

# Semi Quantitative Evaluation of Access and Coverage (SQUEAC) – Nalolo District, Zambia

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# 1 Executive Summary

In October 2022, PIN together with the Ministry of Health (MoH) and Unicef conducted a coverage assessment of the Outpatient Therapeutic Program (OTP) to treat Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM) in Nalolo District's East and West Banks. The assessment was done using the SQUEAC (Semi Quantitative Evaluation of Access and Coverage) methodology and covered services delivered by MoH with the support of PIN in 17 health facilities.

As the SAM prevalence was discovered to be too low both in the East and West Banks, the team only focused on the estimation of MAM coverage. The assessment estimated the MAM coverage in the West Bank to be 39.4% (95% CI: 28.8%-51%). The coverage in the East Bank could not be assessed, as the prior value was overestimated; however, it can be ascertained that the coverage is below the Sphere Standard of 50% for a rural area.

East Bank	
SAM	N/A, caseload not found
MAM	42.7% (31.9-54.5%) - p value 0.0083 null hypothesis accepted and coverage value not accepted
West Bank	
SAM	N/A, caseload not found
MAM	39.4% (28.4%-51.2%)

The quantitative and qualitative data collection and analysis in Stage 1 identified many boosters and barriers to access, which provided a lot of insight into factors that positively or negatively affect the program's coverage.

The discharge outcomes are often not within the Sphere standards, especially in the West Bank. The East Bank meets most of the Sphere standards except for the SAM cure rate.

	Sphere standard	MAM values	SAM values
East Bank			
Cure rate	> 75%	83.3%	<b>67.4%</b>
Default rate	< 15%	10.6%	14.3%
Death rate	< 3% (MAM), < 10% (SAM)	0%	6.1%
West Bank			
Cure rate	> 75%	<b>68.9%</b>	<b>68.2%</b>
Default rate	< 15%	<b>27.6%</b>	<b>22.7%</b>
Death rate	< 3% (MAM), < 10% (SAM)	0.4%	0%

The quantitative data analysis showed gaps in the reported data, suggesting that health workers need more training in terms of admission, discharge and RUTF protocols. Moreover, many patients are outstaying the recommended length of stay in the program, which indicates that improvements can especially be made in discharging cases as non-response.

The survey discovered there is a high awareness of malnutrition and the IMAM program both in the East and West Banks thanks to a network of CHVs, regular Growth monitoring sessions (GMPs), establishment of the IMAM program for pregnant and lactating women (PLW), other nutrition-related programs piloted by PIN (Family MUAC), and engagement of many community leaders by program staff (sensitization sessions organized in 2020 and 2021). Communities have a positive perception of the program and believe that it offers an effective treatment to children.

However, large distances, difficult terrain, seasonal barriers (flooding), and seasonal economic migration (agriculture, fishing) are detrimental to coverage, as they make the access of patients as well as the follow up of non-responders and defaulters more difficult. In some areas, there exists stigma related to traditional perceptions of malnutrition, which may prevent caregivers from bringing their child for treatment. Another barrier is that CHVs provide insufficient IYCF sensitizations to caregivers and to communities. Limited engagement of men in nutrition and health in general also negatively affects the coverage.

At the health facility level, the system of staff rotation combined with training of only selected health workers supported by per diems as per MoH guidelines affects the quality of the program. Due to lack of funding, only a certain number of health workers received a shorter IMAM training (5 instead of 7 days) per each facility in 2020, while the training was not cascaded to other health personnel. Moreover, every few years each health facility experiences staff rotation, which means the trained staff leave and are replaced by untrained staff. This occurred in nine out of 17 facilities just a few weeks before this SQUEAC. As a result, capacities to deliver IMAM at the facility level are negatively affected, including gaps in knowledge of admission/discharge criteria and inadequate provision of consultations to caregivers during admission, discharge and treatment. Occasional RUTF stock outs also affect the treatment delivery and discourage patients from undertaking follow up visits, which contributes to the occurrence of non-response and default.

A series of recommendations (full list can be found in section 11: Conclusions and Recommendations) were formulated based on the assessment's findings:

- Clarify and standardize the IMAM protocol and make it available to all stakeholders
- Provide comprehensive training to all health workers on the updated protocol with a special focus on data management
- Create community of practice for all health workers through a WhatsApp group
- Improve follow up and monitoring of non-responders and defaulters
- Work with relevant stakeholders to prevent stock outs
- Consider substituting RUTF by a locally available alternative
- Additional training of mothers in Family MUAC, especially in the more remote areas
- Adjust messaging to decrease stigma
- Tailor messaging to engage men
- Trial of CHVs to provide community outreach services to offset the negative effects of distance and flooding

## 2 Acknowledgements

This assessment could not have been possible without the hard work of the many people that were involved. Firstly, thank you to Tereza Suchánková, Lastford Mizanda, Emmanuella Nduba Tumelo, Nyauze Mahalihali, Emmanuel Moonga, and Natasha Mutanuka in the Mongu office for their active participation, support and interest throughout the assessment, as well as for ensuring the smooth running of the assessment planning. Thanks also belong to Joseph and Namakau in the Mongu office for their support in terms of logistics and equipment.

My gratitude belongs to Julita Mazyopa and Kelvin Chibesa from Nalolo DHO as well as Ellen Mapani representing the Western Province PHO for their active participation and sharing their vast expertise and knowledge throughout the process. I would also like to appreciate Ward Siamusantu from Unicef who generously gave his time and interest to the assessment, as well as Mwendaendi Katungu from Social Welfare for devoting time and expertise. Finally, big thanks to the data collectors, namely Abigail Suyubo, Arnold Muyunda Inyama, Joseph Muleta, George Munono Sitali, Kamba Mufalo, Mate Mubiana, Sharon Kasanga and Susan Malumo, whose hard work, brilliant ideas, active participation and motivation towards the assessment never wavered, despite the hot weather, long distances and physical endurance required.

I extend gratitude to Emily Hockenhull from Royal College of Physicians who provided a substantial amount of time and technical expertise to guide me through my first SQUEAC survey and supported writing of this reports, as well as to Deirdre McMahon from PIN for her check-ins and ideas.

Lastly, thank you to the communities, health workers and CHVs of Nalolo District who were open and welcoming, giving their time generously to the team in the completion of this assessment.

### 3 List of Acronyms

CDE	Classified Daily Employee
CHV	Community Health Volunteer
DHO	District Health Office
FCS	Food Consumption Score
GMP	Growth Monitoring and Promotion
HEPS	High Energy Protein Supplement
HHS	Household Hunger Score
HP	Health Post
IMAM	Integrated Management of Acute Malnutrition
IPC	Integrated Food Security Phase Classification
LQAS	Lot Quality Assurance Sampling
MAM	Moderate Acute Malnutrition
MCH	Maternal and Child Health Care
MFA	Ministry of Foreign Affairs
MoH	Ministry of Health
MUAC	Mid Upper Arm Circumference
NHC	Neighborhood Health Committee
OTP	Outpatient Therapeutic Program
PHO	Provincial Health Office
PIN	People in Need
PLW	Pregnant and Lactating Women
RHC	Rural Health Center
RUTF	Ready to Use Therapeutic Food
SAM	Severe Acute Malnutrition
SC	Stabilization Center
SQUEAC	Semi Quantitative Evaluation of Access and Coverage
TSFP	Targeted Supplementary Feeding Program
UNICEF	United Nations International Children's Fund
WHO	World Health Organization
WAZ	Weight-for-Age Z-score
WHZ	Weight-for-Height Z-score
WFP	World Food Program
ZVAC	Zambia Vulnerability Assessment Committee

## 4 Introduction

In the two years from 2018 to 2019, Zambia was affected by a series of overlapping disasters such as droughts (characterized by prolonged dry spells, erratic rains and late start of the 2018/2019 rain season), flash floods and subsequent epidemic outbreaks (polio, cholera), which had far-reaching impacts on the food security and nutrition of the affected population. In July 2019, the Government of Zambia conducted through the Zambia Vulnerability Assessment Committee (ZVAC) an in-depth vulnerability and needs assessment<sup>1</sup> to understand the impact of drought in 87 districts across the country. In the Western Province, 32.7% of the population recorded a poor Food Consumption Score (FCS) calculated based on food availability, utilization, access and stability. The Western Province was assessed to be among the three worst performing areas in Household Hunger Score (HHS) that measures households' exposure to restricted food access in the preceding 30 days. According to ZVAC, 42.6% of the households were classified as IPC Phase 3<sup>2</sup> and had already resorted into negative coping strategies, such as reducing their meal consumption per day, selling livestock, or eating less nutritious food, which compromised the nutritional status of the most vulnerable individuals – children, pregnant and lactating women, people with disabilities, chronically ill, and the aged.

Given the humanitarian risks in the country, the Government of Zambia partnered in 2020 with UNICEF to roll out and/or to strengthen the IMAM program for children under 5 in 58 IPC Phase 3 (crisis) and IPC Phase 4 (emergency) priority districts. People in Need (PIN), together with Plan International and World Vision, supported the Ministry of Health (MoH) and the nascent IMAM program in more than 30 districts across Zambia. PIN under this UNICEF funding helped to roll out the IMAM program in six IPC Phase 3 districts in Western Province – Kalabo, Limulunga, Mongu, Nalolo, Senanga, and Sikongo – until September 2021. In April 2021, the Czech Ministry of Foreign Affairs (MFA) started providing funding to PIN to continue strengthening the IMAM program in Nalolo up to December 2022. Apart from establishing and strengthening the children under 5 IMAM program, PIN with the Czech MFA funding and in partnership with Zambian MoH and UNICEF helped to create the IMAM protocol for pregnant and lactating women (PLW). The PLW IMAM program was then piloted in Nalolo starting in July 2021. Furthermore, from April 2021 the Czech MFA also provided funds to PIN to implement the Family MUAC approach (1,068 women trained in the East Bank and 1,833 women trained in the West Bank) in the same district to further strengthen the IMAM coverage.

To evaluate the IMAM program for children under 5 in Nalolo since its commencement in 2020 and to see whether it is functioning optimally and reaching the maximum number of malnourished children, PIN decided to conduct the first SQUEAC survey in Zambia since the one done in Sinazongwe District (Southern Province) by World Vision International in 2010<sup>3</sup>, and the first SQUEAC survey in Western Province. The scope of this survey also indirectly and partially assesses the influence of the PLW IMAM program and Family MUAC on the IMAM program for children under 5 in Nalolo.

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<sup>1</sup> *2019 In-Depth Vulnerability and Needs Assessment, Zambia Vulnerability Assessment Committee, July 2019, [https://reliefweb.int/sites/reliefweb.int/files/resources/Final\\_2019%20In-depth%20Vulnerability%20Report.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/Final_2019%20In-depth%20Vulnerability%20Report.pdf).*

<sup>2</sup> *IPC Acute Food Insecurity Analysis May 2019 – March 2020, Zambia Vulnerability Assessment Committee, August 2019, [http://www.ipcinfo.org/fileadmin/user\\_upload/ipcinfo/docs/IPC\\_Zambia\\_Acute%20Food%20Insecurity\\_2019May2020March.pdf](http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC_Zambia_Acute%20Food%20Insecurity_2019May2020March.pdf).*

<sup>3</sup> *Semi-Quantitative Evaluation of Access and Coverage (SQUEAC) of the Community-based Management of Acute Malnutrition (CMAM) Program in Sinazongwe District, World Vision International, 12-24 April 2010, <http://www.validinternational.org/wp-content/uploads/2016/04/Sinazongwe-SQUEAC-WVZ-v4-2.pdf>.*

## 4.1 Nutrition Situation

The most recent ZVAC survey<sup>4</sup> assessing the period of July-September 2022 and making projections for October-March 2023 indicates that Nalolo has been in IPC Phase 2 but is likely to slide into IPC Phase 3 in the upcoming period with the key drivers being floods caused by the upcoming rainy season and high food prices caused by inflation and Covid-19-related supply disruptions. The ZVAC report estimates that from the total Nalolo population of 80,321 inhabitants, 30% of people experienced IPC Phase 1 (minimal) situation during the assessed period, while 55% and 15% of people found themselves in Phase 2 (stress) and Phase 3 (crisis) situation respectively.

The most recent mass screening conducted by PIN in Nalolo East Bank in November 2022, which covered all facilities and NHCs, shows the GAM rate of 4.3% for children under 5 and 13.5% for PLW. Both of those figures mark a slight increase from the May 2022 mass screening<sup>5</sup> results. The data from the latest mass screening done by PIN in the West Bank in September 2022 indicate the GAM rate of 5.6% for children under 5 while for PLW it stands at 16.7%, which is slightly above the WHO 'critical' threshold of 15%. The September values also show quite a significant increase in malnutrition prevalence (double for children U5 and increase by half for PLW) from May 2022 mass screening.<sup>6</sup>

Survey		East Bank		West Bank	
		Children U5	PLW	Children U5	PLW
Mass screening – May 2022	GAM	2.9%	12.4%	2.4%	11.2%
	MAM	2.7%	11.5%	2.2%	9.8%
	SAM	0.2%	0.9%	0.2%	1.4%
Mass screening – September (WB) & November (EB) 2022	GAM	4.3%	13.5%	5.6%	16.7%
	MAM	3.7%	11.8%	0.6%	15.5%
	SAM	0.6%	1.7%	5%	1.2%

Table 1: Nutrition situation in Nalolo District

The increase in malnutrition prevalence experienced from May to September confirms the general trend of malnutrition being more prevalent towards the end of the year, corresponding to the agricultural cycle. Furthermore, it seems to confirm the projections by the ZVAC for October-March 2023.

## 4.2 Nutrition Services

In Nalolo District, both the under 5 and PLW IMAM programs are implemented through seven health facilities in the West Bank and 10 facilities in the East Bank run by MoH and covering all of the district's under 5 and PLW population. All IMAM sites officially offer only OTP services; however, these provide treatment to both MAM and SAM patients and guidelines for treatment of both conditions are in place.

<sup>4</sup> Zambia Vulnerability Assessment Committee. IPC Acute Food Insecurity Analysis July 2022 – March 2023. 30<sup>th</sup> August 2022. [https://www.ipcinfo.org/fileadmin/user\\_upload/ipcinfo/docs/IPC\\_Zambia\\_Acute\\_Food\\_Insecurity\\_2022July2023Mar\\_Report.pdf](https://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC_Zambia_Acute_Food_Insecurity_2022July2023Mar_Report.pdf)

<sup>5</sup> The May 2022 mass screening in the East Bank was only conducted in five out of seven health facilities, as Mande and Nalolo Health Posts were not accessible at that time of the year due to the flooding caused by rainy season.

<sup>6</sup> Mass screening done in West Bank in May 2022 covered all 10 health facilities but omitted 11 NHCs (3 from Nakatwelenge, 3 from Mapungu, 1 from Liliachi, 3 from Sinungu and 1 from Siloloti) due to flooding.



The total population of the sites' catchment in the East Bank is 25,322 individuals and in the West Bank 43,112 individuals.

The health facilities implementing the IMAM program for both U5 and PLW across the two banks are as follows:

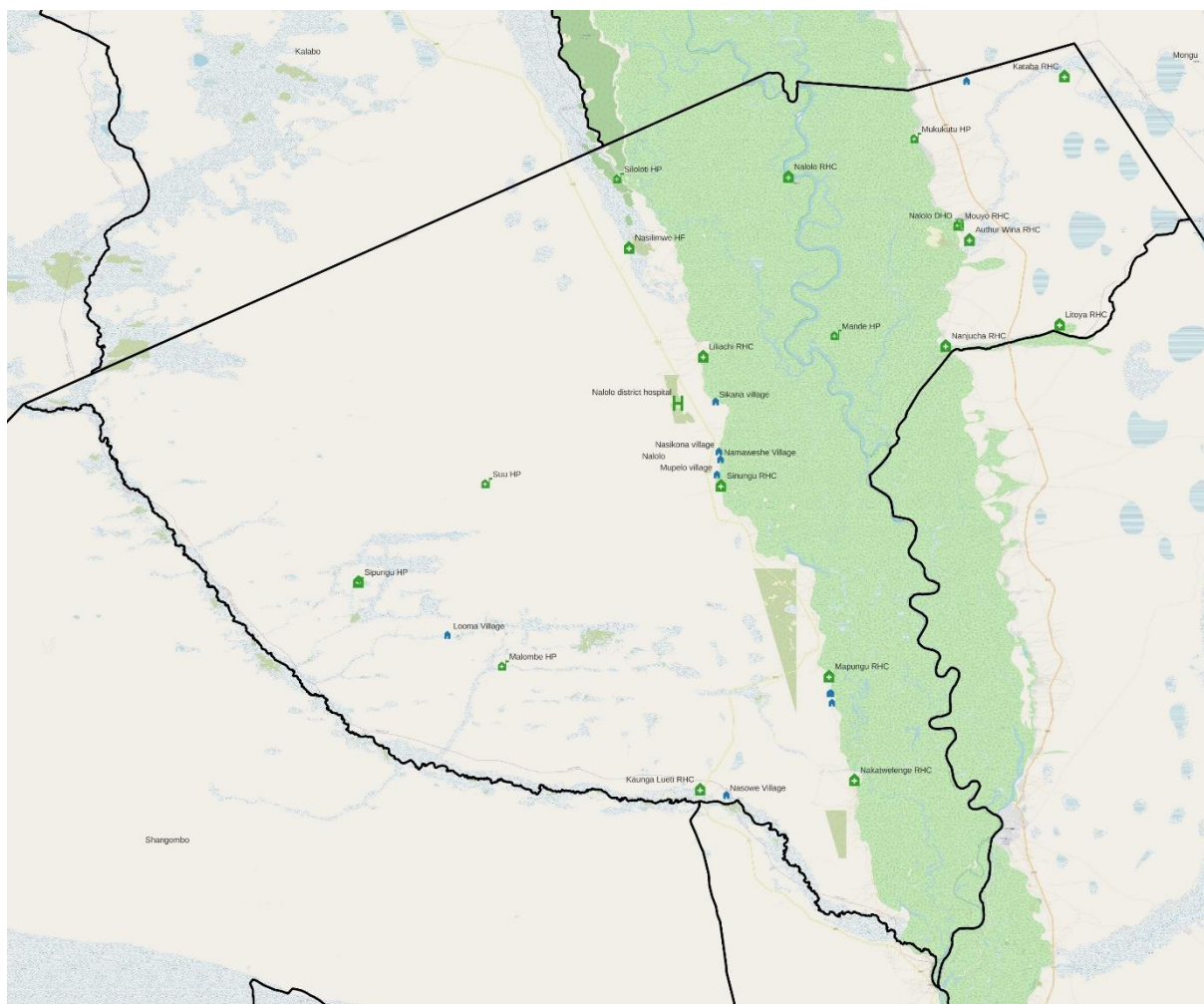
East Bank of Nalolo	West Bank of Nalolo
Kataba RHC	Kaunga Lueti RHC
Litoya RHC	Liliachi RHC (for U5), shares catchment with Nalolo district hospital (for PLW) <sup>7</sup>
Mande HP	Malombe HP
Mouyo RHC (for U5), shares catchment with Arthur Wina RHC (for PLW)	Mapungu RHC
Mukukutu HP	Nakatwelenge RHC
Nalolo RHC	Nasilimwe HP
Nanjucha RHC	Siloloti HP
	Sinungu RHC
	Sipungu HP
	Suu HP

**Table 2: Health facilities implementing the IMAM program in Nalolo District**

All of the health facilities are operated by MoH and receive technical support from PIN, especially in terms of reporting and supply. Moreover, UNICEF also contributes with RUTF provisions.

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<sup>7</sup> Arthur Wina and Nalolo district hospitals do not have CHVs and only admit patients through direct assessments in the facilities.



**Map 2: Health Facilities in Nalolo District**

All 19 facilities provide OTP services; however, these tend to both MAM and SAM patients, as there is no SFP or TSFP service in place. Nalolo District does not offer any Stabilization Center (SC) care; this can be accessed either in hospitals in the neighboring Mongu district (usually accessed by the East Bank patients) or Senanga District (usually accessed by the West Bank patients).

There have been no previous coverage assessments in Nalolo District nor in Western Province, and therefore this is the first of its type. As the size of the catchment areas of the health facilities in East and West Banks, which are divided by the Zambezi River, differs significantly with the facilities in the West Bank having much larger catchments (meaning longer distances for clients to access), it was from the outset expected that the coverage, boosters, barriers and thus the recommendations would differ across the two parts of Nalolo. Therefore, the coverage for the two areas is assessed separately.

### 4.3 Objectives

The principle objective of the SQUEAC evaluation was to assess the coverage of the IMAM program for children under 5, the factors affecting coverage, the barriers and boosters to access, as well as to develop recommendations for the IMAM program improvement. The influence of the IMAM program for PLW and the Family MUAC on the IMAM program for children under 5 coverage was also considered during the evaluation. Furthermore, the Regional MEAL Advisor developed the skills of key Nalolo DHO nutrition staff and PIN project staff in conducting coverage surveys using SQUEAC methodology.

## 4.4 Specific Objectives

1. Map out coverage of OTP programs in Nalolo East and West Banks.
2. Identify boosters and barriers affecting uptake of OTP services in Nalolo District.
3. Develop specific recommendations, based on assessment outcomes to improve acceptance and coverage of the program.

## 4.5 Methodology

The SQUEAC methodology<sup>8</sup> was selected and adapted to determine coverage across East and West Bank of Nalolo District, as well as to provide recommendations to improve coverage with rich evidence to underpin them. The SQUEAC took place in the following stages:

- Stage 1: Tallying and analysis of all program quantitative data, collection and analysis of qualitative information, and identification of boosters and barriers influencing the 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 the coverage is uniform across and within East and West Banks.
- Stage 3: Wide-area surveys (combined with mass screening in case of the East Bank) were conducted to determine coverage estimates of IMAM services across the East and West Banks using Bayesian techniques.

The core team was made up of 16 people, including 6 PIN project and MEAL staff, 1 Nalolo DHO Nutritionist, 1 Western Province PHO Nutritionist, and 8 data collectors. In total, the core team consisted of 10 women and 6 men. However, several other people supported the SQUEAC at its different stages, including the Nalolo DHO Director, PIN Program Quality and Development Manager, Unicef Nutrition Officer, and Unicef consultant for Social Cash Transfer Nutrition Linkages Project.

Given the accessibility challenges and vast distances, the assessment took place over the course of almost eight weeks from 10th October to 30th November 2022. The assessment took place without major problems; however, there was a limitation, as the data collectors had not been familiar with the IMAM program and its protocols. This was addressed by devoting adequate training time to the explanation of the IMAM program and by ensuring that data collectors are accompanied by an experienced person either from PIN or MoH. Moreover, the PIN Regional MEAL Advisor closely supervised the team in the first two stages to ensure early identification of any challenges. In terms of MUAC screening, a practical training session was arranged for the data collectors in Lewanika General Hospital in Mongu in the Children's ward.

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<sup>8</sup> 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.

## 5 Stage 1: Quantitative Data Analysis

### 5.1 Seasonal Calendar

Together with the SQUEAC survey team and community members, a seasonal calendar was developed. The calendar begins in October 2021 and ends in September 2022 to a) reflect the evaluation period of the IMAM program, and to b) also consider project specific activities (e.g. Family MUAC and PIN support) that are not tied to a season.

	2021			2022								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Climatic conditions</b>												
Rainy season	I	I	II	III	III	II	II	I				
Dry season	I							I	I	II	III	III
<b>Economic activities</b>												
Planting	III	III	II								II	III
Harvest						II	III	III	II	I		
Hungry season	III	III	III	III	II	I					I	II
Non-agricultural labor	III	III	II							I	II	III
Fishing migration	II	I						I	II	III	III	III
Fish ban		I	III	III	III	III	I					
<b>Diseases</b>												
Malaria		II	III	III	III	III	II	I				
Diarrhea		I	II	II	II	II	I	II	II	II		
Upper respiratory tract infection				I	I			I	II	II	I	
Mass screening		MoH						PIN	MoH			PIN
Family MUAC training	III	III	III									III
<b>Key events (religious holidays etc.)</b>												
Initiation ceremonies	I	I	I				I	I		I	I	I
<b>Other</b>												
No support from PIN				III	III	III	III					

Figure 3: Seasonal Calendar (October 2021 – September 2022)

### 5.2 OTP (SAM) – Nalolo, East Bank

Zambia's IMAM program is specific in the sense that it admits both moderately and severely malnourished children into the OTP (or ITP/SC for children with SAM with complications), as the TSFP part of the program is not officially established. However, MAM and SAM conditions are being distinguished and recorded separately into MAM and SAM registers. Both conditions are treated by RUTF (and other medicines as per the standard protocol); however, the dosage differs, as children with MAM are supposed to receive two sachets per day and children with SAM should receive sachets based on weight.

The team faced considerable challenges when tallying the IMAM program data, as the data in SAM (and also MAM) monthly reports sometimes differed from the data in SAM (and MAM) registers. Moreover, the SQUEAC team noticed that the data in most of the registers was not complete and that admission and discharge criteria as well as RUTF protocol were not always understood by the health workers. Consequently, the health workers admitted and/or discharged patients as well as

administered the RUTF protocol incorrectly, and thus recorded incorrect data into the IMAM forms. Missing forms such as admission cards, ration cards and under 5 cards also contributed to the challenges in data. The data presented in this report was primarily collected from the SAM (and MAM) registers, as opposed to the monthly reports, and triangulated with the Admission cards where available.

Another challenge was obtaining the official under 5 IMAM protocol. None of the stakeholders were able to share the under 5 IMAM protocol with the SQUEAC evaluator, including PHO, DHO or PIN. This means that health workers also do not have the access to the protocol and can only rely on several IMAM charts distributed by PIN at the outset of the IMAM program. The lack of protocol also posed challenges when discussing IMAM definitions and criteria, e.g. for non-responders, re-admissions and defaulters, within the SQUEAC team in preparation for the Stage 1 quantitative data collection.

### 5.2.1 Admissions Over Time

Looking at the SAM patient admissions in the past 12 months (from October 2021 to September 2022), it seems that the admission rates were somewhat influenced by the rainy season. Beginning in November 2021 when the rainy season properly started, the admissions declined and stayed lower until March/April 2022, despite this being a hunger season coupled with fishing ban and a heightened occurrence of diseases, such as malaria and diarrhea. The lower patient admissions during this season were thus likely caused by a decreased accessibility of health facilities in many areas due to flooding caused by rains. On the other hand, the increase in admissions that began in April/May 2022 was likely enabled by flood recession and the May mass screening. In August and September, the higher admissions were likely contributed to by the beginning of the hunger season, while the rains had not yet begun.

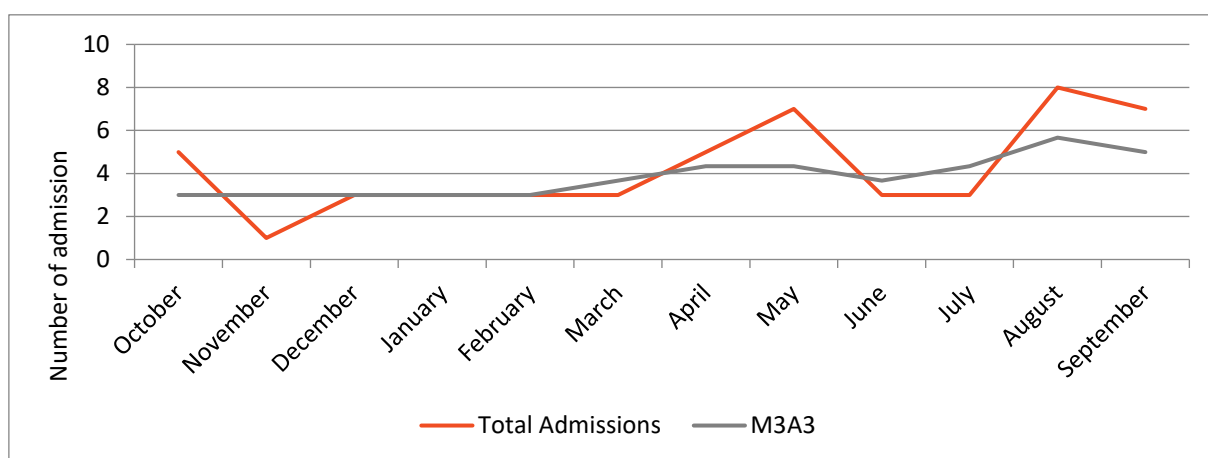


Figure 2: Admissions over time – OTP (SAM), Nalolo, East Bank<sup>9</sup>

### 5.2.2 Admissions per health center

The data on admissions per health facility is not surprising, as the facilities with biggest admissions – Mouyo and Nanjucha – are also those with the biggest catchment populations and accessible locations. On the contrary, the facilities with lowest admissions – Mande and Nalolo – are those who are the least accessible, as the seasonal flooding in their catchments tends to last the longest, and also have

<sup>9</sup> M3A3 is a three month average that smooths the data.

small populations. Moreover, Nalolo has no permanent health worker so patients may feel discouraged to seek treatment there. A similar trend can be observed also for the PLW admissions.

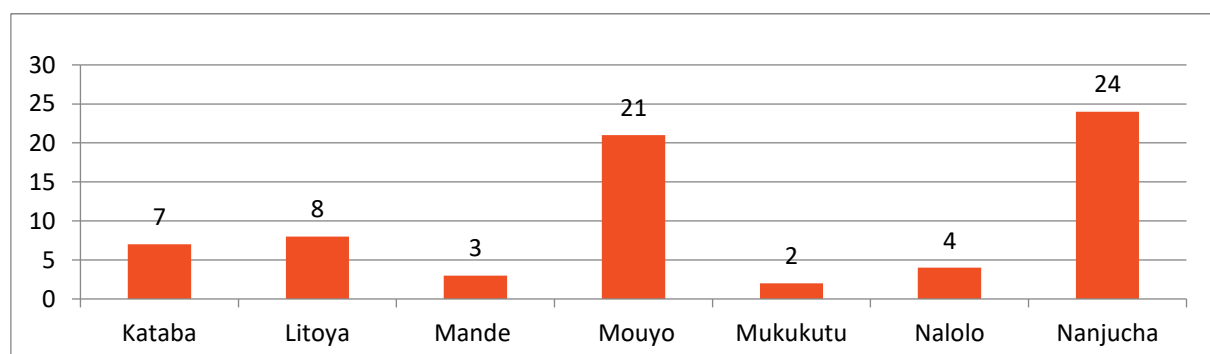


Figure 3: Admissions per health center – OTP (SAM), Nalolo, East Bank

Another distinct feature of the IMAM program in Zambia and in Nalolo District is that patients are admitted not only based on MUAC, oedema and WHZ (weight-for-height), but also based on WAZ (weight-for-age). WAZ is a standard measurement that takes place during well-established monthly GMP sessions for children under 5 and is being regularly recorded into the Under 5 cards owned by the majority of caregivers of children under 5. During GMPs, CHVs standardly measure MUAC, oedema, as well as weight and height/length in health facilities and in NHCs if the NHC owns or borrows a functional scale and height board. During mass screenings, CBVs check for oedema and screen children with MUAC tapes as well as scales and/or height board if available and functional.

When it comes to the proportion of MAM and SAM admissions, the facilities that seem to do better in terms of early case finding are Mande (86% MAM patients) and Mukukutu (85% MAM patients) respectively.

	Kataba	Litoya	Mande	Mouyo	Mukukutu	Nalolo	Nanjucha
<b>MAM admissions</b>	10	14	19	47	11	7	42
<b>SAM admissions</b>	7	8	3	21	2	4	24
<b>Total admissions</b>	17	22	22	68	13	11	66
<b>% of MAM</b>	59%	64%	86%	69%	85%	64%	64%
<b>% of SAM</b>	41%	36%	14%	31%	15%	36%	36%

Table 3: Proportion of MAM and SAM admissions per health center – OTP, Nalolo, East Bank

### 5.2.3 MUAC on admission

During the SQUEAC survey the team tallied the data for MUAC admissions, as most children are admitted into the IMAM program based on this measurement. Figure 3 below demonstrates that, as the program is still relatively new, the MUAC admission criteria continue being unclear for health workers, since many admissions to OTP (SAM) were done based on MUAC of 115mm. Incorrect admissions were recorded in Kataba, Litoya, Mande, Mouyo and Nanjucha, while in Nalolo register most data on measurements was missing to verify the correctness of admissions because the HP has no permanent health worker and is staffed only by an oriented Classified Daily Employee (CDE). Mukukutu was the only facility with all correct admission criteria. It is likely that the spike in admissions at 115mm and 110mm is due to digit preference. The median MUAC on admission is 111mm.

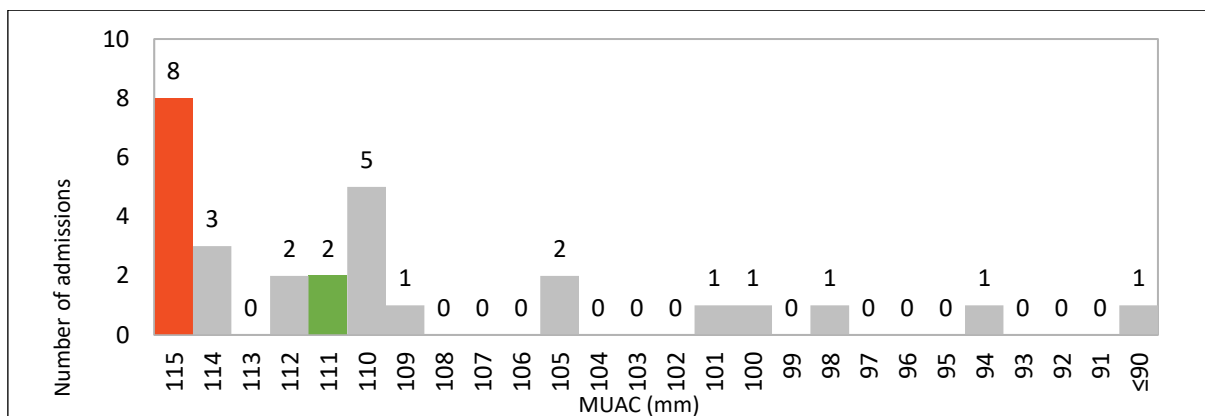


Figure 4: MUAC admissions – OTP (SAM), Nalolo, East Bank

## 5.2.4 Discharge Outcomes

Discharge outcomes are an important indicator of IMAM program performance that informs about the proportion of children who are discharged as cured, defaulted, dead, non-responding, and transferred. The average cure rate of all OTP sites in the East Bank for SAM treatment is 67.35%, which is below the Sphere standard of 75%<sup>10</sup>. Defaulting rate is at 14.29% slightly below the Sphere standard maximum of 15%. The transfer rate is quite high at 12.24% with children transferring either to another OTP site or to SC (Lewanika General Hospital) in Mongu District. Most of the transfers to SC were connected to other health conditions. The death rate of 6.12% is below the Sphere standard maximum of 10%. As such, the default and death rates comply with the Sphere standards, whereas the cure rate is below the recommended threshold.

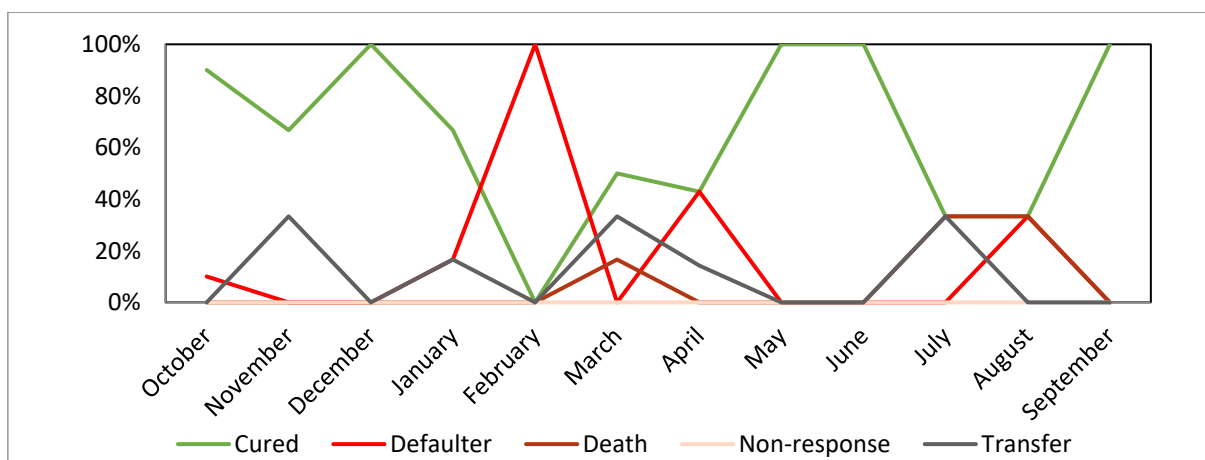


Figure 5: Discharge outcomes over time – OTP (SAM), Nalolo, East Bank

When analyzed per OTP site, there are considerable differences in discharge performance. Whereas Mukukutu and Nanjucha discharge all patients as cured, Kataba only recorded discharges as transfer, death or defaulting. The two deaths were associated with cerebral palsy and dehydration after severe diarrhea. The two Kataba transfers were both to the SC, as one's condition deteriorated and the other had hydrocephalus. The child who died in Mande OTP had been referred to SC in Lewanika GH by a health worker due to loss of appetite and oedema but the caregiver did not follow the referral. Nalolo

<sup>10</sup> Sphere Association. The Sphere Handbook: Humanitarian Charter and Minimum Standards in Humanitarian Response, fourth edition, Geneva, Switzerland, 2018. [www.spherestandards.org/handbook](http://www.spherestandards.org/handbook)



did not record any discharges, as the oriented Classified Daily Employee<sup>11</sup> has not been recording the cases into the register.

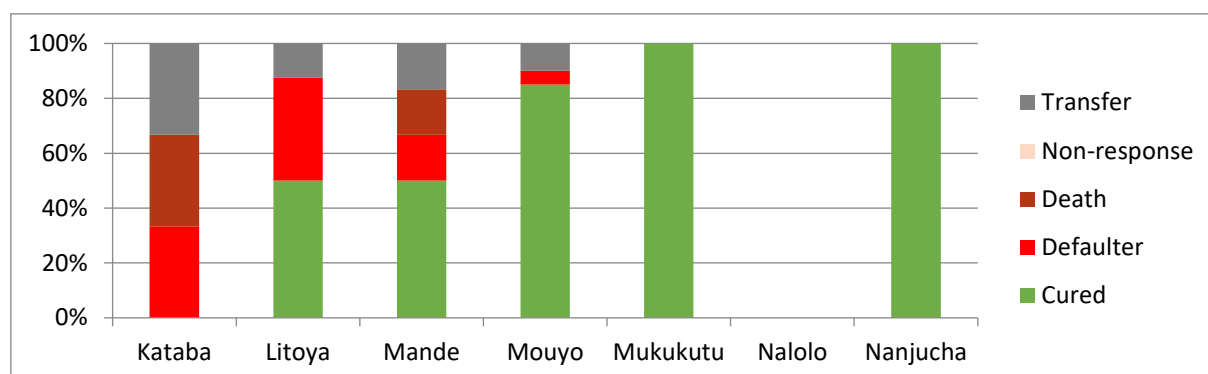


Figure 6: Discharge outcomes by OTP site – OTP (SAM), Nalolo, East Bank

Interestingly, no children were discharged as non-responders, although many spend more than 12 weeks in the program. This is likely explained by four factors. First, the OTP sites experience RUTF stock outs so the longer stays in the OTP with little or no improvement have likely been contributed to by disruptions in RUTF intake by patients. Second, it was observed that health workers continue following the old (emergency)<sup>12</sup> RUTF protocol, whereby the current (non-emergency)<sup>13</sup> RUTF protocol is not being followed. This means that in some cases SAM children receive less RUTF sachets than they should (two sachets per day instead of based on weight). Third, due to distance, health workers may invite some patients for re-examination not after two weeks (standard) but after one month, while the discharged RUTF is sufficient only for two weeks (although this practice is more widespread in the West Bank). Fourth, some patients miss visits due to seasonal economic migration or accessibility challenges caused by flooding. There is a grey area here where some should be classed as non-responders instead of defaulters.

### 5.2.5 Length of Stay Cured

The median length of stay for cured cases is 15 weeks. SAM children stay in the OTP and continue receiving treatment as patients with SAM until they become fully cured. This means that no transfer to MAM register and adjustment of treatment to reflect an improvement in their condition (MAM) takes place. As explained above, most children stay in the program for more than 12 weeks (60% of SAM children in East Bank), which exceeds the recommendation in the IMAM guidelines. Based on the protocol, such children should be discharged as non-responders and referred for further tests at a health facility. However, due to occasional RUTF stock-outs, longer periods between appointments, accessibility challenges (flooding), distance to SC services, seasonal economic migration or a combination of two or more of these factors, many patients stay in the OTP for a long time, yet health workers are not discharging patients as non-responders nor referring them to SC. This further contributes to the very high average and median length of stay before cure.

<sup>11</sup> CDE is a facility personnel who is not a health worker but a staff who supports the maintenance of the facility, including cleaners and guards. They may receive some training or orientation to support some health activities if the facility experiences a shortage of health workers, such as in the case of Nalolo HP.

<sup>12</sup> Children with MAM receive one RUTF sachet per day and children with SAM receive two RUTF sachets per day.

<sup>13</sup> Children with MAM receive two RUTF sachets per day and children with SAM receive RUTF sachets based on their weight.



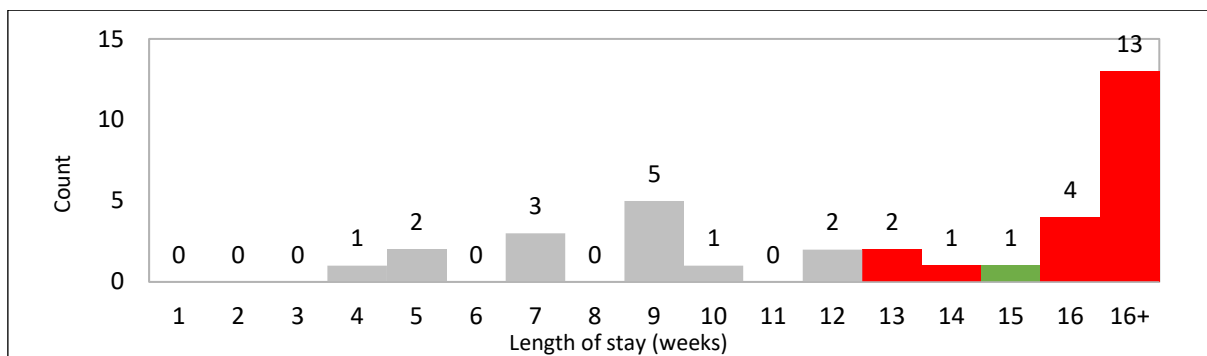


Figure 7: Length of stay cured – OTP (SAM), Nalolo, East Bank

### 5.2.6 Defaulting over time

According to the protocol (as agreed by the participating stakeholders), a patient is to be discharged as a defaulter if they do not attend three consecutive visits at the OTP site and do not come to the site even after a follow up visit by a CHV. However, as many community members undertake economic migration or can be cut off during the rainy season (even more common in the West Bank), they may not be reached by a CHV for the obligatory follow up visit. If the patient cannot be located for the required follow up visit, they cannot be discharged as a defaulter.

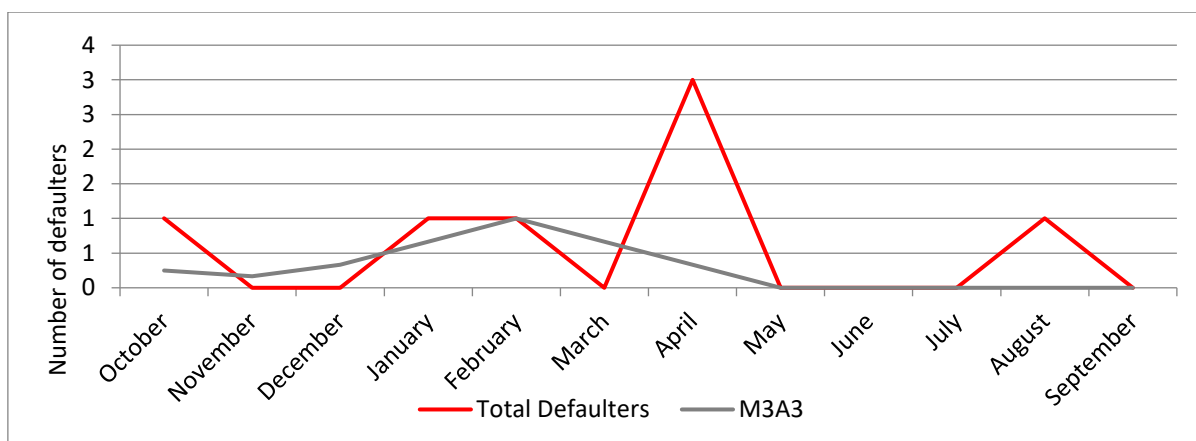


Figure 8: Defaulting over time – OTP (SAM), Nalolo, East Bank

Given the total number of defaulters recorded (n=7), there is little that can be ascertained from analyzing the trendline. However, six out of seven defaulters defaulted after 16 weeks, and so should therefore be classed as non-responders.

## 5.3 OTP (MAM) – East Bank

As mentioned above, Zambia's IMAM program admits both moderately and severely malnourished (without complications) children into the OTP because the TSFP part of the IMAM program is not officially established. Nevertheless, the two conditions of acute malnutrition are distinguished and recorded separately into MAM and SAM registers. Both MAM and SAM are treated by RUTF (and other medicines as per the standard protocol). However, children with MAM receive two RUTF sachets per day and children with SAM receive sachets based on weight.

The challenges that the team faced when tallying the IMAM program data are the same ones as those mentioned in the section 5.2 OTP (SAM) – East Bank (please refer there).

### 5.3.1 Admissions Over Time

As expected, the MAM treatment arm of the program follows similar trends to SAM treatment and is largely influenced by the rainy season affecting access to healthcare due to flooding (November – April). Admissions increased again from July onwards in connection with the hunger season and better accessibility of health facilities.

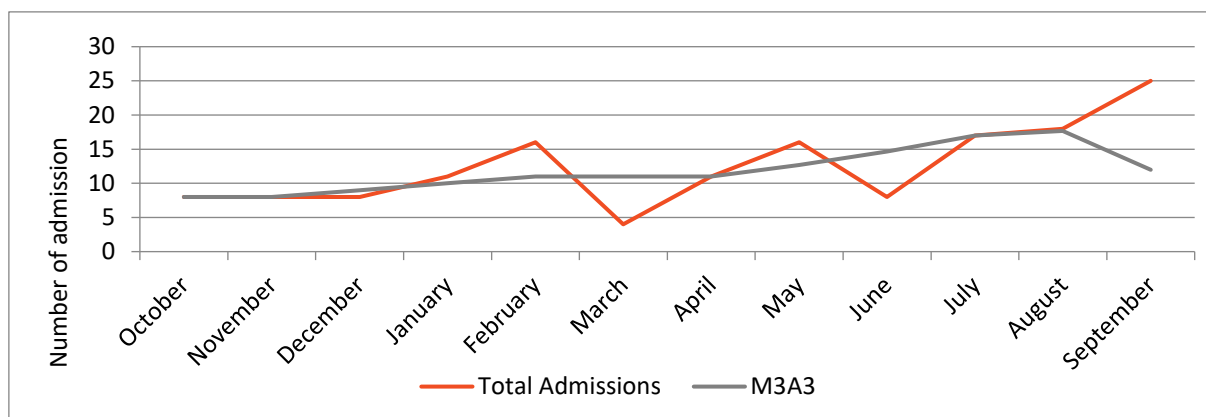


Figure 9: Admissions over time – OTP (MAM), Nalolo, East Bank

### 5.3.2 MUAC on admission

As previously stated, there are numerous admission criteria used in the program. A median MUAC on admission of 122mm of those who are admitted by MUAC is relatively high demonstrating early case finding. The high admissions of 120mm (37% of MAM admissions) indicates digit preference when taking or recording MUAC measurements.

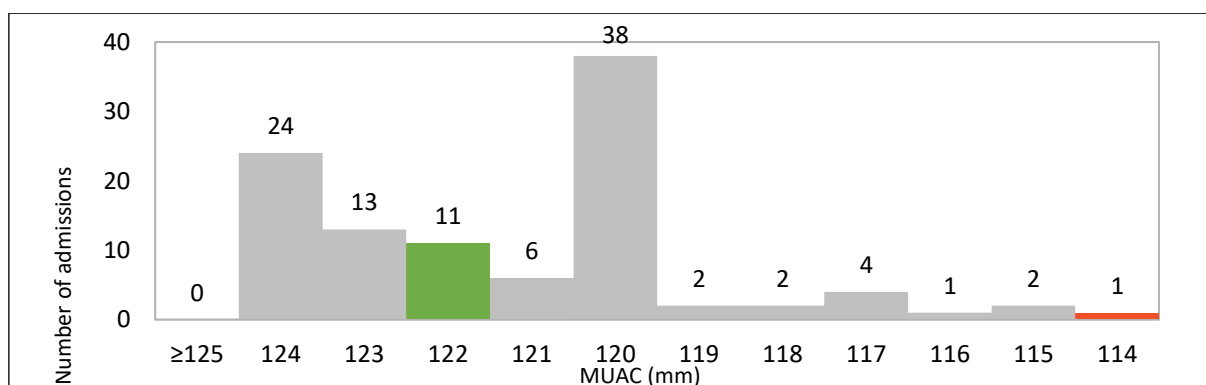


Figure 10: MUAC at admissions – OTP (MAM), Nalolo, East Bank

### 5.3.3 Discharge Outcomes

The average cure rate of all OTP sites in the East Bank for MAM treatment is 83%, which is above the Sphere standard of 75%<sup>14</sup>. Defaulting rate is at 11%, below the Sphere standard maximum of 15%. The transfer rate is 6% with children transferring either to another OTP site or to SAM treatment. The death rate of 0% is an expectation in a TSFP program.

<sup>14</sup> Sphere Association. The Sphere Handbook: Humanitarian Charter and Minimum Standards in Humanitarian Response, fourth edition, Geneva, Switzerland, 2018. [www.spherestandards.org/handbook](http://www.spherestandards.org/handbook)

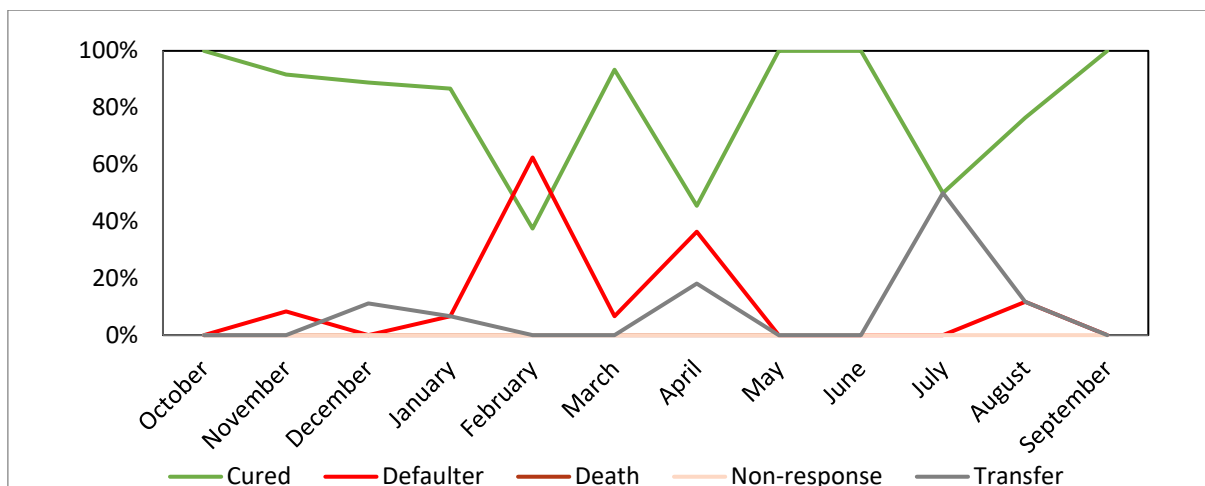


Figure 11: Discharges over time – OTP (MAM), Nalolo, East Bank

There is relatively high variation across the health centers, with Mouyo, Mukukutu and Nanjucha performing well (very high cure levels), and Kataba, Litoya and Mande all performing slightly below the Sphere standard. There is no data from Nalolo as the Classified Daily Employee is not confident in IMAM and therefore does not record the data from follow ups. Flooding caused higher defaulting in February, as the health facilities became inaccessible.

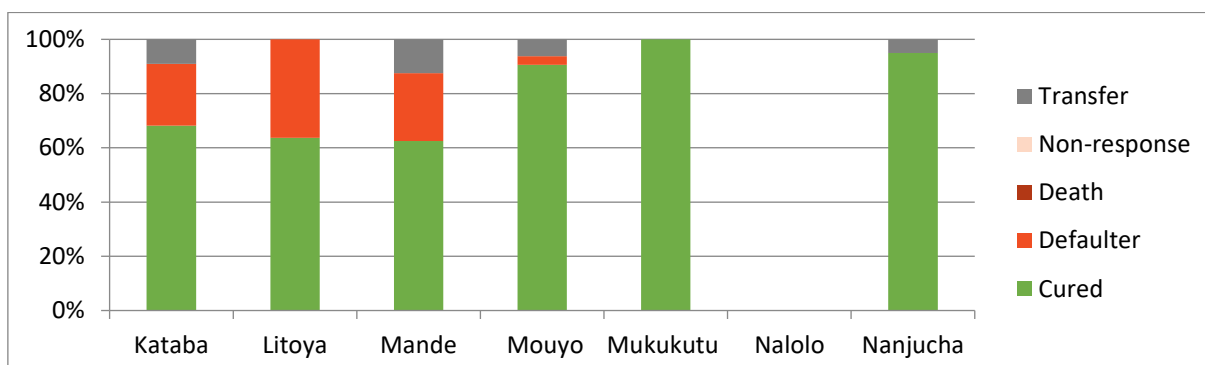


Figure 12: Discharges outcomes per health center – OTP (MAM), Nalolo, East Bank

### 5.3.4 Length of Stay Cured

Similarly to the SAM component, many children with MAM (42%) stay in the program for more than 12 weeks, exceeding the protocol recommendation. This is due to occasional RUTF stock-outs, longer periods between appointments, accessibility challenges (flooding), seasonal economic migration or a combination of two or more of these factors. In addition, health workers are not discharging patients as non-responders and not conducting adequate follow up with patients during treatment when a child is failing to recover.

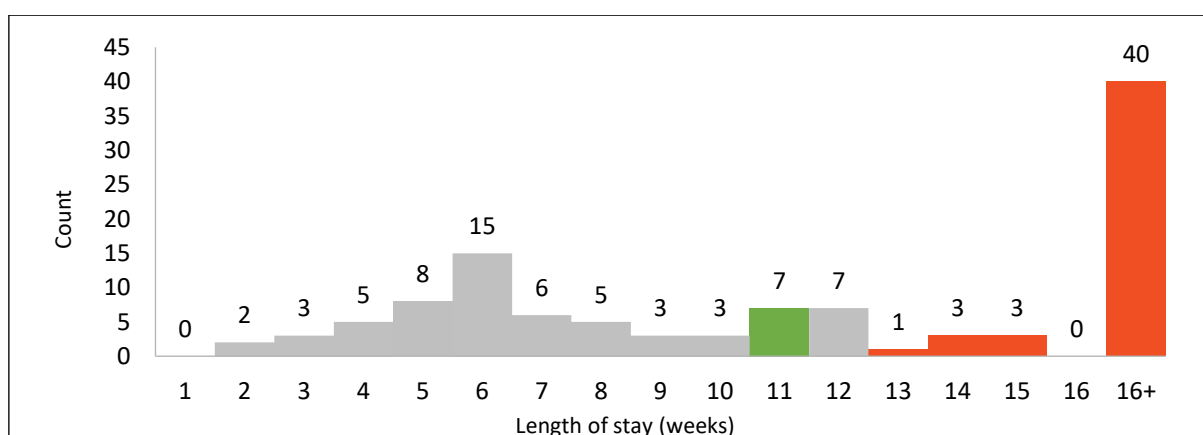


Figure 13: Weeks in program before cure – OTP (MAM), Nalolo, East Bank

### 5.3.5 Defaulting over time

Similarly to OTP, the number of defaulters is very low ( $n=14$ ), and the majority are at 16 weeks and should therefore be described as non-responders.

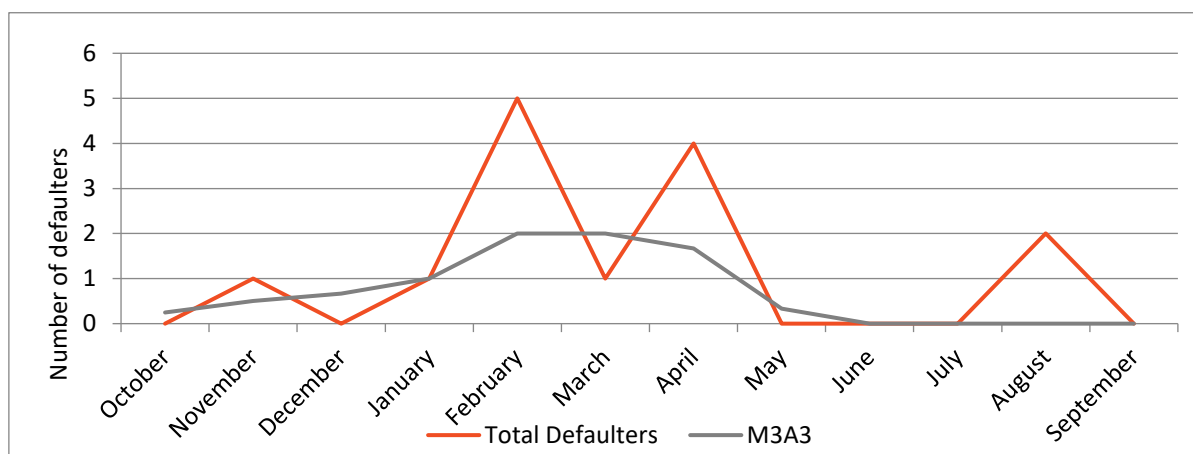


Figure 14: Defaulting over time – OTP (MAM), Nalolo, East Bank

## 5.4 OTP (SAM) – Nalolo, West Bank

In the West Bank, the SQUEAC team faced similar challenges with the quantitative data tallying as in the East Bank. That is, 1) monthly reports did not always match the data in SAM (and MAM) registers; 2) most registers were incomplete; 3) admission and discharge criteria as well as RUTF protocol were not always followed or understood by health personnel; and 4) some IMAM forms were often not available. The data presented in this report was primarily collected from the SAM (and MAM) registers, as opposed to the monthly reports), and triangulated with the Admission cards where available.

### 5.4.1 Admissions Over Time

Similarly to the East Bank, patient admissions in the past 12 months (from October 2021 to September 2022) were affected by the rainy season. From November 2021 when the rainy season started, admissions were relatively low until May 2022. It is expected that admissions would be higher due to the hunger season, along with a fishing ban and increase in diseases, such as malaria and diarrhea. Lower patient admissions during this season were thus likely caused by a decreased accessibility due to flooding. The May/June spike in admissions was also likely influenced by two mass screenings

conducted by PIN in May and by MoH in June, as well as by the renewed support to the IMAM program by PIN, which had been interrupted in January-April 2022 due to lack of funding. The high admissions in September were most likely due to the beginning of the hunger season and might have been influenced by Family MUAC training.

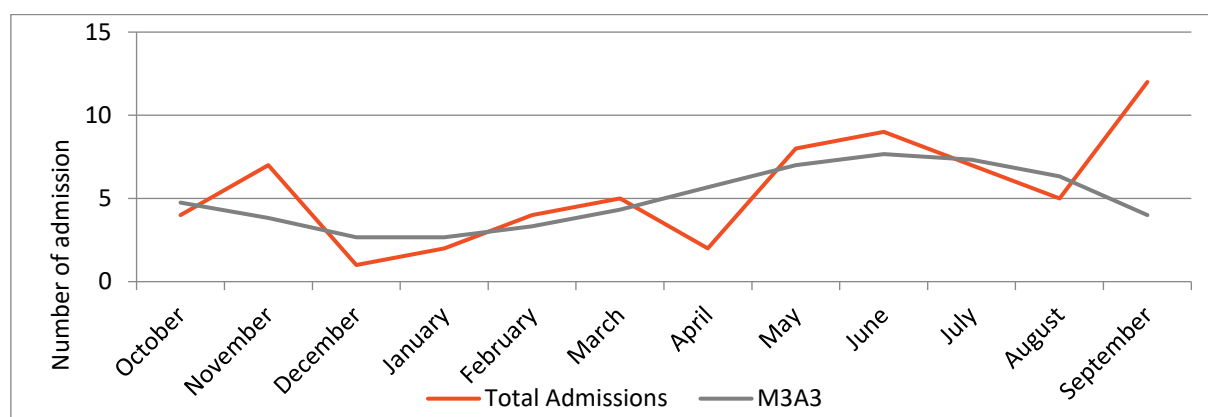


Figure 15: Admissions over time – OTP (SAM), Nalolo, West Bank

## 5.4.2 MUAC on admission

As in the East Bank, Figure 16 demonstrates that the MUAC admission criteria continue to be unclear. There are four admissions made at 115mm from Kuanga Lueti and Siloloti. Moreover, the graph shows a digit preference at 105mm and 110mm. The median MUAC on admission is 111mm demonstrating that cases are found relatively early. Liliachi has the highest number of small MUAC admissions (n=4 at  $\leq 100$ mm); however, this health facility also has the highest number of admissions.

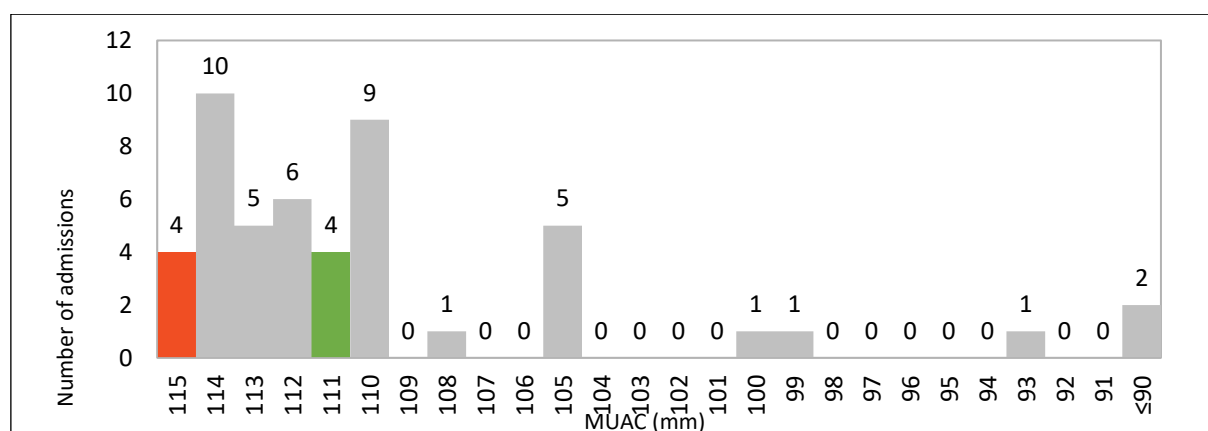


Figure 16: MUAC at admissions – OTP (SAM), Nalolo, West Bank

The proportion of SAM admissions to MAM admissions is maybe rather surprisingly lower in the West Bank as compared to the East Bank with only 18% of admissions on average being children with SAM (30% in the East Bank), while 82% of admissions are children with MAM. It is not clear why the West Bank is performing better in this regard despite its comparative remoteness and bigger size. The most likely assumption is that the CHVs are more active in terms of case finding.

The West Bank facilities that seem to do better in early case finding are Siloloti (96%), Mapungu (91%), Kaunga Lueti (89%), Sipungu (89%), Nakatwelenge (88%), and Sinungu (83%) respectively. This is quite surprising especially for Kaunga Lueti, Malombe, Sipungu, and Suu that are very remote and have geographically biggest catchment areas. On the contrary, it is surprising that Liliachi is doing comparatively worse (57% MAM), as it is central and close to the Nalolo District Hospital, well accessible and with a geographically smaller catchment.

	Kaunga Lueti	Liliachi	Malombe	Mapungu	Nakatwelenge	Nasilimwe	Siloloti	Sinungu	Sipungu	Suu
<b>MAM</b>	24	25	26	40	21	21	25	29	49	26
<b>SAM</b>	3	19	8	4	3	9	6	1	6	7
<b>Total</b>	27	44	34	44	24	30	26	35	55	33
<b>% of MAM</b>	89%	57%	76%	91%	87.5%	70%	96%	83%	89%	79%
<b>% of SAM</b>	11%	43%	24%	9%	12.5%	30%	4%	17%	11%	21%

Table 4: Proportion of MAM and SAM admissions per health center – OTP, Nalolo, West Bank

### 5.4.3 Discharge Outcomes

The average cure rate of all OTP sites in the West Bank for SAM treatment is 68%, which is below the Sphere standard of 75%. Defaulting rate is at 23%, above the Sphere standard maximum of 15%. There is a spike in defaulting in February likely due to flooding. Compared to East Bank, due to the travel distances to the regional hospital, the transfer rate is relatively low at 7%. No deaths were recorded.

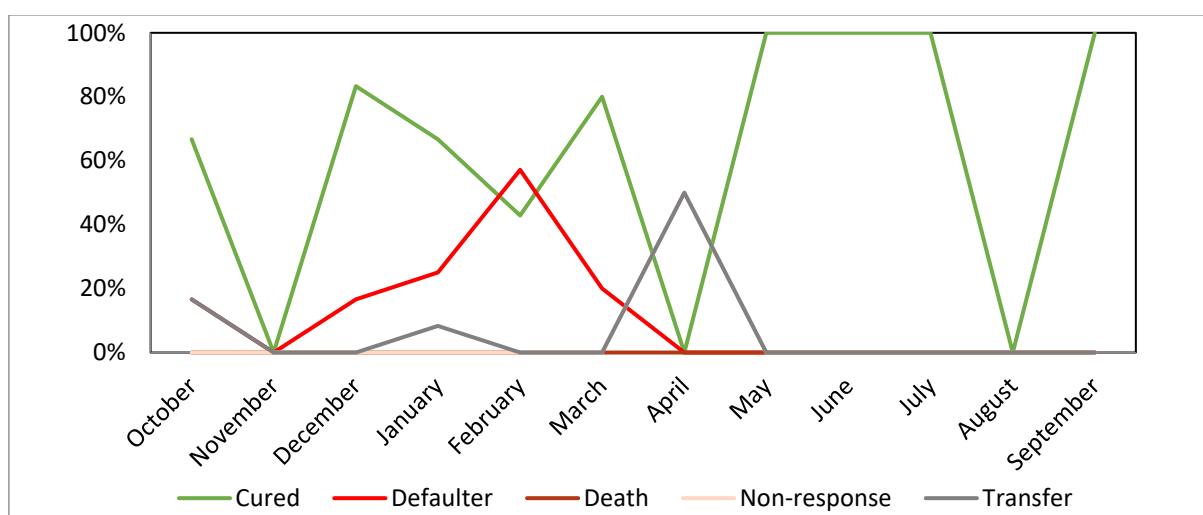


Figure 17: Discharges over time – OTP (SAM), Nalolo, West Bank

There is large variation in discharge outcomes between health facilities. For example, Kaunga Lueti health facility has a 75% default rate, with 3 out of 4 admissions defaulting. This is because this OTP site receives many patients from the neighboring Sioma district where it is difficult for CHVs to follow up on the patients. Moreover, local women often conduct economic migration to neighboring Sioma and Senanga districts due to close proximity and good connectivity. As such, if their child improves, they often decide to continue with their business. Nasilimwe also has a 50% defaulter rate, with 2 out of 4 admissions defaulting. The main reason for the high defaulting rate is distance, as well as gaps in information dissemination to clients. Sinungu health facility has a high transfer rate at 67%, as health workers were transferring children from SAM to MAM treatment when children improved, which is not in line with the IMAM protocol. According to the protocol, a child admitted with SAM should finish the SAM treatment until complete recovery.

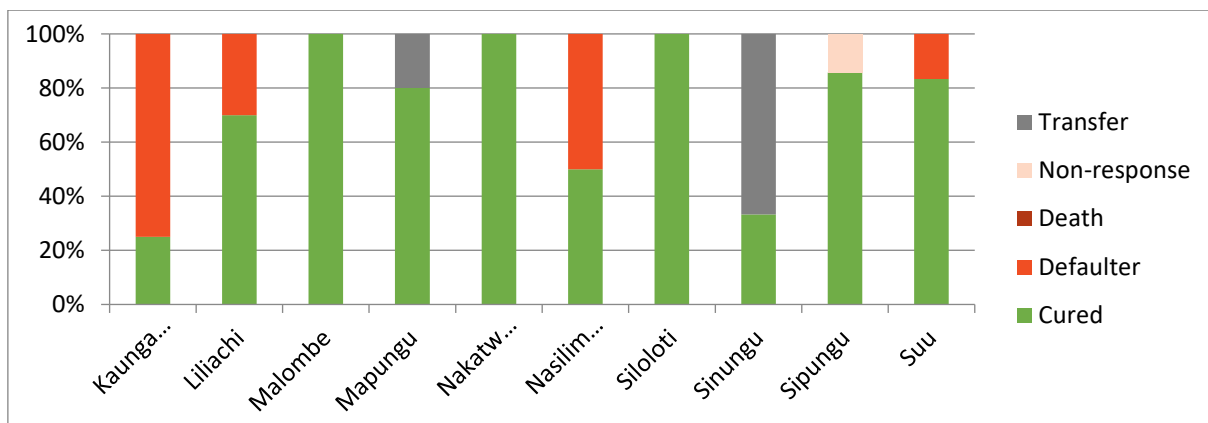


Figure 18: Discharge outcomes per health center – OTP (SAM), Nalolo, West Bank

#### 5.4.4 Length of Stay Cured

The median length of stay for cured cases is 16 weeks, as SAM children stay in the OTP and continue receiving treatment as patients with SAM until they become fully cured. The length of stay of 59% of all SAM patients in West Bank exceeds the protocol and is due to factors such as stockouts, distances, inaccessibility (seasonal floods), longer appointments (4 instead of 2 weeks) that delay recovery. All of these factors affect West Bank more compared to the East Bank and so it is surprising that overstaying of patients with SAM is with 64% more common for East Bank compared to West Bank (59%). Another reason for overstaying is that patients are also not being discharged as non-responders.

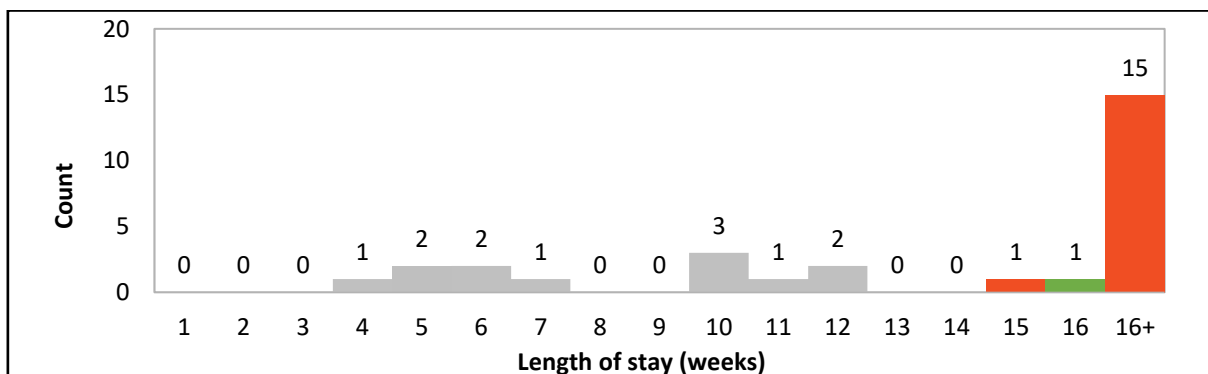


Figure 19: Weeks in program before cure – OTP (SAM), Nalolo, West Bank

#### 5.4.5 Defaulting over time

In all, there were 10 defaulters recorded over the year. The majority of these were from January to March when flooding affected access.

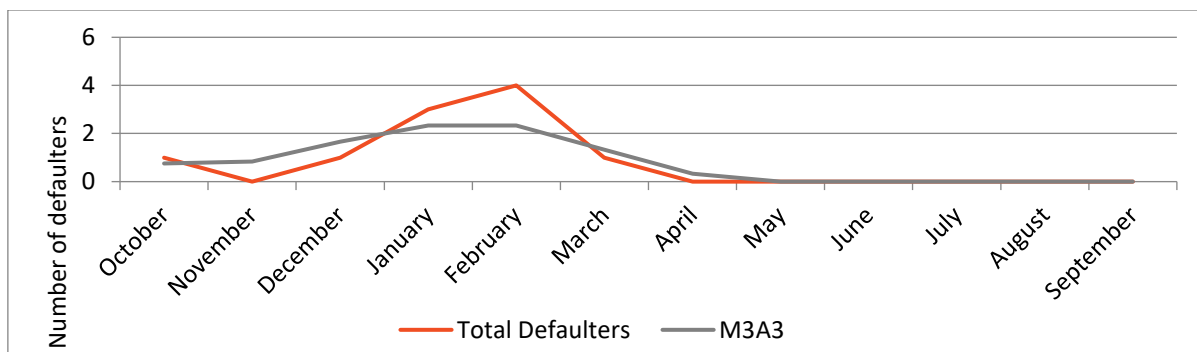


Figure 20: Defaulters over time – OTP (SAM), Nalolo, West Bank

## 5.5 OTP (MAM) – Nalolo, West Bank

### 5.5.1 Admissions Over Time

Similarly to SAM treatment services, patient admissions in the past 12 months (from October 2021 to September 2022) are affected by the rainy season. When the team investigated admissions more closely, they found a number of incorrect admissions (app. 10% of admissions with Nasilimwe were incorrect) and a number based solely on weight for age, which is as previously mentioned an admission criterium specific to Zambian IMAM protocol (yet it does not align with the standard IMAM protocol). There were also several relapses and readmissions following default.

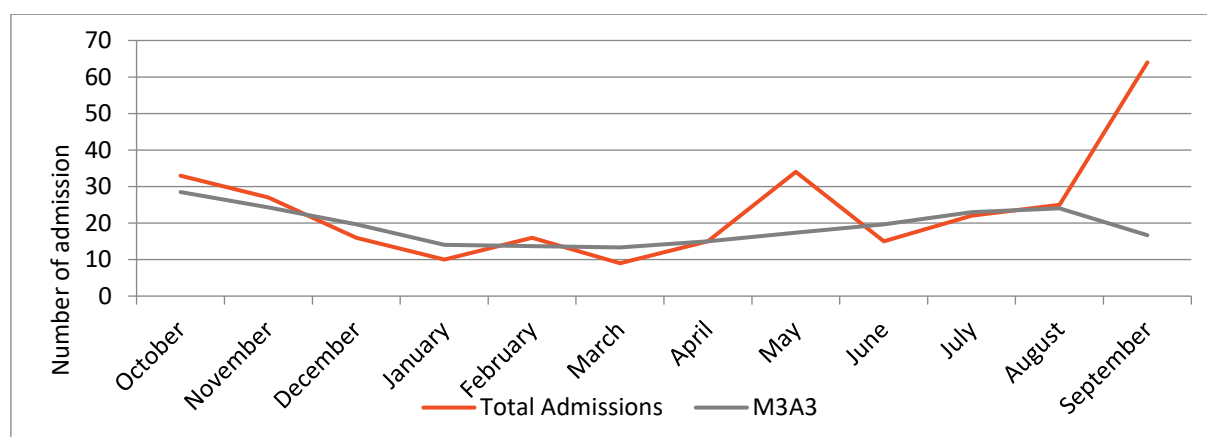


Figure 21: Admissions over time – OTP (MAM), Nalolo, West Bank

### 5.5.2 MUAC on admission

A median MUAC on admission of 122mm of those who are admitted by MUAC is relatively high demonstrating early case finding. There is evident digit preference at 120mm where health workers are rounding up or down to a 'round' number.

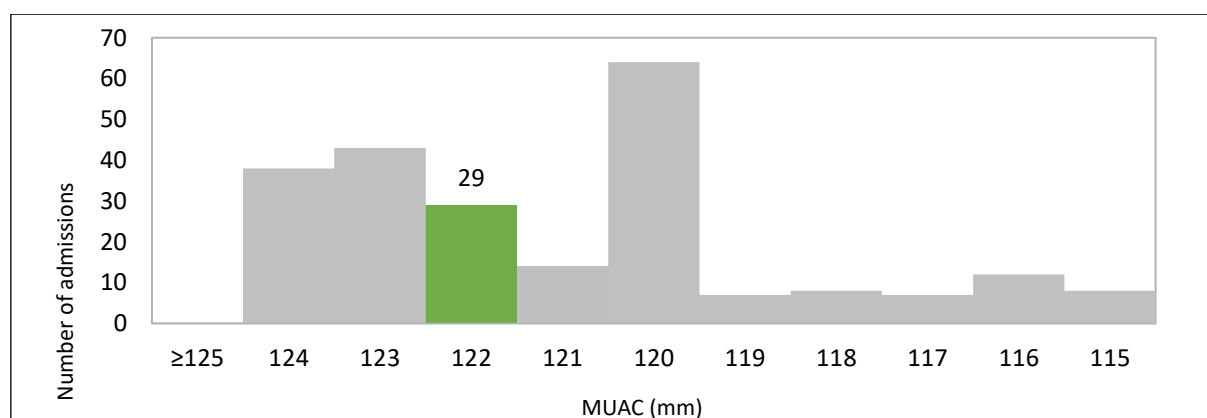


Figure 22: MUAC at admissions – OTP (MAM), Nalolo, West Bank

### 5.5.3 Discharge Outcomes

The average cure rate of all OTP sites in the West Bank for MAM treatment is 69%, below the Sphere standard of 75%. Defaulting is at 28%, above the Sphere standard maximum of 15%. The transfer rate is 3% with children transferring either to another OTP site or to SAM treatment. The death rate of 0% is an expectation in a TSFP program.



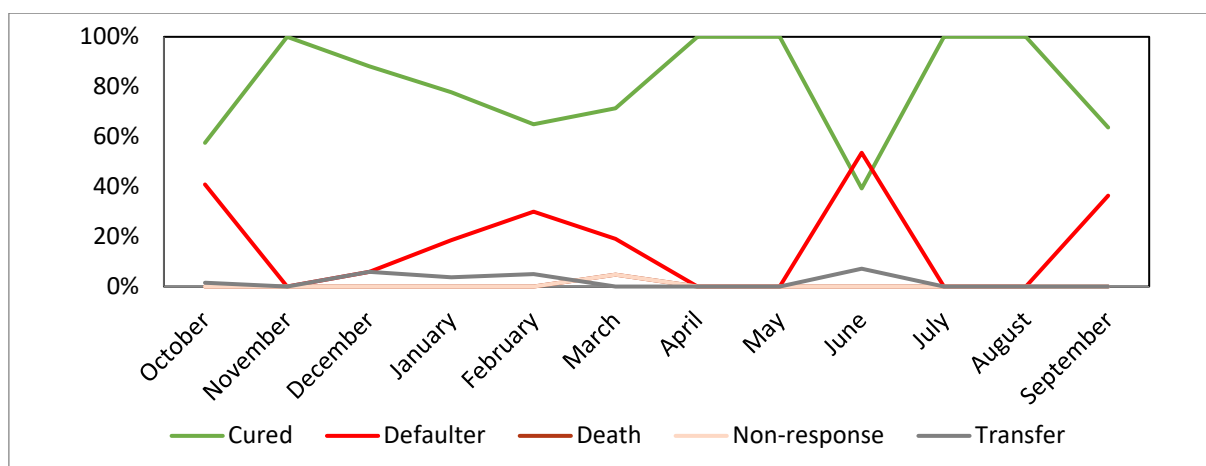


Figure 23: Discharges over time – OTP (MAM), Nalolo, West Bank

There is considerable variation between health facilities. Nakatwelenge has a 100% cure rate (n=14), whereas Kaunga Lueti has very high defaulting levels (74%) because the OTP receives many patients from the neighboring Sioma district where it is difficult for CHVs to do follow ups, as well as women in the area undergo economic migration. Sipungu health facility has an excellent cure rate at 96% however on further investigation of the records, there are 8 cases that have been in the program for over 16 weeks yet have not been discharged as non-responders. The high defaulter rate in Nasilimwe is mostly caused by long distances and gaps in program information dissemination to patients.

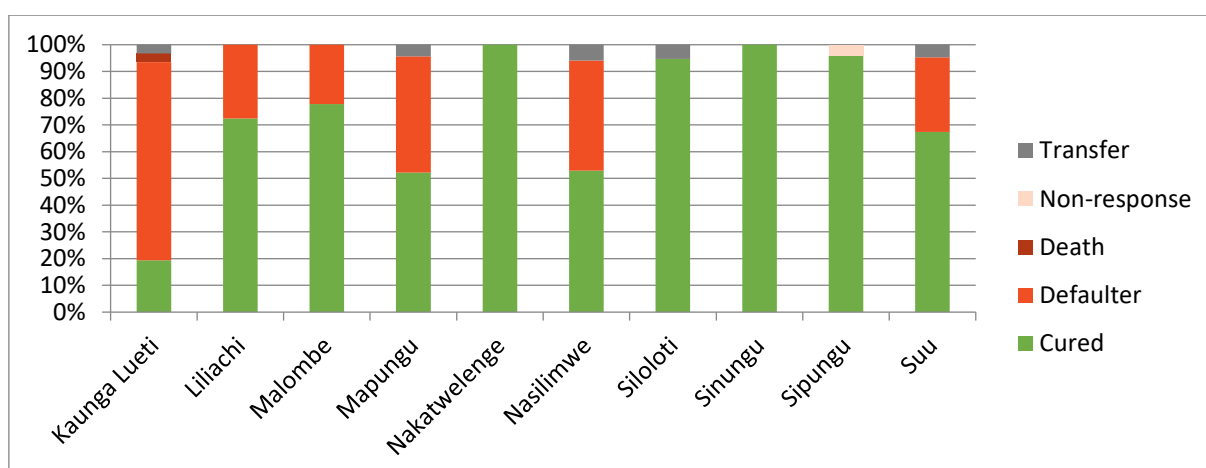


Figure 24: Discharges outcome per health center – OTP (MAM), Nalolo, West Bank

#### 5.5.4 Length of Stay Cured

Similarly to the SAM component, the majority (61% compared to 42% for MAM patients in East Bank) of children stay in the program for more than 12 weeks, with the median at 13 weeks. Like the East Bank, this is primarily due to RUTF stock-outs, long periods between appointments, flooding, as well as economic migration, which is more common in West Bank compared to East Bank. Apart from affecting the length of stay, these strongly contribute to the fact that children are not discharged as non-responders because they often cannot be reached by CBVs for the obligatory follow up after three missed appointments; a prerequisite for this type of discharge. As children cannot be or are not followed up, it results in these very long lengths of stay.

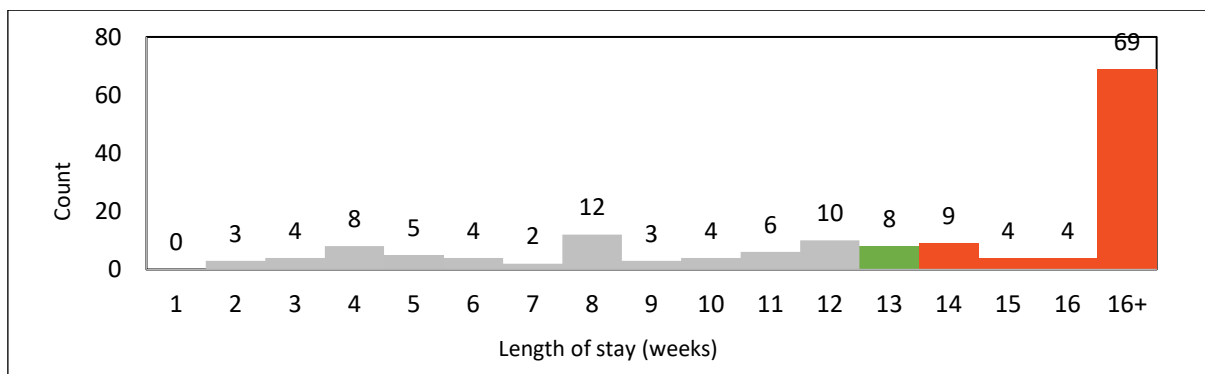


Figure 25: Weeks in program before cure – OTP (MAM), Nalolo, West Bank

### 5.5.5 Defaulting over time

Defaulting was high in October 2021, with all of the cases defaulting from Kaunga Lueti (on the same day, likely after a support visit from DHO) and Suu heath facilities. The number of defaulters stabilizes from November to May, before there is mass defaulting in June, when Mapungu health center is responsible for 10 of those cases. The reasons for defaulting in Kaunga Lueti are described above. As for Suu, it is a health facility with by far the vastest catchment, so long distances are a contributing factor, and there is only one health worker. RUTF stock outs are also a factor.

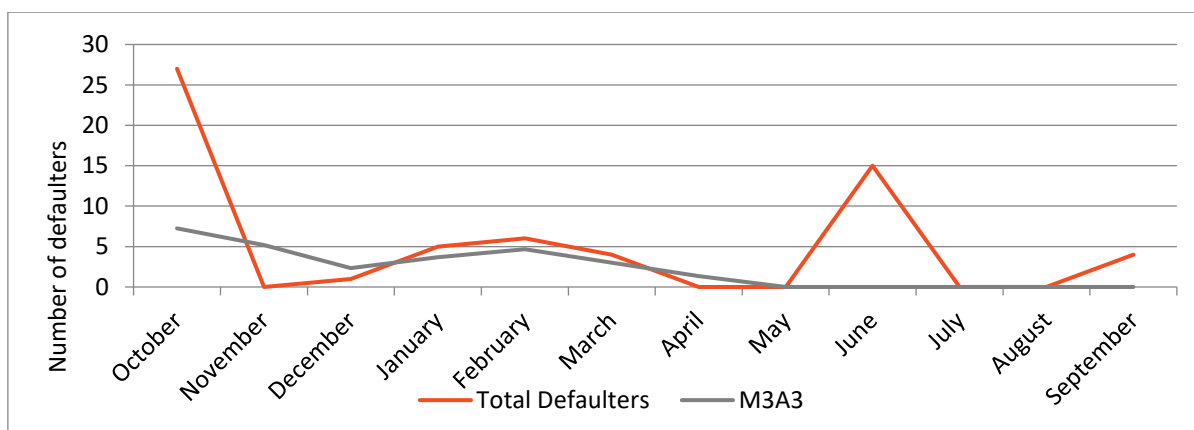


Figure 26: Defaulters over time – OTP (MAM), Nalolo, West Bank

As seen in the discharge data, Kaunga Leti has a high number of defaulters which corresponds with the data presented below. Mapungu and Suu also have high numbers of defaulters, corresponding with the discharge data from each health facility.

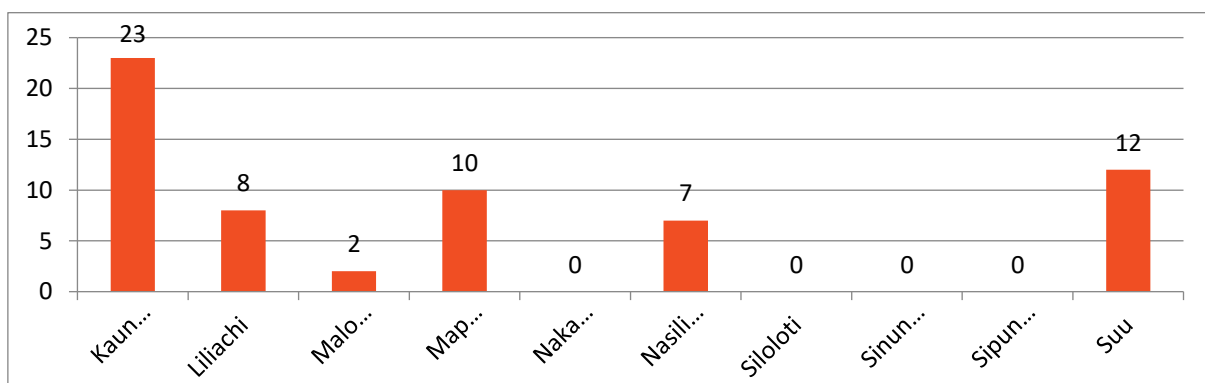


Figure 27: Total defaulters per health facility – OTP (MAM), Nalolo, West Bank

### 5.5.6 Length of Stay Default

Similarly to the data presented from the East Bank OTP (86% of both MAM and SAM patients staying 12+ weeks) and West Bank OTP (80% of SAM patients staying 12+ weeks), there are very long length of stays, with 36 out of 62 defaulters having a length of stay over 16 weeks and 42 (68%) over 12 weeks. Therefore 68% of cases that were classed as a defaulter should have been classified as a non-responder.

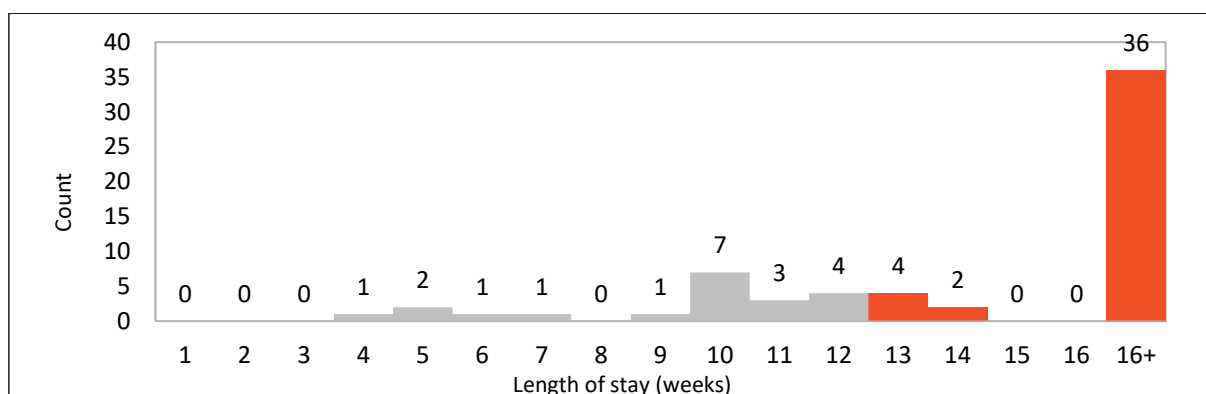


Figure 28: Weeks in program before default – OTP (MAM), Nalolo, West Bank

## 5.6 Observations – Nalolo, West Bank

The SQUEAC team also used an observation checklist (Annex 4) to gain more understanding of the quality of services provided by the health facilities. Staffing and infrastructure was mostly satisfactory with Kataba, Litoya, Mouyo and Nanjucha having all scheduled staff present, latrine and clean water available for patients, as well as having a waiting area. As expected, Nalolo HP had the poorest score, only fulfilling the waiting area requirement. Facilities also had with some exceptions functional infant weighing scales, height board, and MUAC tapes, as well as RUTF, basic antibiotics for childhood illness treatment, and ORS. Kataba and Mande had some non-functional height boards, and Kataba also had some non-functional weighing scales. Mukukutu lacked basic antibiotics.

Most health workers in the facilities responded that their facility had an OTP treatment of SAM and MAM patients with a protocol in place, as well as clear criteria for referral, referral mechanism, and mechanism to search for defaulters and to encourage them to resume treatment. However, health worker from Mande disagreed there were clear criteria in place for referral to OTP nor a clear referral mechanism between OTP (MAM) to OTP (SAM)/SC, OTP (SAM) to OTP (MAM), OTP to SC, and SC to OTP. Mouyo reported being out of referral forms. Mukukutu health worker did not know whether an IMAM protocol existed nor whether there were clear criteria for referral to OTP. Nalolo CDE responded there was no OTP, clear criteria nor referral mechanism, further confirming the IMAM program was not functional in this facility. These responses also confirmed that not all health workers were knowledgeable about admission and discharge criteria. Moreover, none of the facilities had the IMAM protocol available and the SQUEAC team was not able to get a copy of the IMAM protocol from DHO nor PHO.

All facilities had SAM and MAM registers. Most facilities did not have IEC materials (e.g., education posters) to help them during consultations with caregivers.

## 5.7 Observations – Nalolo, East Bank

In the West bank, checklists were completed in Liliachi, Malombe, Nasilimwe, Sinungu, Sipungu, and Suu health facilities. Staffing and infrastructure was mostly satisfactory with Liliachi, Malombe and Suu having all scheduled staff present, latrine and clean water available for patients, as well as having a waiting area. Nasilimwe did not have all scheduled staff present, while Sipungu lacked a waiting area for patients. Sinungu did not have a latrine and clean water available for patients. Facilities usually had with several exceptions functional infant weighing scales, height board, and MUAC tapes, as well as RUTF, basic antibiotics for childhood illness treatment, and ORS. Liliachi had three non-functional weighing scales (only one functional), whereas Sinungu lacked basic antibiotics and Suu had no ORS available.

Liliachi and Sipungu health workers responded that their facility had an OTP treatment of SAM and MAM patients with a protocol in place, as well as clear criteria for referral, referral mechanism, and mechanism to search for defaulters and to encourage them to resume treatment. However, health worker from Malombe did not know whether an IMAM protocol existed and health worker from Sinungu responded there existed no protocol. Likewise, Malombe health worker did not know whether a mechanism to search for defaulters and to encourage them to resume treatment was in place, while Sinungu health worker again responded there was no such mechanism in place. Sinungu and Suu health workers did not know whether there was a clear referral mechanism between OTP (MAM) to OTP (SAM)/SC, OTP (SAM) to OTP (MAM), OTP to SC, and SC to OTP. These responses again confirmed that not all health workers were knowledgeable about admission and discharge criteria. Moreover, none of the facilities had the IMAM protocol available.

All facilities had SAM and MAM registers. Most facilities did not have IEC materials (e.g., education posters) to help them during consultations with caregivers.

## 5.8 Quantitative Data Quality

There were several observations made regarding the quantitative data quality during the Stage 1 of this SQUEAC survey. These include:

<b>Updated under 5 IMAM protocol availability</b>	The Zambian under 5 IMAM protocol is not readily available to most health professionals at DHO and PHO level as a written document. Only flow charts and training manual were accessed during the survey by the SQUEAC team. Moreover, the protocol has been adapted two times since the IMAM program launch in 2020. Health workers were not always aware of these changes or were understandably confused which version of the protocol (that was not in their possession in a written form) they should adhere to. Lack of adherence to a standard unified protocol thus created challenges in the analysis.
<b>Weight for age</b>	Zambian protocol is specific in a sense that it commonly uses weight for age (WAZ) as an admission criterion. This is not standard practice, as it relies on the child's age being accurate. This admission criterion was likely included because it is a standard measurement performed during GMPs and is the primary measurement recorded in the Under 5 cards, which are used to track children's development in their first five years of age. Health personnel are much more familiar with how to assess WAZ compared to WHZ assessment.
<b>Disparities in data</b>	During the data collection, significant disparities were observed between SAM and MAM registers and the monthly SAM and MAM reports. The team decided to base

	the quantitative data analysis on the registers and where available, the team triangulated with Admission Cards and other available documentation.
<b>IMAM program data not clear and transparent due to various challenges</b>	<p>Based on the available data recorded, especially in MAM and SAM registers and Admission Cards, the first impression is that many health workers do not class patients as non-responders or defaulters when adequate and leave them in the program as active cases. However, the situation is more complex and affected by several factors. First, there are indeed gaps in the knowledge of the protocol, as not all health workers were trained and staff change regularly. This means that not all health workers apply the discharge criteria correctly. Second, to discharge a patient as a defaulter, there is a requirement that the patient must be visited by a CBV after three missed appointments. If the patient does not visit the OTP center even after the CBV's follow up visit, the discharge as defaulter can take place. However, as many families conduct seasonal migration and there are challenges regarding distance and seasonal accessibility, some patients are not followed up by a CBV and thus are not discharged but kept as active patients. Third, given the economic situation of patients combined with the issue of distances and accessibility (and sometimes mental state or advanced age of the primary caregiver), some health workers do not refer some non-responding patients to SC because they know the family would not be able to afford it and would not go. Fourth, given the long distances, some patients may have one-month-long appointments (instead of the standard two weeks), yet they are often given a dosage only for two weeks. This increases the period needed for recovery. Fifth, RUTF stock outs take place a couple of times per year. As a result, some patients' visits are not even recorded by health workers in MAM or SAM registers if the RUTF is not on stock, as the treatment cannot be carried out. This may provide a false image of some patients not visiting a health facility regularly for their treatment. If there are RUTF stock outs, health workers either reduce the dosage (but keep the appointments in two or four weeks) or give precedence to SAM over MAM patients. All of these factors make the program data even more opaque.</p>
<b>Long length of stay</b>	<p>Given all the reasons already mentioned in this table, approximately 64% of East Bank and 63% of West Bank patients stay in the IMAM program longer than 12 weeks before cure or default combined. For those who are discharged as defaulters, the rate is the same (86%) for both children with MAM and SAM for defaulters. For children discharged as cured, the rate of overstaying is at 42% for children with MAM and 60% for children with SAM. It would require more resources to evaluate how much more resource intensive the program is given all these factors but it can be assessed that the program has a lot of room for more holistic programming and reduction of resource if made more efficient.</p>

Table 5: Quantitative data quality challenges

## 6 Stage 1: Qualitative Data Collection and Analysis

Qualitative data was collected in Stage 1 to complement the quantitative data and provide further information, especially about boosters and barriers to access of the IMAM program. In order to collect qualitative data, program stakeholders were first identified. These included U5 IMAM program participants (caregivers of SAM and MAM children), community members (caregivers of healthy children, village leaders, church leaders, traditional healers, men, and women) and program staff (health workers, CHVs). Moreover, interviews were carried out with PLW IMAM program participants and women trained in Family MUAC to understand any potential impacts on the U5 IMAM program. All health facilities with the IMAM program (7 facilities in East Bank and 10 facilities in West Bank) and catchment areas were chosen for the qualitative research. Residential locations were chosen in order to ensure good spatial coverage and inclusion of locations that are both close to and far from the OTP sites.

### 6.1 Methodology

The SQUEAC team was trained in qualitative research techniques, including focus group discussions and key informant interviews, for one day. During the training, the team collectively reviewed all the interview guides (Annex 4) and translated them into the local language. On the first day of data collection in the East Bank, the entire team went to collect data in the same area to allow for close supervision, on-the-job training and feedback from the survey lead. In total, the data collection in the East Bank took 3 days and in the West Bank 3.5 days. The team members worked in pairs, which allowed one person to conduct the interview and manage discussions, while the other person could take notes. At the end of each day, all the team members returned to discuss their findings, which were recorded and organized into boosters (positive factors), barriers (negative factors), questions for the upcoming day of the data collection, and other notes.

### 6.2 Findings – East Bank

In total, the team conducted 55 interviews in the East Bank on 14<sup>th</sup>, 15<sup>th</sup> and 17<sup>th</sup> October, 2022. These include 26 key informant interviews (KIIs), 15 focus group discussions (FGDs), and 14 semi-structured interviews. Moreover, 7 observation checklists were completed, one per each OTP site. See Annex 1 for more information.

EAST BANK – POSITIVE FACTORS (BOOSTERS)	
<b>Health facilities receive technical support</b>	Whilst the quantitative data analysis demonstrated that there is area for improvement, health workers confirmed that they have been receiving regular technical support from both DHO (Nutritionist, M&E) and PIN staff. This support has included capacity building and mentoring in terms of data reporting (monthly report), admission and discharge criteria, and orientation on how to fill in the IMAM forms correctly.
<b>CHVs receive material and technical support</b>	CHVs were grateful for the material and technical support they have been receiving from both health workers and PIN. This support has included orientation in the community component of the IMAM program, including on the job capacity building. The material

	support provided by PIN, has included forms, writing tools, as well as gear for the rainy season to enable CHVs to do follow up and screenings.
<b>Screenings, referrals and follow up by CBVs</b>	The community component rests on a network of CHVs who have been oriented by PIN and health workers and who receive a continuous technical support from health workers and material support from PIN. Each health facility consists of several NHCs and each NHC has 3 CHVs who conduct regular GMPs (usually weekly at central NHCs – facility level, and monthly in other NHCs), occasional mass screenings, and patient follow ups in their catchment areas. Screenings are often combined with other well established and popular community health programs and events, such as the HIV and vaccination programs and Child Health Weeks. Although it has been observed that measurements performed by some CHVs are not accurate, their community screening activities have brought about a high awareness of the program and their occasional sensitizations have contributed to community's knowledge of nutrition. Most interviewed caregivers confirmed that their children have been recently screened by a CHV and those caregivers with a child in the program also confirmed that CHVs followed them up either via phone calls or in person.
<b>Community leaders promote IMAM</b>	Many respondents informed that community leaders promote IMAM and help refer children who are suspected to have malnutrition to the OTP sites. This is either because they have been well sensitized and engaged by DHO and PIN throughout the program's lifespan or because some of them are also engaged by facilities as CHVs. This is an important booster for the program, as community leaders traditionally have an important influence over the community and people tend to abide by the advice of their leaders.
<b>High awareness and positive perception of the IMAM program</b>	The community (caregivers of malnourished children both in and not in the program, caregivers of healthy children, women trained in Family MUAC, men, community leaders, traditional healers, and religious leaders) demonstrated a high program awareness with most of those interviewed having knowledge of both the U5 and PLW IMAM programs and services provided. This is attributed to sensitization during GMPs and mass screenings, as well as the fact that some CHVs are also important members of the community, such as community leaders or teachers, and thus have a considerable influence on the community. In general, the program is well accepted by the community and is seen to be effective in curing children with malnutrition, as improvements can be observed by the community.
<b>Integration with other health programs</b>	The U5 IMAM program has benefitted from other related activities and integration with other health programs. The existence of the PLW IMAM program naturally propagates the program for U5. Moreover, the Family MUAC activity supported by PIN that trained 1,068 women in the catchments of 5 health facilities (except for Nalolo and Mande) in how to use MUAC seems to have also contributed to the awareness of the IMAM program (although it has not substantially contributed to self-referrals). Moreover, the program has been integrated with other older health programs, such as GMPs, vaccination and HIV, during community outreach activities. It is also an integral part of the popular and well-established Child Health Weeks.
<b>Awareness of the symptoms and effects of malnutrition</b>	The community (caregivers of malnourished children both in the program, caregivers of healthy children, women trained in Family MUAC, men, community leaders) demonstrated awareness of the many severe symptoms of malnutrition, including marasmus, lethargy, hair color changes, and hair loss. The impact of malnutrition was usually described as death, with few respondents mentioning impacts on child's development.
<b>Incipient involvement</b>	Although more work needs to be done in this regard, as nutrition in Zambia is traditionally regarded as a domain of women and men do not get involved, the team detected a nascent



<b>and support of men</b>	positive trend of men being encouraged to take part in child nutrition. Several male respondents (men, community leaders and traditional healers) confirmed that traditional leaders do encourage men to participate in nutrition issues within their household. Other respondent (caregivers of malnourished children in the IMAM program CHVs, men and community leaders) affirmed that fathers of malnourished children support their wives in seeking help at the OTP sites.
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Table 6: Qualitative findings – East Bank Positive Factors (Boosters)

<b>EAST BANK – NEGATIVE FACTORS (BARRIERS)</b>	
<b>Deficiencies in health workers' knowledge of protocols, training and handovers</b>	The team has observed from the errors in IMAM documents (SAM Registers, MAM Registers, Admission Cards, RUTF Stock Cards) and from the interviews with health workers that most health workers still have gaps in terms of admission and discharge criteria and RUTF protocol. This may be attributed to several reasons. First, only selected health workers in each facility (1 to 4 depending on the size) received a 5-day-long IMAM orientation instead of the full 7-day-long training when the IMAM program started in 2020 due to the budget constraints. Second, the system of receiving per diems for training of governmental workers may have influenced the motivation and attention during the orientation. This is also likely the reason why the oriented health workers did not cascade the knowledge to the remaining health workers who tend to share a perception that IMAM is not their agenda. Third, health facilities are understaffed and health workers overworked, which may affect their diagnosis and attention to changes in RUTF protocol (since the inception, the RUTF protocol has changed twice). Old RUTF protocols were also displayed on facility walls instead of the updated versions. Fourth, MoH rests on the mechanism of staff rotation, which takes place every few years. During the time of the SQUEAC survey, three health facilities in the East Bank experienced this rotation, which means that some oriented health workers left, while unoriented staff took their place. Fifth, a system of handovers is not established so unless the new health workers will be self-motivated to study the protocol themselves, there is no other foreseen mechanism to train them, except for some short orientations conducted by DHO Nutritionist during her visits to facilities. However, such visits usually have several agendas that need to be covered. As a result of these factors, the team observed some incorrect admissions, data not being recorded in the registers, and patients overstaying in the program without being properly discharged.
<b>Dysfunctional OTP site in Nalolo HP</b>	Nalolo HP has no health worker permanently stationed in the health facility and the facility building itself is in a dire condition. There is only a CDE who maintains the facility and who received the IMAM orientation. However, since the CDE is not a trained health worker, her confidence to carry out the IMAM program is affected, CHVs do not follow up with her, and the community is not motivated to bring children to the OTP site. As such, the IMAM program in Nalolo HP is practically dysfunctional. The 7 MAM and 4 SAM patients appearing in the registers have either no data recorded (except for name, age and date of admission) or only information from the first visit. Moreover, the Nalolo HP catchment was the only area where Family MUAC was not implemented by PIN.
<b>RUTF stock outs</b>	Both caregivers and health workers confirmed that the treatment at OTP sites is affected by RUTF stock outs. These seem to happen because the DHO does not have enough vehicles to transport RUTF along with all the other necessary medication. There are also some gaps in transportation planning between DHO and PIN.



<b>Missing IMAM forms and errors or incomplete data</b>	Keeping records of children in the program and monthly reporting seem to be one of the biggest challenges for health workers since the inception of the program. PIN has invested a lot of time on capacity building of health workers in this area and the DHO staff also provides orientations during their visits but challenges still remain. Some of it can be attributed to the following: 1) facilities do not have all the required program forms (especially Admission cards and Under five cards), 2) some health workers have not mastered the IMAM and RUTF protocols, 3) not all health workers are oriented in IMAM, and 4) work overload causes that some health workers ask CHVs to fill the MAM/SAM registers in their stead.
<b>NHCs and CBVs lack materials for identification and follow up</b>	Most CHVs and health workers confirmed that many NHCs have no or dysfunctional scales and/or height boards. As a result, they cannot screen for height for age or weight for height during regular screenings or they have to borrow scales and height boards from other NHCs. CHVs also informed that they lack phones, talk time and/or transport for case follow ups at more remote villages. The first problem affects case finding and the second problem negatively influences follow up especially in more remote locations. CHVs also often mention that they lack financial or material incentives.
<b>Overstayers</b>	The survey identified several factors that may contribute to the high proportion of overstayers. First, health workers follow the old emergency protocol instead of the new one (old protocol: MAM children receive 1 RUTF sachet per day, SAM children 2 sachets; new protocol: MAM children receive 2 RUTF sachets per day, SAM children per weight). Second, some health workers give follow up appointments to children coming from longer distances after 4 weeks but the RUTF dosage is often given only for 2 weeks. Third, discharges can be administered only after a child does not show up for three consecutive visits (which may be in some cases 3 months in total) and does not come to the OTP site after a follow up visit from a CHV. If a CHV cannot locate the child, a discharge is not administered because the follow up visit did not effectively take place. As some of the community undertakes seasonal migration, there are occasions when a child cannot be reached nor discharged for several months. Fourth, RUTF stock outs mean that a child may not receive the needed dosage during the follow up visit and has to come another time. Fifth, appointments may be missed due to sickness of a mother or community events, such as traditional ceremonies, religious events and even football tournaments. Six, scarce occasions of RUTF sharing with other children were mentioned by a few caregivers. All these factors mean that the treatment is less efficient and thus takes longer time.
<b>Distance</b>	Some respondents, especially CHVs, health workers and some caregivers mentioned that long distance may be a barrier to access the health services (in case of caregivers) or to identification and follow up (in case of CHVs). The situation gets worse during the rainy season, as some facility catchments (especially Mande and Nalolo) get flooded and thus cut off. Some facilities address the situation by giving appointments to children from further villages in 4 (not 2) weeks.
<b>Stigma</b>	Most types of respondents (caregivers of malnourished children in and not in the program, health workers, CHVs, men, community leaders, teachers, and women trained in Family MUAC) confirmed that there is stigma connected to malnutrition. Respondents explained that the perception that causes shame is that mothers with malnourished children do not know how to take care of their children. A few respondents also mentioned a competition among mothers in terms of who is dressed better and whose child looks better (healthy) when attending GMPs. Several respondents also spoke about shame connected to status, especially in case of teachers. One teacher whose child was malnourished explained that

	he was ashamed to take his child to the OTP site because of his high status in the community, as malnutrition is associated with not having enough food. Similar reasoning was also mentioned by other types of respondents. Such perceptions engender stigma in the community and may prevent some mothers to attend screenings or seeking help at the OTP site. Moreover, it has also a negative impact on community referrals, as malnutrition is perceived to be an “own business” of the affected family and peer advice or referral are not much welcome.
<b>Lack of knowledge about IMAM program</b>	Several respondents (caregivers of malnourished children in and not in the program, caregivers of healthy children, men, community leaders) in the more remote areas informed that some community members may not know about the IMAM program or themselves confirmed they have not heard of the program. However, despite having some respondents who did not know about the program, in practically every village the team interviewed someone who was aware of the program.
<b>Lack of awareness about causes of malnutrition</b>	Quite a significant number of respondents (caregivers of malnourished children in and not in the program, men, women, religious leaders) displayed a lack of awareness about the causes of malnutrition. It was observed that some people still recognize the rather traditional explanation for malnutrition, which is caused by a mother who breastfeeds her child after a sexual intercourse without washing her breasts. The resulting condition is recognized in the community as malili and it is often believed it can be treated by a traditional healer. This further stigmatizes the condition. Traditional healers also recognize another type of malnutrition that cannot be healed by them and which in the words of one traditional healer comes “from God”. It is understood that this type of malnutrition can be treated in a health facility.
<b>Preference to take child to traditional healer or pastor</b>	Several respondents informed that if the treatment at a health facility does not yield any or only little improvement of a child, caregivers are likely to seek help from a traditional healer. On the other hand, the team also found out that some caregivers are more likely to bring a malnourished child to a pastor before they even go to a health facility. The interviewed pastors confirmed that in such cases they recommend to the caregiver to take the child to a health facility.
<b>Fathers not interested in health &amp; nutrition of children</b>	Traditionally, health and nutrition are seen as a domain of women, in which men should not be involved. Although the team has observed that this perception has been changing in some areas and some men have started getting involved in child’s health, many men still keep distance from these issues. The persistence of this traditional role division was confirmed by many respondents, including male caregivers, community leaders, teachers, traditional healers, and religious leaders.

Table 7: Qualitative findings – East Bank Negative Factors (Barriers)

EAST BANK – OTHER FINDINGS	
<b>Sharing of HEPS</b>	The team learned during the data collection that some mothers who are attending the PLW IMAM program and have a child in the U5 IMAM program may share their HEPS rations with their malnourished child.
<b>Mothers and children in the program</b>	Health workers and CHVs observed that many PLW who attend the IMAM program also have malnourished children who are enrolled in the U5 IMAM program. Some of them went as far as to say that PLW who are in the program are more likely to have children in the program as well.

<b>Low impact of Family MUAC on early identification and referrals</b>	Family MUAC training, which took place in October 2021, has not significantly contributed to early identification and self- or community referrals to the IMAM program. The team found out that many mothers who were trained and received MUAC tapes do not use them anymore for several reasons. Some mothers used the tapes a few times but when they saw that both them and their children were healthy, they stopped using the tapes. Some mothers lost their tapes. Others may not feel confident to perform the measurements and prefer if the CHVs do it. Those mothers who still use the MUAC tapes often screen incorrectly and only their own children. The team did not come across any instance when a trained mother would be said to have performed the MUAC measurements on other children than her own.
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Table 8: Qualitative findings – East Bank Other Findings

### 6.3 Findings – West Bank

In the West Bank, the team conducted 52 interviews during the data collection taking place on 19<sup>th</sup>-22<sup>nd</sup> October, 2022. These include 24 key informant interviews (KIIs), 12 focus group discussions (FGDs), and 16 semi-structured interviews. Moreover, 10 observation checklists were completed, one per each OTP site. See Annex 1 for more information.

<b>WEST BANK – POSITIVE FACTORS (BOOSTERS)</b>	
<b>CHVs receive material and technical support</b>	CHVs were grateful for the material and technical support they have been receiving from both health workers, DHO and PIN. This support has included orientation in the community component of the IMAM program, including on the job capacity building. The material support provided by PIN, has included forms, writing tools, as well as gear for the rainy season to enable CHVs to do follow up and screenings.
<b>Screenings, referrals and follow up by CBVs</b>	The community component rests on a network of CHVs who have been oriented by PIN and health workers and who receive a continuous technical support from health workers and material support from PIN. Each health facility consists of several NHCs and each NHC has 3 CHVs who conduct regular GMPs (usually weekly at central NHCs – facility level, and monthly in other NHCs), occasional mass screenings, and patient follow ups in their catchment areas. Screenings are often combined with other well established and popular community health programs and events, such as the HIV and vaccination programs and Child Health Weeks. Although it has been observed that measurements performed by some CHVs are not accurate, their community screening activities and promotion of IMAM have brought about a high awareness of the program and their sensitizations have contributed to community's knowledge of nutrition. Most interviewed caregivers confirmed that their children have been recently screened by a CHV and those caregivers with a child in the program also confirmed that CHVs encouraged them to go to the health facility.
<b>CHVs conduct nutrition sensitization</b>	Many community members (caregivers of malnourished children, men, community leaders, teachers, traditional healers, and health workers) confirmed that CBVs are active in nutrition sensitization both within the NHCs and at the health facilities (central NHCs). These sensitizations usually happen before and during GMPs and screenings.
<b>Traditional healers refer to IMAM</b>	Several traditional healers interviewed informed that they refer “one type” of malnutrition they distinguish (usually referred to as nañwe) to health facilities, as they are unable to treat this type of malnutrition themselves. Health workers, CBVs, and teachers confirmed this practice. Nañwe was usually described by traditional healers as a condition where a

	<p>baby is thin but has a swollen stomach and poor appetite. This is a booster for the program, as traditional healers who have traditionally been the primary providers of health services have started referring patients they cannot treat to health facilities. Moreover, they openly admit they are not able to treat “some types” of malnutrition, while health facilities are able to treat them.</p>
<p><b>High awareness and positive perception of the IMAM program</b></p>	<p>The community (caregivers of malnourished children both in and not in the program, caregivers of healthy children, women, men, community leaders, and traditional healers) demonstrated a high program awareness with most of those interviewed having knowledge of both the U5 and PLW IMAM programs and services provided, including the fact that RUTF is a medicine that should not be shared. This is attributed to sensitization during GMPs and mass screenings, as well as the fact that some CHVs are also important members of the community, such as community leaders or teachers, and thus have a considerable influence on the community. In general, the program is well accepted by the community and is seen to be effective in curing children with malnutrition, as improvements can be observed by the community.</p>
<p><b>Integration with other health programs</b></p>	<p>The U5 IMAM program has benefitted from other related activities and integration with other health programs. The existence of the PLW IMAM program naturally propagates the program for U5, and the Family MUAC activity supported by PIN that trained 1,833 women in the catchments of 8 health facilities (except for Siloloti and Nalolo District Hospital/Liliachi catchment) in how to use MUAC seems to have also contributed to the awareness of the IMAM program (although it has not substantially contributed to self-referrals). Moreover, the program is now an integral part of the popular and well-established Child Health Weeks and is also combined with other community programs, such as vaccination and GMPs. Several health workers also confirmed that screening for malnutrition is conducted during all checkups at the facility level.</p>
<p><b>Family MUAC</b></p>	<p>With 1,833 women in 8 facility catchments trained, the knowledge of Family MUAC is rather widespread in the West Bank as confirmed by many interviewees (caregivers of malnourished children in the program, women, men, traditional healers, women trained in family MUAC, and malnourished PLW in the program). Although the trained women usually do not use the MUAC tape to screen or, if they do, they do so only within their own family, the awareness of the activity is also increasing the awareness of the IMAM program and the issue of malnutrition in general. Those who stopped screening themselves and their children did so either because they were healthy (green MUAC) or because they forgot how to use the MUAC tape.</p>
<p><b>Awareness of the symptoms and effects of malnutrition</b></p>	<p>The community (caregivers of malnourished children in the program, women trained in Family MUAC, women, men, community leaders, and traditional healers) demonstrated awareness of the many severe symptoms of malnutrition, including marasmus, lethargy, hair color changes, and hair loss. The impact of malnutrition was usually described as death, with few respondents mentioning impacts on child’s development.</p>
<p><b>Involvement and support of men</b></p>	<p>Compared to the East Bank, more respondents from the West Bank (caregivers of malnourished children both in and out of the program, women, men, women trained in Family MUAC, religious leaders, CBVs, health workers) confirmed men’s involvement in child nutrition. Men’s involvement was mentioned in three forms: a) fathers take children to GMPs, b) husbands encourage wives to seek treatment for a child in a health facility, and c) men are interested or involved in children’s nutrition and health.</p>

Table 9: Qualitative findings – West Bank Positive Factors (Boosters)

<b>WEST BANK – NEGATIVE FACTORS (BARRIERS)</b>	
<b>Deficiencies in health workers' knowledge of protocols, training and handovers</b>	<p>The team has observed from the entries and errors in IMAM documents (SAM Registers, MAM Registers, Admission Cards, RUTF Stock Cards) and from the interviews with health workers that health workers in all facilities still have gaps in terms of admission and discharge criteria and RUTF protocol. This may be attributed to several reasons. First, only selected health workers in each facility (1 to 4 depending on the size) received a 5-day-long IMAM orientation instead of the full 7-day-long training when the IMAM program started in 2020 due to the budget constraints. Second, the system of receiving per diems for training of governmental workers may have influenced the motivation and attention during the orientation. This is also likely the reason why the oriented health workers did not cascade the knowledge to the remaining health workers who tend to share a perception that IMAM is not their agenda. Third, health facilities are understaffed and health workers overworked, which may affect their diagnosis and attention to changes in RUTF protocol (since the inception, the RUTF protocol has changed twice). Old RUTF protocols were also displayed on facility walls instead of the updated versions. Fourth, MoH applies the mechanism of staff rotation, which takes place every few years. Two weeks before the SQUEAC survey, six health facilities in the West Bank (Liliachi, Nakatwenge, Nasilimwe, Sinungu, Sipungu, Suu) experienced this rotation, which means that some oriented health workers left, while unoriented staff took their place. Fifth, a system of handovers is not established so unless the new health workers will be self-motivated to study the protocol themselves, there is no other foreseen mechanism to train them, except for some short orientations conducted by DHO Nutritionist during her visits to facilities. However, such visits usually have several agendas that need to be covered. As a result of these factors, the team observed some incorrect admissions, data not being recorded in the registers, and patients overstaying in the program without being properly discharged. Some caregivers of children in the program also informed that health workers did not provide them complete consultation and explanation during admission, discharge and/or discharge.</p>
<b>RUTF stock outs</b>	<p>Both caregivers, health workers, CHVs and teachers confirmed that the treatment at OTP sites is affected by RUTF stock outs. These seem to happen because the DHO does not have enough vehicles to transport RUTF along with all the other necessary medication. There are also some gaps in transportation planning between DHO and PIN. When RUTF shortage happens, health workers usually reduce the dosage they prescribe to patients and/or prioritize SAM patients.</p>
<b>Missing IMAM forms and errors or incomplete data</b>	<p>Keeping records of children in the program and monthly reporting seem to be one of the biggest challenges for health workers since the inception of the program. PIN has invested a lot of time on capacity building of health workers in this area and the DHO staff also provides orientations during their visits but challenges still remain. Some of it can be attributed to the following: 1) facilities do not have all the required program forms (especially Admission cards and Under five cards), 2) some health workers have not mastered the IMAM and RUTF protocols, 3) not all health workers are oriented in IMAM, and 4) work overload causes that some health workers may not properly fill the registers. There may also be more cases like Sipungu where the only trained health worker in IMAM used to leave CHVs in charge of IMAM admissions and registers when he was not in the health facility.</p>
<b>NHCs and CBVs lack materials</b>	<p>CHVs and health workers from most facilities confirmed that many NHCs have no or dysfunctional scales and/or height boards. As a result, they cannot screen for height for</p>

<b>for identification and follow up</b>	<p>age or weight for height during regular screenings, have to borrow scales and height boards from other NHCs, or have to skip GMPs. CHVs also informed that they lack phones, talk time and/or transport for case follow ups at more remote villages. Moreover, CHVs informed they lacked materials, such as umbrellas, raincoats and work suits, that would help them do their community work during rainy season. The first and third problems affect case finding, while the second and third problems negatively influence follow up especially in more remote locations. CHVs also often mention that they lack financial incentives or other material support, such as soap and hand sanitizers to protect them during screenings.</p>
<b>Overstayers</b>	<p>The survey identified several factors that may contribute to the high proportion of overstayers. First, health workers follow the old emergency protocol instead of the new one (old protocol: MAM children receive 1 RUTF sachet per day, SAM children 2 sachets; new protocol: MAM children receive 2 RUTF sachets per day, SAM children per weight). Some health workers informed that updates of RUTF protocol were not communicated properly. Second, some health workers give follow up appointments to children coming from longer distances after 4 weeks but the RUTF dosage is often given only for 2 weeks. Third, discharges can be administered only after a child does not show up for three consecutive visits (which may be in some cases 3 months in total) and does not come to the OTP site after a follow up visit from a CHV. If a CHV cannot locate the child, a discharge is not administered because the follow up visit did not effectively take place. As some of the community undertakes seasonal migration without transferring their child to a different OTP, there are occasions when a child cannot be reached nor discharged for several months. Fourth, some mothers stop taking child for follow up visits if they see that their child has improved. Fifth, RUTF stock outs mean that a child may not receive the needed dosage during the follow up visit and has to come another time. The visits during stockouts are often not recorded in the registers. Sixth, there is a widespread food insecurity in the West Bank, which contributes to long lengths of stays and relapses. Seventh, scarce occasions of RUTF sharing with other children were mentioned by a few caregivers. All these factors mean that the treatment is less efficient and thus takes longer time.</p>
<b>Seasonal / economic migration</b>	<p>Respondents (caregivers of children in the program, men, women, community leaders, traditional healers, religious leaders, health workers, and CHVs) informed that it is common for people to undertake seasonal and/or economic migration. Most common is the fishing migration when families go to fish camps from May to November. Farming activities for which some families migrate to flood planes are most intensive from March to July.</p>
<b>Geographical barriers</b>	<p>Health facility catchment areas in the West Bank are much larger, more remote, and less accessible compared to those in the East Bank. Consequently, CHVs are covering larger areas (the rule is that there are three CHVs per NHC), which means that some remote villages may not be regularly visited or followed up. It is thus not surprising that significant number of respondents, especially CHVs, health workers caregivers of healthy children as well as of malnourished children both in and out of the program, and religious leaders mentioned that long distance is a barrier to access the health services (in case of caregivers) or to identification and follow up (in case of CHVs). The situation gets worse during the rainy season, as many facility catchments (especially Malombe, Siloloti, Sipungu, and Suu) get flooded and thus cut off. Moreover, there is a dire lack of transportation opportunities and there are no roads (apart from dirt and mostly sand roads), which further complicates both the outreach by health staff and access by</p>



	caregivers. The likely result is that more respondents in the West Bank (caregivers of children in and not in the program, CBVs, health workers) compared to the East Bank responded that caregivers do not attend GMPs and some areas may not have GMPs organized, as there is no CHV living there. Some facilities address the situation by giving appointments to children from further villages in 4 (not 2) weeks.
<b>Stigma</b>	Most types of respondents (caregivers of malnourished children in and not in the program, CHVs, women, men, community leaders, traditional healers, and PLW in the program) confirmed that there is stigma connected to malnutrition. Respondents explained that the perception that causes shame is that mothers with malnourished children do not know how to take care of their children. Such perceptions engender stigma in the community and may prevent some mothers to attend screenings or seeking help at the OTP site. Stigma also pertains to the recent and rather widespread occurrence of scabies. The team found out that mothers may feel shy to take their child to a GMP if they or their children suffer from a more serious form of scabies.
<b>Community leaders not supporting / promoting IMAM program</b>	Several respondents (caregivers of malnourished children in the program, health workers, women, community leaders, traditional healers) informed that some community leaders do not support the IMAM program or are not involved in promoting it among their communities. This suggests that the sensitization of community leaders, which has happened twice (in 2020 and 2021) since the IMAM program's inception, might have not been sufficient and/or might have not reached all traditional leaders.
<b>Lack of awareness about causes of malnutrition</b>	Quite a significant number of respondents (caregivers of malnourished children in and not in the program, women, community leaders, teachers, traditional healers) displayed a lack of awareness about the causes of malnutrition. It was observed that some people still recognize the rather traditional explanation for malnutrition, which is caused by a mother who breastfeeds her child after a sexual intercourse without washing her breasts. The resulting condition is recognized in the community as malili and it is often believed it can only be treated by a traditional healer. This further stigmatizes the condition. Some communities recognize two types (malili and nañwe) and some communities recognize three types (malili, nañwe and sashela) of malnutrition. It was usually said that nañwe cannot be treated by a traditional healer but can be treated in a health facility. An effective cure for the third type of malnutrition was not clearly defined. Concurrently, several respondents also informed the team that admission criteria to the IMAM program were not clearly understood by community.
<b>Lack of sensitization on malnutrition</b>	Lack of community awareness about malnutrition is contributed to by the fact that health staff does not conduct much sensitization. Caregivers with children in the program informed that health workers did not sensitize them on malnutrition and proper feeding practices. On the other hand, community respondents (caregivers with children in the program, caregivers of healthy children, women trained in Family MUAC, women, community leaders, traditional healers) also confirmed that CBVs did not use GMPs to conduct sensitization on health and nutrition. Moreover, respondents from some more remote villages explained that, as there is no CHV in their vicinity, their villages may not organize GMPs nor receive nutrition sensitization.
<b>Preference to take child to traditional</b>	Several respondents (caregivers of malnourished children not in IMAM, women, men, traditional healers, CHVs, health workers) informed that there are caregivers who prefer to take their child to a traditional healer rather than to a health facility and may refuse to go to a health facility when referred by a CBV. Several respondents expressed opinions suggesting a negative perception of the IMAM program, such as that RUTF does not taste

<b>healer or pastor</b>	good and gives diarrhea to children. On the other hand, there are also caregivers who perceive that the treatment at a health facility does not yield any or only little improvement of a child. Such caregivers are likely to seek help elsewhere, including traditional healer and pastor. Some may decide to use traditional herbs and administer the treatment themselves.
<b>Men not involved in nutrition</b>	Traditionally, health and nutrition are seen as a domain of women, in which men should not be involved. Although the team has observed that this perception has been changing in some areas and some men have started getting involved in child's health, many men still keep distance from these issues. The facts that men are not engaged in community meetings related to health and nutrition as well as that they are not engaged in nutrition in general was confirmed by many respondents, including caregivers with children in the program, women, men, health workers, community leaders, traditional healers, and religious leaders.

Table 10: Qualitative findings – West Bank Negative Factors (Barriers)

<b>WEST BANK – OTHER FINDINGS</b>	
<b>Sharing of HEPS</b>	The team learned during the data collection that some mothers who are attending the PLW IMAM program and have a child in the U5 IMAM program may share their HEPS rations with their malnourished child.
<b>Absent husband</b>	The qualitative data collection in the West Bank suggested that children who stayed in a household with an absent father and only mother to take care of them were likely to be malnourished. Several such cases were encountered by the team.
<b>Low impact of Family MUAC on early identification and referrals</b>	Family MUAC training, which took place in October 2021 in seven facilities' catchments and in September and October 2022 in the remaining three facilities' catchments (Liliachi, Malombe, Sipungu), has not significantly contributed to early identification and self- or community referrals to the IMAM program. The team found out that many mothers who were trained and received MUAC tapes do not use them anymore for several reasons. Some mothers used the tapes a few times but when they saw that both them and their children were healthy and thus could not be enrolled to the program to receive HEPS and RUTF, they stopped using the tapes. Some mothers forgot how to screen and may not feel confident to perform the measurements themselves. Others prefer if the CHVs do it. Those mothers who still use the MUAC tapes often screen incorrectly and only their own children. They often continue screening because they want their children to be enrolled in the program or to be enrolled themselves. This suggests that HEPS and RUTF are seen as an additional source of food. The team came across one instance where the mothers trained in Family MUAC oriented other mothers as well as used their knowledge to perform the MUAC measurements on other children and women. This resulted in one successful PLW referral. This community still attends GMPs.
<b>PIN does not communicate on time</b>	Health workers and CHVs pointed out that PIN is not good at communicating activities related to the IMAM program well in advance. This poses pressure on the health staff who need sufficient time to prepare for the proposed activities.

Table 11: Qualitative findings – West Bank Other Findings



## 7 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 program. 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 impact on program 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.

### 7.1 Hypothesis

*Children who live in households where their father is present have high coverage (>50%), children who live in households where their father is not present have low coverage (<50%).*

and

*Children whose mother is enrolled in the PLW program have high coverage (>50%), children whose mother is not enrolled in the PLW program have low coverage (<50%).*

### 7.2 Justification

It was decided that due to the similarities in stage 1 data collected across the East and West Banks, the same hypotheses would be tested.

From stage 1, the team identified that children living in households where the father was not present are more vulnerable and thus wanted to explore further the linkages between coverage and the family unit structure.

The team also identified that awareness of the program was greater in households where the mother was also enrolled in PLW treatment. It was therefore decided to test this hypothesis to investigate linkages between these programs.

### 7.3 Sampling

Sampling was done in two stages: purposive village sampling and then exhaustive screening of all SAM and MAM children in each village.

Villages were selected in each bank according to their proximity to health facilities; some close, some far to account for the influence of distance on coverage.

East Bank - health facility catchment	Village	West Bank – health facility catchment	Village
<b>Kataba</b>	Malala	<b>Nasilimwe</b>	Kabula
	Nasitoya		Kandiyana
	Ñeleta		Lyande (Sibiu)
	Lipaa		Malobena
	Makuyungu/Lipaa		Nakakulukati
<b>Mande</b>	Nalumino		Nasikona

Mukukutu	Nakalala		Natusha
Nanjucha	Nongwa	Sinungu	Lulema
	Sale		Lyamaninga
		Sipungu	Handa
			Ndilala
			Sanga
			Sewi
			Sikubangandu
			Silumeulu
		Suu	Liwele
			Likene

Table 12: Villages sampled for the Stage 2 hypothesis testing

The case definitions below were used:

<b>SAM child</b>	Bilateral pitting oedema or MUAC <115mm
<b>SAM recovering case</b>	MUAC >115mm but still undergoing SAM OTP treatment (RUTF)
<b>MAM child</b>	MUAC ≥115mm and <125mm
<b>MAM recovering case</b>	MUAC ≥125mm but still undergoing MAM OTP treatment (RUTF)

Table 13: MAM and SAM case definitions used in Stages 2 and 3

Since the discharge criteria for OTP is two 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 two consecutive visits.

All children under five were screened in the village using MUAC. When a case was found, the team would issue a questionnaire, using Kobo toolbox, according to whether the child was in or out of the program.

As there are different admission and discharge criteria used in the program, there were challenges in identifying children that were in active treatment, as many were overstayers. The team worked through case by case to establish those that were in the program according to the admission criteria defined above. In case of a malnourished child enrolled in the program who has not visited the facility for 3 months (to cater for the 1-month-long follow up appointment periods), the child was considered as inactive or not enrolled because s/he was not benefitting from the treatment for at least 3 months. Furthermore, children who were admitted based on WAZ and were active in the program were considered as active cases, since WAZ is considered to be one of the admission criteria in Zambia.

The stage 2 provided useful information to carry through in to the third stage.

## 7.4 Findings

### 7.4.1 East Bank

Only 3 SAM cases were identified during the stage 2 screening in the East Bank. On the other hand, 7 MAM cases were discovered by the team.

Village	SAM covered	SAM uncovered	SAM recovering	Total
Lipaa	0	0	0	0
Makuyungu/Lipaa	0	0	0	0
Malala	0	0	1	1
Nakalala	0	0	0	0
Nalumino	0	1	0	1
Nasitoya	0	0	0	0
Ñeleta	0	0	1	1
Nongwa	0	0	0	0
Sale	0	0	0	0
<b>Total</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>

Table 14: SAM cases identified in Stage 2 – East Bank

Village	MAM covered	MAM uncovered	MAM recovering	Total
Lipaa	1	0	0	1
Makuyungu/Lipaa	1	0	0	1
Malala	0	0	0	0
Nakalala	1	0	0	1
Nalumino	0	0	0	0
Nasitoya	1	0	0	1
Ñeleta	0	0	0	0
Nongwa	0	2	0	2
Sale	1	0	0	1
<b>Total</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>7</b>

Table 15: MAM cases identified in Stage 2 – East Bank

### 7.4.2 West Bank

Only 3 SAM cases were identified (2 enrolled in IMAM program and 1 not) during the stage 2 screening in the West Bank and the hypothesis testing thus could not be done for SAM cases. On the other hand, 20 MAM cases were discovered by the team.

Village	SAM covered	SAM uncovered	SAM recovering	Total
Handa	1	0	0	1
Kabula	0	0	0	0
Kandiyana	0	0	0	0
Likene	0	0	0	0
Liwele	0	0	0	0
Lulema	0	0	0	0
Lyamaninga	0	0	0	0
Lyande (Sibiu)	0	1	0	1
Malobena	0	0	0	0
Nakakulukati	0	0	0	0
Nasikona	0	0	0	0
Natusha	1	0	0	1
Ndilala	0	0	0	0
Ngambola	0	0	0	0
Sanga	0	0	0	0
Sewi	0	0	0	0
Sikubangandu	0	0	0	0
Silumeulu	0	0	0	0
<b>Total</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>

Table 16: SAM cases identified in Stage 2 – West Bank

Village	MAM covered	MAM uncovered	MAM recovering	Total
Handa	0	0	0	0
Kabula	0	1	0	1
Kandiyana	0	3	0	3
Likene	0	0	0	0
Liwele	0	1	0	1
Lulema	0	0	0	0
Lyamaninga	0	1	0	1
Lyande (Sibiu)	0	0	1	1
Malobena	1	1	0	2
Nakakulukati	0	1	0	1
Nasikona	2	0	0	2
Natusha	0	1	0	1

Ndilala	0	1	0	1
Ngambola	1	0	0	1
Sanga	1	0	0	1
Sewi	1	1	0	2
Sikubangandu	0	1	0	1
Silumeulu	0	1	0	1
<b>Total</b>	<b>6</b>	<b>13</b>	<b>1</b>	<b>20</b>

Table 17: MAM cases identified in Stage 2 – West Bank

## 7.5 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. The SPHERE standard for coverage of IMAM programs in rural locations was used, and was therefore set at 50%.

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

$$d = \lceil n \cdot p \cdot 100 \rceil$$

d = decision rule

n= number of cases found

p= coverage standard defined

### 7.5.1 East Bank

SAM			
Mother in PLW	Conclusion	Mother not in PLW	Conclusion
n=2 d=1 Covered cases=2 Exceeds d? Yes	Decision rule met and therefore coverage described as being above the standard	n=1 d=0 Covered cases=0 Exceeds d? No	Decision rule not met and therefore coverage classified as being below the standard
There is a correlation between enrollment of the SAM children and enrollment of PLWs, therefore the hypothesis is proven.			
MAM			
Mother in PLW	Conclusion	Mother not in PLW	Conclusion
n=1 d=0 Covered cases=1 Exceeds d? Yes	Decision rule met therefore coverage classified as being above the standard	n=6 d=3 Covered cases=4 Exceeds d? Yes	The decision rule is met, and therefore coverage is above the standard
Conversely for MAM, there is no correlation between the enrollment of MAM children and PLWs, therefore the hypothesis is <b>not</b> proven.			

Table 18: Hypothesis testing in Stage 2, mother in PLW IMAM – East Bank

SAM			
Father present in HH	Conclusion	Father absent in HH	Conclusion
n=1 d=0 Covered cases=1 Exceeds d? Yes	Decision rule met therefore coverage classified as being above the standard	n=2 d=1 Covered cases=1 Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard
There is a correlation between the enrollment of SAM children and the presence of their father, therefore the hypothesis is proven.			
MAM			
Father present in HH	Conclusion	Father absent in HH	Conclusion
n=3 d=1 Covered cases=2 Exceeds d? Yes	Decision rule met therefore coverage classified as being above the standard	n=4 d=2 Covered cases=3 Exceeds d? Yes	Decision rule met therefore coverage classified as being above the standard
Coverage is above the threshold for both when the father is present and not present, therefore the hypothesis is <b>not</b> proven.			

Table 19: Hypothesis testing in Stage 2, Father present in HH – East Bank

### 7.5.2 West Bank

SAM			
Mother in PLW	Conclusion	Mother not in PLW	Conclusion
n=2 d=1 Covered cases=1 Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard	n=1 d=0 Covered cases=1 Exceeds d? Yes	Decision rule met therefore coverage classified as being above the standard
Coverage is below the threshold for when the mother has been enrolled in the PLW program and just above the threshold for when the mother has not been enrolled, therefore the hypothesis is <b>not</b> proven.			
MAM			
Mother in PLW	Conclusion	Mother not in PLW	Conclusion
n=4 d=2 Covered cases=1 Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard	n=16 d=8 Covered cases=6 Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard
Coverage is below the threshold for both when the mother has and has not been enrolled in the PLW program, therefore the hypothesis is <b>not</b> proven.			

Table 20: Hypothesis testing in Stage 2, mother in PLW IMAM – West Bank

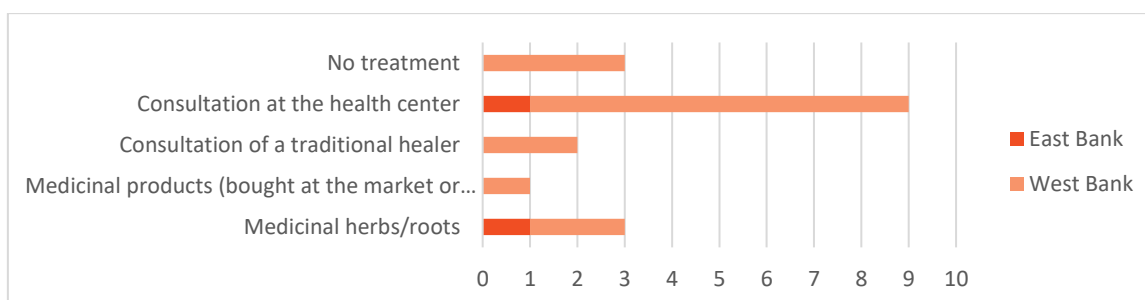
SAM			
Father present in HH	Conclusion	Father absent in HH	Conclusion

n=1 d=0 Covered cases=1 Exceeds d? Yes	Decision rule met therefore coverage classified as being above the standard	n=2 d=1 Covered cases=1 Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard
Coverage is above the threshold for when the father is present and below for when the father is not present, therefore the hypothesis <b>is</b> proven.			
<b>MAM</b>			
<b>Father present in HH</b>	<b>Conclusion</b>	<b>Father absent in HH</b>	<b>Conclusion</b>
n=7 d=4 Covered cases=3 Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard	n=13 d=7 Covered cases=4 Exceeds d? No	Decision rule not met therefore coverage classified as being below the standard
Coverage is below the threshold for both when the father is and is not present, therefore the hypothesis is <b>not</b> proven.			

**Table 21: Hypothesis testing in Stage 2, Father present in HH – West Bank**

To summarize, the Stage 2 hypothesis testing data demonstrates that largely, whether the mother is/was enrolled in PLW IMAM program or not has no influence on whether a child is in the program or not. Likewise, the presence or absence of father in the household does not significantly influence whether a child is in the program or not.

Caregivers who were able to recognize their child was suffering from malnutrition were asked how they treated or planned to treat the disease. By far the most common response was consultation at the health center. However, some respondents also responded they were planning no treatment or that they would treat their children themselves either by medicinal herbs and roots or by purchasing medicine at a market or in a pharmacy. A few would consult a traditional healer.



**Figure 29: Treatment of malnutrition by mothers, Stage 2 – East & West Bank**

Caregivers who enrolled their child into the program in the East Bank did that because malnutrition was diagnosed by health personnel or they recognized the disease themselves. Other reasons included wanting their child to be healthy, encouragement of the husband and recognition of the program.

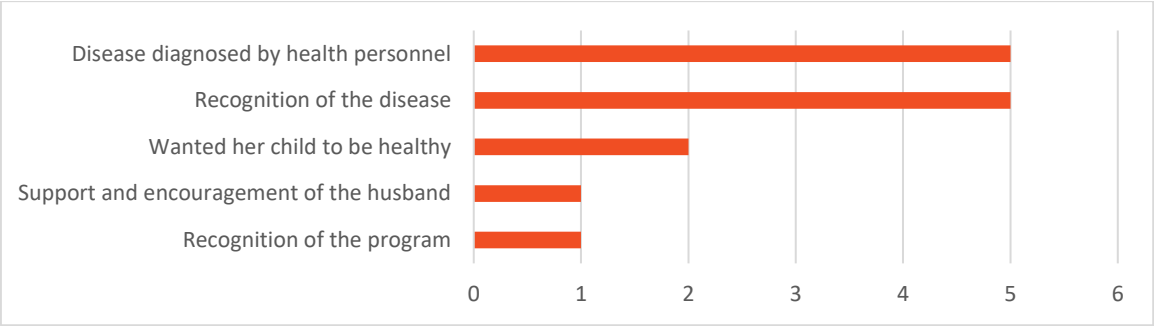


Figure 30: Reasons for enrollment into the U5 IMAM program, Stage 2 – East Bank

In the West Bank, caregivers enrolled their child into the IMAM program mainly because they identified their child was malnourished and they wanted their child to be healthy and because the treatment is free. Some caregivers also mentioned accessibility and short distance to a facility, availability of RUTF, friendliness of the program staff, and diagnosis of the disease by health personnel.

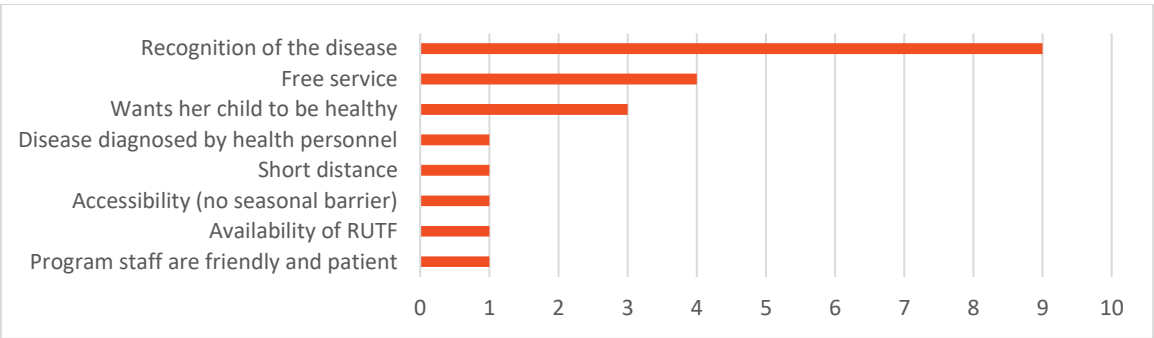


Figure 31: Reasons for enrollment into the U5 IMAM program, Stage 2 – West Bank

Reasons for non-enrollment on the East Bank include stockout of RUTF, lack of awareness child is malnourished and preference for alternative treatment (in this case, medicinal herbs).

As for the West Bank, the reasons for non-enrollment include distance and a lack of company for the journey to the facility, malnutrition not recognized by the facility staff, RUTF stock-outs, and being busy with other activities. Other reasons mentioned were no-one to look after the other children, and lack of belief in the effectiveness of the program treatment.

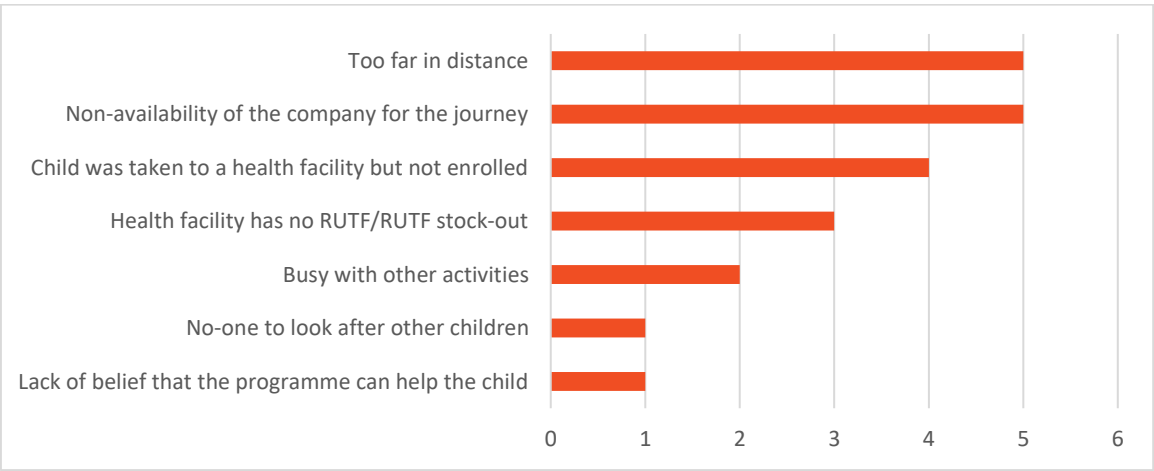


Figure 32: Reasons for non-enrollment into the U5 IMAM program, Stage 2 – West Bank



## 7.6 Conclusion

A comparison between the four population groups, of households where the father is present and households where the father is not present, and whether the mother has been enrolled in the PLW program previously or not demonstrated mixed results on the impact of these factors on coverage. This is because coverage is less than the 50% threshold across all groups apart from SAM children in the East Bank where there is a correlation between the mother being involved as a PLW and the child being enrolled in the IMAM program. In the West Bank, coverage is above 50% for SAM children whose mother has never been enrolled. However, due to the relatively small numbers of mothers enrolled as PLWs, it is likely that the impact on overall coverage is low.

There is a correlation demonstrated between the father being present and enrollment for SAM children on the West Bank. Again, low numbers of SAM children make it difficult to demonstrate impact of these factors.

Reasons for non-enrollment are interesting and shed further light on cases being in and out of the program. There are differences between the East and West Bank whereby on the East Bank, the main reasons for enrollment of children in the program are equally through the disease being diagnosed by health personnel and the recognition by the mother, while on the West Bank, most of children in the program were enrolled based on mother's recognition of malnutrition (and only one child was enrolled after being screened by health personnel). Moreover, the third most common reason for non-enrollment on the West Bank is that the child was taken to the health facility but the disease was not recognized by health facility staff. Additionally, another reason on the West Bank is lack of company for the journey, linking to the barrier of distance and accessibility, which were not mentioned by the East Bank respondents. RUTF stock outs are a common reason for non-enrollment.



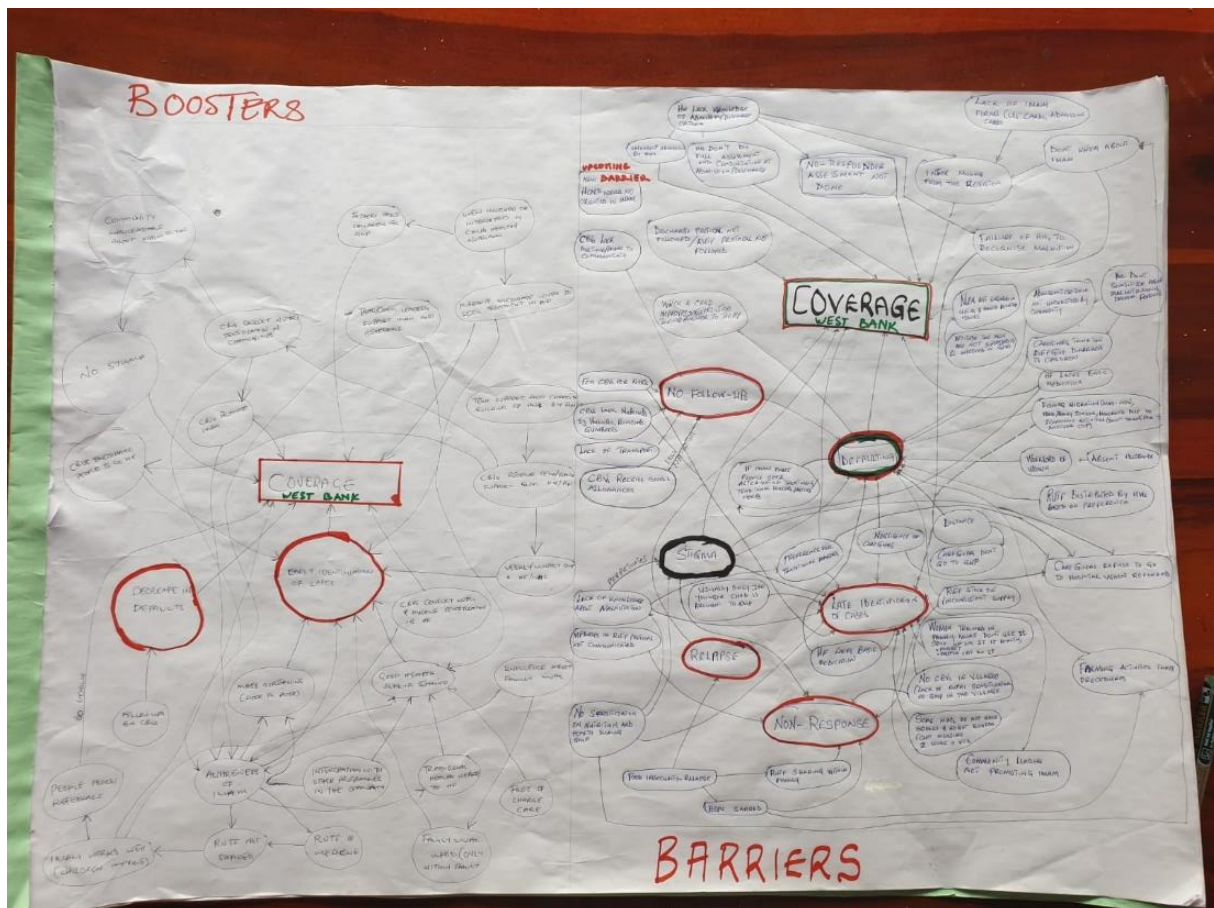


Figure 34: Concept map – West Bank

## 8.2 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 five 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.

## 8.3 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 analyzed 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 placed 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 5.

## 8.4 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:

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

## 8.5 Prior – East Bank

The scoring of the four prior calculation approaches and their average on the East Bank can be found in Table 18.

MAM		SAM	
Unweighted BBQ	50%	Unweighted BBQ	50%
Weighted BBQ	60%	Weighted BBQ	62%
Scoring of concept map	62%	Scoring of concept map	62%
Histogram of belief	64%	Histogram of belief	55%
<b>Average</b>	<b>59%</b>	<b>Average:</b>	<b>57%</b>

Table 22: Calculation of the prior – East Bank

## 8.6 Prior – West Bank

The scoring of the four prior calculation approaches and their average on the West Bank can be found in Table 19.

MAM		SAM	
Unweighted BBQ	50%	Unweighted BBQ	50%
Weighted BBQ	49.5%	Weighted BBQ	55.5%
Scoring of concept map	34%	Scoring of concept map	34%
Histogram of belief	62%	Histogram of belief	56%
<b>Average</b>	<b>49%</b>	<b>Average:</b>	<b>49%</b>

Table 23: Calculation of the prior – West Bank

## 9 Stage 3

The principal objective of Stage 3 is to provide an estimate for coverage. 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 sizes of 32 (East Bank) and 34 (West Bank) for the large area survey to reach the MAM sample. It was decided to measure the coverage on the MAM population, as SAM prevalence was low and would require exhaustive mass screening of the total Nalolo population of children U5.

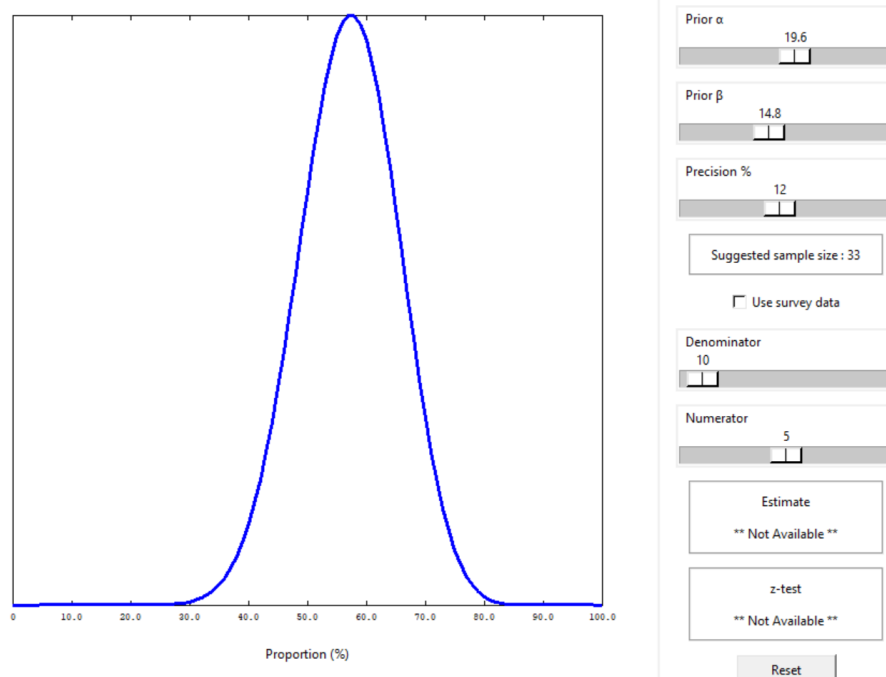


Figure 35: Stage 3 SAM sample size (Bayesian calculation) – East Bank

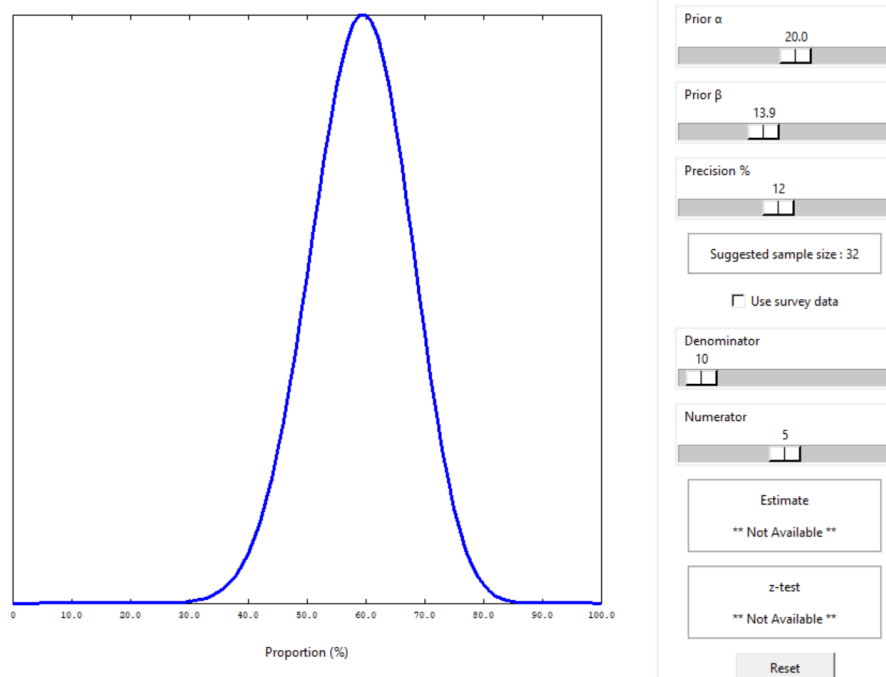


Figure 36: Stage 3 MAM sample size (Bayesian calculation) – East Bank



On the West Bank, a sample of 56 was originally calculated with a higher precision of 10%, as the May 2022 mass screening results showed a high MAM prevalence of 5% (compared to only 1.6% on the East Bank).

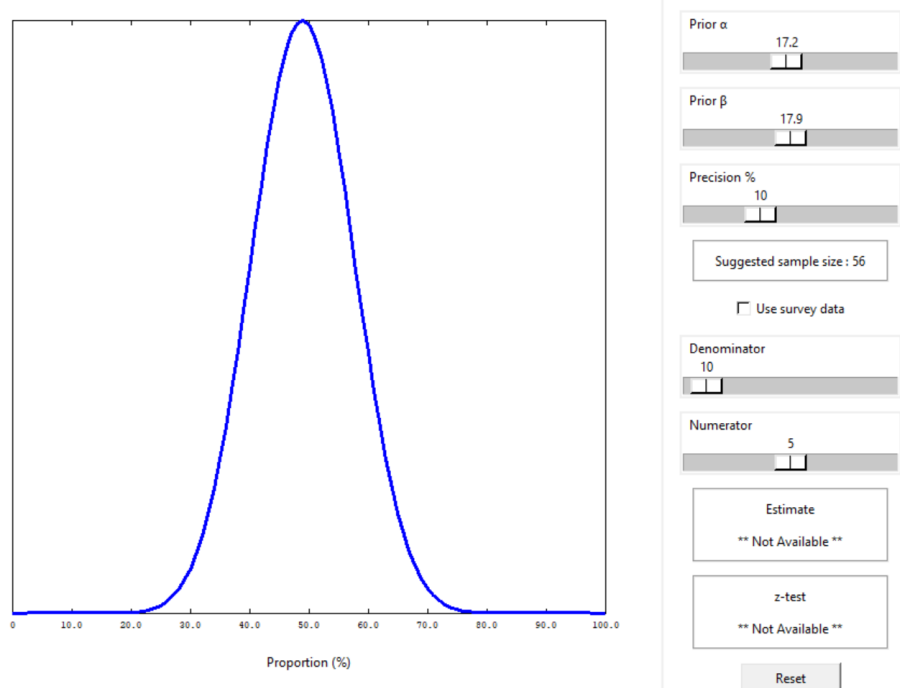


Figure 37: Stage 3 SAM & MAM sample size (Bayesian calculation), precision 10% – East Bank

However, later it was decided to use a smaller precision of 12%, which decreased the sample to 34, as the original MAM sample of 56 could not be achieved during the Stage 3 in the sample villages. The reason was either because the prevalence (5%) estimated during May 2022 mass screening was incorrect and in fact much lower at the time of the large area survey or because the average population of villages was smaller than estimated; or a combination of both of these factors.

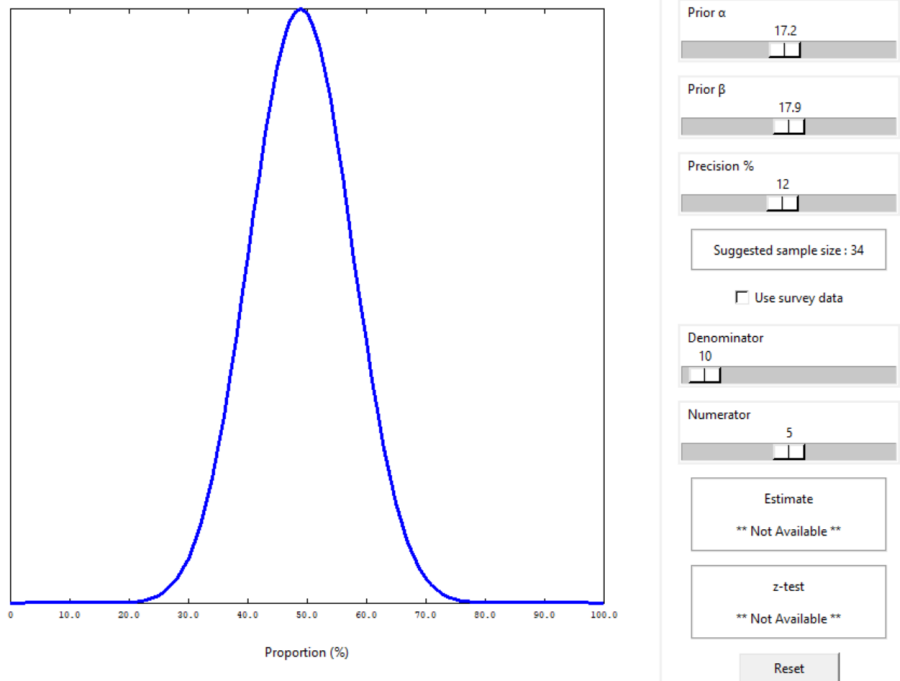


Figure 38: Stage 3 SAM & MAM sample size (Bayesian calculation), precision 12% – East Bank

## 9.1 Sampling

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

$$n_{\text{villages}} = \left\lceil \frac{n}{\text{average village population}_{\text{all ages}} \times \frac{\text{percentage of population}_{6-59 \text{ months}}}{100} \times \frac{\text{MAM prevalence}}{100}} \right\rceil$$

As mentioned above, it was decided to use MAM prevalence instead of the SAM prevalence because the SAM prevalence was estimated to be too low to find the required number of cases.

The specific calculations for the **East Bank** were as follows:

- n = 32
- % population 6-59 months = 21%
- Prevalence of MAM (estimated based on mass screening) = 1.6%
- Average population of each village = 76

The specific calculations for the **West Bank** were as follows:

- n = 56
- % population 6-59 months = 21%
- Prevalence of MAM (estimated based on mass screening) = 5%
- Average population of each village = 79

## 9.2 Sampling Framework

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

- **First Stage:** A detailed map of the East and West Banks was not available; therefore, a spatially stratified sampling method (list method) was employed, using lists provided by program staff.
- **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, Kobo toolbox was utilized with the team working in pairs.

The wide area survey on the East Bank was completed over a period of five days (7<sup>th</sup>-11<sup>th</sup> November) plus one additional day (22<sup>nd</sup> November) to cover the full sample. The team consisted of 12 members and required three cars to reach the total of 126 villages. On average, 21 villages were screened by the team per day.

On the West Bank, 12 team members with three cars conducted the wide area survey for five days (14<sup>th</sup>-18<sup>th</sup> November) plus four team members continued with the survey for three additional days

(28<sup>th</sup>-30<sup>th</sup> November) to cover the full sample of 106 villages. This means that approximately 13 villages were screened per day on average. The survey took a longer time on the West Bank due to bigger distances between villages and a longer travel time required to reach the West Bank from PIN's Mongu office.

### 9.3 Challenges

The team faced several challenges during this stage of the SQUEAC survey. These included:

- Insufficient time was budgeted for the large area survey. Only four working days were allocated to the Stage 3 data collection at the planning and budgeting stage; whereas 14 days were needed for the exercise due to distances and accessibility.
- The team was not able to achieve the full original samples on both the East and West Banks calculated based on the average village population estimations (74 for East Bank, 79 for West Bank) and MAM prevalence estimations (1.6% for East Bank, 5% for West Bank), and additional villages needed to be sampled on both banks to reach the samples. Moreover, the sample precision had to be decreased to 12% on the West Bank (East Bank calculated with 12% precision from the outset, as MAM prevalence was only estimated at 1.6%) to reach the sample. This was likely due to two factors:
  - It is likely that MAM prevalence estimated based on 2022 mass screenings conducted by CBVs was not correct and was estimated higher than the reality. This would mean that CBVs do not screen correctly and refer healthy children for treatment.
  - The lists of villages on both East and West Banks were not complete, nor was the information on village population and distances. It was very difficult for the team to get the village and population information from the district despite communicating this need three months in advance. It is thus believed that the district does not have the complete information on its population. The incomplete lists used for this SQUEAC were collected in coordination with health facilities and CBVs.
- There is no accommodation nor market or shop available on the West Bank. The team thus had to plan in advance and purchase and/or carry all food, water, coal for cooking, cooking and eating utensils, mattresses and blankets in advance. The team was allowed to use the empty rooms in the Nalolo District Hospital for accommodation free of charge.



## 10 Findings

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 program. Recovering cases out of the program are those cases who recover from SAM/MAM without receiving programmatic treatment<sup>15</sup>.

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  $R_{out}$  = recovering cases not in the program:

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

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 program ( $R_{out}$ ) is calculated using the formula below. A critical element of this is a correction factor that has been with knowledge of the length of time an untreated case of SAM or MAM takes to recover.

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

Tables 23 and 24 below show the total number of cases found in the wide area survey and the final calculation of  $R_{out}$ .

SAM East Bank	
SAM covered	3
SAM recovering in	0
SAM uncovered	1
SAM recovering out	0
MAM East Bank	
MAM covered	6
MAM recovering in	4
MAM uncovered	22
MAM recovering out	4

Table 24: No. of SAM and MAM cases identified in Stage 3 – East Bank

SAM West Bank	
SAM covered	3

<sup>15</sup> A single coverage estimator for use in SQUEAC, SLEAC, and other CMAM coverage assessments, <https://www.enonline.net/fex/49/singlecoverage>.

SAM recovering in	0
SAM uncovered	3
SAM recovering out	0
<b>MAM West Bank</b>	
MAM covered	9
MAM recovering in	2
MAM uncovered	24
MAM recovering out	1

Table 25: No. of SAM and MAM cases identified in Stage 3 – West Bank

## 10.1 Coverage Estimations

The following 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.

In the East Bank, due to the very low prevalence of SAM, it was not possible to find the required sample size given the significant time and the resources this would require. The prior value for MAM was overestimated and therefore cannot be presented as there is a conflict between the prior and likelihood. We can ascertain, however, that coverage is below the Sphere standard of 50% for a rural area.

<b>East Bank</b>	
<b>SAM</b>	N/A, caseload not found
<b>MAM</b>	42.7% (31.9-54.5%) - p value 0.0083 null hypothesis accepted and coverage value not accepted

Table 26: Posterior coverage in Stage 3 – East Bank

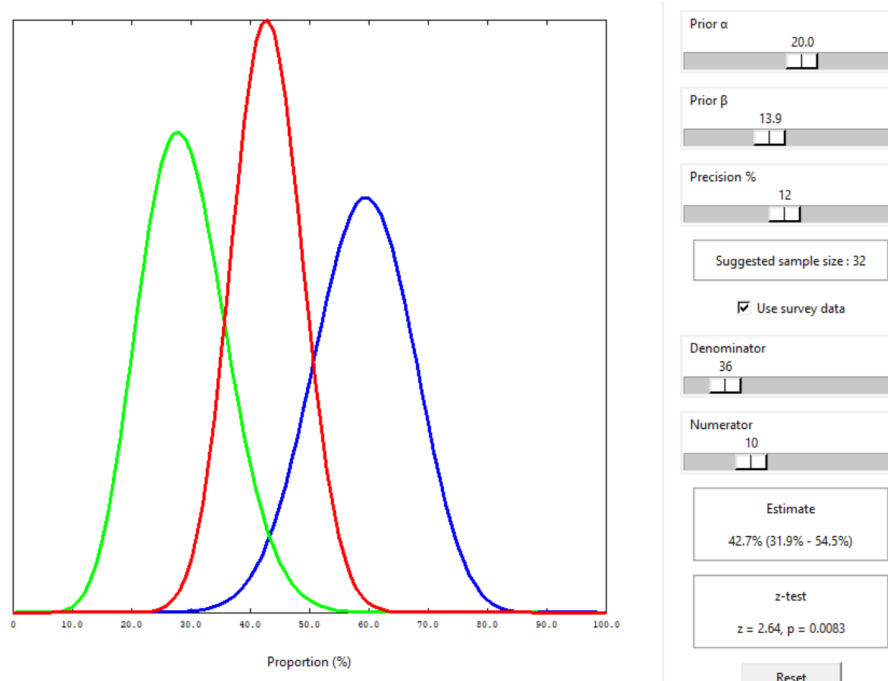


Figure 39: Posterior coverage – East Bank

Similarly to the East Bank, it was not possible to find enough SAM cases to meet the sample size in the West Bank. However, sufficient MAM cases were found and the data does not present a conflict between the prior and the likelihood. Again, coverage is below the Sphere standard of 50%.

West Bank	
SAM	N/A, caseload not found
MAM	39.4% (28.4%-51.2%) - p value 0.1181 null hypothesis rejected and coverage value accepted

Table 27: Posterior coverage in Stage 3 – West Bank

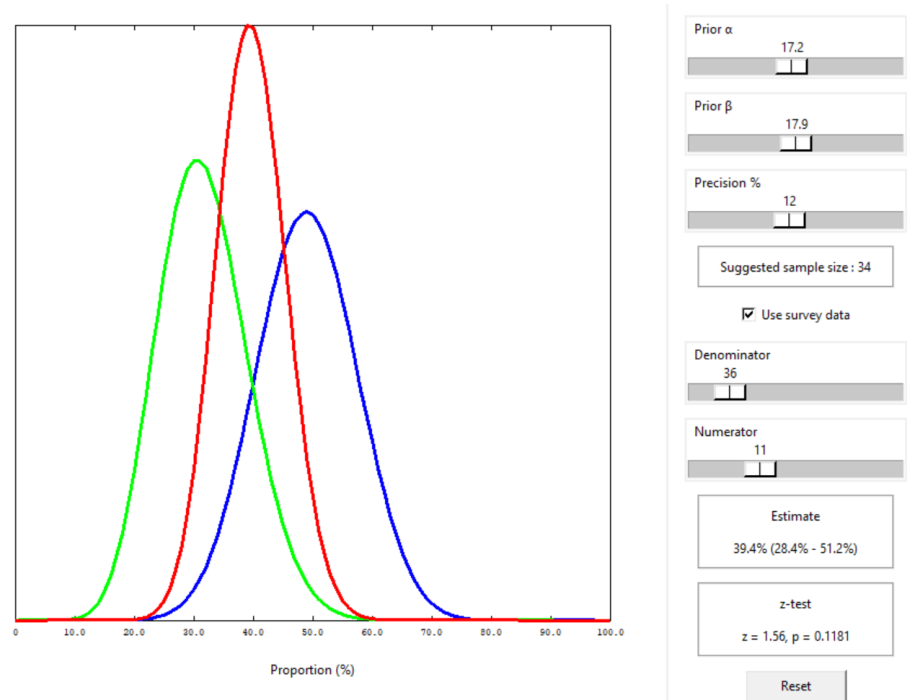


Figure 40: Posterior coverage – West Bank

The Stage 3 data showed that a high proportion of the 50% of caregivers with children out of the program did not think their child was sick, indicating a low awareness of malnutrition. In the West Bank, only 7% of caregivers of children who were not enrolled in IMAM indicated that malnutrition caused the symptoms suffered from by their child. Few caregivers (0% East Bank, 7% West Bank) identified malaria as a disease their child was suffering from. None of the responding mothers in the East Bank identified malaria as the cause of the symptoms their child was suffering from. In the West Bank, only 7% of caregivers of children who were not enrolled in IMAM indicated that malnutrition caused the symptoms suffered from by their child. Interestingly, all mothers whose children were enrolled in the IMAM program thought their child was not sick. This may indicate a positive perception of the program’s impact on children’s health.

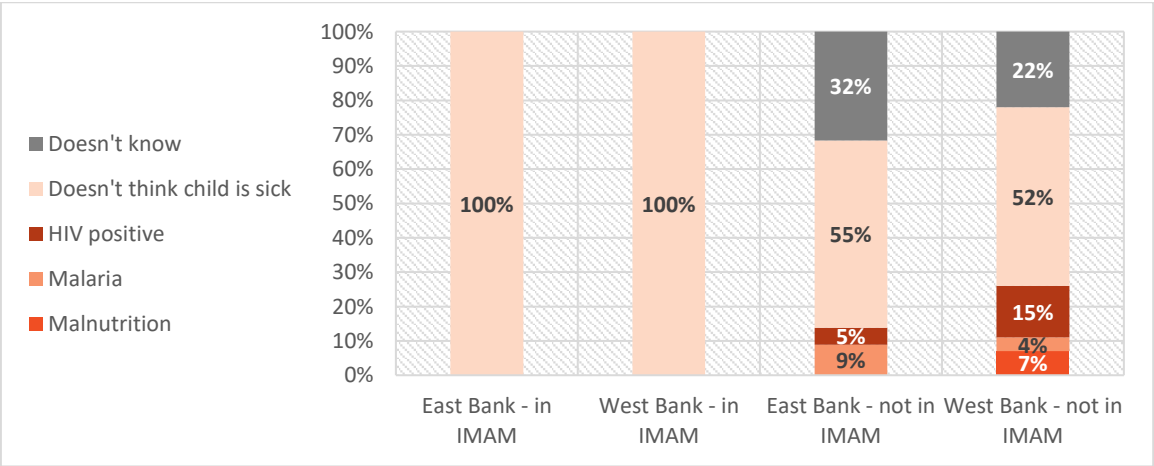


Figure 41: What illness caused the symptoms, Stage 3 – East & West Bank

Mothers who were able to recognize their child was suffering from symptoms related to malnutrition were asked how they treated or planned to treat the disease. By far the most common response was consultation at the health center (around 60% for both East and West Bank responders). However, some respondents also responded they were planning no treatment or that they would treat their

children themselves either by medicinal herbs and roots or by purchasing medicine at a market or in a pharmacy. One respondent would prepare enriched meals. These responses and their frequency confirm the results from the Stage 2 small area survey.

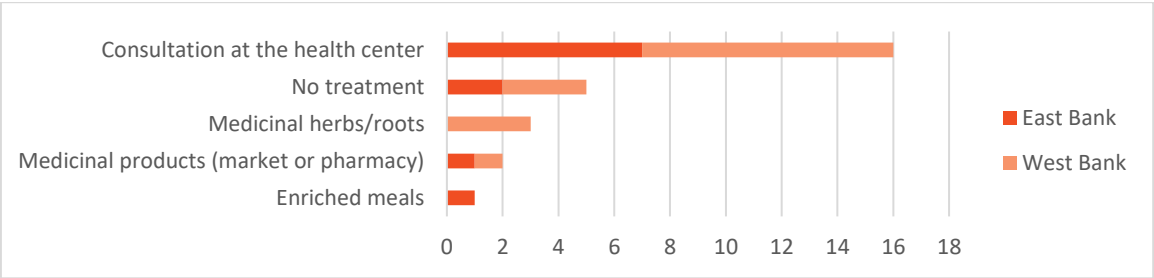


Figure 42: Treatment of malnutrition by mothers, Stage 3 – East & West Bank

Reasons for enrollment into the IMAM program given by covered cases are displayed in figures 47 and 48.

Most of the caregivers who enrolled their child into the program in the East Bank did that because they recognized the disease themselves or wanted their child to be healthy. Other reasons included malnutrition was diagnosed by health personnel, short distance and accessibility as well as the fact the service is for free. The results additionally confirm the Stage 2 findings. This data shows that caregivers display good health seeking behavior and are able to recognize the symptoms and act on it by seeking out medical services. Distance may not play such a strong role in health seeking behavior, as other factors seem much more important based on their frequency.

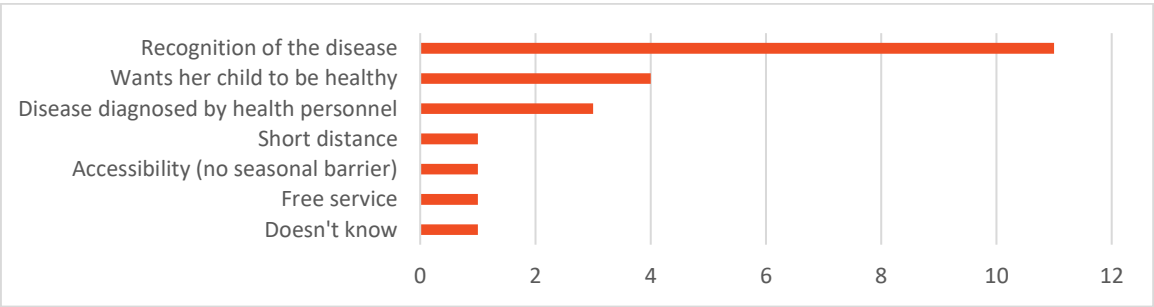


Figure 43: Reasons for enrollment into the U5 IMAM program, Stage 3 – East Bank

In the West Bank, caregivers enrolled their child into the IMAM program mainly because they identified their child was malnourished and they wanted their child to be healthy. The other three most common reasons were the disease diagnosis by health personnel and the facts that the service was for free and program staff were friendly and patient. Some caregivers also mentioned accessibility and short distance to a facility, availability of RUTF, and encouragement of another family member. These results and their frequency are again more or less in line with the findings from Stage 2. This data shows that caregivers display good health seeking behavior and are able to recognize the symptoms and act on it by seeking out medical services. It also confirms a positive perception of the program. Again, it seems that distance does not play such a strong role in health seeking behavior.

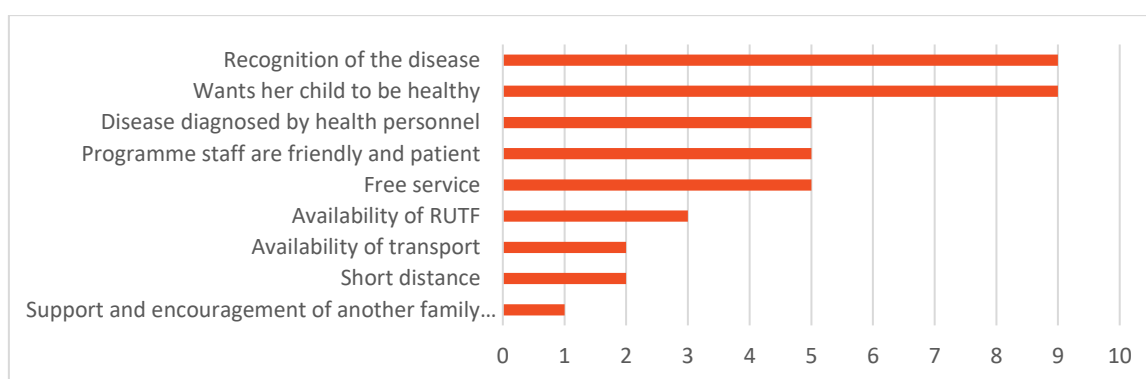


Figure 44: Reasons for enrollment into the U5 IMAM program, Stage 3 – West Bank

Most respondents in both East and West Banks provided a reason for non-enrollment connected to a gap on the side of the IMAM program. In most cases, a child was taken to a health facility but was not enrolled into the IMAM program by the health worker. The other most common reasons were that a child was screened by a CBV but was not referred for the treatment, or that a child was not screened. This suggests (and confirms findings from Stage 1) that either health personnel (health workers and CBVs) may have some gaps in malnutrition screening techniques or IMAM admission criteria, or that the children covered in Stage 3 developed malnutrition after being screened by health personnel. The two children (age 17 months) who were not screened in the West Bank have a CBV in their area but the CBV does not come to screen them. The one child (age 27 months) not screened in the East Bank does not have a CBV in the area. At the same time, this means that their caregivers do not take them to the monthly GMPs for screening and thus suggests gaps in health seeking behavior from the caregiver.

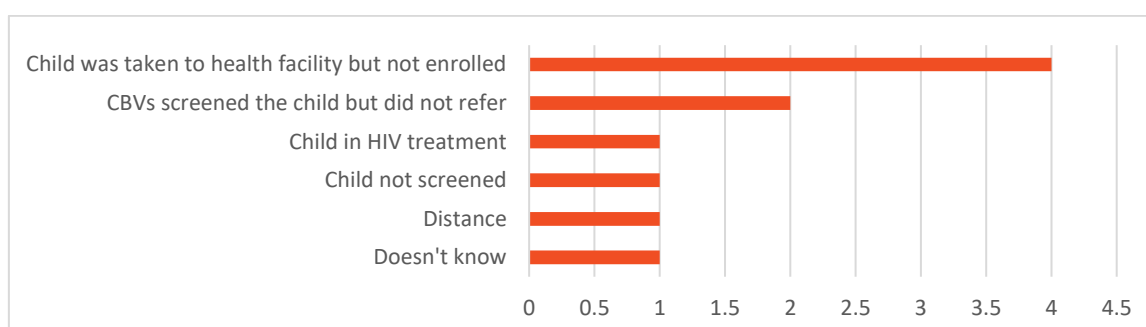


Figure 45: Reasons for non-enrollment into the U5 IMAM program, Stage 3 – East Bank

In the West Bank, other reasons stated during the survey included stay in a different district, which confirms the Stage 1 findings about seasonal migration having an impact on the treatment of a child. Another mentioned reason was a workload of the mother.

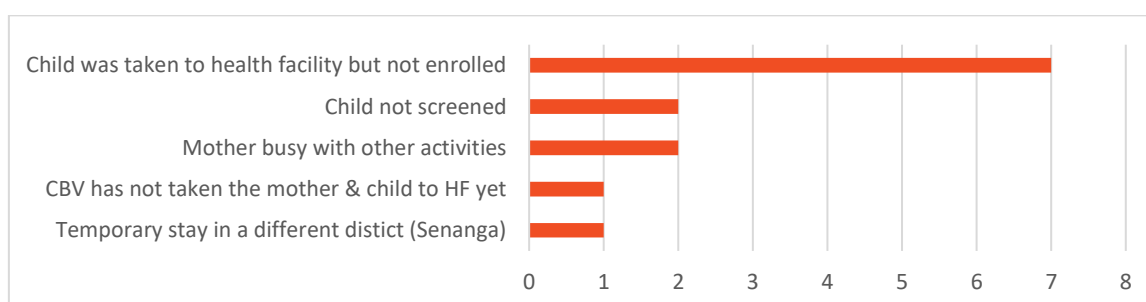


Figure 46: Reasons for non-enrollment into the U5 IMAM program, Stage 3 – West Bank

Mothers of malnourished children not enrolled in the IMAM program were asked if they were aware of any health facility services dedicated to the treatment of malnutrition. Out of these mothers, 74% of the East Bank respondents and 63% of the West Bank respondents confirmed knowing about such services. On the other hand, one quarter of the East Bank respondents and more than one third of the West Bank respondents had no knowledge of these services. This indicates that there is still some space for IMAM program awareness raising.

The team also looked at the presence and activity of CBVs; 92% of East Bank and 90% of West Bank respondents confirmed that they had a CBV in their area. This showcases good coverage of the assessed villages by CBVs. When asked about the activity of the CBVs in the areas where they are present, 70% of East Bank and 78% of West Bank respondents confirmed that CBVs come to screen their children.

Figures 51 and 52 and Table 24 below, which provide data on the frequency of CBVs' activity in terms of visits/screenings, show an interesting trend and a difference in CBVs' work in the two banks. The data showcases that the work of CBVs in the East Bank is much less effective compared to the CBVs' work in the West Bank. In the East Bank, most (92%) uncovered malnourished children were visited within one month before the Stage 3 survey and in general uncovered children were visited and screened much more frequently by CBVs (6.1 visits per year) in the past year compared to the covered children (4.7 visits per year). This indicates that the accuracy of screening and/or the decision to refer to treatment are not done correctly by the CBVs in the East Bank.

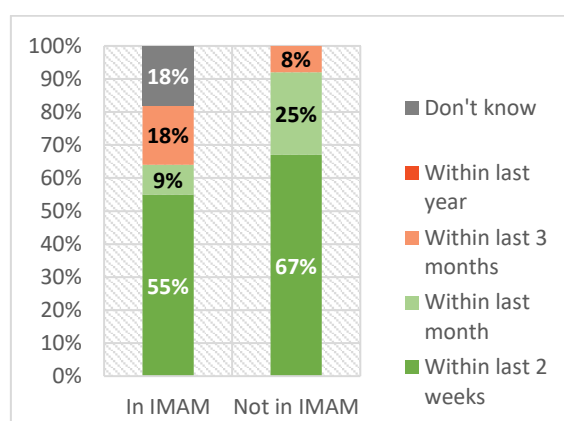


Figure 47: CBV activity – East Bank, MAM & SAM

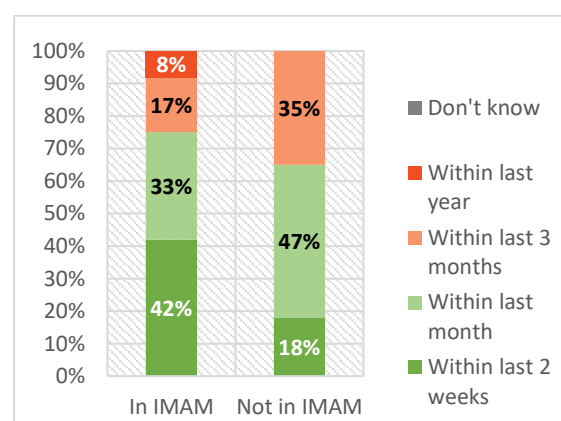


Figure 48: CBV activity – West Bank, MAM & SAM

On the other hand, the work of CBVs in the West Bank seems to be more effective. More covered children (75%) were visited within one month before the survey compared to uncovered children (65%). Moreover, the uncovered children received on average more than two visits less in the past year (3.5 visits) compared to the covered children (5.8 visits). This indicates that the CBVs in the West Bank are more likely to screen correctly and/or refer correctly compared to the East Bank CBVs.

Area	Average no. of CBVs' visits of children in IMAM (covered) per year	Average no. of CBVs' visits of children not in IMAM (uncovered) per year	Average no. of CBVs' visits of all children per year
East Bank	4.7	6.1	5.5
West Bank	5.8	3.5	4.2

Table 28: Frequency of screening by CBVs per year in Stage 3 – East & West Bank

It is not surprising that children in the East Bank received on average more visits (5.5) by CBVs in the past year compared to the children in the West Bank (4.2) given the considerably bigger catchment areas in the West Bank.

# 11 Conclusions and Recommendations

The findings from all stages of this SQUEAC assessment provide a clear picture of the factors affecting coverage of both SAM and MAM OTP treatment program across the East and West Banks of Nalolo district, Zambia.

**Stage 1** demonstrated that there are gaps and discrepancies across the data collected at health facilities, with gaps in knowledge of health workers as well as reporting tools underpinning this. However, the data analysis provided huge insight into the program, demonstrating the impact of screening activities on admission and flooding and stockouts on discharges for example. Long lengths of stay are an area of improvement, with confusions between non-responders and defaulting frequently made. The data also demonstrated positive attributes to the program, with MUAC data demonstrating mostly early case finding.

The qualitative data collection revealed that there is generally a high awareness of malnutrition and the IMAM program, due to the community mobilization activities that have taken place to date. There remain gaps in screening at NHCs, with not all of them having adequate measuring equipment. There is an active and well established network of CHVs that contribute to screening and some sensitization activities, whilst there are some gaps in measuring skills with MUAC. CHVs are well accepted in the community. Stigma continues to surround cases of undernutrition, particularly when combined with other childhood diseases such as scabies; however, with increased community mobilization activities and engagement of community leaders, this can hopefully be overcome.

**Stage 2** was used to gather more information around the impact of the PLW program on coverage and the presence of fathers in the household on coverage, as the team had come across many single mothers. Some correlation was demonstrated within the hypotheses, and questions around the hypotheses provided interesting additional information. Coverage was largely below the threshold across the populations measured.

A low SAM prevalence meant that **Stage 3** was just conducted for MAM coverage. The prior for the East Bank was set too high and therefore there was a conflict between the prior and the likelihood, meaning that the posterior value cannot be reported; however, we can ascertain that coverage is below the Sphere Standard of 50% for a rural population. The West Bank prior was more accurate and so coverage is reported at 39.4% (28.4%-51.2%).

## 11.1 Health Facility Level - Deficiencies in health workers' knowledge of protocols, training and handovers

### 11.1.1 Standardize IMAM protocol

- Clarify and standardize the IMAM protocol that the program uses with the input of key stakeholders, including Ministry of Health, Unicef and health workers, using WHO guidelines as a basis.
- Consider a larger piece of work looking at the impact of including weight for age measures on nutritional outcomes (including stunting) – for additional information see [this](#) article and also the working group at the [Emergency Nutrition Network](#).
- Provide comprehensive training to all health workers on updated protocol.
- Provide on the job supervision to health workers at all health centers, particularly focusing on data recording and following process with caregivers and children (e.g., fully explaining to the caregiver about the program and providing clear instructions). Underpin training with the



importance of nutrition programming and how it supports health (with 45% of U5 deaths being attributed to under nutrition).

- Ensure the updated protocol is accessible to PHO, DHO and health workers.
- Create community of practice for health workers through a WhatsApp group moderated by PIN staff, where health workers can provide peer to peer support. Health workers can also inform of imminent stock outs and shortages of reporting forms.

### **11.1.2 Improve data management**

- Provide comprehensive training on data collection and management to health workers, using examples of data from this report.
- Ensure that all health facilities have sufficient data recording items.
- Work with DHO to have more oversight of health worker rotations. Include working with existing health workers who are leaving their post to gather specific lessons learnt from the health facility, and preparedness to provide specific training to incoming health workers.
- Run on the job data clinics to ensure data is kept up to date, including individual case management of registers, ensuring that health workers are able to identify those who are non-responding and defaulting, anthropometric measures are taken and recorded for every case.
- Link case management to the follow up of non-responders and defaulters.
- Ensure all supervision is well communicated by PIN far in advance of the visit.

### **11.1.3 Supply chain**

- Work with relevant stakeholders to ensure supply chains are kept open, this may include holding a half day meeting between PIN and DHO to create a shared standard operating procedure that both parties can take responsibility for.
- Redistribute stock to ensure health facilities do not suffer stock outs.
- Communicate with beneficiaries through CHVs when there is a stock out and when stock returns.
- Explore options for substituting RUTF with a local alternative.

### **11.1.4 Follow up of non-responders and defaulters**

- Train health workers in how to identify those who are not responding to treatment and those that have defaulted.
- Train health workers in the protocol around non-response (counselling, follow up in the community by CHVs) to be given to non-responders.
- Follow up by CHVs for defaulters.
- Consider providing CHVs with a phone and small credit allowance to enable them to do follow up of patients in remote areas.

### **11.1.5 Flooding**

- Ensure that those who are in the catchment area for flooded health centers are informed in advance of facility closures and alternative centers.
- Provide additional supply to caregivers when it is deemed that flooding is a risk.
- Consider trialing IMAM led by CHVs who can provide services at village level.

### 11.1.6 Systematic Screening

- Ensure that systematic screening is standard at all health facilities (all children under 5 are screened using MUAC and/or WHZ), the provision of working scales and height boards is essential for this.

## 11.2 Community Level:

### 11.2.1 Family MUAC

- Strengthen Family MUAC function through individual and/or community consultations to understand in more detail the perception of, as well as the barriers and enablers to this approach. Is it seen as a tool just to get in to the program or a tool that can be used to assess the growth and development of children?
- Review how Family MUAC is currently being promoted.
- Consider the development and implementation of a Social Behavior Change Communication (SBCC) strategy, to ensure community adoption and sustainability of the approach. This strategy can, for example, also integrate clear and consistent communication activities on the admission criteria.
- As part of the SBCC, provide additional participatory training sessions, including both men and women, and make the approach more widespread and commonly used through continual positive reinforcement, especially in the more remote communities.
- Ensure the message of Family MUAC (e.g. people measuring other people's children) is shared to encourage wider usage in communities.
- Follow up training with booster sessions to increase confidence of those who have been trained in family MUAC.
- Consider smaller pilot, focusing on the most remote villages (particularly in West Bank), asking CHVs to conduct follow up and booster instructions in Family MUAC when they visit health facilities.

### 11.2.2 Stigma

- As part of the SBCC, consider doing a community mobilization session involving the local leaders. The session could include a 'Problem Tree' activity where the causes and consequences of malnutrition are clearly explained, and misperceptions/stigma about malnutrition can be discussed.
- Hold open community dialogues as needed. Community dialogues should include as many people as possible from different socioeconomic backgrounds and different segments of the community.
- Specifically retarget community leaders (both male and female) to increase awareness of the program and also decrease stigma.
- Words such as 'negligent' and 'careless' should be avoided when talking about caregivers.

### 11.2.3 Lack of knowledge about IMAM program and Lack of awareness about causes of malnutrition/ Preference to take child to traditional healer or pastor/ Fathers not interested in health & nutrition of children

- The IMAM program and information around malnutrition should be provided throughout caregiver interactions with the health system (for example, during ANC). This should also be complemented by community sessions and/or counselling at the household level.

- Given the evidence that undernutrition begins in-utero, messaging about undernutrition should begin prior to conception. This is in line with Zambia’s First 1000 Most Critical Days Programs (MCDP II).
- As part of the SBCC, leverage the community’s interests and aspirations (for example, supporting good nutrition during the first 1000 days can improve the growth and development, and education opportunities for the child). Leverage positive messaging. For example, in Peru, there is a strong investment in education and therefore nutrition messaging has been linked to education attainment and the link with escaping poverty.
- Work specifically with traditional healers and pastors to raise awareness of the IMAM program – train how to measure MUAC and promote referral of cases to the health facility.
- Tailor messaging to men, examples of good nutrition linking to economic output, or less expense can work well.
- Influential local people can also be used to spread messages around health, including sportspeople, artists and musicians. Consider participatory communications channels, such as drama and music groups.
- Link with other PIN CPs that have effectively engaged men in childhood nutrition, such as Orange Fleshed Sweet Potato Program in Ethiopia
- As part of the SBCC, link to wider undernutrition programs that actively prevent, including other elements to increase sustainability of intervention such as cooking demonstrations using community gardens at health facilities, infant and young child feeding counselling (using [behavior change techniques](#) rather than the typical message relaying).

#### **11.2.4 Distance**

- Similarly to flooding, a trial of CHVs to provide community outreach services could lessen the effects of distance
- The program is already spacing visits for those who live far away; however, this should be systematic with a protocol developed for this purpose

#### **11.2.5 Pregnant and Lactating Women**

- Resource permitting, conduct a small survey of the PLW program, conducting a full analysis of data (both electronic and in registers), and collect qualitative data

#### **11.2.6 Equipment**

- If resources allow, provide equipment for measurements, including scales, height boards and MUAC tapes, to NHCs and CHVs
- Provide CHVs with adequate equipment to conduct follow up during rainy season, including gumboots, raincoats and umbrellas

## 12 Annexes

### 12.1 Annex 1: Participant List

Name	Position
Tereza Suchánková	Programme Quality & Development Manager, PIN
Lastford Miyanda	Project Manager, PIN
Emmanuel Nduba Tumelo	Field Coordinator, PIN
Nyauze Mahalihali	Field Coordinator, PIN
Emmanuel Moonga	MEAL Officer, PIN
Natasha Mutanuka	MEAL Assistant Intern, PIN
Anna Nejedlá	Regional MEAL Advisor for Africa, PIN
Deirdre McMahon	Nutrition & Behavior Change Advisor, PIN
Emily Hockenhull	Network Involvement and Engagement Manager, Royal College of Physicians
Julita Mazyopa	Nutritionist, Nalolo DHO
Kelvin Chibesa	Director, Nalolo DHO
Ellen Mapani	Nutritionist, Lewanika General Hospital
Ward Siamusantu	Nutrition Officer, Unicef
Mwendaendi Katungu	Consultant for Social Cash Transfer Nutritional Linkages, Unicef
Abigail Suyubo	Data collector
Inyama Arnold Muyunda	Data collector
Joseph Muleta	Data collector
George Munono Sitali	Data collector
Kamba Mufalo	Data collector
Mate Mubiana	Data collector
Sharon Kasanga	Data collector
Susan Malumo	Data collector

### 12.2 Annex 2: Complete list of interviews, East Bank

EAST BANK – QUALITATIVE DATA COLLECTION			
Date	Informant type	Interview method	Location

<b>14<sup>th</sup> October, 2022</b>	-	Observation (checklist)	Litoya
	-	Observation (checklist)	Mouyo
	-	Observation (checklist)	Nanjucha
	Health worker	KII	Litoya
	Health worker	KII	Mouyo
	Health worker	KII	Nanjucha
	CHV	KII	Litoya
	CHV	FGD	Mouyo
	CHV	FGD	Nanjucha
	Caregiver of a malnourished child not in the IMAM program	KII	Litoya
	Caregiver of a malnourished child in the IMAM program (male)	KII	Mouyo
	Caregiver of a malnourished child in the IMAM program (female)	KII	Mouyo
	Caregivers of a malnourished child in the IMAM program (female)	FGD	Nanjucha
	Caregiver of a healthy child (female)	KII	Mouyo
	Caregivers of a healthy child (females)	FGD	Litoya
	Community leader	KII	Nanjucha
	Teacher	KII	Mouyo
	Religious leader	KII	Nanjucha
<b>15<sup>th</sup> October, 2022</b>	-	Observation (checklist)	Kataba
	-	Observation (checklist)	Mande
	-	Observation (checklist)	Mukukutu
	Health worker	Semi-structured interview	Kataba
	Health worker	KII	Mande
	Health worker	KII	Mukukutu
	CHV	Semi-structured interview	Kataba
	CHV	KII	Mande
	CHV	FGD	Mukukutu
	Caregiver of a malnourished child in the IMAM program (female)	KII	Kataba

	Caregiver of a malnourished child in the IMAM program (male)	KII	Kataba
	Caregiver of a malnourished child in the IMAM program (female)	Semi-structured interview	Kataba
	Caregivers of a malnourished child in the IMAM program (female)	FGD	Mande
	Caregivers of a malnourished child in the IMAM program / Women trained in Family MUAC (female)	FGD	Mande
	Caregivers of a malnourished child in the IMAM program (female)	FGD	Mukukutu
	Caregivers of a malnourished child in the IMAM program (male)	FGD	Mukukutu
	Caregiver of a malnourished child <u>not</u> in the IMAM program (female)	Semi-structured interview	Kataba
	Caregiver of a malnourished child <u>not</u> in the IMAM program (female)	Semi-structured interview	Kataba
	Caregiver of a malnourished child <u>not</u> in the IMAM program (female)	KII	Mukukutu
	Community member (female)	KII	Mande
	Community members (female)	FGD	Mukukutu
	Community member (male)	KII	Kataba
	Community members (male)	FGD	Mande
	Community members (male)	FGD	Mukukutu
	Community leader (male)	KII	Kataba
	Community leader / Traditional healer (male)	KII	Mukukutu
	Religious leader (male)	KII	Mukukutu
<b>17<sup>th</sup> October, 2022</b>	-	Observation (checklist)	Nalolo
	Health worker	Semi-structured interview	Mouyo
	Health worker	Semi-structured interview	Nanjucha
	Health worker	Semi-structured interview	Litoya
	Health worker	Semi-structured interview	Kataba
	General worker (no health worker in the facility)	KII	Nalolo
	CHV	KII	Nalolo

	CHV	KII	Nalolo
	CHV	KII	Nanjucha
	CHV	Semi-structured interview	Litoya
	Caregivers of a malnourished child in the IMAM program (female)	FGD	Nalolo
	Caregivers of a malnourished child <u>not</u> in the IMAM program (female)	FGD	Kataba
	Caregiver of a malnourished child <u>not</u> in the IMAM program (female)	Semi-structured interview	Litoya
	Community member (male)	Semi-structured interview	Litoya
	Community leader (male)	Semi-structured interview	Litoya
	Community leader (male)	Semi-structured interview	Nanjucha
	Women trained in Family MUAC	FGD	Nalolo

### 12.3 Annex 3: Complete list of interviews, West Bank

WEST BANK – QUALITATIVE DATA COLLECTION			
Date	Informant type	Interview method	Location
19 <sup>th</sup> October, 2022	-	Observation (checklist)	Liliachi
	-	Observation (checklist)	Nasilimwe
	-	Observation (checklist)	Siloloti
	Health worker	KII	Liliachi
	Health worker	Semi-structured interview	Siloloti
	CHV	KII	Siloloti
	CHV	FGD	Nasilimwe
20 <sup>th</sup> October, 2022	-	Observation (checklist)	Kaunga Lueti
	-	Observation (checklist)	Mapungu
	-	Observation (checklist)	Nakatwelenge
	-	Observation (checklist)	Sipungu
	-	Observation (checklist)	Suu
	Health worker	KII	Kaunga Lueti
	Health worker	KII	Mapungu
	Health worker	KII	Nakatwelenge

	Health worker	Semi-structured interview	Sipungu
	Health worker	KII	Suu
	Health worker	Semi-structured interview	Suu
	CHV	FGD	Kaunga Lueti
	CHV	KII	Nakatwelenge
	Caregiver of a malnourished child in the IMAM program (female)	KII	Kaunga Lueti
	Caregiver of a malnourished child in the IMAM program (female)	KII	Nakatwelenge
	Community members (female)	FGD	Nakatwelenge
	Community member (female)	KII	Sipungu
	Community member (male), including 1 teacher and traditional healer	FGD	Nakatwelenge
	Teacher (male)	KII	Kaunga Lueti
	Caregiver of a healthy child (female)	FGD	Sipungu
<b>21<sup>st</sup> October, 2022</b>	-	Observation (checklist)	Liliachi
	-	Observation (checklist)	Nasilimwe
	-	Observation (checklist)	Sinungu
	Health worker	Semi-structured interview	Liliachi
	Health worker	KII	Nasilimwe
	Health worker	KII	Sinungu
	Health worker	Semi-structured interview	Sinungu
	CHV	KII	Liliachi
	CHV	KII	Sinungu
	CHV	FGD	Sinungu
	Caregiver of a malnourished child in the IMAM program (female)	Semi-structured interview	Liliachi
	Caregiver of a malnourished child in the IMAM program (female)	KII	Nasilimwe
	Caregiver of a malnourished child in the IMAM program (female)	FGD	Nasilimwe
	Caregiver of a malnourished child in the IMAM program (female)	Semi-structured interview	Sinungu
	Caregiver of a malnourished child <u>not</u> in the IMAM program (male)	KII	Liliachi



	Caregiver of a malnourished child <u>not</u> in the IMAM program (female)	Semi-structured interview	Liliachi
	Community members (female)	FGD	Nasilimwe
	Community member (male)	KII	Sinungu
	Community leader and traditional healer	Semi-structured interview	Nasilimwe
	Traditional healer (female)	Semi-structured interview	Liliachi
	Traditional healer (male)	KII	Nasilimwe
	PLW in the IMAM program	Semi-structured interview	Nasilimwe
<b>22<sup>nd</sup> October, 2022</b>	-	Observation (checklist)	Malombe
	Health worker	Semi-structured interview	Sipungu
	Health worker	Semi-structured interview	Suu
	CHV	KII	Malobe
	CHV	Semi-structured interview	Suu
	Caregiver of a malnourished child in the IMAM program (female)	KII	Malombe
	Caregivers of a malnourished child in the IMAM program (female)	FGD	Malombe
	Caregivers of a malnourished child in the IMAM program (female)	Semi-structured interview	Suu
	Caregivers of a malnourished child in the IMAM program (male)	Semi-structured interview	Suu
	Caregiver of a malnourished child <u>not</u> in the IMAM program (female)	KII	Malombe
	Caregiver of a malnourished child <u>not</u> in the IMAM program (female)	FGD	Malombe
	Community members (male & female)	FGD	Sipungu
	Religious leader (male)	KII	Malombe
	Women trained in family MUAC	FGD	Sipungu
	Woman trained in family MUAC	KII	Suu

## 12.4 Annex 4: Interview guides



1. Health Workers.docx



2. Community Members.docx



3. Volunteers.docx



4. Carer of child in program.docx



5. Carer of defaulted child.docx



6. Carer of child not in program.docx



7. OTP Observation  
checklist.docx



8. Seasonal  
Calendar2.docx

## **12.5 Annex 5: Coded boosters and barriers, East Bank and West Bank**



East Bank\_Boosters &  
barriers.xlsx



West Bank\_Boosters  
& barriers.xlsx

## **12.6 Annex 6: Stage 2 & stage 3 questionnaire**



SQUEAC  
Questionnaire\_Stages



[peopleinneed.cz](http://peopleinneed.cz)