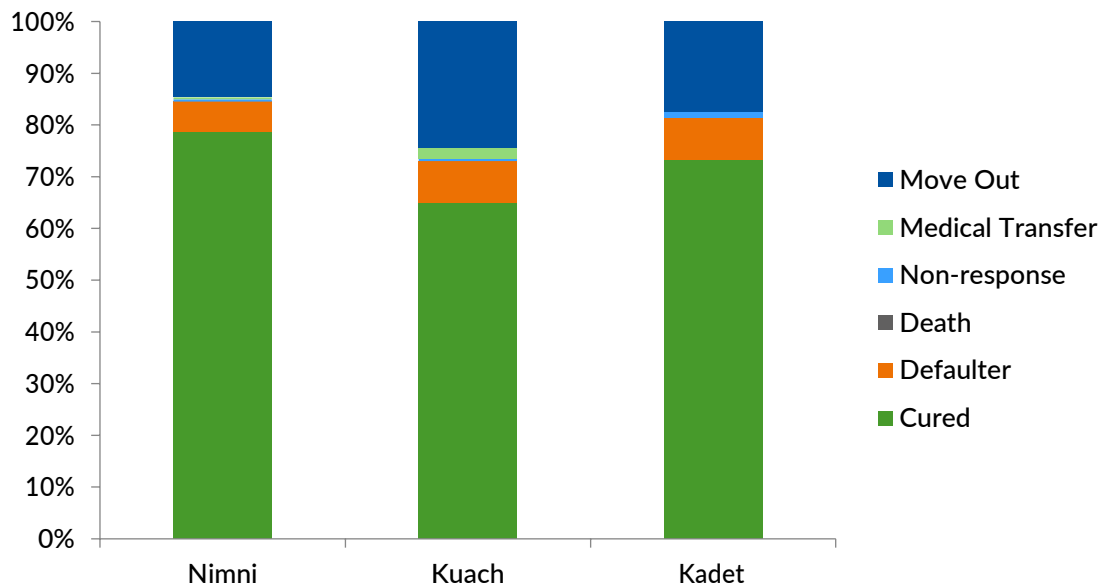
Figure 30: Discharge Outcomes per OTP Site - OTP BBR

The discharge outcomes of individual OTPs vary slightly, with Nimni displaying a higher cure rate (79%) than Kuach (65%) and Kadet (73%). This could be related to the insecurity that affected Kuach and Kadet, although there has also been fighting in the Nimni catchment area, and the SFP discharge outcomes (figure xx) display a different picture, thus the variation is likely due to poor reporting.

2.4.4 Length of Stay Cured
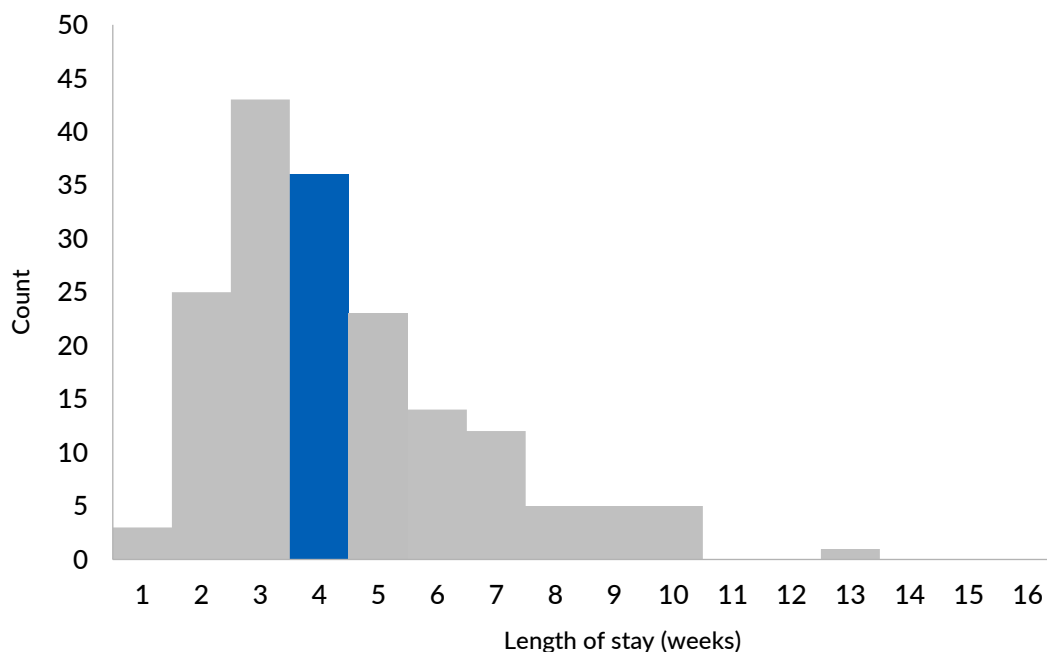
Figure 31: Length of Stay before Cure - OTP BBR

Median LOS for cured cases is 4 weeks, which is coinciding with the high MUAC on admission seen for SAM cases.

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2.4.5 Defaulting over time

Defaulter data is erratic, due to access issues because of security. This means that there are spikes in defaulting as data is reported. However, analysing this trend allows us to examine more closely the factors that affect coverage throughout the previous year.
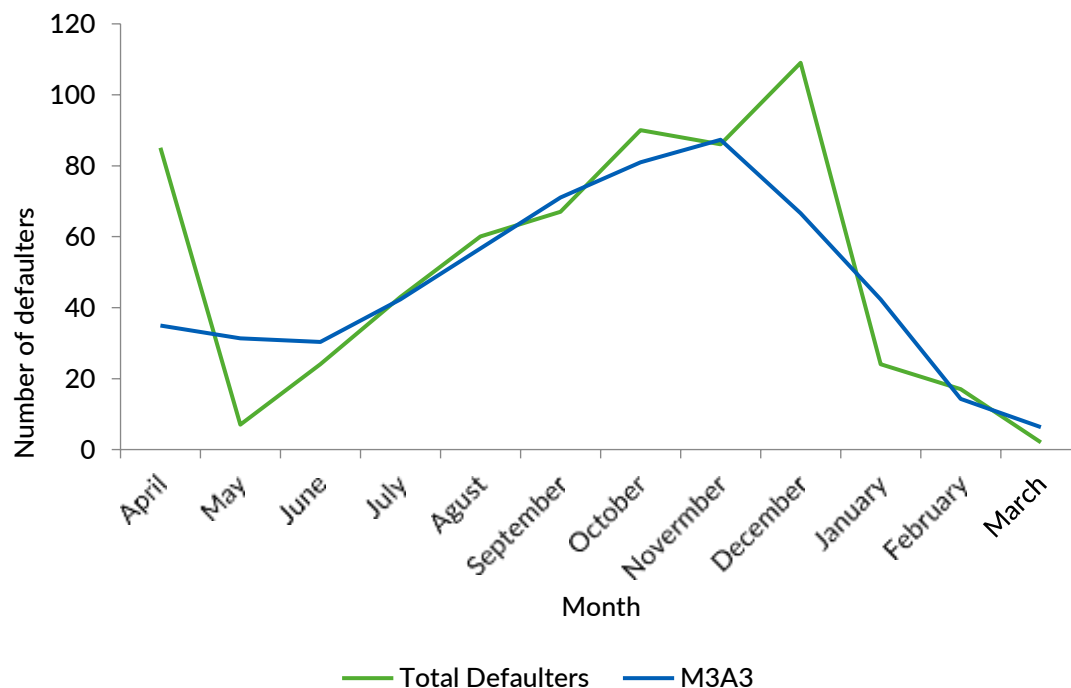
Figure 32: Defaulting Over Time - OTP BBR

Security incidents in April 2017 and November 2017 increased defaulting, but this decreases as programme activities resume. Defaulting increases steadily from May onwards, which is in conjunction with the rains, because cultivation begins and access to sites decreases, and harvest season, from September onwards. As access to OTP sites is restored from January, and the hunger season approaches, defaulting decreases.

2.4.6 Weeks in programme before default
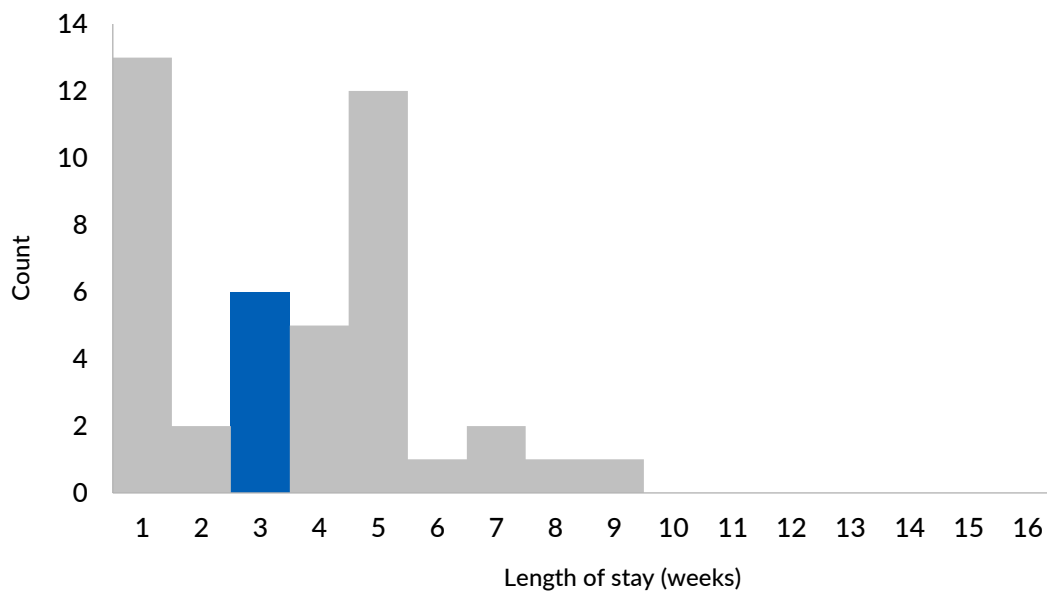
Figure 33: Weeks in programme before default - OTP BBR

The median length of stay before default is 3 weeks, however there are a high proportion defaulting after the first visit. There are a number of possible explanations for this; there is high mobility in the population due to conflict, and so some clients may be displaced after one or two visits. In addition, as many referrals are made from the health facilities, there are numerous cases where children are not brought back for follow up visits at the OTP. Finally, this could also be indicative of inadequate instructions resulting in the caregiver not understanding the need to return for treatment or a poor user experience at the OTP.

2.4.7 MUAC at Discharge Default
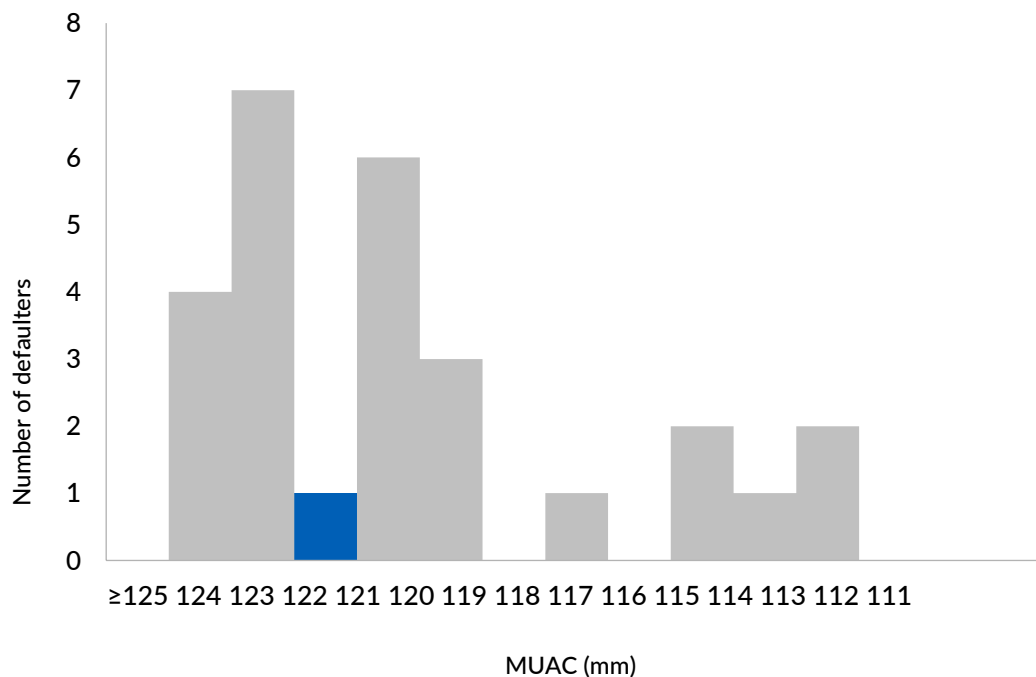
Figure 34: MUAC at default - OTP BBR

The MUAC at default demonstrates that although the cases have defaulted, a high proportion have indicated an increase in MUAC, in comparison to the median MUAC on admission of 112mm. This demonstrates that caregivers wait until their children begin to recover, before defaulting.

2.5 MODERATE ACUTE MALNUTRITION TREATMENT: BEYOND BENTIU RESPONSE

2.5.1 Admissions over time

The trend for admissions over time in SFP is largely similar to the OTP, which is expected, given the programme is operated out of the same sites.
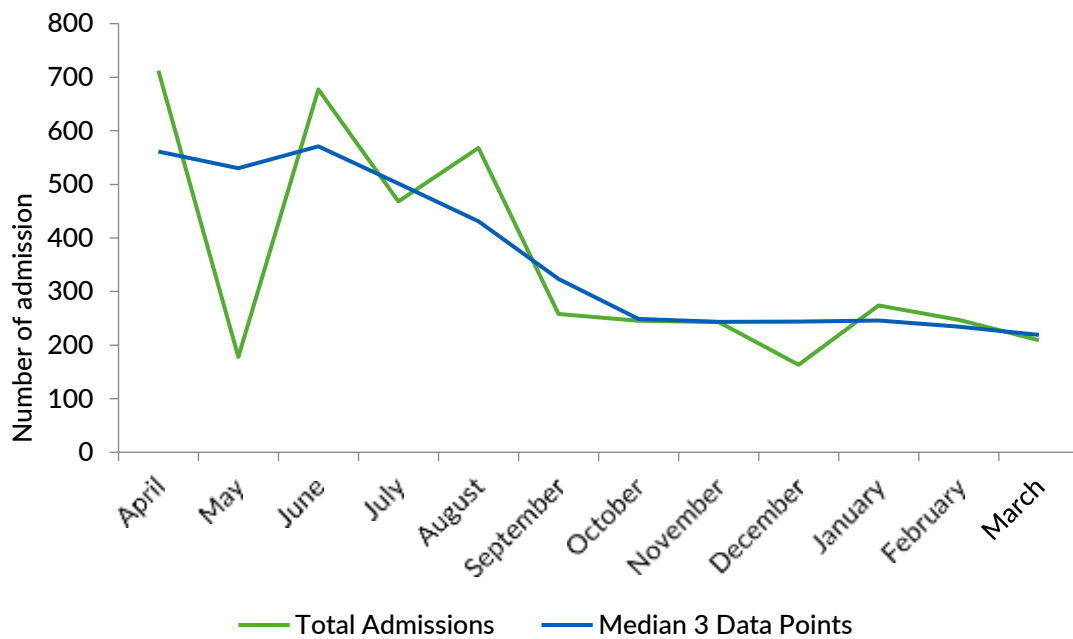
Figure 35: Admissions Over Time - SFP BBR

Security incidents in April and November decreased the number of admissions, and during harvests from September to October, the total number of admissions also decreases.

2.5.2 MUAC at admission
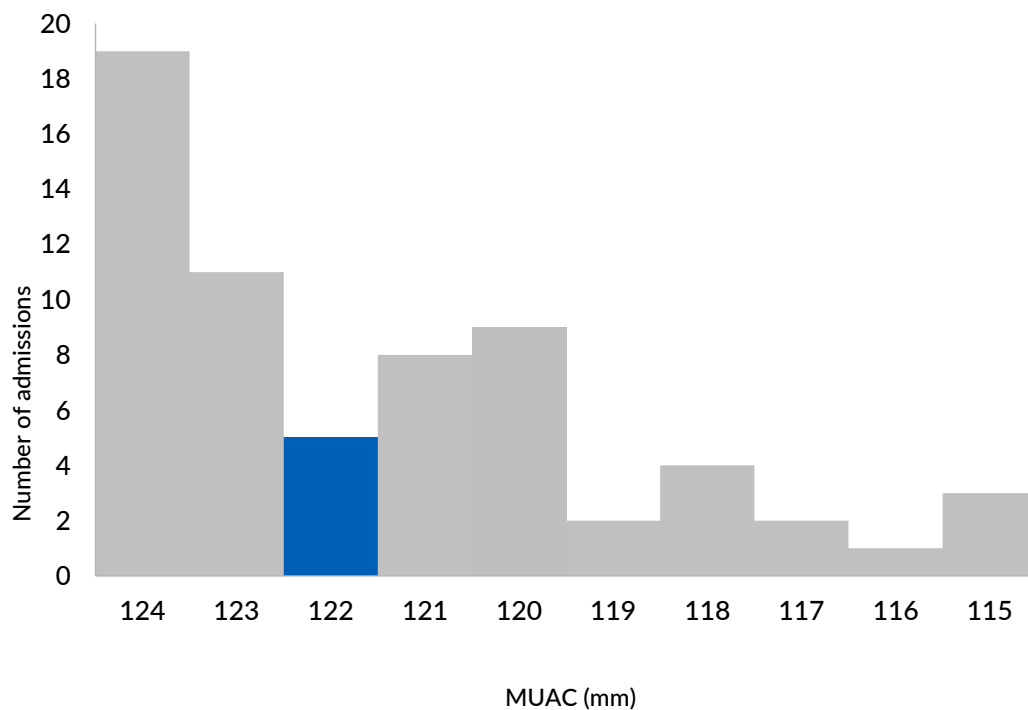
Figure 36: MUAC at admission - SFP BBR

The median MUAC on admission of cases admitted by MUAC is 122mm, indicating early admissions. There are however a significant number admitted at 124mm, indicating the MUAC tape is being pulled tighter to ensure admission. Similarly, there are digit preferences at 120mm and 115mm.

2.5.3 Discharge Outcomes

Discharge outcomes are an important indicator of performance that allows us to see what proportion of cases recover after treatment.
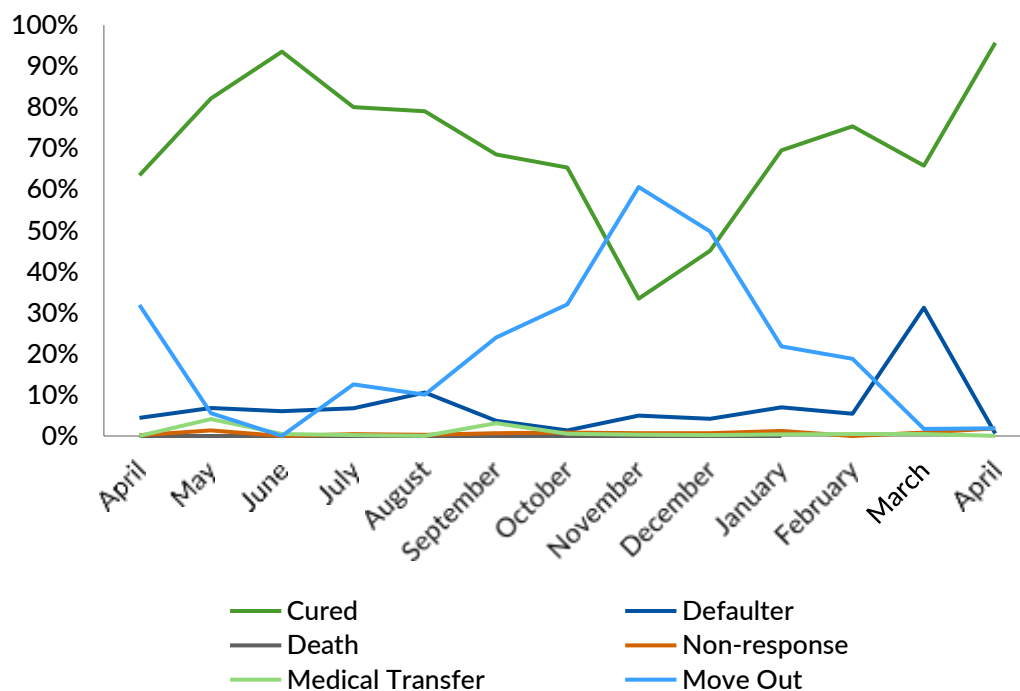
Figure 37: Discharge Outcome over time - SFP BBR

The mean cure rate is 64%, which is below the Sphere standard of 75%[15]. Defaulting is 6%, however move-out is 29% which is above the Sphere standard maximum limit of 15%, and above the 25% 'alarming' threshold in the South Sudan CMAM protocol.

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[15] http://www.severemalnutrition.org/sites/default/files/Interim-guidelines-integrated-mgmt-SAM-South-Sudan-Dec2009.pdf
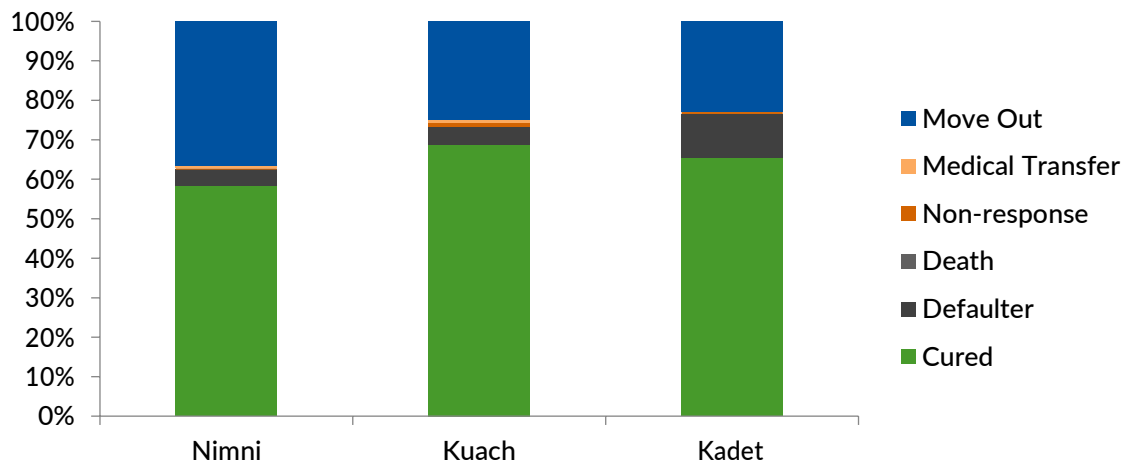
Figure 38: Discharge Outcome by OTP site - SFP BBR

The cure rate is slightly lower in Nimni OTP (58%). However neither Kuach or Kadet meet the Sphere standard for cure. Nevertheless, given the insecurity in the area however, these levels are not surprising.

2.5.4 Length of Stay Cured
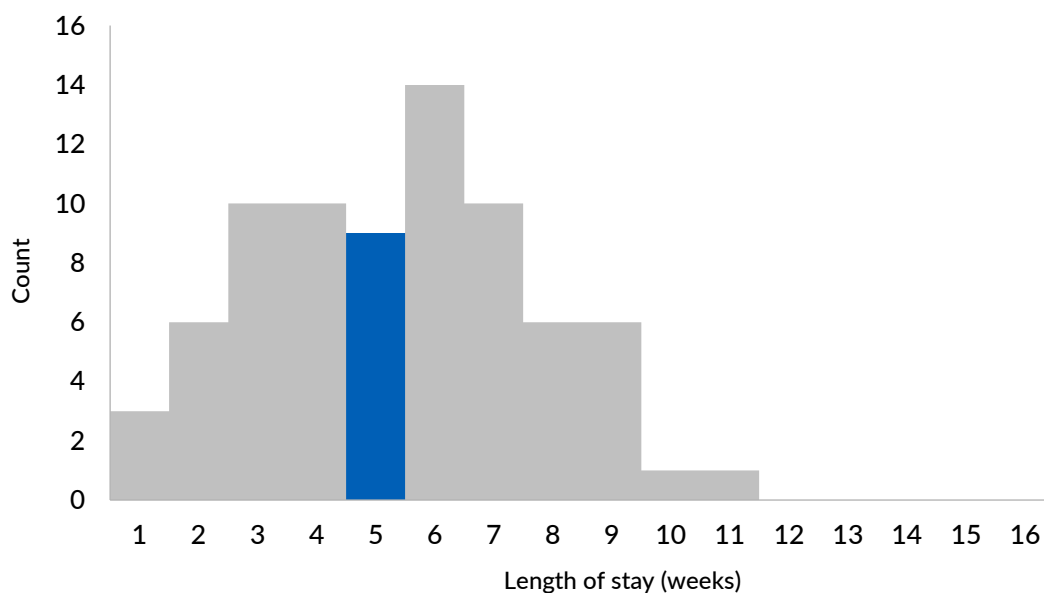
Figure 39: Length of stay before cure - SFP BBR

The median length of stay for cured cases is 5 weeks, indicating that these cases are following treatment protocol. There were cases (n=9) that took 2 weeks or less to be cured, but this figure is unlikely and indicates incorrect discharge.

2.5.5 Defaulting over time
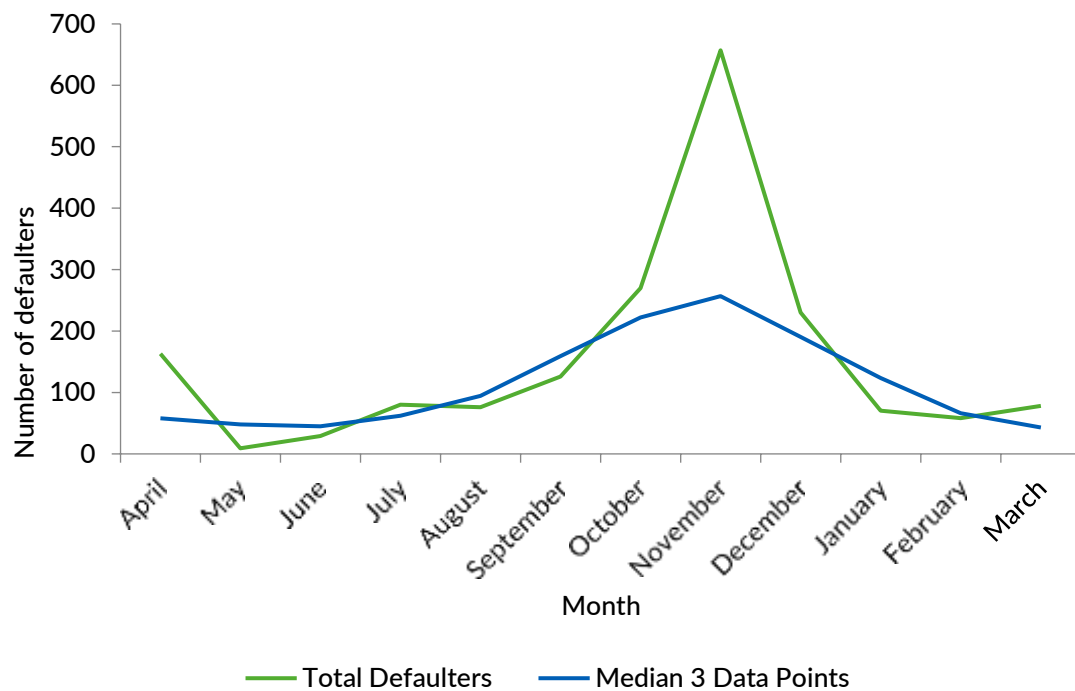
Figure 40: Defaulting over time - SFP BBR

Defaulting data follows a similar pattern seen in the other data sets. The spike in defaulting seen in April 2017 because of insecurity decreases until June and July, where defaulting steadily increases as the rains come, inaccessibility increases, as do cultivation activities and subsequent harvests. The security incident in November 2017 causes a huge spike in defaulting which continues into December before levels are stabilised again at the beginning of 2018.

2.5.6 Weeks in programme before defaulting
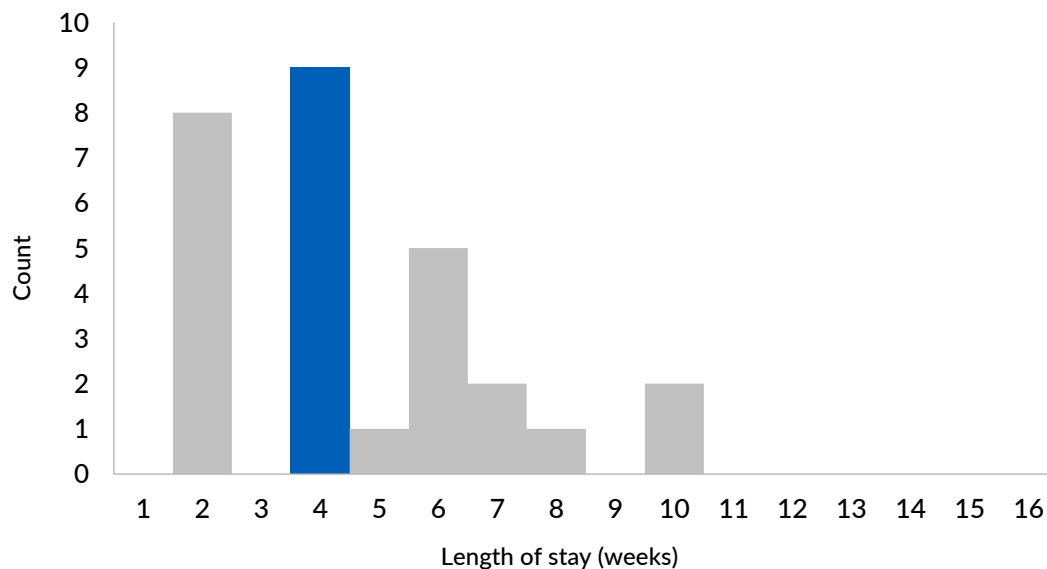
Figure 41: Weeks in programme before default - SFP BBR

The median length of stay before defaulting is 4 weeks. In a similar vein to the trends seen in the PoC, it is likely that caregivers witness an improvement in their child's health and discontinue with treatment.

2.5.7 MUAC at default

A further look at the MUAC measurement on a defaulting case's last visit, allows is to see at which stage in their treatment they are defaulting.
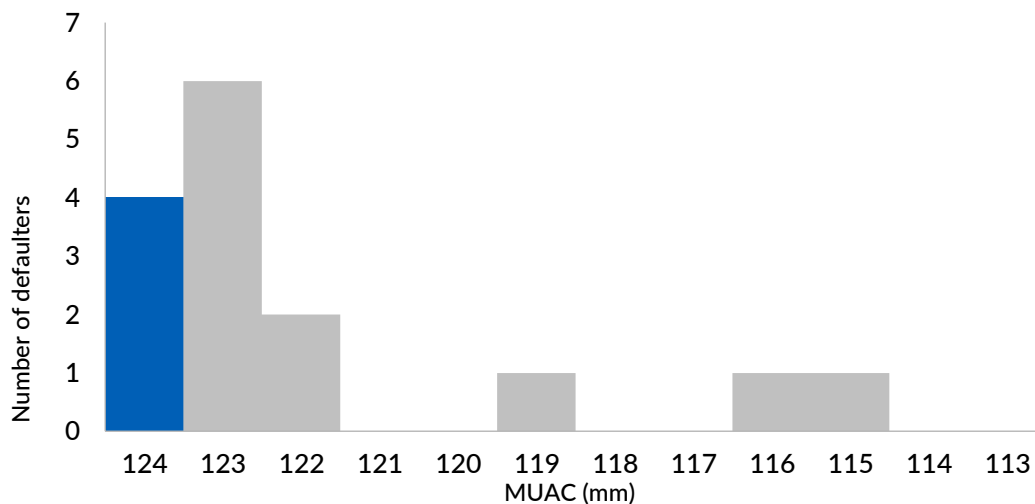
Figure 42: MUAC at default - SFP BBR

A median MUAC on default of 124mm correlates with the median length of stay before default. Cases are getting better in the programme, and as caregivers see an improvement, they discontinue taking their child for treatment.

2.5.8 Referral Source
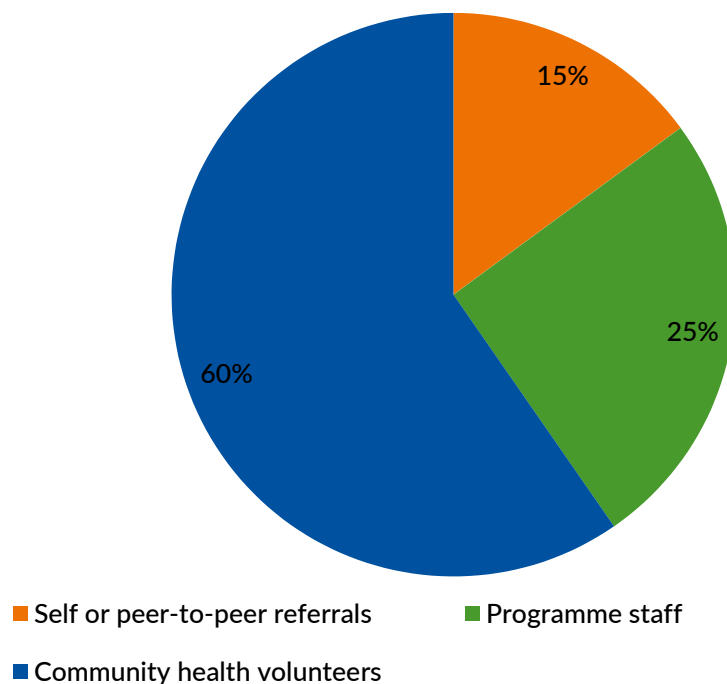
Figure 43: Referral Source - SFP BBR

Analysis of referral source for SFP provides some insight into awareness of the programme within the community. The most common referral source is through volunteers (60%) which is a high proportion and indicates good volunteer activity within the community. Programme staff referral is also high, however it is likely that these were also self-referral, or referred across from PHCUs. Self or peer referral indicates good awareness of the programme within the community.

2.6 QUANTITATIVE DATA QUALITY

Given the volume of admissions into the programmes, the data analysed was generally of a high quality. There are areas for improvement however, which include the following: recording the correct discharge outcome, in particular non-responders, who are often cured beyond a stay of 90 days, or defaulters that stay beyond 90 days. Recording of referral source can be improved to be more accurate, to be able to identify how cases have come into the programme, and not just identify if they are a 'new admission' or a relapse.

3.0 QUALITATIVE DATA COLLECTION AND ANALYSIS

Qualitative data was collected to complement and provide further information on the quantitative data collection.

Programme stakeholders were first identified. These included programme participants (carers of SAM and MAM children), community members (village leaders, church leaders, men, women) and programme staff (management staff, CNWs, CNVs) see *Annex 2* for a full list of interviews. Both OTP and residential locations were chosen for the qualitative research. Residential locations for the qualitative data collection were chosen based on the following factors; ensuring of good spatial coverage throughout the study sites and locations close and far from OTP sites.

3.1 METHODOLOGY

A day was spent training the team in qualitative research techniques, including focus group discussions and key informant interviews. The team were collectively trained to use all the interview guides and, on the first day of data collection, all the team went to the same area to allow for close supervision from the survey lead, and on-the-job training and feedback. An additional 5 days of qualitative research was conducted, this time was split between the PoC and BBR. The team worked in pairs, allowing for one person to conduct the interview and manage discussions, and for the other to take notes. As the end of each day, teams returned to discuss their findings, which were recorded and organised into positive and negative factors.

In all, 24 interviews were conducted in the PoC and 21 were conducted in BBR. There were 79 female respondents and 19 male respondents, see appendix 2 for a full list of interviews. Data has been organised and presented in tables 5 and 6.

Table 5: Qualitative Findings - Positive Factors

Positive Factors	
Awareness of the symptoms, causes and effects of acute malnutrition	The community (men, women, caregivers of malnourished children not in the programme) demonstrated awareness of the most severe symptoms of acute malnutrition *(nouy)*, listing oedema, marasmus, skin lesions, lethargy, hair colour changes and hair loss. Mostly, respondents described the impact of acute malnutrition as death, with few listing the impacts on development and productivity as the effects. Most informants were able to identify at least one cause of malnutrition such as lack of food, diarrhoea or poor care and hygiene practices. Awareness was higher in the camp setting, with a few (two women and a man) respondents in the community unable to name any causes or symptoms of malnutrition.
Community collaboration leads to sharing of messages within communities	Inside the PoC, community and religious leaders are regularly included in dialogue with NGO partners to ensure acceptance and encouragement of the programme. In the BBR programme, county commissioners, and sometimes payam chiefs, are consulted with regards to programming and access to ensure community acceptance. These communication channels are extended within communities, with reports of village chiefs visiting houses with malnourished children to remind mothers to enrol them into the programme. There is also a strong community network, where neighbours and family members will often take care of other children to assist mothers with children in the programme.
Good health seeking behaviour leads to self referral	There is limited use of traditional medicines in both the PoC and BBR (although use of the neem tree was mentioned). This has stemmed from health counselling sessions which has been provided to caregivers by various NGOs. Alongside this, increased awareness of the healthcare options available means that caregivers seek healthcare in health centres and hospitals. This self-referral mechanism for diseases combined with systematic screening at health facilities results in referrals across to OTP sites. Due to the fact that the referral source is not accurately recorded, this is difficult to quantify. However anecdotal evidence tells us that this is commonplace. There is also some self referral to the OTP sites, particularly in the PoC, where caregivers are more aware of the programme and the symptoms to look out for, as relapse is common.

Coordination between NGO partners leads to systematic screening at health facilities and an effective referral system.	Within the PoC there is extensive coordination between nutrition partners, which includes coordination of CNW activities across sectors and blocks in the PoC to ensure that there is no repetition of activities. Actions to prevent double registration, such as inking of the child's finger, and cutting the corners of RUTF and RUSF sachets, have been coordinated through the nutrition cluster. These efforts appear to have been successful in reducing double registration, or "doubling" as it is known in Bentiu, with few recorded in registers and few cases recalled by programme staff. Attendance of services at health facilities could potentially result in incidents of children receiving double doses of drugs such as antibiotics and deworming. Both in the PoC and in BBR, there is systematic screening taking place at all health facilities. PHCUs and hospitals are seen as the first port of call when a child is sick, and so health facilities screening all children is essential in ensuring that these children are identified and referred. In BBR, all of the OTPs assessed are within a very close proximity to a PHCU. However, in addition, PHCUs screen all children with MUAC and so are able to refer cases across. There is generally good health seeking behaviour, and good awareness of health services around the villages, and even if distances are far, mothers will make the effort to walk. Staff at OTPs did however highlight, that despite the good referral mechanism, children will often be admitted, and then not returned to the OTP for treatment, because they are not also returning to the health facility for treatment. This is reflected in the defaulting data in the OTP component of BBR, where many cases default after the first visit.
Positive perception of the programme	The programme is recognised in the community as effective at curing children of malnutrition. It is spoken of positively and cited as a reason for the reduction in child mortality and improvement in child health. Respondents noted that they receive a good service at the OTP sites. They also described the changes they have made in their feeding practices, such as breastfeeding within one hour of birth, and expressing breastmilk to be given to the child whilst they are out collecting firewood.
Screening by CNWs and CNVs in the community	The community component of the programme, particularly in the PoC, is supported by a strong network of Community Nutrition Workers (CNWs). The activities of CNWs in the community has resulted in a high awareness of the programme and the NGOs implementing the programmes in the camp. There is regular screening inside the blocks, and many of the caregivers interviewed have children recently screened by CNWs.

	In BBR, there are Community Nutrition Volunteers (CNVs), although screening activities are more patchy. This is partly due to the limited number of CNVs and also the selection process which local authorities are responsible for. In villages where there is a CNV; respondents were aware of the programme and children were more likely to have been screened. In villages without a CNV present, there were a few cases where the respondents were unaware of the programme (although these did not have young children) and children were only likely to have been screened if they had been taken to a health facility or OTP site.

Table 6: Qualitative Findings – Negative Factors

Negative Factors	
Insecurity	Fighting in the area has resulted in the closure of OTP sites, this conflict last occured in April and November 2017 in the Nimni area, resulting in displacement of populations. In addition, there was fighting in April 2018 which resulted in the temporary closure of Nimni OTP (for one week), and BBR activities suspended for 1 week . OTP staff also contributed that defaulting is higher during periods of fighting and war. There are some issues with cattle raiding, which was reported to increase at the beginning of the rainy season (as the cattle cannot be returned during this time) however this was reported to have minimal implications on access to health and OTP services. Insecurity also increases the mobility of the men, who move from place to place in part to avoid insecurity and conscription. This increases the workload of mothers and the women who are left behind, and have to take on tasks traditionally left for men (house building and parts of cultivation).
Distance	Distance was the most commonly cited barrier to access during data collection in BBR. In some locations, caregivers are walking up to 2 hours in each direction. When combined with seasonality, and the rains, access is difficult for caregivers. Concern Worldwide have addressed this through the opening of mobile sites, which have reduced the walking distance to sites for many. However, there are still inaccessible villages where distance is compounded by rain during the rainy season, making roads impassable. In addition, the time it takes to travel, combined with other responsibilities, such as household tasks, childcare, agricultural activities and income generating activities, mean that those who live further away from an OTP site are less likely to attend in the first place, and more likely to default.

	Conversely, since the crisis, there has been displacement of communities, and the population has moved to live in areas that they deem more secure. This includes places with better road access, closer to other people, and with easier access to trading places and healthcare. This has decreased the time it takes for them to walk to OTP sites, and thus, although some of the distances remain far, they are still decreased.
Insufficient screening on PoC Gates	Each arrival to the PoC should be screened for malnutrition on the gates with MUAC and WHZ, and there are CNWs present during working hours (8.30am-5.30pm Monday-Sunday). However it was found during qualitative data collection through observations that this is not always the case; there are not always CNWs present and they are only screening arrivals that look like they are new (i.e. they have luggage). During an interview with the caregiver of a malnourished child who had been enrolled in the programme on the same day as the interview, she explained how she had arrived at the PoC 5 weeks prior to being enrolled, after walking for 6 days. Her child had not been screened on arrival, and she was unaware of any of the services available until a relative she was staying with had told her to take the child to a PHCU. By this point the child required referral to MSF, where she was admitted for 6 days in the stabilisation centre before being referred back to an OTP site to begin treatment as an outpatient. Although this is a rare occurrence and was clearly a shortcoming in screening and information dissemination, the first point of access to nutrition services were the PoC gates where the child could have been screened and admitted before she became so severe.
Insufficient information and guidance to cases in the programme and rejected cases	There were several occasions (both inside the PoC and in BBR) where mothers described taking a child to the OTP site but were rejected because the child did not fulfil admission criteria. When a child is not admitted, even if correct procedure has been followed, and indeed they do not meet admission criteria, it is important that a full and justified explanation is given to the caregiver as to why their child is not being admitted into the programme.

In BBR, there was an occasion where a mother had not understood instructions provided to her (or insufficient instructions had been provided), and for example were unaware of the amount of RUTF to give to the child, only providing it when the child cried. |
| Lack of awareness of the programme | On the whole, most respondents were aware of the programme, however there were a limited number in BBR who were unaware of its existence. This included women (grandmothers) from the community in a focus group, who can be key decision makers in factors affecting |

	childcare. This was also linked to patchy CNV coverage; villages without a CNV were less likely to be aware of the programme.
Lack of male involvement in childcare results in the burden of childcare falling on the mother	Culturally, men have very little involvement in childcare, and they often stay away from the home for long periods of time. This leaves the responsibilities of childcare, housework, firewood collection, house construction and agricultural activities to the mother. Inside the PoC, the presence of men is more common, because many are staying inside for security reasons. However women still shoulder most of the burden, often acting as the main source of income through income generating activities, such as firewood collecting. A focus group weighting exercise with a group of 14 women, in sector 4 where there was an overwhelming consensus that the heavy workload of women is the most important factor to accessing nutrition services. The lack of male involvement in childcare leads to the recruitment of other family members to assist and often older siblings. It was observed a number of times that older siblings of children enrolled attend OTP sites. Sometimes they can be as young as 8 or 9 years old. In this case, they are turned away as they are unable to attend the IYCF counselling sessions. However this leaves a dilemma, as it is not certain that the mothers will return with the child and, in some instances, the cases being rejected are severely malnourished. In addition, children acting as carers interferes with their schooling and has wider implications on their education.
Defaulting	A significant problem which is affecting the programme is defaulting. Despite the electronic numbers reported remaining low, investigation into the registers suggested that defaulting is higher than initially thought. Despite there being defaulter tracing in place, this doesn't necessarily provide information as to why they are defaulting or where they are going. Therefore the team started defaulter tracing and found mixed responses. Out of 10 cases traced in in sector 3 and sector 4, the neighbours of 3 were unaware of the child or the caregiver, suggesting that the address that had been provided was false. One had been referred to MSF, 4 had left the PoC and neighbours/relatives were unsure if they were still continuing treatment. One of the cases had gone to Rubkona, and so the team travelled to an OTP in Rubkona to see if the child had been transferred. However, there was no record of the name. Another had

	travelled to Rubkona to be closer to the cows so the child could drink cows milk to cure them and so had not been enrolled elsewhere. The mother of the final case was selling tea in the market. In the registers, many of the cases are recorded as 'move-out'. However it is difficult to obtain evidence to state if they are transferring to other OTP sites. Cases that have defaulted as they have left the PoC will not affect the coverage estimate of the PoC, as they are no longer residing there. However, they are still out in the communities requiring treatment.
Opportunity costs	In order to generate income, women are often occupied with other activities, such as collecting firewood or cutting grasses for sale. As previously mentioned, the heavy workload of women interferes with attendance to the programme, and children often step in as caregivers to mitigate this. This is more pronounced within the PoC, where women travel for long distances (up to 30km a day) to collect firewood, taking the whole day. Mothers who were interviewed explained that they now know how to express breastmilk to leave for the children when they are working. In BBR, opportunity costs still remain a barrier, where collecting firewood is the main source of income. However there is often more of a family network in place where children can be taken care of.
Gender inbalance of admissions	A previous analysis of admissions data showed that more girls are admitted than boys (for example, in Nimni OTP, 55% of admissions are girls). This was confirmed by programme staff who also witnessed the same phenomenon. Although not specifically affecting the coverage of the programme, this is still an interesting finding, and therefore it was further investigated. When asked who was likely to become malnourished, a boy or a girl, respondents (n=4) cited that girls were more likely to, as boys cry more and need feeding more to keep them strong.
Selling and sharing of RUTF/RUSF	There is limited anecdotal evidence of selling or RUTF and RUSF in the PoC. Programme staff informed that it is available to buy, however all respondents informed that it is not available. Non-response rates suggest that there is sharing of RUTF and RUSF amongst children in the same household, particularly in the PoC. Programme staff from all partners report that there is sharing and it is inevitable due to the Nuer culture of sharing amongst families, compounded by

	food insecurity in the area. Lead mothers also affirmed this information, and reported that they know it is happening, and try to teach other mothers to not share. However when questioned, all mothers denied sharing, and repeated the messages that they are taught by programme staff and CNVs.
Traditional medicine	Although use of traditional medicine is limited, with respondents both inside the PoC and in BBR stating that they no longer use traditional medicines, there remains some usage. A focus group within the PoC stated that there are traditional medicine practitioners operating from the market, and that they target new arrivals or those who are in the programme/previously in the programme who are non-responders. Other interviews in the PoC categorically stated that traditional medicine is no longer used, and it proved difficult to find traditional medicine practitioners within the market.
	In BBR, there were two respondents who had used traditional medicine to treat their children. One had used traditional medicine (neem tree) before going to the health facility for treatment, as the distances to travel are far, the other had used it alongside OTP treatment. However, the majority of respondents no longer use traditional medicines and prefer to access healthcare from health facilities, OTP sites and sometimes, a pharmacy.

3.2 STAGE 1 SUMMARY

Qualitative data collected and analysed in stage 1 complemented the quantitative data, providing more insight into the positive and negative factors influencing coverage. As the population between the PoC and BBR, there were similarities across the two populations, however the different contexts also created contrasts within the data sets. There is high awareness of malnutrition and the programme across both PoC and BBR, however this is higher within the PoC due to the network of CNWs and the regular screening. In the communities outside the PoC, the coverage of CNVs is more patchy, and so there are screening gaps, however awareness remains high. There are good health seeking behaviours across the communities, with the PHCUs, PHCCs and hospitals remaining the first port of call for these cases. High levels of screening at these clinics results in referrals across to OTP sites, which is effective in recruiting cases, however the programme (particularly in BBR) then struggles to retain them, with a high level of defaulting at the first follow up. This is compounded by the factors of distance, insecurity and busy workloads of caregivers. The establishment of mobile clinics in BBR has reduced the distance for many caregivers to walk, and also the waiting times, as the burden on clinics has reduced. Security incidents have resulted in the closure of clinics temporarily, however once the situation stabilises, operations are quickly restored and CNV networks are instrumental in sharing these messages. Lack of male involvement is a barrier to coverage across the PoC and BBR, with high opportunity costs for mothers impacting access to the programme. Other activities such as childcare or conducting income generating activities takes up the time of caregivers and this is exacerbated by the lack of support provided by males.

4.0 STAGE 2: TESTING THE HYPOTHESIS

Stage 2 is designed to check stage 1 findings, it can be used as a 'checkpoint' to ensure that our findings from stage 1 are a true reflection of the programme. It can also be used to deep dive and inform the prior. Stage 2 is also an opportunity to collect additional information on an area of interest that may have an indirect impact on programme coverage, especially indirectly. Information collected in stage 2 can also be used during the formulation of the prior, ahead of the wide area survey in stage 3.

As the stage 1 findings from the PoC and Guit County were different, and the positive and negative factors affecting the programme are diverse, it was decided to test two different hypotheses, 1 in the PoC and a separate hypotheses in BBR.

4.1 HYPOTHESIS – PROTECTION OF CIVILIANS CAMP

Malnourished children with a sibling/other family member to act as a caregiver have high coverage (>90%), malnourished children without a sibling/other family member to act as a caregiver have low coverage <90%).

4.1.2 Justification
During stage 1, it was reported by programme staff that there is a challenge of younger siblings bringing children to the OTP sites; this was also observed on several occasions. When this is the case, they are unable to receive the IYCF messaging that is given to all beneficiaries. Given the lack of male involvement in childcare, the opportunity costs

that caregivers face and the volume of activity that falls on the mother, it was decided to investigate the relationship between the presence of child caregivers and coverage further, in order to generate more evidence on the impact of this.

4.1.3 Sampling

Sampling was done in 2 stages: block sampling and then sampling of SAM and MAM children in each block.

A block from each sector was chosen that was neither too close or too far from the OTP (although the maximum walk for beneficiaries is 15 minutes).

The case definitions in table 7 were used:

Table 7: Case Definitions

Control Arm	
SAM child	Bilateral pitting oedema or MUAC <115mm
SAM recovering case	MUAC >115mm but still under-going OTP treatment (RUTF)
MAM child	MUAC ≥115mm and <125mm
MAM recovering case	MUAC ≥125mm but still undergoing TSFP treatment (RUSF in study, CSB++ outside study)

Since the discharge criteria for OTP is 2 consecutive measurements of MUAC ≥115mm some non-SAM cases may still be receiving OTP treatment. This is referred to as a recovering case. This also applies for MAM cases, since the discharge criteria is MUAC ≥125mm for 2 consecutive weeks.

All children under 5 were screened in the block using MUAC. When a case was found, the team would issue a questionnaire according to whether the child was in or out of the programme. Inside the PoC, additional questions were asked regarding the primary and secondary caregiver of the child. Copies of these questionnaires can be found in appendix x, xx and xxx

4.1.4 Findings - PoC

The results from the PoC are presented below in tables 8 and 9.

Table 8: Stage 2 Findings - SAM PoC

Catchment	Block	SAM covered	SAM uncovered	SAM recovering	Total
Sector 1	2	4	1	0	5
Sector 2	3	2	1	0	3
Sector 3	5	1	1	0	2
Sector 4	4	2	0	0	0
Sector 5	10	1	1	0	3

Table 9: Stage 2 Findings - MAM PoC

Catchment	Block	MAM covered	MAM uncovered	MAM recovering	Total

Sector 1	2	4	1	0	5
Sector 2	3	0	0	0	0
Sector 3	5	3	1	0	4
Sector 4	4	3	0	0	3
Sector 5	10	5	0	0	5

4.1.5 Analysis

For the analysis of the results simplified lot quality assurance sampling (LQAS) was done in order to obtain a classification of coverage, and to determine whether the hypotheses were confirmed or denied. Inside the PoC, the SPHERE standard for coverage of CMAM programmes in camp locations was used, and therefore was set at 90%.

The following formula was used to determine the decision rule for the hypothesis:

$$d = \lfloor n \times \frac{p}{100} \rfloor$$

$d = \lfloor n * p100 \rfloor$

d = decision rule

n= number of cases found

p= coverage standard defined.

Table 10: Stage 2 Analysis - PoC

SAM				
Families with a sibling/family member who can assist	Conclusion	Families without a sibling/family member who can assist	Conclusion
n=7 d= 6 covered cases= Exceeds d? Yes	Decision rule met therefore coverage classified as being above the standard.	n= 3 d= 2 covered cases= Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard
MAM				
Families with a sibling/family member who can assist	Conclusion	Families without a sibling/family member who can assist	Conclusion
n= 10 d= 9 covered cases= Exceeds d? Yes	Decision rule met therefore coverage classified as being above the standard	n= 5 d= 4 covered cases= Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard

4.1.6 Analysis of SAM cases

In order to gain a better understanding of the reasons to not being in the programme, and also explore the hypothesis further, additional questions were asked to carers of

malnourished children enrolled and not enrolled. Carers were asked if there was a sibling or other family member available to take care of children in the shelter, or to take the malnourished child to the OTP.
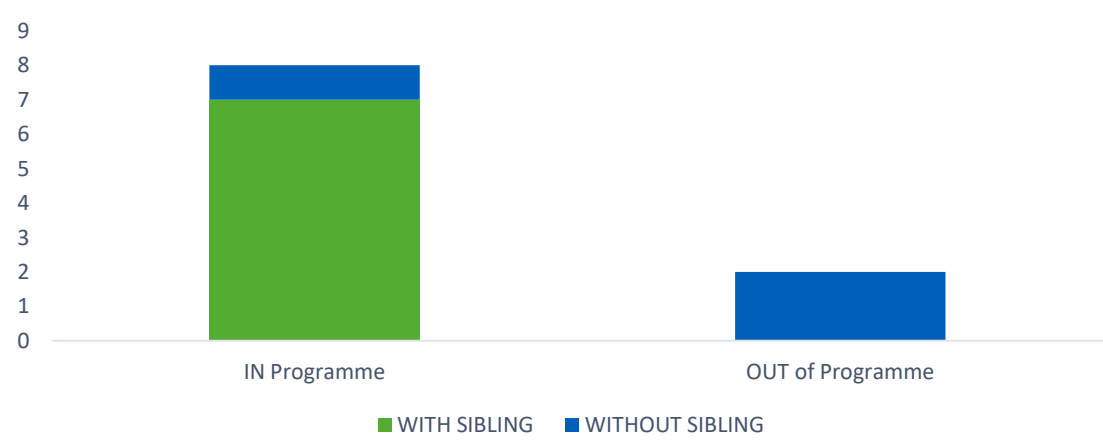
Figure 44: SAM children with and without a sibling

Out of the 8 SAM cases that were found in the programme, 7 had a sibling able to take care of the child. Neither of the two cases found out of the programme had a sibling able to take care of the malnourished child, and the caregiver had no family support. Providing evidence that there is the presence of another child able to take care of either the malnourished child or other children in the household is a positive factor to coverage.
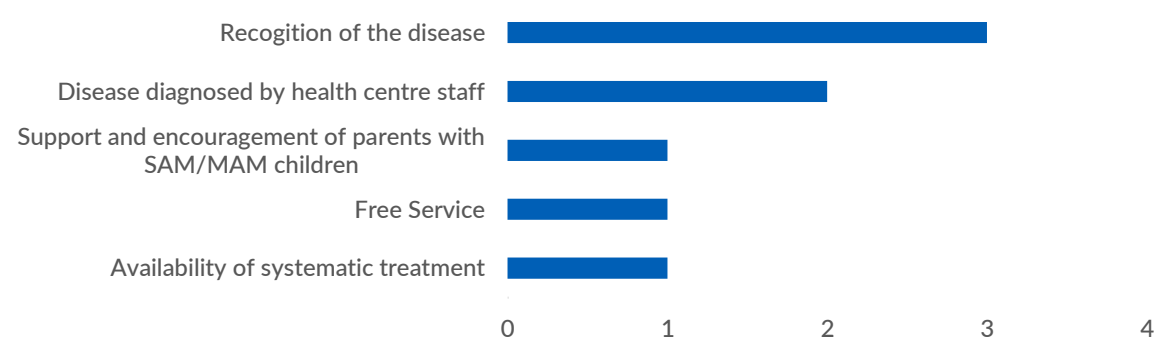
Figure 45: Reason for enrolment of SAM children

The main reason given for enrolment of SAM children is recognition of the disease; the caregiver realised the child is sick and has sought treatment. Staff in health facilities are also crucial to the enrolment of children into the programme.

4.1.7 Analysis of MAM cases
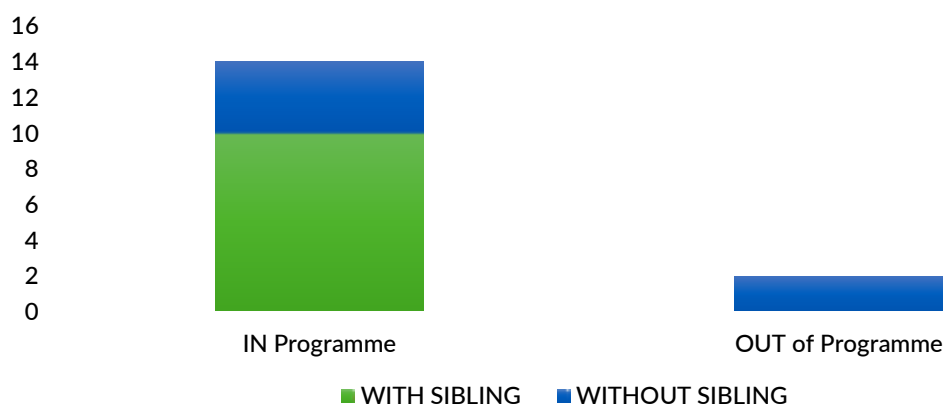
Figure 46: MAM children with and without a sibling

Similarly with MAM cases, the majority of children in the programme (10 out of 14) have a sibling who is able to take responsibility in childcare activities. The two children out of the programme did not have a sibling able to take care of the child.

The main reason for enrolment is overwhelmingly because caregivers recognise the child is sick and requires treatment. Support of other parents and neighbours was also cited, demonstrating the importance of community collaboration (note that all provided responses have been aggregated).
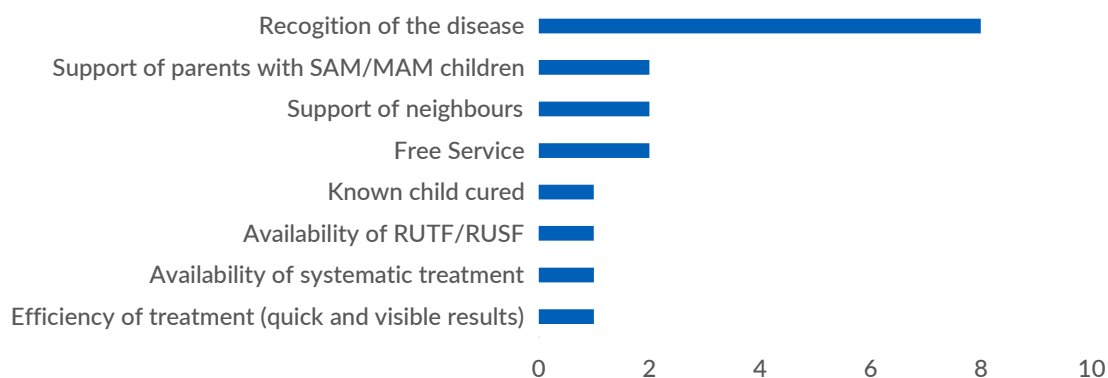
Figure 47: Reason for enrolment of MAM children

As cases not in the programme were few, responses for MAM and SAM were aggregated. Busy with other activities, such as collecting firewood and tea making, were cited, as well as a lack of help to look after other children.
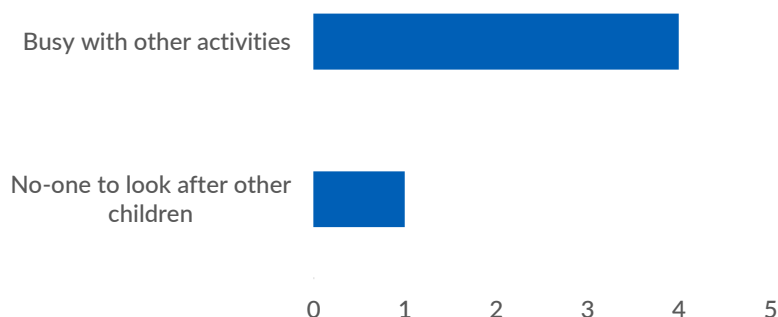
Figure 48: Reason for not being in the programme, both SAM and MAM

4.1.8 Conclusion

A comparison between the two population groups, of those who have additional family members who are able to act as caregivers and those who do not demonstrates the impact of the assistance that other family members, such as siblings or grandmothers can have on a child being in the programme. Although there is a difference, this is not so great as to demonstrate patchy coverage, and therefore, we can proceed to conducting a wide area survey of the entire site.

4.2 HYPOTHESIS – BEYOND BENTIU RESPONSE

Villages with a CNV present have coverage above the standard of 50%, villages without the presence of a CNV have coverage below the standard of 50%.

4.2.1 Justification

Each OTP site has 10 CNVs operating from it. The selection of CNVs is conducted by the *commissioner* of the county. With these two factors combined, it means that there are villages without CNVs operating in them. It was evident during stage 1, that villages with a CNV present have higher awareness of the programme and of malnutrition. Those without were less likely to know about the programme or know children enrolled in the programme. It was therefore decided to investigate the extent of the impact of the presence of CNVs on coverage.

4.2.2 Sampling

Similarly for BBR, sampling was done in 2 stages: village sampling and then sampling of SAM and MAM children in each village.

Two villages were chosen from each catchment area being investigated. A village with a CNV and a village without a CNV were selected. Other characteristics, such as distance from the OTP and village size were similar.

The same case definitions as in table xx were used.

Again, all children under 5 were screened in the village using MUAC. When a case was found, the team would issue a questionnaire according to whether the child was in the programme or out of the programme.

4.2.3 Findings

The results from BBR are presented below in tables 11 and 12.

Table 11: Stage 2 Analysis - SAM BBR

Catchment	Village	CNVs	SAM covered	SAM uncovered	SAM recovering	Total
Kadet	Juba	N	1	0	1	2
	Moukuan	Y	2	0	1	3
Kuach	Luor	N	0	1	0	1
	Kerdet	Y	1	0	0	1
Nimni	Kuanyrow	Y	1	1	1	3
	Biel	N	1	0	0	1

Table 12: Stage 2 Analysis - MAM BBR

Catchment	Village	CNVs	MAM covered	MAM uncovered	MAM recovering	Total
Kadet	Juba	N	2	1	0	3
	Moukuan	Y	1	0	0	1
Kuach	Luor	N	3	0	0	3
	Kerdet	Y	0	0	0	0
Nimni	Kuanyrow	Y	4	2	0	6
	Biel	N	0	0	0	0

For the analysis of the results Simplified Lot Quality Assurance Sampling (LQAS) was conducted in order to obtain a classification of coverage, and to determine whether the hypotheses were confirmed or denied. The SPHERE standard for coverage of CMAM programmes in rural of 50% was used.

The following formula was used to determine the decision rule for the hypothesis:

$$d = \lfloor n \times \frac{p}{100} \rfloor$$

$d = \lfloor n * p 100 \rfloor$

d = decision rule

n= number of cases found

p= coverage standard defined.

4.2.4 Analysis
Table 13: Stage 2 Analysis - BBR

SAM			
Villages with CNV presence	Conclusion	Villages without CNV presence	Conclusion
n=11 d=5 covered cases=5 Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard.	n=7 d=3 covered cases=3 Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard
MAM			

Villages with CNV presence	Conclusion	Villages without CNV presence	Conclusion
n=7 d=3 covered cases=5 Exceeds d? Yes	Decision rule met therefore coverage classified as being above the standard	n=11 d=5 covered cases=5 Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard

4.2.5 Analysis of SAM cases
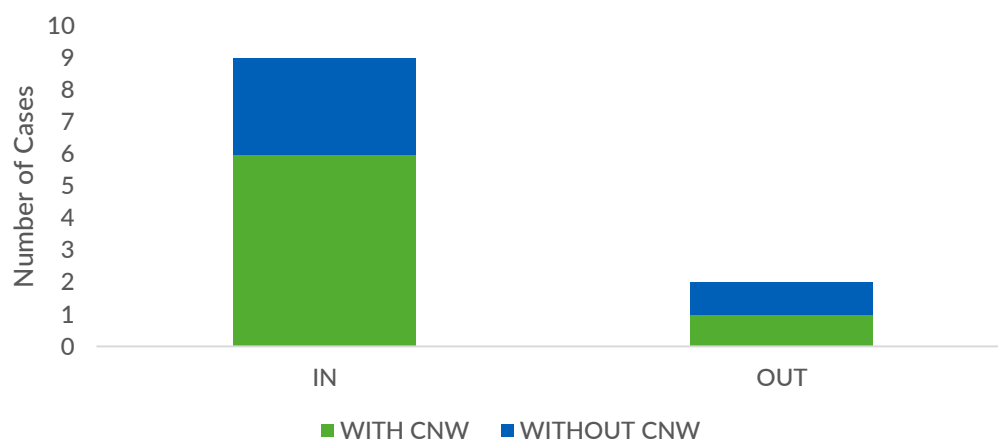
Figure 49: SAM Cases With and Without CNVs

Six out of nine SAM cases had a CNV in their village, indicating that this affects coverage. Out of those out of the programme, 1 did not have a CNV present, and the other had a CNV present, though the mother informed that she had just arrived at the village 3 days prior.

Figure 50: Reason for enrolment – SAM Cases

Similarly to the PoC, the main reason for enrolment is recognition of disease, as well as diagnosis by staff in health facilities. Free OTP services, the ability to provide systematic

treatment (such as malaria treatment) and friendly staff remain a positive factor to service access.

4.2.6 Analysis of MAM cases

Presence of CNVs has less of an impact for MAM cases, where half of those that are in the programme have a CNV present. This is likely to be due to the health seeking behaviour seen in communities, and the accessing of health services, which then screen for malnutrition.
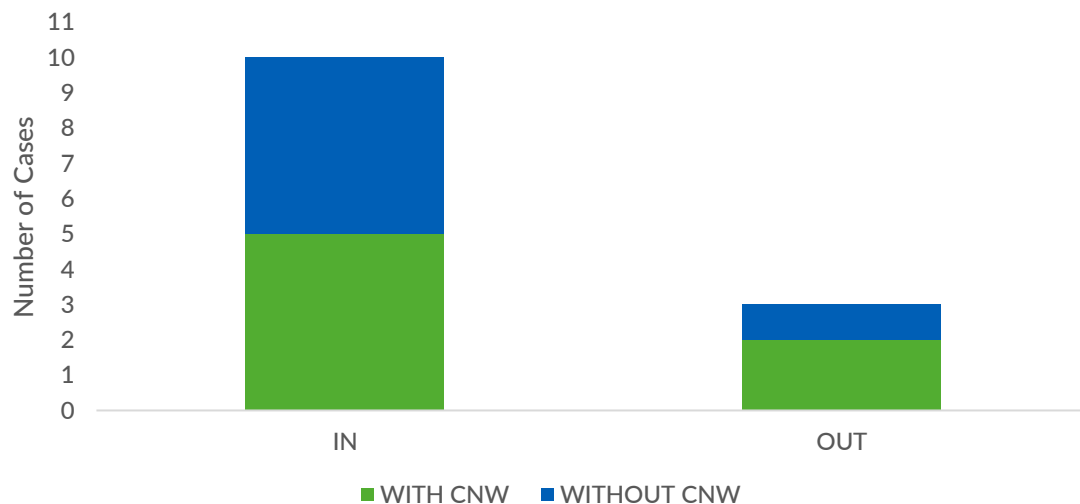
Figure 51: MAM Cases With and Without CNVs
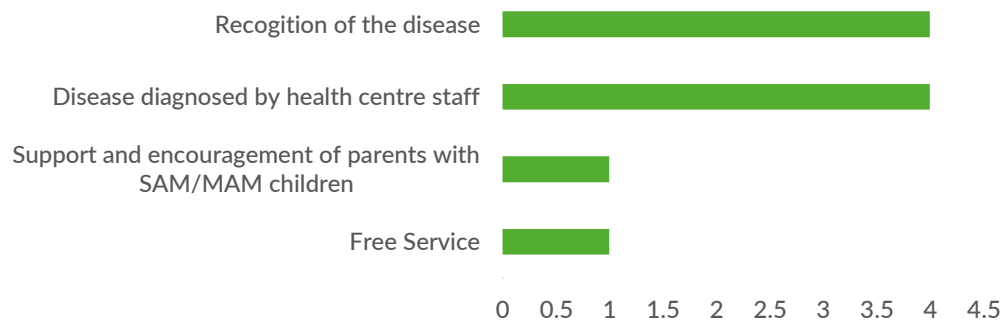
Figure 52: Reason for enrolment – MAM Cases

The main reason for enrolment of MAM cases were both the disease being recognised by staff at OTP sites, and also the caregiver themselves being aware that the child needs treatment. The free service and also support of other parents are also positive factors to coverage.
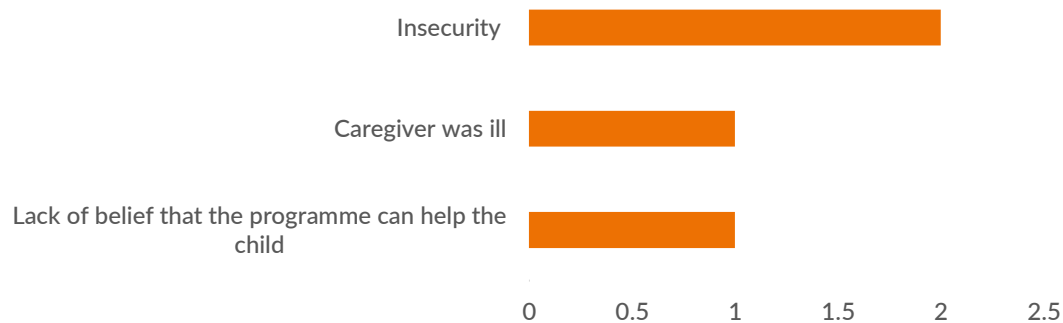
Figure 53: Reasons for non-enrolment in the programme - SAM and MAM

Due to the low number of uncovered cases identified, answers were combined. Insecurity was cited as a barrier to coverage by two caregivers (one SAM child), the caregiver being sick and a lack of belief that the programme can help the child were also cited. One caregiver of a MAM child was out cultivating and so unable to answer the questionnaire, and the additional SAM child found had come to the village 2 days prior, from a different location.

4.2.7 Conclusion

CNV presence positively affects coverage, with cases more likely to be in the programme if they have a CNV in their village. However, high programmatic awareness and good health seeking behaviour leading to a visit to a health facility also contributes to a child being enrolled in the programme.

5.0 BUILDING THE PRIOR

A prior belief of coverage was developed using all the information collected during Stages 1 and 2. SAM and MAM priors were developed separately, using four different methods for each: unweighted boosters and barriers, weighted boosters and barriers, scored concept maps and *histogram of belief*.

5.1 CONCEPT MAPS

Concept mapping is a graphical data-analysis technique that is useful for representing relationships between findings. Concept maps show findings and the connections (relationships) between findings in terms of boosters and barriers affecting coverage and are used to organise and analyse data. Terms such as 'increases/decreases, leads to, results in' are used to show positive and negative connections between factors that influence coverage. The team was divided into three groups to construct concept maps, each team fed back their findings and then each connection was counted. A positive connection is given a +1 value, and each negative connection is given a -1 value. These values are then added together to a total number of positive factors and a total number of negative factors. Following this exercise, it was decided that the concept maps introduced bias to the prior value, as they included boosters which were not overly triangulated (there were few sources and methods to substantiate the points). The scores that emanated from this exercise were deemed by the team to not be reflective of the

58

programme, and therefore they were not included in the prior building. The maps however were useful in identifying areas that can be strengthened and built upon, and so were useful for building recommendations.

Figure 54: Concept Map of OTP - PoC

5.2 SIMPLE SCORING OF BOOSTERS AND BARRIERS

A prior was calculated through simple scoring of boosters and barriers. The boosters and barriers were listed and a score of 5 was given to each one. The sum of the scores of the boosters and barriers was then taken to calculate a prior mode. This method accounts for the quantity of boosters and barriers to influence the prior, not the relative importance of each.

5.3 WEIGHTED SCORING OF BOOSTERS AND BARRIERS

Another method used to calculate the prior was to take the same list of boosters and barriers and give them a weighted score (between one and five) depending on their relative importance. The team worked together, having analysed all of the evidence from Stages 1 and 2, to allocate a score that represented the relative effect each factor has on

coverage. For each factor, the following were considered: the prevalence of the factor, how much of the survey area it relates to, the strength of the evidence and how much impact it has on coverage. The team reflected on the evidence from the first two stages of the assessment that had been places on the walls of the training room. A list of all of the coded, scored and unweighted boosters and barriers can be found in annex xx.

5.7 HISTOGRAM OF BELIEF

Histogram priors for all programmatic arms were developed collectively in the classroom, each coverage value (x axis) was discussed, and a belief of whether coverage is likely to be that value determined (y axis).

The following equation was used to calculate the prior:

$$prior\ mode = \frac{sum\ of\ boosters + (100 - sum\ of\ barriers)}{2}$$

5.7.1 SAM POC

Method	Prior Score
Scoring of Concept Map	64.5%
Weighted bbq	75%
Unweighted bbq	65%
Histogram of belief	85%
Mean	72%

5.7.2 MAM POC

Method	Prior Score
Scoring of Concept Map	52.5%
Weighted bbq	68.5%
Unweighted bbq	65%
Histogram of belief	80%
Mean	66.5%

5.7.3 SAM BBR

Method	Prior Score
Scoring of Concept Map	53.5
Weighted bbq	68.5
Unweighted bbq	65%
Histogram of belief	85%
Mean	68%

5.7.4 MAM BBR

Method	Prior Score
Scoring of Concept Map	52.5%
Weighted bbq	68.5%
Unweighted bbq	65%

Histogram of belief	80%
Mean	66.5%

6.0 STAGE 3

The principal objective of Stage 3 is to provide an estimate for coverage, in this case, both in the PoC and outside in BBR. This firstly requires the development of a likelihood by way of a wide area survey, and then, using a Bayesian conjugate analysis, combine the prior and the likelihood to produce the posterior coverage estimate. Using the prior calculated at the beginning of Stage 3, the Bayesian SQUEAC calculator established a suggested sample size of 43 for the large area survey.
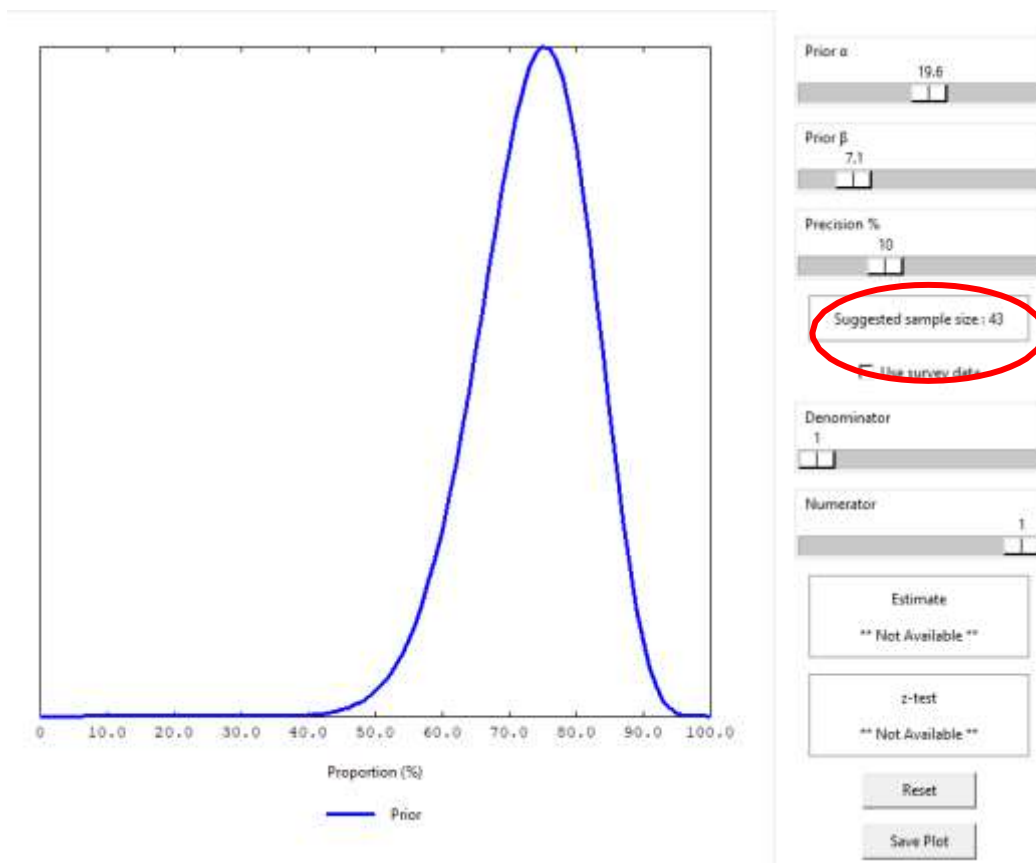
Figure 55: Baysian Curve – OTP Coverage PoC

6.1 SAMPLING IN POC

The number of blocks to sample in each given area (control and intervention) to reach the target sample size of n = 43, was calculated using estimated population size, population structure and prevalence of SAM using the following formula:

$$n_{villages} = \left[\frac{n}{average\ village\ population_{all\ ages} \times \frac{percentage\ of\ population_{6-59\ months}}{100} \times \frac{SAM\ prevalence}{100}} \right]$$

The specific calculation for Bentiu PoC was as follows:

- n = 43
- % population 6-59 months = 23.9%[16]
- Prevalence of SAM = 0.7%[17]
- Average population of each block = 1762[18]

$$n = \frac{43}{\left[1762 \times \frac{23.9}{100} \times \frac{0.7}{100}\right]} = 15$$

6.2 SAMPLING IN BBR
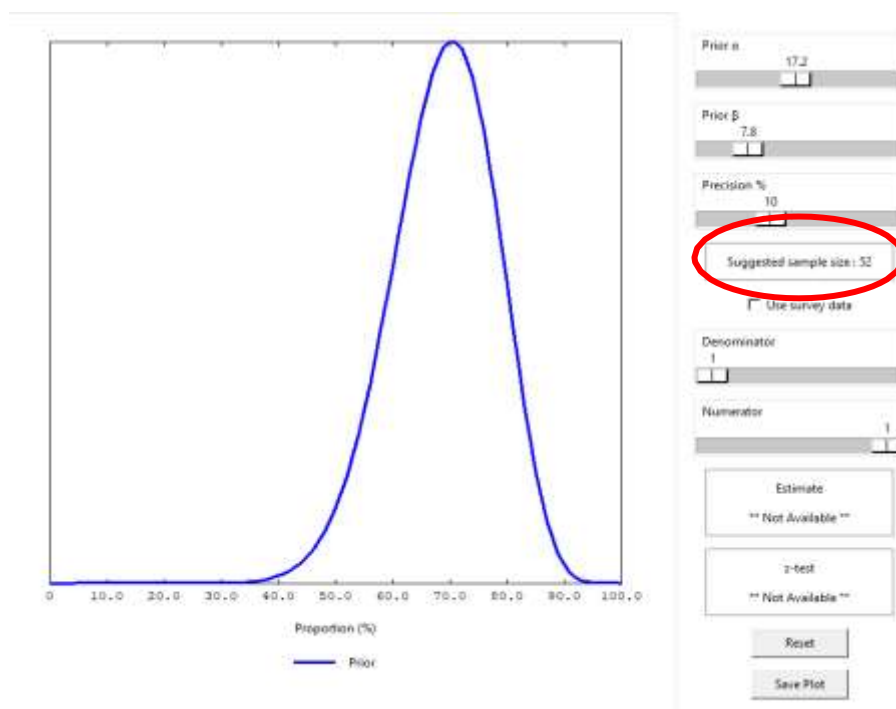
Figure 56: Baysian Curve – OTP Coverage BBR

The specific calculation for BBR was as follows:

- n = 52
- % population 6-59 months = 19.1%[19]

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[16] SMART Survey June 2018
[17] The team were aware that they would be able to cover more ground during Stage 3, and so the SAM prevalence is based on the lower estimate of the SMART MUAC prevalence to increase the number of blocks to visit
[18] based on total PoC population and the number of blocks with people living in them, from 'Bentiu Site Profile, February 2018' – South Sudan Camp Coordination and Camp Management.
[19] SMART Survey June 2018

- Prevalence of SAM = 2.0%[20]
- Average population of each block = 722[21]

$$n = \frac{52}{\left[722 \times \frac{19.1}{100} \times \frac{2.0}{100}\right]} = 18.97$$

Although theoretically possible to sample 19 villages in the time available it was felt that the area was too vast and may have caused difficulties in reaching the sample size. It was therefore decided to increase the capacity of the team by recruiting and training 6 more enumerators. In addition, although we knew we might struggle to find 52 SAM cases in the sampled villages, we knew from the Bayes SQUEAC calculator that even with a sample size of 23, we would still be able to achieve the acceptable precision of 15%.

6.3 SAMPLING FRAMEWORK

A two stage sampling method was used; the first stage ensured the selection of a spatially representative sample of villages in each arm. The second stage used door-to-door sampling to find all SAM and MAM children in selected villages.

- First Stage: A detailed map of xxx was not available, therefore a spatially stratified sampling method (list method) was employed, using data from Vitamin A outreach which was supplemented using team knowledge for village names and populations. It is likely that there are discrepancies around the definition of a village and also the naming as we found during when visiting the villages throughout the assessment.

- Second Stage: This method was further strengthened by using door to door sampling to ensure all SAM and MAM cases were found. Similarly to Stage 2, every child under 5 years of age in the sampled area was screened using MUAC.

A questionnaire for caregivers of covered and uncovered MAM/SAM cases was also used in order to understand the boosters and barriers for each case (see the CMN website for similar). During stage 3, DDG (Digital Data Gathering) was utilised, and so each team of two had a tablet to input data.

The wide area survey was then completed over a period of 6 days by 8 teams of 2 which were divided between the PoC and BBR. The team was able to cover between 1 and 2 villages a day, if it was found that the village was very small, and there was still more time for case finding, the neighbouring village was also sampled. Rain was a challenge in accessing villages and case finding, and there were days where roads were inaccessible due to rainfall. Flexibility in scheduling allowed additional days to be added to the end of the assessment, to allow all sampled villages to be reached. A smaller team (of between 2 and 4) conducted case finding within the PoC, and were able to cover between 2 and 3 blocks per day.

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[20] based on SMART data and stage 2 data combined
[21] based on total PoC population and the number of blocks with people living in them, from 'Bentiu Site Profile, February 2018' – South Sudan Camp Coordination and Camp Management

6.4 RESULTS OF WIDE AREA SURVEY

The single coverage estimator was used to estimate coverage for the assessment. This method is effective in by accounting for both SAM/MAM cases and recovering cases in and out of the programme.

The following formula is used where C_{in}= covered SAM/MAM cases, C_{out}= uncovered SAM/MAM cases, R_{in} = recovering cases in the program and Rout = recovering cases not in the programme:

$$Coverage = \frac{C_{in} + R_{in}}{C_{in} + R_{in} + C_{out} + R_{out}}$$

The C_{in}, C_{out} and R_{in} are all collected during the wide-area survey although R_{out} must be estimated. The number of recovering cases not in the programme (R_{out}) is calculated using the formula below. A critical element of this is a correction factor (3) that has been with knowledge of the length of time an untreated case of SAM or MAM takes to recover.

$$R_{out} \approx \frac{1}{k} \times (R_{in} \times \frac{C_{in} + C_{out} + 1}{C_{in} + 1} - R_{in})$$

Table 14 below shows the total number of cases found in the PoC wide area survey and the final calculation of Rout.

Table 14: Total number of cases found in PoC wide area survey

SAM PoC	
SAM covered	30
SAM recovering	5
SAM uncovered	5
SAM recovering out	0
MAM PoC	
MAM covered	51
MAM recovering	5
MAM uncovered	24
MAM recovering out	0

6.5 COVERAGE ESTIMATIONS – BENTIU PROTECTION OF CIVILIANS CAMP

Table 15: Coverage Estimations for PoC

SAM	82.8% (71.6%-90.0%
MAM	69.4% (60.3%-77.3%)

These coverage estimates were calculated using the single coverage estimator.

The Bayes SQUEAC calculator presents a posterior curve (red), based on the conjugate analysis of the prior (blue) and the likelihood (green). The analysis displays if there is conflict between the prior and the likelihood, or if the prior is in accordance with the likelihood and we can accept the results.
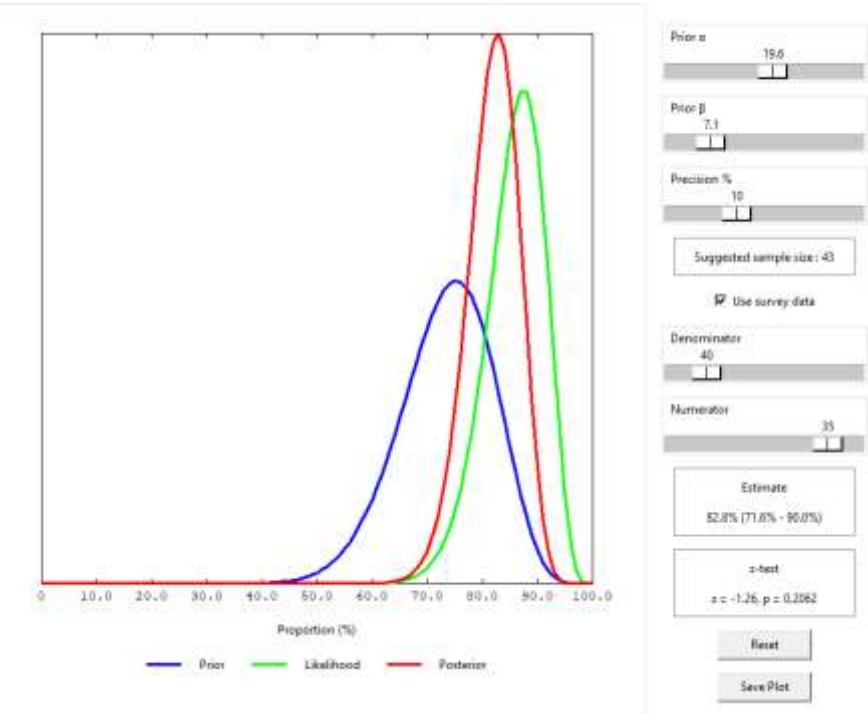
Figure 57: Baysian Conjugate Analysis - SAM PoC
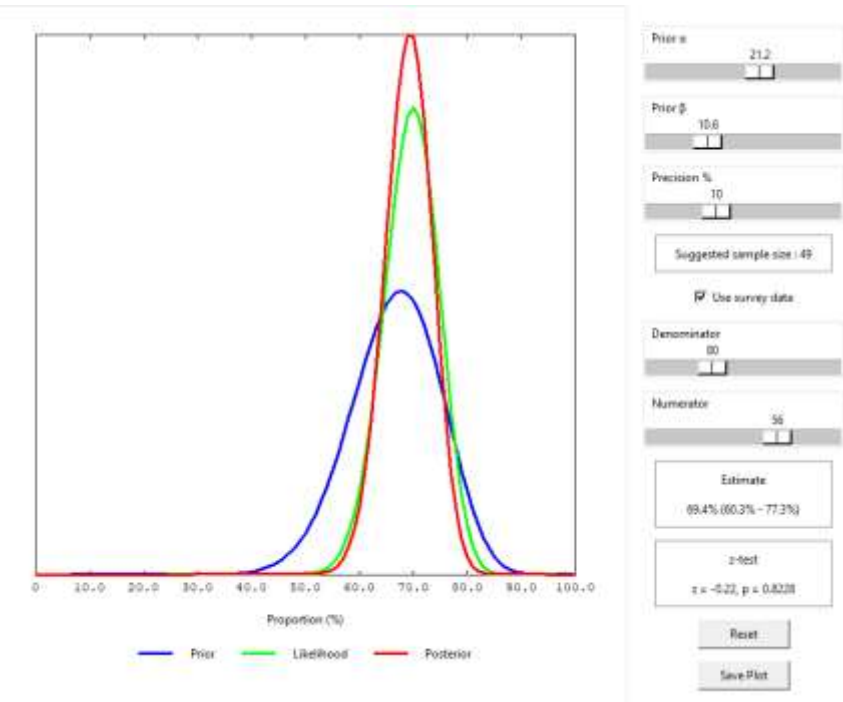
Figure 58: Baysian Conjugate Analysis - MAM PoC

There are no conflicts between prior and the likelihood and the coverage estimations can be accepted.

Reasons given by covered cases are displayed in figures 60 and 61.
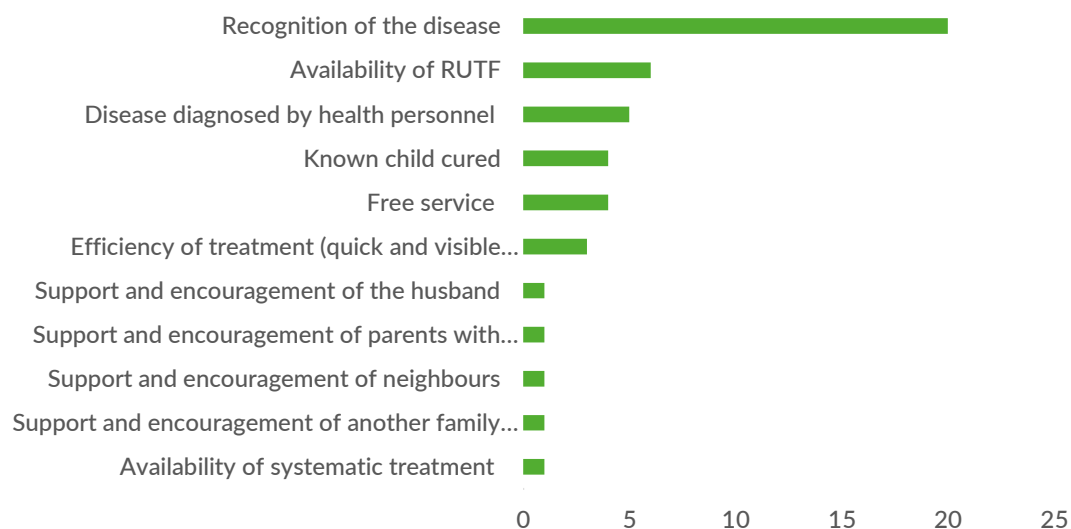
Figure 59: Reasons for enrolment PoC Stage 3 OTP
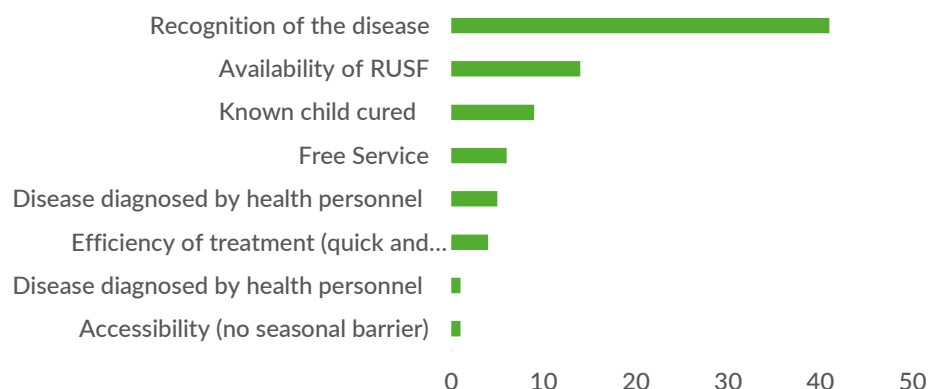
Figure 60: Reasons for enrolment PoC Stage 3 SFP

The reasons given for enrolment in the programme in the PoC are similar for both OTP and SFP, and are also similar to stage 2. Recognising that the child requires treatment was the most common response provided, followed by the availability of products to treat the child. Knowing a child that has been cured also helps to increase awareness of the programme and reinforces the positive perception.

In addition, information regarding the screening activities was collected. The majority of cases in the programme had been recently screened, as demonstrated in figures 62 and 63 below. Most cases (90%, n=110/125) had found out about the programme through CNVs or programme staff.
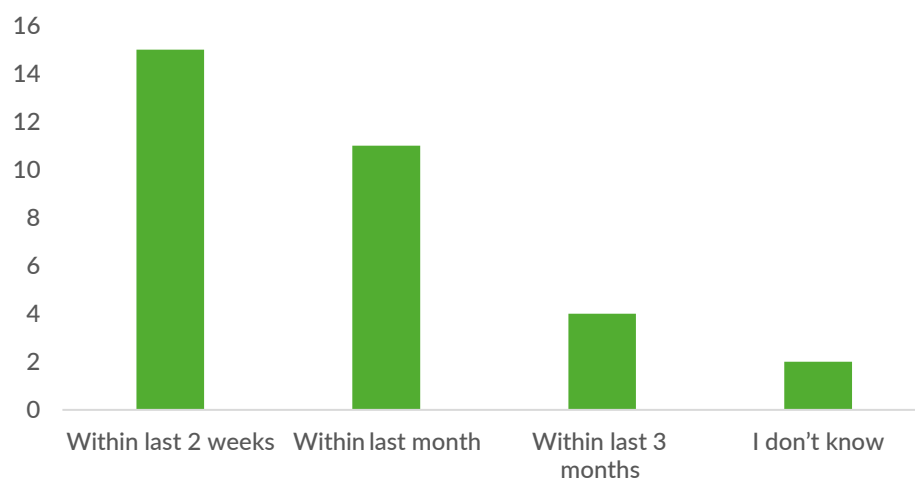
Figure 61: Screening by CNVs PoC OTP
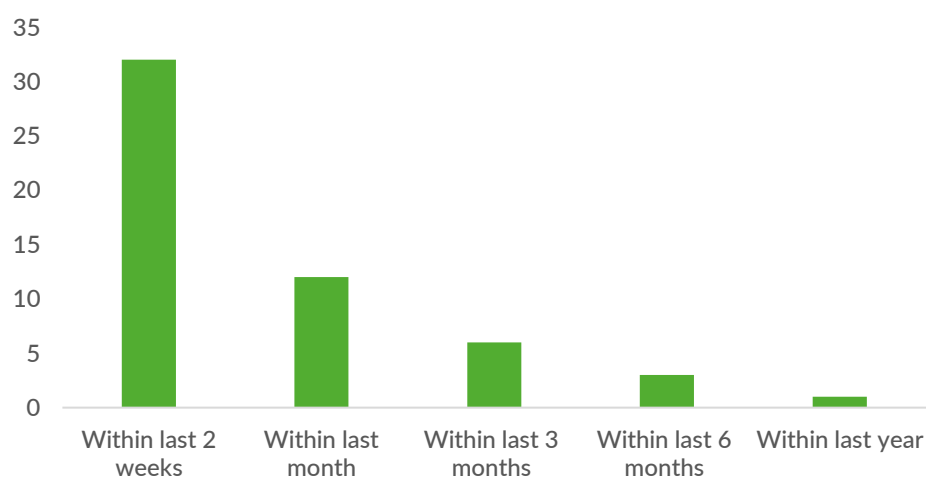
Figure 62: Screening by CNVs PoC SFP

6.6 WIDE AREA SURVEY – BEYOND BENTIU RESPONSE

Table 16 below shows the total number of cases found in the BBR wide area survey and the final calculation of Rout.

Table 16: Total number of cases found in BBR wide area survey

SAM BBR	
SAM covered	12
SAM recovering	1
SAM uncovered	10
SAM recovering out	0
MAM BBR	
MAM covered	41
MAM recovering	6
MAM uncovered	14
MAM recovering out	0

6.7 COVERAGE ESTIMATIONS – BEYOND BENTIU RESPONSE

Table 17: Coverage Estimations for BBR

SAM	63.5% (48.9%-75.6%)
MAM	73.7% (63.5%-81.8%)

These coverage estimates were calculated using the single coverage estimator.
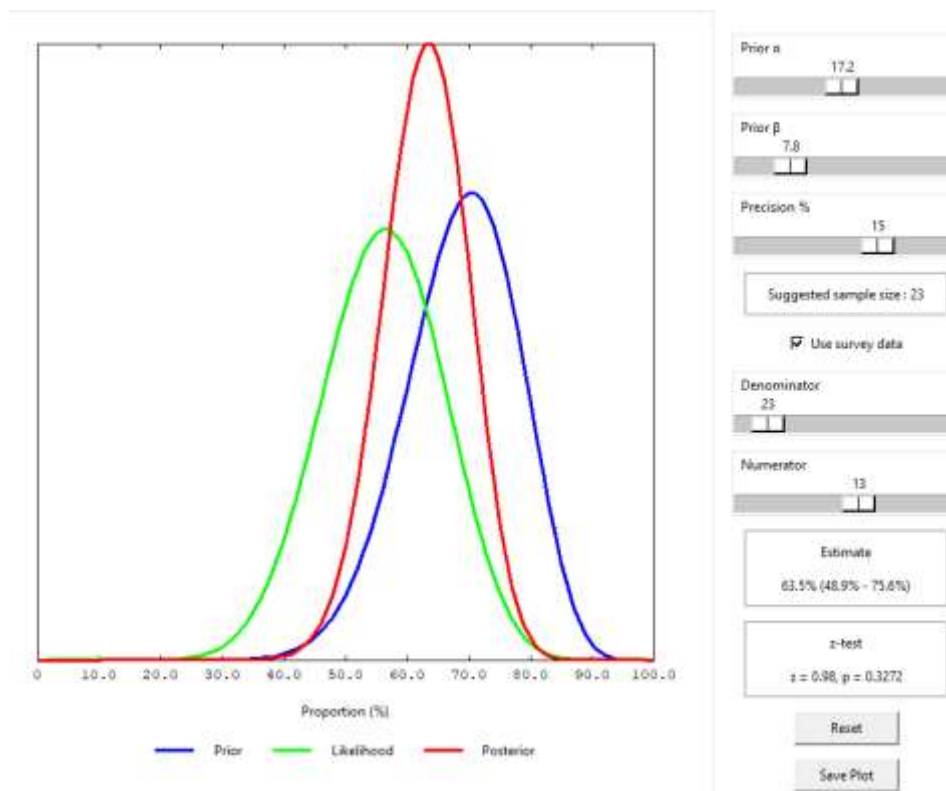
Figure 63: Baysian Conjugate Analysis - SAM BBR
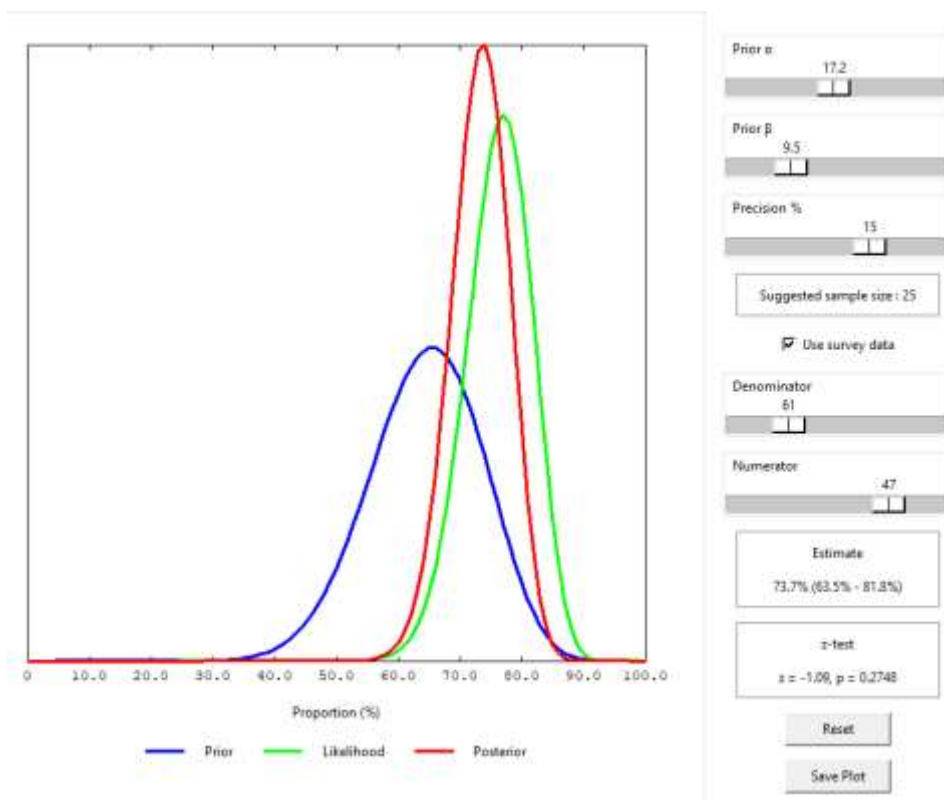
Figure 64: Baysian Conjugate Analysis - MAM BBR

MAM coverage is higher than SAM coverage, which is unusual in a CMAM programme, due to the more obvious symptoms of SAM. A probable explanation to this is the high number of SAM cases found in Yieroh, Kadet. This is a particularly rural village, over 3.5 hours walk from an OTP and with no CNV presence. Out of 8 cases of acute malnutrition, 6 were SAM, none of the respondents were aware of the programme and and all respondents cited distance as the main barrier to access. This indicates that due to the isolated location of Yieroh, cases have deteriorated into SAM, and so it is the results from this village which has skewed the coverage of SAM vs MAM.

Reasons for enrolment are in charts 65 and 66. In both SFP and OTP, the main reasons for enrolment are because the caregiver recognises that the child is sick, and the child has been diagnosed by staff in the OTP. The community aspect, whereby community members share information and encourage each other is also evident, as support and knowing other children are cited as reasons for enrolment.
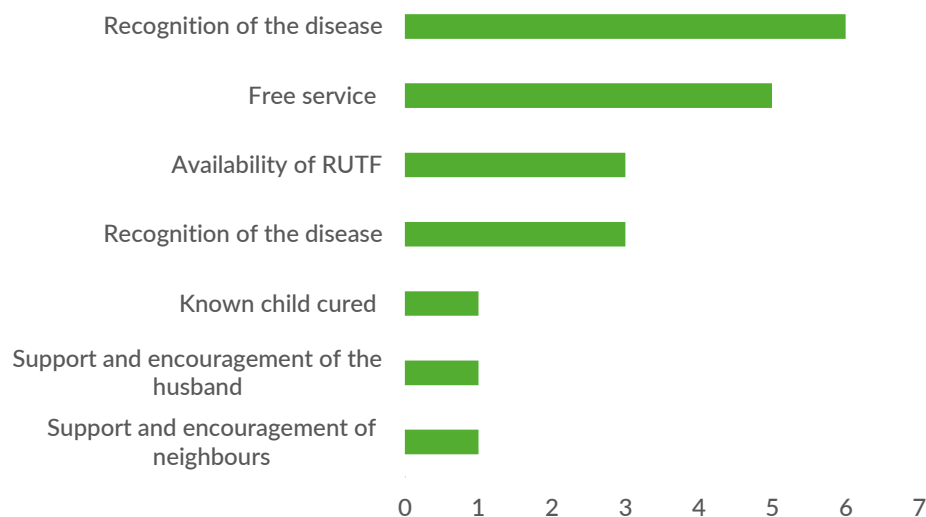
Figure 65: Reason for enrolment - SAM BBR
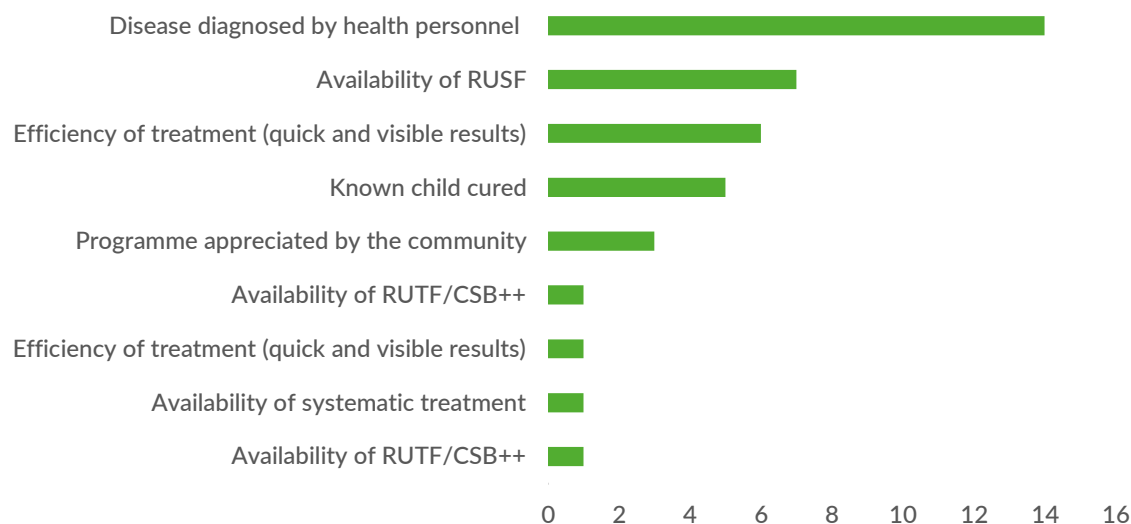
Figure 66: Reason for enrolment - MAM BBR

Reasons for uncovered cases from all villages are given in figure 67. Due to the low number of responses and the homogeneity in responses across OTP and SFP, both SFP and OTP have been put into 1 chart. Distance is the most common barrier to coverage in BBR, as is being busy with other activities and insecurity (risk of robbery on the way to the OTP site).
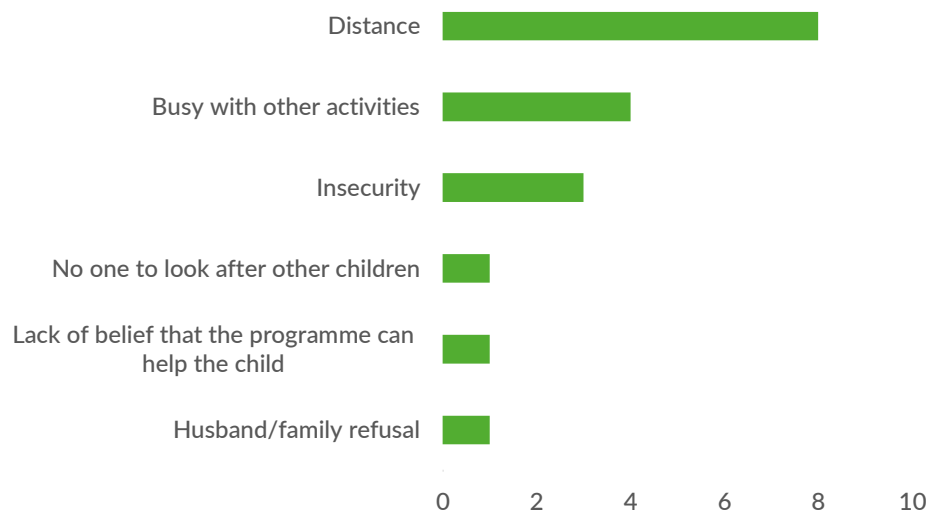
Figure 67: Reason for lack of enrolment

Further information was gathered about CNV presence and activity levels. Of the ten SAM children found not in the programme, eight live in villages without a CNV, and of the children with a CNV, only one had been screened.
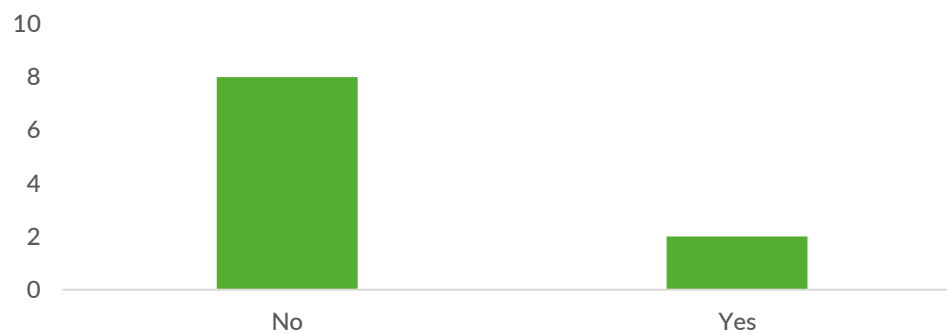
Figure 68: CNV presence of uncovered SAM children in BBR

Analysis of the 14 uncovered MAM children displayed that 7 have a CNV and 7 do not, of those that do have a CNV, four have been screened within the last 3 months.
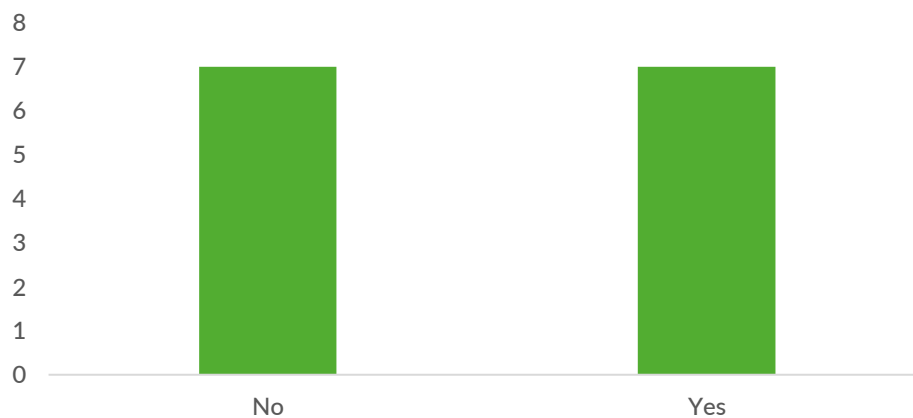
7.0 CONCLUSION

Quantitative data collected in stage 1 provided insight into the strengths and shortcomings of the programme. Within the PoC, the discharge outcomes are within the Sphere standards, with the mean cure rate above 75% and defaulting below 15%. However, analysis of a sample of data from registers highlighted that there are gaps in reporting of data, and defaulting and non-response rates are likely higher than in the electronic data sets. In BBR, defaulting is higher, and the cure rate is lower, which is attributed to the longer distances to travel to OTP sites, insecurity and patchy CNV coverage in villages.

Qualitative data collected and analysed in stage 1 complemented the quantitative data, providing more insight into the positive and negative factors influencing coverage. Across both the PoC and BBR, there is high awareness of malnutrition and the programme however this is higher within the PoC due to the network of CNWs and the regular screening. In the communities outside the PoC, the coverage of CNVs is more patchy, and so there are screening gaps, however awareness remains high. Within the PoC, there is also higher engagement with camp leadership and religious leaders, who are involved in regular meetings.

Selling of RUTF and RUSF is taking place within the camp, however communities are aware that the practice is not allowed and therefore it was difficult to obtain information on this. In BBR, the lack of markets is a positive factor in restricting the opportunities to sell nutrition commodities. It is however likely that due to Nuer culture, sharing is common, and this is reflected in the non-response rates seen across both the PoC and BBR.

There are good health seeking behaviours across the communities, and caregivers travel to health facilities in lieu of using traditional medicines. Screening by staff at health facilities results in referral across to OTP sites (at least 8% of SAM cases in the PoC cases are referred from health facilities), however in BBR, retaining cases is more difficult as treatment can be viewed as a one off, this is seen in the high level of defaulting after the first visit.

A barrier to access within the PoC is the gaps that exist in screening, despite the active networks of CNWs. It was observed that screening on the entry gates to the PoC is insufficient, however it remains a good opportunity to screen any cases that may have been missed in the blocks of the PoC.

In BBR, many respondents cited distance as a barrier to access, this was also seen in stage 3 responses. Since the establishment of mobile clinics however, the distances that caregivers are expected to walk have reduced significantly, and this also reduces the risk of insecurity when accessing sites. There are however still villages which are far from sites, and these villages are less likely to have a CNV that screens, and therefore awareness of the OTP is lower in these places.

Lack of male involvement and the high workload of mothers is a barrier to coverage across the PoC and BBR. Mothers living in the PoC are participating in activities such as firewood collection and making tea in the market, to generate income. Despite being aware that they should express their breastmilk to leave for children to prevent them becoming malnourished, these children are still less likely to be taken to the OTP sites

for treatment. There is also a significant amount of movement in and out of the PoC, especially during cultivation periods. It is unlikely that cases who have defaulted because of movement have re-enrolled at another OTP site.

Stage 2 was used to further investigate areas of interest and to demonstrate gaps in coverage. In the PoC, it had been observed that children were being brought to the OTP sites by children (usually the sibling). Often the sibling would be rejected from the OTP site because they are not enough to receive IYCF messaging, however there are no rules regarding this. It was decided as a result, to investigate the relationship between having a child at home who is able to act as a caregiver to children in the programme and if this impacts coverage. The results showed that the presence of this child does in fact have a positive influence on coverage, however it also can have negative impacts on that child's education.

In BBR, it was decided by the team to assess the relationship between the presence of CNVs in a village and coverage. Coverage was above the standard for MAM cases in villages with CNVs, demonstrating that CNVs do have a positive impact on coverage. Further questions incorporated into stage 2 to further ascertain the level of CNV coverage, continued to demonstrate a link between coverage and CNVs. However it also demonstrated that accessing health services for diseases also has a positive correlation with coverage, as children are referred across.

The wide area survey in stage 3 provided coverage estimates for OTP and SFP coverage in the PoC and BBR. These coverage estimates were calculated using the single coverage estimator.

Table 18: Coverage estimates for PoC and BBR

PoC	
SAM	82.8% (71.6%-90.0%
MAM	69.4% (60.3%-77.3%)
BBR	
SAM	63.5% (48.9%-75.6%)
MAM	73.7% (63.5%-81.8%)

Coverage of OTP and SFP inside the PoC is below the Sphere standard for a camp of 90%. This is inline with the information found in stage 1 and 2, where the barriers to coverage, including movement in and out of the PoC and missed opportunities in screening impact the ability of the programme to access each child. Coverage of MAM children is lower due to the reduced awareness of MAM cases, and also the lack of severity.

In BBR, the coverage of both SAM and MAM programmes are above the Sphere standard for a camp of 50%. Interestingly, MAM coverage is higher than SAM coverage, however this can be explained by the discovery of several uncovered SAM cases in one village which is far (over 3 hours) from an OTP. Uncovered cases explained that 'distance' was the most likely factor to affect coverage, and incidents of insecurity. Nonetheless, the high coverage in BBR is explained by the good spatial coverage of OTP sites, and also the willingness of the communities to travel to sites to seek care.

7.1 LIMITATIONS OF THE ASSESSMENT

On the whole, the assessment took place with few challenges, however there are points that can be learnt for future activities of this nature:

The design of the questionnaire used in stage 3 on the DDG devices resulted in the reason for non-enrolment being omitted unless a very specific set of answers were given prior. It was only towards the end of stage 3 data collection that this was realised, and so some of this data is missing. Where possible, teams were asked to recall information that was given to them by caregivers, however there are still gaps in this data (particularly in the PoC).

The assessment took place during the beginning of rainy season which meant that access could sometimes be limited (particularly in further to reach Kadet areas), and causes some delays as roads became inaccessible. On the whole, the team were lucky, however there were days where rains were too heavy and the team could not travel out. It is therefore recommended for future assessments that they are scheduled for earlier in the year. In addition, the long travelling distances between the base and the various locations in BBR, alongside the security limitations added some strain on data collection days. Thus, it is recommended to schedule additional time, or facilitate the team to stay in the field to support this.

8.0 RECOMMENDATIONS

A series of recommendations were formulated in conjunction with members of the SQUEAC team and nutrition cluster in response to the findings from the PoC.

Table 19: Recommendations

Finding	Recommendation	Action	Persons Responsible
Lack of male involvement in childcare	Increase messaging on IYCF and CMAM to men	Use innovative techniques to increase messaging, and more importantly, uptake, to men. • Utilise Male Change Agent approach to train community selected male leaders (more examples and information can be found here and here) • Pilot father-to-father support groups and train them in how to take MUAC • Utilise influential musicians inside the PoC to share messages through music	
Siblings are sent away from OTPs which can have a negative impact on coverage (especially if primary carer is too busy to attend)	Develop and promote IYCF messages and methods for a child audience	Develop IYCF messages and methods for a child audience targeted at the siblings of the SAM cases. - Develop child to parent approaches - Include IYCF messages in songs for siblings to learn and take home to their villages and families.	
Busy workload of mothers	Create business opportunities/income generating opportunities that have a higher yield with less input (time) Cash transfers	• Use above actions to involve males • Coordinate with FSL counterparts to identify opportunities to collaborate on initiatives such as cash transfers and income generating activities	

Gaps in screening	Training in mothers MUAC	• Ensure that screening on the gates is conducted for every under 5 that arrives (the positioning of CNVs at the gate should be considered to ensure this opportunity is not missed) • Utilise mother-to-mother support groups inside the PoC to train lead mothers in MUAC • Ensuring that the geographical spread of mothers able to MUAC is evenly distributed (whilst mindful of annual selection of mothers)	
	Identifying children who are coming up to 6 months	• Use baby tents, mother to mother support groups and enrolled PLWs to highlight these children	
Movement in and out of PoC leads to defaulting	Increase messaging around transferring	• Tune messages given to mothers seasonally. For example, before cultivation season begins, increase	

		messaging and information around alternative OTP sites that can be used outside the camp • Increase messaging around the consequences of malnutrition (including hindrance on cognitive development and future health, not just the short term consequences) and the importance of remaining in the programme, continual growth monitoring and prevention of malnutrition	
Community Outreach	Create a more holistic messaging system that is seasonally appropriate (e.g. reflects the cultivation season)	• Link with WASH partners/programmes to share messages – train hygiene promotors in MUAC and referral of malnourished cases • Utilise the strong influence churches have, through using services and religious leaders to share messaged • Use radio at targeted times and through targeted messages to share information (this could be done through the creation of a drama series, rather than 'advert' style messaging • Utilise community leaders and their influence to share targeted messages	
Sharing and selling of RUTF	Give an unpopular name to RUTF, which is locally called 'nyalop' (which means something soft) – to ensure RUTF is treated as a medicine not a food	• Use highlighted communication channels to 'rebrand' RUTF so it is treated as a drug and not a food commodity (in a similar way paracetamol is respected as a drug and usually not taken unnecessarily)	
Data Quality	Provide additional training to all OTP staff	▫ Provide refresher training to OTP staff on quality data recording, including recording referral data and discharging the child correctly (clearly defining move-out and defaulter in doing so) ▫ Conduct monthly data reviews that include all staff, to demonstrate the impact of data quality on figures	

Recommendations specifically for Beyond Bentiu Response			
Improve coverage of CNVs (especially in far reaching villages)	Advocate to local authorities on distribution of CNVs	- Conduct mapping exercise of CNV distribution - Increase number of CNVs and work with local government to recruit from harder to reach areas - Ensure that CNVs in harder to reach areas receive adequate supervision (through recording number of outreaches to them)	
Gaps in awareness	Engage local authorities in programmatic activities	- Build on relationships already formed with local authorities to engage them in community sensitisation	
Gaps in screening	Trainings in CMAM for all staff members (extending to local authorities) Train hygiene promotors in MUAC and basic nutrition Mothers MUAC	- Ensure all staff (including those in other departments (such as WASH and Shelter and NFI) are given basic training in CMAM to encourage engagement with the nutrition sector - Continue support and training opportunities for PHCUs and PHCCs on screening to continue engagement - Provide engagement sessions to local authorities, who can provide sensitisation to community members and in some cases, provide follow up - Use this engagement to train staff operating within the communities (such as hygiene promotors) in MUAC screening and basic nutrition (and vice versa for CNVs and OTP staff) - Use Mother to Mother Support groups to identify mothers to learn Mothers MUAC (particularly in further to reach villages)	
Inaccessibility	Convert mobile sites to static sites	In order to leave supplies in OTPs, they need to be a static site, and therefore conversion of mobile sites is recommended to continue with the high geographic coverage	

APPENDIX 1: PARTICIPANT LIST

Name	Organisation
Peter Yak Kew	Concern Worldwide
John Shalton Kiir	Concern Worldwide
William Wuor Juch	Concern Worldwide
Nancy Karra	Concern Worldwide
Chierey Wagak Ruei	Concern Worldwide
Angelina Nyabany Gatluak	Concern Worldwide
Peter Gai Bediet Guong	Concern Worldwide
Samuel Gai Deng	Concern Worldwide
Gabriel Gatkoang Thoar	Concern Worldwide
Riak Ruazel Bong	Concern Worldwide
Nyareak Lorjom Nger	Concern Worldwide
Matthew Lad Both	World Relief
Chiengwan Gai Geng	Enumerator
Taban Jock Gatwech	Enumerator
Joseph Puoch Gatdor	Enumerator
Gatpan Gai	Enumerator
Simon Gatlek Riek	Enumerator
Tut Mareak Ruop	Enumerator
John Wichjial Nger	Enumerator
John Both Wang Dak	Enumerator
John Dak Keat	Enumerator
Chiluok Ruai Gatluak	Enumerator
Younes Pai Tut	Enumerator
Angelina Kasare Luoy	Enumerator

APPENDIX 2: COMPLETE LIST OF INTERVIEWS

BENTIU PROTECTION OF CIVILIANS CAMP

Date	Informant Type	Interview Method	Location	Number of participants

19/06/2018	Community Member	Key Informant Interview	Sector 3, Market	1 (male)
	OTP staff	Key Informant Interview	Sector 3, OTP site	1 (male)
	Caregivers in the programme	Focus Group Discussion	Sector 3 OTP site	8 (women)
	Caregivers in the programme	Key Informant Interview	Sector 4	1 (woman)
	Community Members	Focus Group Discussion	Sector 3	4 (women)
	Carer of malnourished children in the programme	Semi-structured Interview	Sector 3	1 (woman)
	OTP staff	Key Informant Interview	Sector 3	1 (male)
20/06/2018	OTP staff	Key Informant Interview	Sector 2	1 (male)
	OTP staff	Key Informant Interview	Sector 2	1 (woman)
	OTP staff	Key Informant Interview	Sector 2	1 (male)
	Community member	Key Informant Interview	Sector 4	1 (woman)
	Community member	Informal Group Discussion	Sector 4	2 (women)
	OTP staff	Key Informant Interview	Sector 4	1 (male)
	Community member	Semi Structured Interview	Sector 4	1 (women)
	Community Members	Informal Group Discussion	Sector 5	3 (women)
	Community Members	Informal Group Discussion	Sector 5	2 (women)
	Community Members	Focus Group Discussion	Sector 5	4 (women)
	Caregiver of child in the programme	Key Informant Interview	Sector 2	1 (woman)
	Teacher	Semi Structured Interview	School	1 (male)
21/06/2018	Community members	Informal Group Discussion	Sector 3	1 (male)
	Community members	Informal Group Discussion	Sector 5, Block 8	4 (women)
	Community Nutrition Volunteer	Key Informant Interview	Sector 1 Gate	2 (male)
	Community members	Informal Group Discussion	Sector 5, Block 1	5 (women)
22/06/2018	Community leader	Key Informant Interview	Sector 4	1 (male)

BEYOND BENTIU RESPONSE

BEYOND BENTIU RESPONSE Date	Informant Type	Interview Method	Location	Number of participants
21/6/2018	Community Members	Focus Group Discussion	Kuerkuol (Kuach)	4 (women)
	Caregiver of recently cured child	Semi Structured Interview	Kuerkuol (Kuach)	1 (woman)
	CNVs	Informal Group Discussion	Kuach OTP	2 (male)
	Mother with child in the programme	Key Informant Interview	Kuach OTP	1 (woman)
	Programme Staff	Semi-structured Interview	Kuach OTP	1 (woman)
	CNV	Key Informant Interview	Kuach catchment	1 (male)
	Community Members	Informal Group Discussion	Kuach catchment	3)women)
22/06/2018	Caregiver of recently cured child	Key Informant Interview	Wichpuol (Nimni)	1 (woman)
	Carer of child not in the programme	Key Informant Interview	Thepchaak (Nimni)	1 (woman)
	Community Members	Focus Group Discussion	Thepchaak (Nimni)	4 (3 women, 1 man)
	Caregiver of Child in the programme	Focus Group Discussion	Kuerlatjor	4 (women)
	Community Members	Key Informant Interview	Wichpuol (Nimni)	4 (women)
	Community members	Informal Group Discussion	Wichpuol (Nimni)	2 (men)
	Caregivers of children in the programme	Semi Structured Interview	Thepchaak	1 (woman)
	Caregiver of child not in the programme	Key Informant Interview	Thepchaak	1 (woman)
	Community members	Focus Group Discussion	Thepchaak	3 (women)
25/06/2018	Community Members	Focus Group Discussion	Zornor (Nimni)	4 (women)
	Caregiver of defaulted child	Key Informant Interview	Zornor (Nimni)	1 (women)
	OTP Staff	Informal Group Discussion	Nimni OTP	2 (men)
	Community Members	Informal Group Discussion	Zornor (Nimni)	3 (men)
	Women in the community	Focus Group Discussion	Zornor (Nimni)	8 (women)

APPENDIX 3: INTERVIEW GUIDES

GUIDE1: OTP/TSFP staff

CMAM SERVICES

1. How do you identify SAM and MAM cases?

2. Can you describe the treatment protocol for children with acute malnutrition available in this health facility or in health facilities in this community? (Probe: SAM/MAM admission and discharge criteria? Is there a protocol? Do the staff use the protocol?)

3. How are the SAM/MAM programme integrated with other programmes in the facility?

4. How do you get SAM cases admitted to the programme? Probe for referrals/self-referrals/screening at the facility

5. How do you get MAM cases admitted to the programme? Probe for referrals/self-referrals/screening at the facility

6. What are the main factors affecting the proper running of IMAM services in the OTP?

7. Do you think there is a difference between access to SAM and MAM services? Can you explain them?

8. Is defaulting a challenge in your program?

- When does defaulting occur most and what are the probable reasons for defaulting?
- Is there a mechanism to bring defaulters back to the program? Explain it

9. Can you describe any CMAM training you have attended?

10. Can you describe technical support and feedback you receive from your supervisor(s)? (probe for who/how often on on the job training)

11. If SUPERVISOR at OTP: Describe supervision visits to Health posts to support health workers? When was the last time you visited?

12. In your opinion, what are your recommendations to improve the IMAM services?

COMMUNITY MOBILIZATI ON ACTIVITIES

1. What existing community mobilization activities are already underway to promote IMAM service use?

2. Is screening conducted at community level? (When and how often?)

3. Who is responsible for community mobilisation?

4. What works best?

5. What are the main factors affecting access to IMAM services in the community?

(Probe: team structure, reporting, how you work with community-based volunteers?)

6. In your opinion, who are the most appropriate community figures and groups to carry out community mobilization activities for CMAM?
    (Probe: religious leaders, traditional healers, mother groups, father groups, youth groups, paid volunteers, CHWs)

7. Does the programme face any challenges to carry their community mobilisation and screening activities effectively?

GUIDE 2: COMMUNITY MEMBERS (Community Elders, Religious leaders, Teachers, Village Health Groups, Men & Women (caregivers of children not in the programme)

1. Do you have any knowledge on identification of malnutrition, the signs and symptoms (local words to describe malnourished children)?
2. What are the impacts of malnutrition on a child and the community?
3. When a child is sick, where do you first seek a solution?
4. If you attend the PHCU, do they screen children for malnutrition using MUAC?
5. Have staff at the PHCU ever given you information on malnutrition treatment services?
6. Do you know where malnutrition can be treated/ are you aware of a program which treats malnutrition?
7. Do you know of children who are in the program?

   If yes, ask their perceptions of the programme? (Probe!! Why do they have a good or bad perception?)

8. Do you know of children who are in the program, but left or have stopped coming?

   What are the reasons?

   What can encourage the family to return of these children to program?

9. Do you know any malnourished children NOT in the program?
    What are the reasons?
10. How far is the OTP from the block/village?

Name of OTP or health centre	Distance (in kms)	Distance (hrs)	Perception of the distance (near, far, very far)

What impact does the distance have on accessing treatment for malnutrition?

11. Do you know where you can buy RUTF, RUSF or CSB++?

If yes:

Where?

How much?

Do you know anyone who buys it?

COMMUNITY MOBILIZATI ON ACTIVITIES

1. Show the MUAC tape and ask if they have seen it?

    Where did you see it and with who?

    When last did you see it (MUAC) and what was it being used for?

    Are there people in this village who use this (MUAC) on your children?

    If yes, how often do visit the houses and screen the children?

2. Do you know how a malnourished child is referred or can be admitted into a malnutrition programme?

    (if they don't explain that this is the role of the CHVs)

    Do the CHVs visit a family with a malnourished child?

GUIDE 3: Community Volunteers

1. How long you worked as a CNV? What are your primary activities and frequency? (Probe : working hrs/week or month , unpaid volunteer commitment, motivation, challenges, reporting,)
2. What are your Nutrition roles as a CNW?
3. What support do you get from the health assistant? (Probe: training, materials and use, workload etc.)

MALNUTRITION AND OTP /TSFP SERVICES

1. Where do the communities first seek treatment for a sick child? Why?
2. Where do the communities first seek treatment for a malnourished child? Why?
3. How does the community perceive children with malnutrition? Why?
   Do you think that this condition is stigmatised? Why?
4. Can you describe the differences between MAM and SAM? (Probe on symptoms, cut-offs)
5. Can you describe the programme that treats SAM and MAM cases?

SCREENING

1. Can you describe the referral procedure?
2. How often do screenings take place?
3. Do you face any challenges in implementing screenings?
4. Have you encountered caregivers who refused to take a child to the health facility after referral? If yes, what were their reasons? What have you done with those cases?

5. What is the procedure you use to follow-up children who are not attending the program?

RECOMMENDATIONS

1. In your opinion, what would make the CMAM service easier, more comfortable and familiar to use by your community?
(Probe: existing challenges and positive factors, recommendations)

2. What are the recommendations to improve the community mobilization for CMAM program? (Probe: case finding, defaulter tracing, sensitization, increase service use by the community?

GUIDE 4: caregivers of children in the programme

1. What do you think caused malnutrition to your child? Are there any other possible causes?

   What are other possible causes of malnutrition for other children in the community? (use the local term for malnutrition)

2. What does the community think of a malnourished child?

   Do you think that this condition is stigmatised? Why?

3. How long was your child malnourished for before they joined the programme?
4. Have you used any other means of treatment for your child's illness before coming to the health facility?

   If yes, what and where you used? Why did you choose to come to health facility? If a woman, what was your husband's reaction?

5. How did your child get enrolled in the nutrition program?

(Describe the process, who diagnosed them, where they were diagnosed)

6. Did you visit the PHCU when your child was sick?

If yes:

- What treatment was provided?
- Were they screened for malnutrition there?
7. How long has your child been in the program? How has this program made an impact on your child?
8. Has your child been admitted before in the SFP/OTP/ITC? Have any of your other children been admitted in the SFP/OTP/ITC before? (Find out approximate dates and ask for treatment cards)

If yes, can you describe the treatment received before?

9. What is your family or community's reaction to your child being in the programme?
10. How do you respond to pressure to share your supplies of RUTF or RUSF with other family or community members?

COMMUNITY MOBILIZATI ON ACTIVITIES

1. Do the CNVs or health workers visit your home? If yes, what are the services offered in the visit?
   When was the last time a CHV visited your home?

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2. When was the last time your child was screened for malnutrition?
   a. Where did the screening take place?
   b. How did they screen your child?
   c. Who else is involved in screening in your community?
3. Do you know of any other children in the neighbourhood who are malnourished?
4. Have you in the past, referred any other children for treatment?
5. Will you refer another child to this program if you think they are sick of malnutrition (use local term)?

CHALLENGES TO TREATM ENT

1. What would make you not to attend the programme when required to?
2. Do you know any children who are malnourished but are not in the programme? What are the reasons?
3. Do you know of any children who were left the programme in the middle of the treatment (defaulting children)? What are the reasons?
4. What do you think can be done to prevent children from leaving the program before they finish treatment (defaulting)?
5. Is there a health worker always available at the health facility when you attend?
6. How long do you usually wait from the time you get to the facility to the time your child receives treatment?
7. How far is the health facility from the village or block? (for a caregiver with a child)

Name of Health Centre	Distance (in kms)	Distance (hrs)	Perception of the distance (near, far, very far)

What impact does the distance have on accessing treatment for malnutrition?

8. What are your recommendations to make the CMAM service easier and more comfortable to use for you and other caregivers?

GUIDE 5: Mothers and caregivers of defaulting children
1. How long was your child malnourished for before they joined the programme?

2. How was your child enrolled in the nutrition program?
   a. (Describe the process, who diagnosed them, where they were diagnosed)

3. Can you describe the treatment that was given to your child?

4. How long has your child been in the program? Did you feel that the program made an impact on your child?

5. Had your child been admitted before in the SFP/OTP/ITC?

6. Have any of your other children been admitted in the SFP/OTP/ITC before? (Find out approximate dates and ask for treatment cards)

7. Did they complete their treatment?

8. What was your reason for not continuing with treatment?

9. What changes can be made to the program to ensure your child and other children continue treatment?

NUTRITION UNIT/HEALTH FACILITY OBSERVATION CHECKLIST

1	Staffing and infrastructure	Yes	No	DK		
	Are all scheduled nutrition staff present today?					
	Is there a toilet or latrine that is available for clients to use?					
	Does the health facility have clean water available today?					
	Does the health facility have Waiting area /shaded for caregivers and children?					
	Observed waiting time	Time of client in:	Time of client out:			
2	Supplies and Medicines	Observed	Reported (not seen)	DK	Functional	No Functional
	Infant weighing scale that is Accessible to health workers					
	Height board					
	MUAC tape					
	Plumpynut /RUSF					
	Basic antibiotics for childhood illness treatment					
	ORS					
3	supplementary feeding program/SFP	Yes	No	DK		
	Do you have an SFP/MAM treatment program? If No, skip to Section 4					
	Does a protocol exist?					
	Are there clear criteria for referral to SFP?					

		Yes	No	DK		
	Are there clear referral mechanism between SFP to OTP /SC and OTP/SC to SFP?					
	Is there a mechanism in place to search for defaulters and to encourage them to resume treatment?					
4	Therapeutic Feeding Programme/OTP/SC	Yes	No	DK		
	Do you have an OTP? If No, skip to section 5					
	Does a protocol exist?					
	Are there clear criteria for referral to OTP					
	Are there clear referral mechanism between SFP to OTP /SC, OTP/SC to SFP, OTP to SC, and SC to OTP?					
	Is there a mechanism in place to search for defaulters and to encourage them to resume treatment?					
5	Triage	Yes	No	DK		
	Is pre-screening used to screen child for acute malnutrition using MUAC tape?					
	Does an entrance to registration and consultation occur in a controlled manner?					
6	Communications and Documentation					
	Beneficiary registers					
	Beneficiary Cards					
	IEC materials (e.g. educational posters)					

Additional questions – security and movement to the PoC

Did you stay in the PoC at all?

When? Most recent return?

How often do you go back to the PoC?

When you go back, how long do you stay for?

For what reason do you leave the PoC?

Have you accessed OTP services inside the OTP?

Since the crisis began, how has access to health facilities and OTP sites from the villages been affected?

How about in the past year?

Would this stop you from going to the health facility or OTP?

Gender questions
Which people are mostly affected by malnutrition in this area? (probe for gender – boys or girls)

Why? (are girls more affected)

Who's role is it to take children to the OTP?

When a woman goes to collect firewood, who will look after the children?

Where are the men when this happens?

What role do the men have in childcare?

Are there many male headed households?

Who looks after the children when the mother is not around?

Are there many female headed households?

Who can support these mothers in taking care of the children?

APPENDIX 4: CODED BOOSTERS AND BARRIERS

Positive Factor	Inside the PoC	Beyond Bentiu Response	PoC SAM unweighted	PoC SAM weighted	PoC MAM (unweighted)	PoC MAM weighted	BBR SAM (unweighte)	BBR SAM (weighted)	BBR MAM (unweighted)	BBR MAM (weighted)
Community Collaboration	5B 7D	2B 5D 2B 15A	5	5	5	4	5	3	5	3
Effective Referral System, Coordination between NGO	1D 2D 10D 2D 2D 10D 1B 1D	1B 8B 10D 1B 5C 2D 4A 5A	5	5	5	5	5	4	5	3

partners Systematic Screening at health facilities	10D 2D								
Self Referral (inc Good health seeking behaviour)r	1D 2D 5B	1B 2B 1D 2C	5	4	5	3	5	4	5	3
Defaulter Tracing	1D 5A 5B 1D 8B 1D	1D 8B	5	4	5	4	5	1	5	1
Community are aware of symptoms of SAM Community are aware of causes of malnutrition Community are aware of impacts of malnutrition	6D 7D 6D 6D 5A 5A 5B 5B 2D 2D 4D 6D	5B 5D 5A 5C 2D 8B 5A 2D 2B	5	5	5	4	5	4	5	4
Community are aware of programme	4D 2A 5B	2D 5A 5A	5	5	5	5	5	5	5	5
Positive percep	4D 2A 5A	5B 2D	5	5	5	5	5	5	5	5

tion of the programme	7D 6D 2D 1D 2D 2D	2D 5A								
Screening by CNVs in the community	4D 1D 2A 2A 5A 5B 1D 1D 1D 8B 5A 7D 7D 2D 1D	8D 1D 2D 8B 2C 2B 8D	5	5	5	5	5	3	5	3
Sharing of health messages in community Effective Outreach (CHWs)	4D 1D 2D 1D 1D 2D	5D	5	5	5	4				

Negative Factor	Inside the PoC	Beyond Bentiu Response	PoC unweighed SAM	PoC weighted SAM	PoC unweighed MAM	PoC weighted MAM	BBR unweighed SAM	BBR weighted SAM	BBR unweighed MAM	BBR weighted MAM
Insecurity		8D 1D 2B 8D 5A	0	0	0	0	5	1	5	2
Distance		8D 1D 2D 8B 5B 5D 2D 5A 5A 5B 2D 5A 5A 5B 2C 2C 5C 4A 5A 5A 8D 2B 5A 5A	0	0	0	0	5	2	5	2
No screening on PoC	2D E 2D		0	0	0	0	0	0	0	0

gates outside of working hours					91				
Lack of screening in the community		5D 5A 2C 4A 5A 5A 5A 5A	0	0	0	0	5	2	5	2
Insufficient information to rejected cases Lack of instructions by OTP staff		5D2D 2C	0	0	0	0	5	1	5	1
Lack of awareness of programme		5B 10D 2B 5A 5A	0	0	0	0	5	1	5	1
Selling of RUTF/ RUSF	7D 6D 1D						0	0	0	0
Doubling	10D 1C E						0	0	0	0
Lack of male involvement in childcare Burden of childcare falls on mother	5B 5D 1D 5B 5B 5D 5C 2B	5A 5A 5A 5B 8B 8D 2B 8D 2D 5A 2D 5A 5A	5	1	5	2	5	1	5	2
Children acting as caregivers	5D 2D	5D 5C 5C					5	1	5	2
No systematic screening at PHCU Lack of informa	5B 5B	5D 5C 5C								

tion on nutrition services at PHCU									
Delay in stock	5B 1D 1D						0	0	0	0
Use of tradition al medicin e	1D 1D	5A 8A							
Defaulti ng	4D 2A 2A 1D 1D 1D 5A 1D 5C 5C	1D 2D 2C	5	1	5	2	5	1	5	1
Opport unity Cost	2D 2A 2A 5A 5D 2D 8B 5B 5A 7D 9C 2D 2D	5A 8D 3D 2B 1D	5	1	5	2	5	1	5	1

APPENDIX 5: CONCEPT MAP OF COVERAGE IN BENTIU POC

Concept map of Coverage in Bentiu PoC July 2018