



Semi-Quantitative Evaluation of Access and Coverage (SQUEAC)

Sittwe Township- Rakhine State

MYANMAR



Final report- October-November 2014

Funded by



ACKNOWLEDGEMENTS

ACF would like to express great appreciation to all those who made the coverage assessment of the nutrition program in Sittwe Township possible.

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ACRONYMS

ACF	Action Contre la Faim
ACS	Active Community Screening
ARI	Acute Respiratory Infection
BBQ	Barriers, Boosters and Questions
DFID	Department for International Development
IDP	Internal Displaced People
LQAS	Lot Quality Assurance Sampling
MAM	Moderate Acute Malnutrition
MHAA	Myanmar Health Assistant Association
MUAC	Mid-Upper Arm Circumference
NGO	Non-Governmental Organization
OTP	Outpatient Therapeutic Program
RUTF	Ready-to-Use Therapeutic Food
SAM	Severe Acute Malnutrition
SCI	Save the Children International
SFP	Supplementary Feeding Program
SQUEAC	Semi-Quantitative Evaluation of Access and Coverage
SMART	Standard Monitoring & Assessment of Relief and Transitions
STW	Sittwe
TFP	Therapeutic Feeding Program
TBA	Traditional Birth Attendant
THP	Traditional Health Practitioner
WHZ	Weight-for-height Z-score

A NOTE ON TERMINOLOGY: For the purposes of this evaluation report, the term “**Rural Zone**” is applied to camps and villages of Muslim-based ethnicities, who are served by OTPs located in Thet Kel Pyin, Budupaw, Darpine, Ohn Taw Gyi North, and Me Za Li Khone. The term “**Urban Zone**” is applied to camps located at the periphery of downtown Sittwe, as well as villages (including those located in geographically rural areas) which are of Buddhist or Maramagyi origin that are serviced by the OTPs in Set Yon Su 1, Set Yon Su 3, and Set Roe Kya 2 camp. So as not to confuse with the term “Urban,” this coverage assessment did not include downtown Sittwe wards as the evaluation focused on displacement camps and geographically rural villages.

EXECUTIVE SUMMARY

Two independent coverage assessments based on the SQUEAC (*Semi-Quantitative Evaluation of Access and Coverage*) methodology took place in October 2014 to assess coverage of Severe Acute Malnutrition (SAM) treatment in Sittwe Township. Both studies aimed to assess the coverage of Action Contre la Faim (ACF) and Myanmar Health Assistant Association (MHAA) Outpatient Therapeutic Programs (OTP) and to understand the barriers to health care access in the areas of intervention. The exercise also resulted in built capacity of program staff in undertaking coverage assessments.

The results of the SQUEAC assessment in the Rural Zone reflect an estimated Period Coverage of 70, 9% [95% CI: 59, 5% - 79, 9%]. Period Coverage is the most appropriate indicator to reflect overall program coverage as shown by program's characteristics such as the early recruitment of cases and timeliness of treatment.

In the Urban zone, stage 3 of the evaluation was not conducted due to the very low caseload of SAM and thus, an estimate of the overall coverage could not be established. However, findings from the SQUEAC evaluation suggest a high coverage for MHAA's program in the Sittwe Urban zone.

Coverage is globally high and relatively homogeneous throughout the area of intervention. Main barriers identified and recommendations to improve coverage are described below:

Distance and related factors such as transportation costs and security remain important barriers to access; however the evaluation found that they are not the major negative factor influencing program coverage. In this regard, lack of awareness about the program in distant villages is identified as a main barrier. Another group of key barriers are those directly related to the role of mother, often being the main caregiver: cost-opportunity (domestic and family responsibilities), not being able to travel, and husband refusal.

Poor levels of compliance to treatment due to negative beliefs towards RUTF (lack of trust), as well as sharing and selling the product are related to high levels of non-responder and defaulting cases that directly impact program coverage.

Recommendations from the assessment include:

- 1) Expand sensitization and program awareness activities in villages that are geographically distant from OTP centers;
- 2) Improve referral monitoring and increase communication between partners conducting screening in the field;
- 3) Actively engage the communities in the program by developing the sensitization strategy with respected community figures such as local authorities, religious leaders, and community health actors (THP, TBA) to improve perception, understanding and acceptance of treatment;
- 4) Continue promoting initiatives at OTP level that give priority to beneficiaries coming from distant locations to maintain their motivation;

- 5) Introduce a gender approach in the community awareness strategy to overcome cultural barriers influencing program coverage related to the lack of decision making power of women as main caregivers;
- 6) Evaluate the possibility for the ACF team to follow up with beneficiaries at hospital level in order to mitigate challenges with referrals as well as the defaulter risk;
- 7) Integrate active data analysis of reliable indicators on program coverage as an on-going monitoring tool to identify possible barriers and potential opportunities on a regular basis.

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INTRODUCTION AND OBJECTIVES

Sittwe (STW) is one of the 17 Townships of the Rakhine State, located in western Myanmar bordering with Bay of Bengal and separated from the rest of the country by the Arakan Mountains. Rakhine State is one of the least developed parts of Myanmar and is characterized by high population density with an estimated population of 3.3 million people, protracted trends of both acute and chronic malnutrition, low levels of income and economic diversification, and under-developed infrastructure. The impact of the recent conflict has exacerbated these challenges.

The tensions that flared in June and October of 2012 resulted in wide-spread displacement and camp settlement; the loss of housing, productive assets, and livelihoods; disrupted market access and crop planting cycles, restricted access to basic health and education services, and psycho-social trauma that impacted both community and family level traditional support mechanisms as well as individual mental health. With chronic poverty as a baseline, these aggravated conditions leave families in a vulnerable situation. While the context has stabilized somewhat through relief assistance, basic food security remains fragile and sustainable options for income opportunities and livelihoods recovery are extremely challenged. According to the last nutrition anthropometric survey¹ conducted in the Township by Save the Children International (SCI) in November-December 2013, Global Acute Malnutrition (GAM) rates remain at high levels: GAM is 10,7% (7,0 - 16,2 95%CI) in Urban STW and 9,5% (6,8 - 13,0 95% CI) in Rural STW. Global chronic malnutrition rates are above WHO thresholds, at 42% for Urban Zone and 42.7% for Rural.

ACF has worked in STW since 2007. A nutrition program was implemented from 2007 to 2010, and the emergency nutrition program began in November 2012. In the initial stage of the crisis at the end of 2012, ACF covered nutrition services for all SAM cases in Sittwe. Due to the very low caseload in the Urban Zone, by May 2013 ACF handed over Urban SAM treatment to the local nutrition partner MHAA and continues to work in close cooperation with them. As such, two nutrition partners (ACF for rural and MHAA for urban, respectively) run OTPs in different localities to maximize communities' access to services.

The Therapeutic Feeding Program (TFP) based in outpatient treatment of severely acute malnourished children from 6 to 59 months has 8 OTP (Outpatient Therapeutic Program) centers, including 7 in camps (4 Rural/3 Urban) and 1 in a Rural Zone village. MHAA covers the Supplementary Feeding Program (SFP) for the whole Township. Screening activities are conducted by both organizations including the essential support of Save the Children International (SCI) volunteers.

The objective of this study is to assess the coverage of ACF and MHAA's OTPs and to understand the barriers to accessing health care in the areas of intervention within STW Township for children from 6 to 59 months, based on the Semi-Quantitative Evaluation of Access and Coverage (SQUEAC) methodology. Specific objectives are the following:

¹ Nutritional Anthropometric Assessment (Based on SMART methodology). Children aged 6 to 59 months living in IDP camps. Sittwe and Pauktaw Townships, Rakhine State – Republic of the Union of Myanmar. Save the Children, March 2014.

- Assess the global estimation of coverage of Severe Acute Malnutrition (SAM) treatment in STW Township.
- Identify high and low coverage areas within the intervention area.
- Identify barriers to access to treatment of SAM based on information collected from mothers/caretakers of SAM children identified during the investigation and who are not enrolled in the program.
- Make recommendations based on the results of the evaluation to improve the access to treatment of severe acute malnutrition and increase the level of coverage in the program intervention area.

METHODOLOGY

THE SQUEAC METHOD

The coverage assessment tool, Semi-Quantitative Evaluation of Access and Coverage (SQUEAC²), was developed by Valid International, FANTA, Brixton Health, Concern Worldwide, ACF and World Vision in order to provide an efficient and accurate method of identifying barriers to service access and to estimate the coverage of nutrition programs. SQUEAC is an interactive, informal and intelligent investigation that collects a large amount of data from different sources (i.e. using routine data as well as additional data collected in the field), using a wide variety of methods and providing the means to organize the data. It is a semi-quantitative assessment as it combines both quantitative and qualitative data.

The current investigation aims to estimate global coverage of Sittwe Township, both in Rural and Urban zones where ACF and MHAA OTPs take place. It was pertinent to conduct two independent (but mutually linked) coverage assessments, including one in the Urban Zone and one in the Rural zone, considering that they are two programmes run by different partners with high dissimilarities in the SAM caseload. The analysis of this data is guided by the two fundamental principles of 1) **exhaustiveness** of information up to the point of saturation and 2) **triangulation** of information that is collected from different sources using alternative methods and cross checking data until findings become redundant before being validated. By focusing on the collection and intelligent analysis of data during the first field phase, the investigation sheds light on the operation of the service whilst simultaneously providing a sound estimate of coverage which allows for a smaller sample size to be used in the final stage.

Stages of the investigation

SQUEAC allows for the regular monitoring of programs at low cost, helps identify areas of high or low coverage and provides explanations for such situations. All of this information allows the planning for specific and concrete actions in order to improve the coverage of programs.

² Myatt, Mark 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.

The SQUEAC methodology consists of three main stages:

STAGE 1: Identification of high and low coverage areas and barriers and boosters to access

This stage is based on the analysis of both quantitative data (already available) and qualitative information (collected during the investigation) in order to understand the various factors influencing coverage, some of which have a positive effect and some a negative effect on coverage. The SQUEAC approach helps to identify and understand these relevant factors and their effects. The evaluation of these factors helps to develop a trend in the coverage rates prior to conducting a field investigation in well-defined areas.

- **Analysis of quantitative program data:** routine data (monthly reports) and records of individual monitoring (register book and individual cards). The analysis of program data is used to assess the overall quality of services, to identify trends in admissions and performance, and to determine if the program meets needs. This stage also helps to identify potential problems related to the identification and admission of beneficiaries as well as problems related to their treatment. Information such as MUAC measurements at admission and numbers of defaulters can be used to assess early detection, recruitment and effective communication channels. It also provides information on differences in raw performance between different health facilities.
- **Collection and analysis of qualitative data** through meetings in the community and health facilities with those involved directly or indirectly in the program³. This phase of the investigation is twofold: it serves to better inform and explain the results of the analysis of routine data and it also helps to understand the knowledge, opinions and experiences of all people concerned as well as to identify potential barriers to access.

Interview guides were used to orient the process of obtaining information on coverage. These interview guides were developed based on guides already used in other SQUEAC investigations but also adapted to the context and modified by the investigation team.

The following methods to gather information were used:

- Focus Group Discussions
- Semi-structured interviews
- Case studies
- Observation

These interviews were conducted with the following sources of information:

- OTP staff
- Volunteers
- Mothers/caretakers of children in the program/defaulters
- Local authorities
- Religious leaders

³ The team took advantage of these meetings in the community and OTP centers to identify the local terminology used to describe acute malnutrition (Rakhine language and the language spoken by the Muslim community) and the key informants in the community. This preliminary research is essential to facilitate the active and adaptive case-finding methodology used as part of stages 2 and 3.

- Traditional Health Practitioners (THP)
- Traditional Birth Attendants (TBA)
- Men of the community
- Women of the community

Several locations spread across both Rural and Urban catchment areas, were visited for the collection of qualitative information.

The different people encountered and the various methods used allowed the investigation team to collect information about the barriers and boosters to coverage of the OTP programs. The data gathered was recorded on a daily basis using the tool called **BBQ (Barriers, Boosters and Questions)**. This tool not only allows for the organizing of information on a daily basis, to continue with the research of qualitative information in an interactive and directed manner, but also ensures the triangulation of information. To guarantee the exhaustiveness of the process, the research of information continued until saturation - until the same findings were obtained from different sources, using different methods.

Altogether, the findings from the quantitative analysis and the conclusions from the qualitative research on the field and investigation team's discussions were triangulated to set the knowledge around barriers and boosters to coverage in each of the two zones –Rural and Urban- of Sittwe Township. Based on the evaluation of positive and negative factors, identification of potentially high and low coverage areas and formulation of a hypothesis on coverage is done - Depending on the barriers and boosters found, the hypotheses on “high” or “low” coverage areas are developed: the hypothesis about heterogeneity of coverage are based on the identification of areas of “good” and “less good” coverage. Then, small-area surveys are conducted to confirm or refute these hypotheses.

STAGE 2: High and low coverage areas hypothesis testing through small-area surveys

The objective of the second stage of the investigation is to confirm or reject, through small-area surveys, the assumptions on areas of low or high coverage as well as the barriers to access as identified in the previous stages of analysis.

The **small-area survey** method was used to test the assumption of geographical heterogeneity of coverage. A number of locations (half of them in which coverage is potentially high or satisfactory and half in which coverage is potentially low or unsatisfactory) were selected taking into account the criteria identified to be the most relevant according to the findings from the previous stage.

Sample size of the small-area survey is not calculated in advance, but rather is based on the number of SAM cases found.

Regarding the case-finding methodology, two different methods were used given the two different types of locations existing in the program catchment area: IDP camps, in which **door-to-door screening** of all children 6-59 months was used; and villages, in which **active and adaptive case finding** method (i.e. visiting households of potential cases based on key informants' information to find all severely malnourished children) was used.

For both, the **case definition** used was "all children aged 6-59 months with the following characteristics: MUAC <115 mm and/or presence of bilateral oedema, or who were currently in the OTP program for the treatment of SAM".

Throughout the small-area survey, two different questionnaires (annex 4 and 5) were distributed to all mothers or other caretakers of the cases detected: one to covered cases (both SAM and recovering cases currently admitted in the program) – in order to find out if they were former beneficiaries of the program as well as to understand how they were referred to the program; another one to the non-covered SAM cases – in order to further understand the reasons that these children had not received treatment, as this allows for the identification of barriers to access. All “non-covered” children found (also MAM) during the study were referred to OTP or SFP centers for treatment.

Analysis of the results was done using **LQAS (Lot Quality Assurance Sampling)** in order to obtain a classification of coverage compared to a specific threshold. Given the two different type of locations in the program catchment area (IDP camps and villages), the value was set at 70% as a combination of the SPHERE standard values defined for rural areas (50%) and camps (90%) in order to be able to reveal coverage differences between potentially high and low coverage areas. The decision rule was calculated using the following formula:

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

n: number of cases found
p: standard coverage defined for the area

The number of cases found and the number of cases covered was examined as follows (see annex 3 for form to gather the data in the field):

- If the number of cases covered was higher than the threshold value (d), then coverage was classified as satisfactory (coverage meets or exceeded the standard).
- If the number of cases covered was lower than the threshold value (d), then coverage was classified as unsatisfactory (coverage did not meet, neither exceeded the standard).

Results from analysis of cases found as well as all the information obtained by the questionnaires of covered and non-covered cases, were added and triangulated with all the barriers and boosters previously identified to complete the global knowledge about factors influencing program coverage.

To show this triangulation process and conclusions from stages 1 and 2, the software XMind was used: a powerful tool capable of organizing and displaying results of the SQUEAC investigation in a visual and orderly manner. Mind-mapping method allows modifications according to findings along the process.

STAGE 3: Estimation of global coverage

The estimate of the overall coverage is obtained by taking the following steps:

- I. Developing the *Prior Probability* by using the software “Bayes Calculator”⁴ to create a curve that represents our belief on coverage.
- II. Building the *Likelihood* by conducting a survey in a defined area in order to know the total number of children that need to be in the program for treatment of severe acute malnutrition and the number of cases covered. A random sampling method based on the geographical distribution of villages is used.
- III. Producing the *Posterior Probability* (the estimate of the overall coverage). The process of synthesizing the Prior Probability and the Likelihood to produce the overall estimate is called conjugated analysis.

I. Developing Prior Probability

Prior Probability is the formulation of the belief about coverage. This belief is built from the evaluation of factors with a positive or negative impact on coverage resulted from the analysis of quantitative and qualitative data collected in stages 1 and 2. Bayesian theory is used to translate our belief about coverage into a numeric value and to express it as a percentage.

To calculate the *Prior Probability*, boosters and barriers have been weighted according to their perceived impact on coverage. A weight from 1 to 10 (being 1 the minimum and 10 the maximum) was assigned to each barrier/booster. Then, the sum of the points corresponding to the boosters was added to the minimum coverage value (0%), and the sum of the points corresponding to the barriers was subtracted from the maximum coverage value (100%). The average of the two values was then calculated to obtain the mode of the probability.

Priori Probability was thus produced and then described as a curve using the Bayes Calculator⁵. The parameters of the shape of the curve (the distribution of the *Prior Probability*), α and β , were calculated using a degree of certainty of $\pm 20\%$ and introducing the mode value of *Prior Probability* in the formulas below. The mode corresponds to the value of Prior Probability expressed as a proportion.

$$\mu = \frac{\text{minimum} + 4 \times \text{mode} + \text{maximum}}{6}$$

$$\sigma = \frac{\text{maximum} - \text{minimum}}{6}$$

$$\alpha_{\text{Prior}} = \mu \times \left(\frac{\mu \times (1 - \mu)}{\sigma^2} - 1 \right)$$

$$\beta_{\text{Prior}} = (1 - \mu) \times \left(\frac{\mu \times (1 - \mu)}{\sigma^2} - 1 \right)$$

⁵ SQUEAC Coverage Estimate Calculator (Version 3.01) - BayesSQUEAC

II. Building the Likelihood

The aim of this stage was to enrich the a *Prior Probability* with "extra" information by conducting a survey in the area of intervention to obtain the more likely evidence represented by the total number of cases that should be under treatment for severe acute malnutrition in area, and among them, the number of cases covered.

Cases were searched, as in stage 2, by using the same case definition and by applying door-to-door screening in camps and active and adaptive case-finding method in villages, and door-to-door screening in camps. The questionnaires for covered and non-covered SAM cases were also filled in.

The **target sample size (n)** -minimum number of children needed- used was calculated using the following formula:

$$n_{Likelihood} = \left\lceil \frac{mode \times (1 - mode)}{(precision \div 1.96)^2} - (\alpha_{Prior} + \beta_{Prior} - 2) \right\rceil$$

- mode: the value of *Prior Probability* expressed as a proportion
- α et β : values defining Prior Probability distribution
- Precision: desired precision.

The **number of locations (N)** to investigate was determined using the formula below, being "n" the target sample (minimum number of children needed according to the result from the above calculations):

$$N = \frac{n}{\left(\begin{array}{c} \text{Mean} \\ \text{population} \\ \text{by} \\ \text{location} \end{array} \right) * \frac{(\text{Population 6 - 59 months})}{100} * \frac{(\text{SAMprevalence})}{100}}$$

It should be noted that in general, with this methodology, desired sample size is already much smaller than that required by other methods for assessing coverage (ESZC/CSAS) where no data analysis is made in advance and there is any belief about the coverage prior conducting the survey where children are screened.

The selection of the locations was done using a map by means of the so called *centric systematic area sampling* or *quadrat sampling* method to ensure randomness and spatial representativeness.

III. Producing Posterior Probability

The synthesis of the *Priori Probability* (the belief about coverage) and the Likelihood (results from the wide-area survey) allows to produce the *Posterior Probability* or the overall estimate of coverage. This estimate and the curve of the *Posterior Probability* are calculated using the Bayes calculator with a credible interval of 95%.

Two measures, the **Point Coverage** and the **Period Coverage** can be used to express the results of coverage assessments of nutrition programs:

- Point Coverage represents the level of coverage at the time that the survey was being conducted and only includes children with severe acute malnutrition criteria.
- Period Coverage takes into account all children receiving treatment at the time of the survey, irrespective of their nutritional status (severely malnourished children and recovering children).

SQUEAC methodology recommends using just one of the two measures for the calculation of coverage. The choice of coverage estimate must be guided by the characteristics of the program.

ORGANISATION OF THE STUDY

The organization and actual development of this coverage assessment involved different phases. In a first phase, technical support was provided remotely through exchanges between Beatriz Pérez Bernabé (coverage expert) and Celine Lesavre (ACF-Myanmar Nutrition & Health Head of Department) for the planning and preparation of the evaluation. For technical support in the field, the SQUEAC expert was deployed to Sittwe to recruit and train the team in SQUEAC methodology and to carry out the assessment. The coordination during field stage was done with the support of U Than Shwe (Nutrition Program Manager) and in consultation with MHAA coordination and field staff.

Two groups were trained to conduct the Urban and Rural investigations respectively. Each group was organized into 3 teams of 3 members lead by a team leader from ACF's nutrition program staff – the rest of the participants were purposely recruited to conduct the survey.

The coverage assessment took place from October 20th to November 4th 2014. Two days of introductory theoretical sessions concentrated on the importance of assessing coverage and the basics of SQUEAC methodology, after which the investigation began in earnest. Also, a practical session on assessment of nutritional status (by MUAC and oedema check) in one of the programs' OTP was done to ensure all of the members of the team –especially those recruited for the survey- were able to perform accurate measurements. The training process was then run concurrently with the investigation - in-classroom sessions for each key stage of the study was alternated with guided practical implementation in the field, all framed with iterative briefing and debriefing sessions.

Additionally, a briefing session was provided to all ACF nutrition program staff (including those not directly participating in the survey) as an added value for staff to learn about the importance of assessing coverage and the basics of SQUEAC methodology.

RESULTS

According to the methodology explained above we present here the main results emerging from our investigation:

STAGE 1: IDENTIFICATION OF AREAS OF LOW AND HIGH COVERAGE AND BARRIERS AND BOOSTERS TO ACCESS

The objective of this stage was to identify areas of high and low coverage and to have an initial understanding regarding the reasons for poor access to treatment, using the program's existing quantitative data, together with qualitative information collected from the various stakeholders.

I. Analysis of quantitative program data

Routine program data from the ACF nutrition program was mainly extracted from monthly reports, analyzed since the beginning of program activities (December 2012) until September 2014. Individual records from the register book and individual cards were available from the program monitoring database and analyzed for the year 2014 (January – September).

Program data from the MHAA nutrition program was analyzed only from individual records from January to September 2014 due to the lack of monthly statistics in the period before., The amount of data was globally scarce due to the low caseload of the program and as such the analysis for the Urban Zone caseload is limited.

A. Program admissions: overall numbers and admissions vs. needs

Since December 2012, a total of 1.949 SAM children were admitted in ACF's nutrition facilities implementing Outpatient Therapeutic Program (OTP) in the Rural zone of STW Township. Figure 1 below shows the evolution of overall ACF admissions.

The total number of program admissions in MHAA Urban Zone programming from January to September 2014 was 15 SAM children.

A calendar with different seasonal events such as morbidity, climatology, agriculture, migration as well as any particular event that took place during the period of study was built and confronted to the curve of admissions over time to assess the extent to which the program meets context needs (see annex 1 for matching with seasonal calendar).

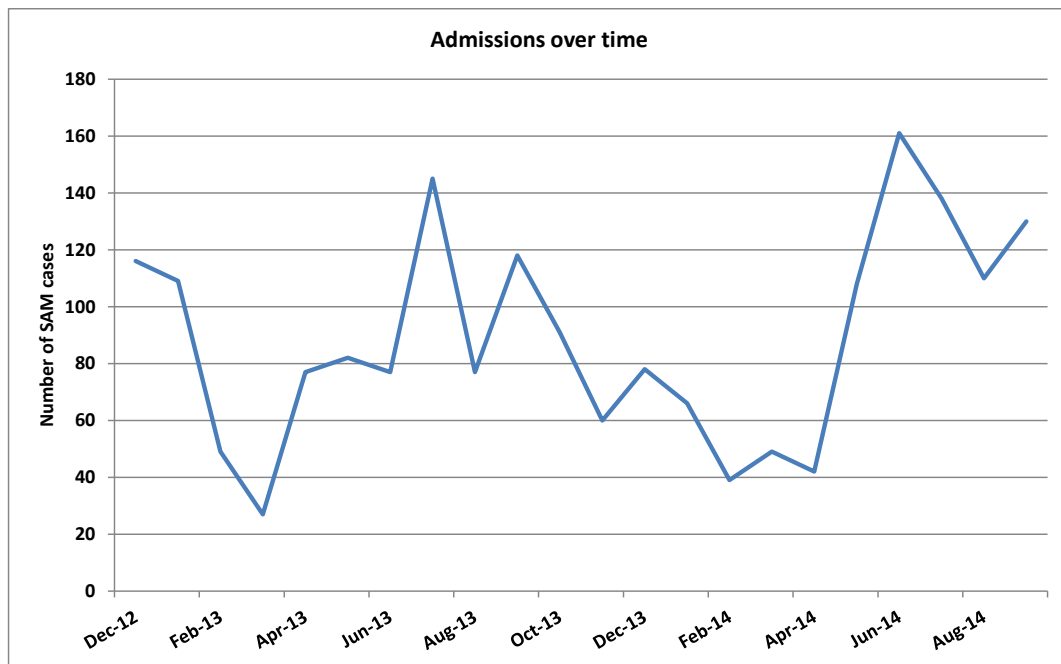


Figure 1. Admissions trend in ACF OTP centers from December 2012 to September 2014
(Rural zone, Sittwe Township, Rakhine State, Myanmar October 2014)

The period identified as of the most need, in which food is less available as well as when childhood diseases (i.e. Malaria, diarrhea, ARI) are most prevalent, begins in May and lasts until approximately the end of September – although the months of greatest need are concentrated between June and September. Program data shows that admissions globally did increase during these periods looking both at the years 2013 and 2014, although in both cases a drastic decrease took place in August, corresponding to the month in which Muslim communities observe Ramadan.

In 2013, the minimum number in admissions takes places in February-March, corresponding to the moment in which the reorganization of Active Community Screening (ACS) team (and therefore, reduction of screening activities) take place after the end of contracts and beginning of the new year.

In 2014 the curve maintains the pattern, however the overall number of admissions in higher than in 2013. This is consequence of the events of March 2014 that restricted NGO activities including an important impact on healthcare access. In addition, no active screening was conducted in communities during the month of April due to the Census exercise, Water Festival, and the operational recovery period after the March incident.

Program data shows a regular and expected pattern suggesting that program adapts to context needs.

There is no trend of admissions per OTP for the MHAA program as they had only 15 admissions in Set Roe Kyaw 2 Camp.

B. Admissions by OTP

ACF runs 5 OTP, 4 in IDP camps and 1 in a village. In order to be able to compare the number of admissions by service delivery unit, the analysis has only been done for the year 2014 (January – September 2014; n = 843) since not all 5 OTP centers started activities at the same time: OTP-1 B and OTP-2 were the first ones to open at the end of 2012; OTP-1-A and OTP-3-A in August 2013; OTP-3-B in January 2014. Figures 2 and 3 show the distribution of total number of admissions by OTP and proportion of admissions to 6-59 months by OTP, respectively.

There is no disaggregation of admissions per OTP for the MHAA program as all 15 admissions were treated at their OTP in Set Roe Kyaw 2 Camp.

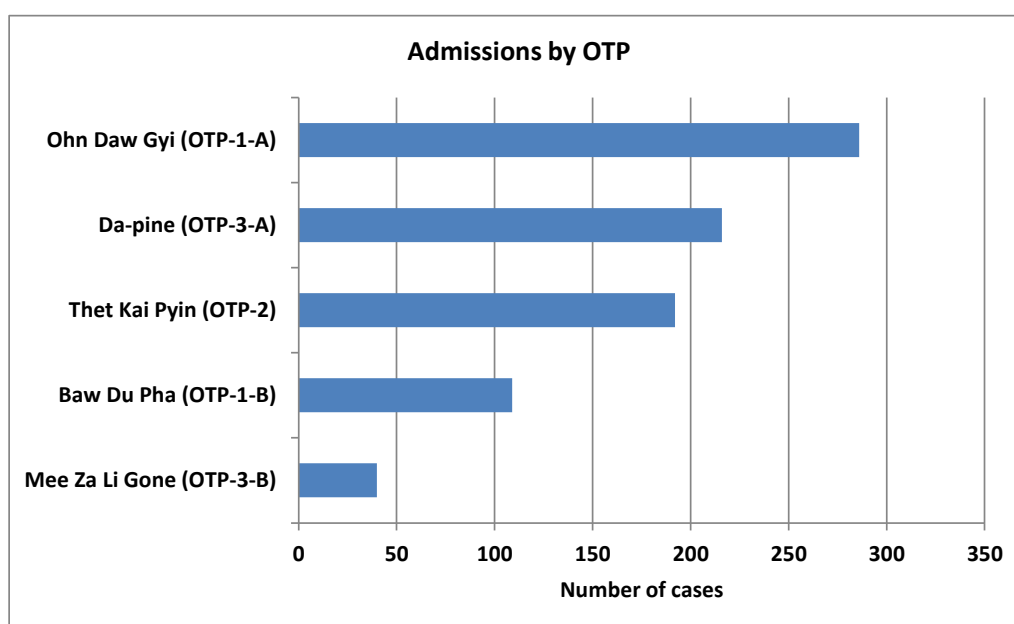


Figure 2. Number of admissions by ACF OTP between January and September 2014 (Sittwe Townships, *Rakhine State, Myanmar, October 2014*)

Absolute number of admissions show OTP-1-A as OTP-3-A as the ones with greater numbers due to the high population concentration in their catchment areas. OTP-3-B, the only one located in a village instead of in a camp, appears to be as the one with the lowest number of beneficiaries. However, when plotting admission proportional to population 6-59 months in the catchment area, OTP-3-B increases with regards to the others suggesting a high level of activity. OTP-1-B and OTP-2 show the higher number of beneficiaries as shown in the figure below. Nevertheless, disparities across different facilities are not significant.

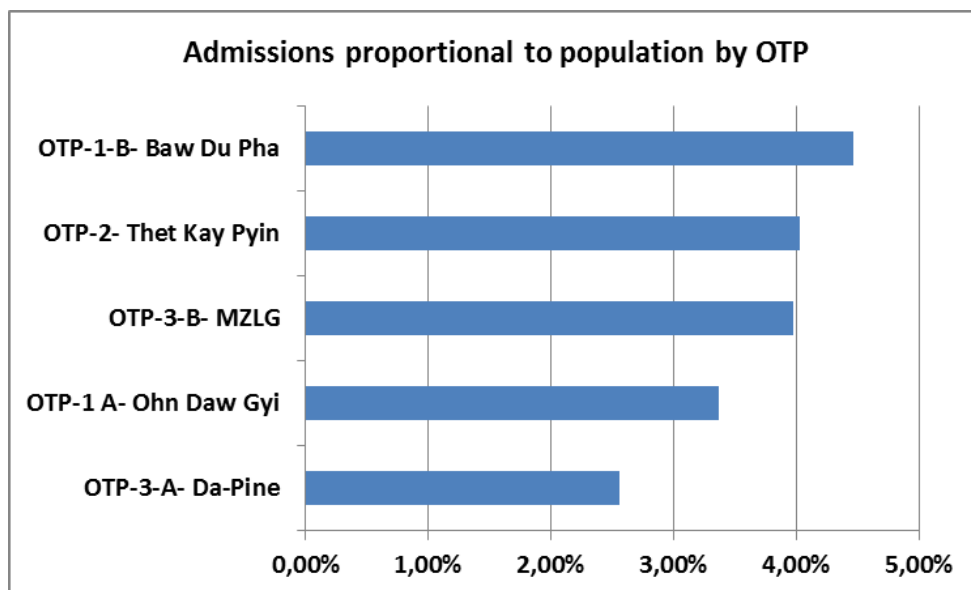


Figure 3. Proportion of ACF admissions related to 6-59 months population between January to September 2014 (*Sittwe Township, Rakhine State, Myanmar, October 2014*)

C. Referral mechanism

For ACF's caseload, according to the information from individual record cards analyzed for the year 2014 ($n = 843$), the bulk of beneficiaries arrived to nutrition facilities spontaneously (47,21%) or referred by nutrition program actors (35,23%) – in order: Active Community Screening (ACS) team in villages, ACF and SCI volunteers joint active screening in camps, active screening by OTP staffs, screening during follow-up at the OTP of relapsed cases, screening by Community Awareness Team (CAT) and screening by OTP/MHCP team during home visits. This information suggests good program coverage due to positive health seeking behavior by the population and active screening in the community. Referrals by other NGOs account for 17, 20% and 1 case referred by a clinic.

For MHAA's caseload, fourteen children were referred by MHAA volunteers and one by ACF Staff.

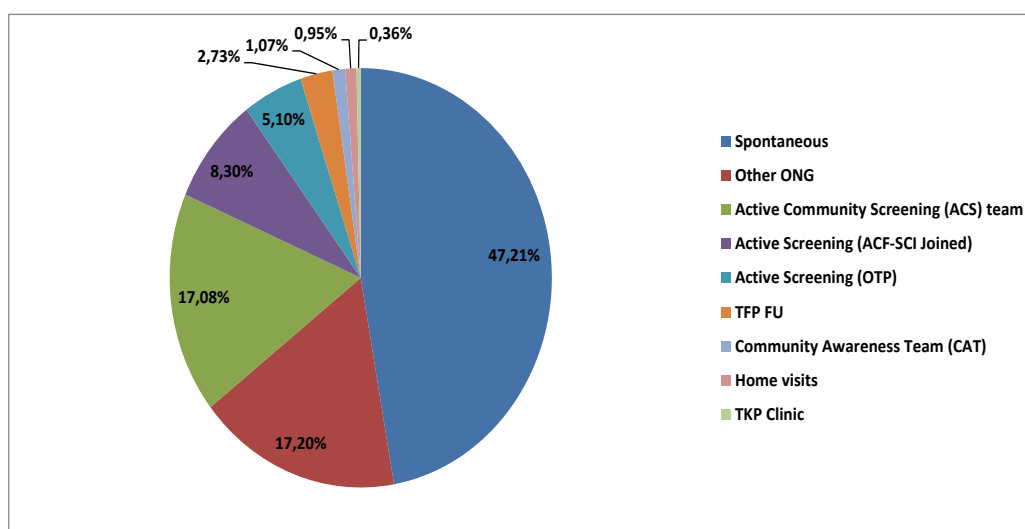


Figure 4. Source of referral of beneficiaries of ACF OTP centers between January and September 2014 (*Sittwe Township, Rakhine State, Myanmar, October 2014*)

D. Spatial distribution of coverage - Distance between home and OTP

Home locations of admissions (Rural Zone n = 843 / Urban Zone n =15) and their distance to the OTP center (time to travel) were studied to understand the spatial coverage of program activities in STW. Locations were grouped into three categories according to the time to travel (in minutes) by foot to the OTP: from left to right the closest to farthest: In Rural Zone this includes from 10 to 20 minutes; more than 20 but less than 45 minutes; and greater than 45 minutes. In Urban Zones this includes from 10-15 minutes, 20 minutes, and greater than 30 minutes.

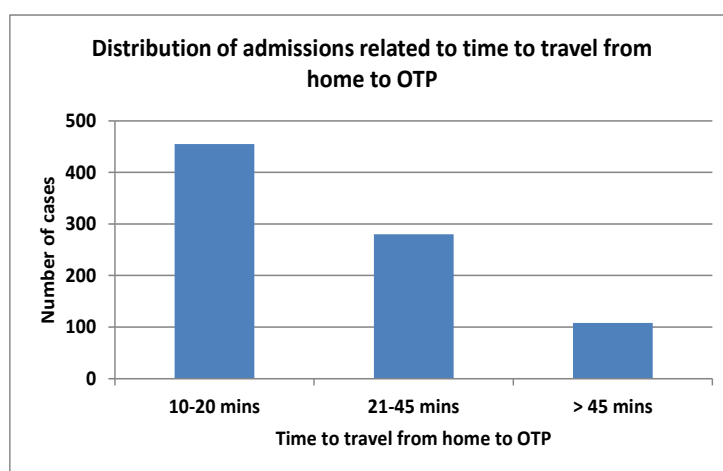


Figure 5. Distribution of admissions in OTP program according to distance from home to OTP (*Sittwe Township, Rakhine State, Myanmar, October 2014*)

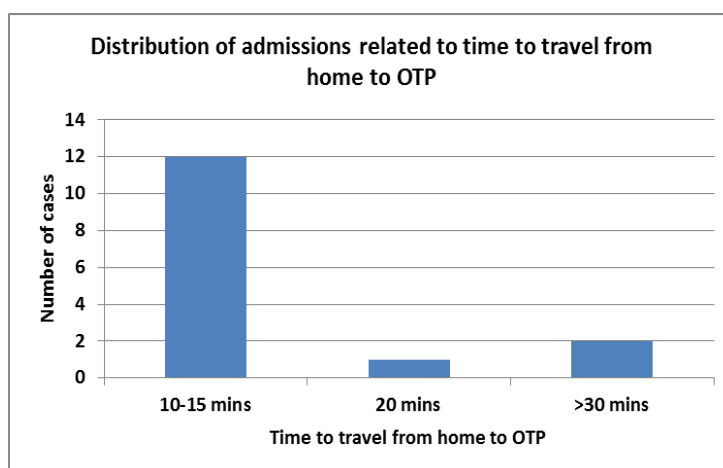


Figure 6. Distribution of admissions in MHAA program according to distance from home to OTP (*Sittwe Township, Rakhine State, Myanmar, October 2014*)

The analysis shows that indeed distance may influence the attendance to OTP: the number of admissions dramatically decreases as the distance increases in Rural Zone, and the same trend is apparent to a lesser extent in Urban Zone. This relation was a key point towards guiding the investigation in the formulation of hypotheses on coverage for testing as part of Stage Two.

E. MUAC at admission

In order to further understand whether the program is reaching SAM children early, the MUAC at admission was plotted for recorded beneficiaries whose admission criteria was MUAC during 2014 (ACF n = 756, MHAA n =15). The results are found in figures 6 and 7 below. The median MUAC at admission was 112 mm which shows that overall, children are admitted early., In the ACF program, the proportion of critical cases (PB <= 90mm), less than 2%, is low meaning that few cases initiate treatment with an advanced degree of severity – in fact, it is very likely that most of these children fall into the category of under 65 cm.

In the MHAA program, no critical cases (PB <= 90mm) were registered.

This result goes in line with the conclusions obtained through the analysis of referral information that suggest both a positive health seeking behavior of mothers/caretakers, as well as early case-finding and recruitment system of cases by the program. That most cases are identified and admitted in the program in the early stages of the disease certainly has a positive impact on program coverage.

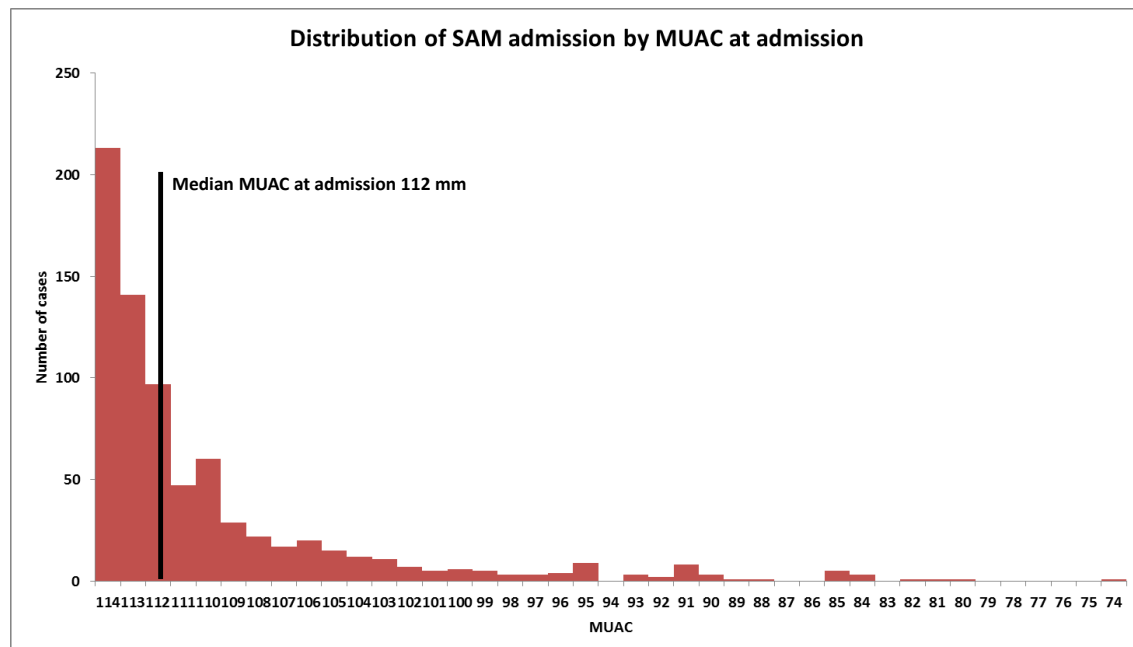


Figure 7. Distribution of MUAC at admissions for SAM cases admitted in the ACF program between January and September 2014 (Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

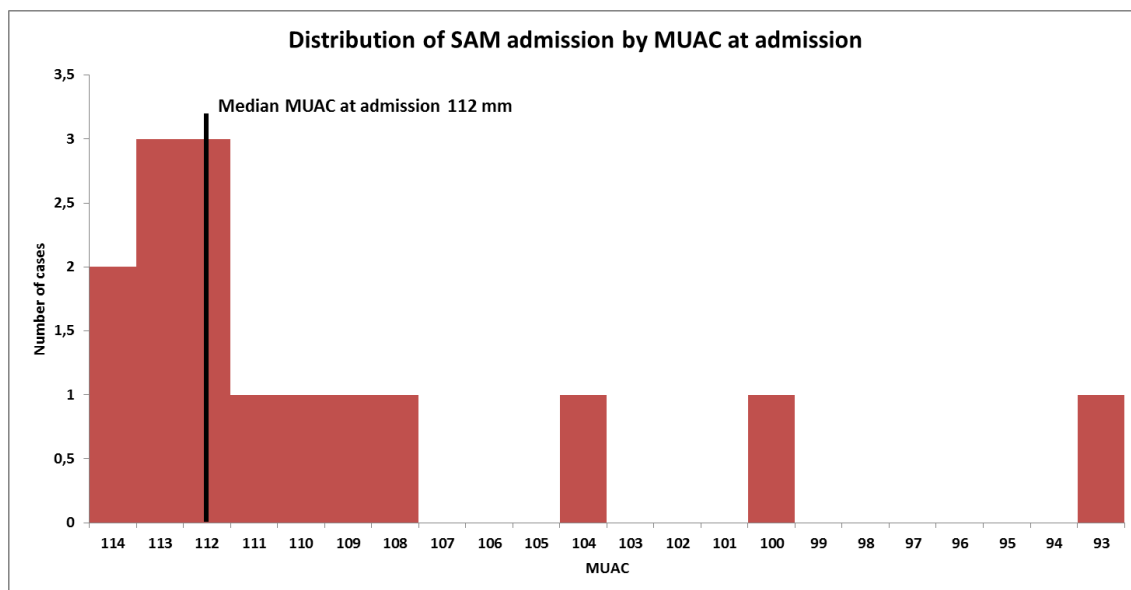


Figure 8. Distribution of MUAC at admissions for SAM cases admitted in MHAA program (Urban zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

F. Program exits: performance Indicators

Figure 9 shows the trend and cumulative value of ACF program performance indicators for the whole period of program activities (December 2012 – January 2014; n = 1.735).

Analysis of ACF program exits reveal a low cure rate (65, 59%) below the 75% value recommended by SPHERE standards, which could lead to negative opinions of the community about program performance. Also, non-responder rate is very high (19, 54%) and defaulter rate is relatively high (7, 44%) with a direct negative impact for program coverage. The death rate is 0.92%. Of the 15 admissions in the MHAA program, 12 were discharged cured and 3 were still under treatment at the time of the study. No defaulters, non-responders, or deaths were registered in the MHAA program.

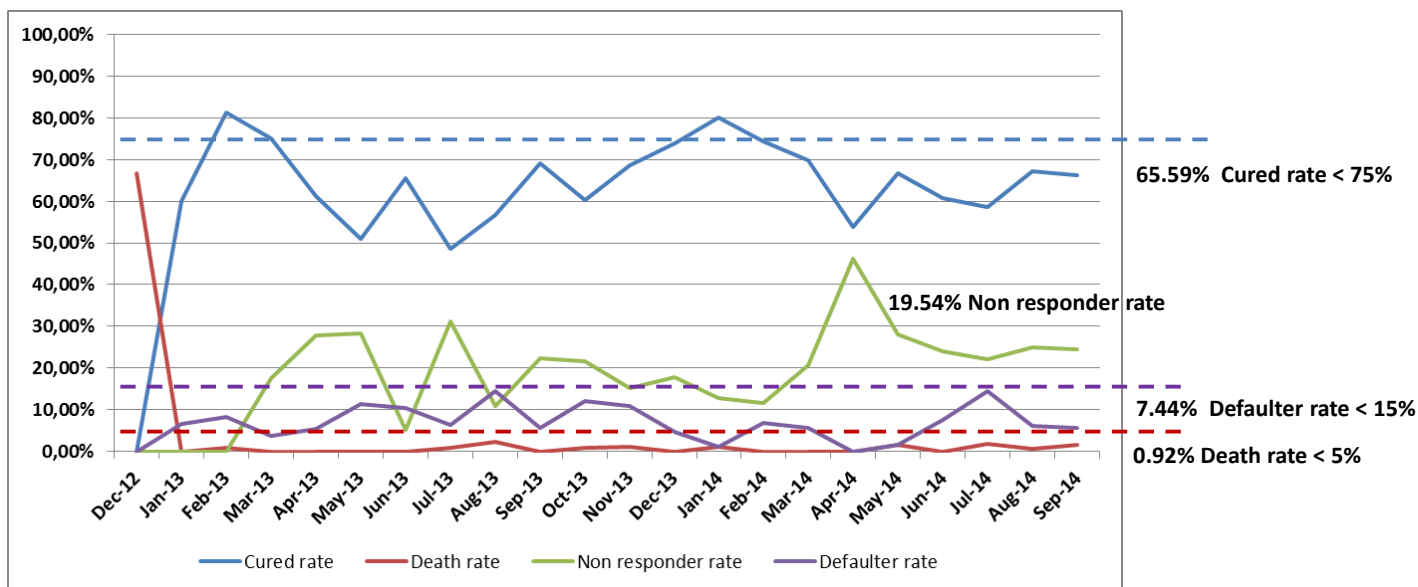


Figure 9. Evolution of performance indicators of ACF program between December 2012 and September 2014 (*Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014*)

G. Defaulters

The trend of defaulters over time for the whole period of activities ($n = 129$) (see figure 4) shows a peak in the month of August in 2013 and in July in 2014 due to Ramadan. There is also an increase in November 2013 which could be explained by the fact that at this time of the year people are busy working on winter crops as well as often emigrating - in October and November, just after the rainy season, many families try to go out of country.

When looking at defaulter rate by OTP in order to identify potential disparities across the different facilities during the year 2014 ($n = 43$), data reveals that the higher proportion of defaulters is found in the OTP located in the village (OTP-3-B), which suggests a negative impact on coverage in its catchment area. It is followed by OTP-1-B and OTP-2, this last one receiving beneficiaries coming from the other side of the main road.

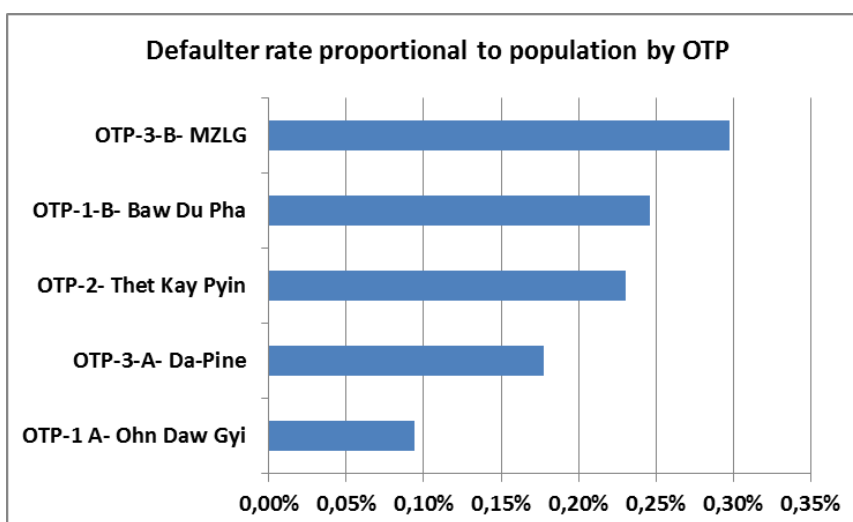


Figure 10. Defaulter rate by ACF OTP related to 6-59 months population between January to September 2014 (*Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014*)

A review of the information collected during routine home visits along 2014 about these defaulters was done and the following reasons were reported by beneficiaries: do not trust the treatment, family moving, distance, husband refusal, “family problem”, transportation costs, mother/caretaker busy/no one available to bring the child to the OTP, and that the child refuses RUTF .

H. Length of stay of discharged-cured

Although the cure rate was found not to be satisfactory (65,59%) in ACF program, for those discharged-cured during 2014 (n = 403) the result of plotting the number of weeks of treatment shows that the median length of stay was only 8 weeks, in line with average duration of 6 to 8 weeks of treatment according to different studies SAM treatment. Long lengths of stay may lead to bad opinions and even higher defaulting rates. 4 weeks is the most frequent duration of treatment for patients.

The MHAA program results also demonstrated a median length of stay at 8 weeks.

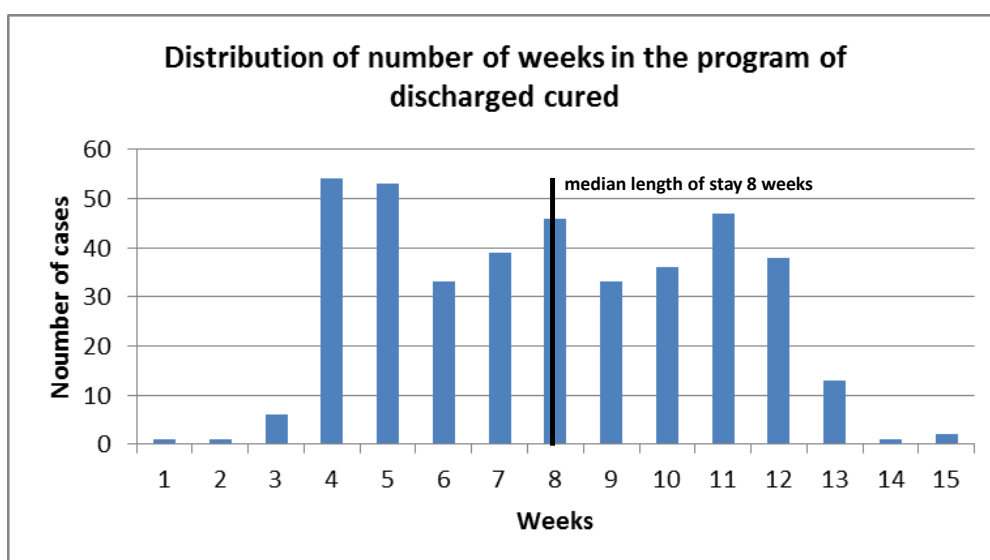


Figure 11. Number of weeks of treatment before being discharged-cured for SAM cases admitted in ACF program between January and September 2014 (Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

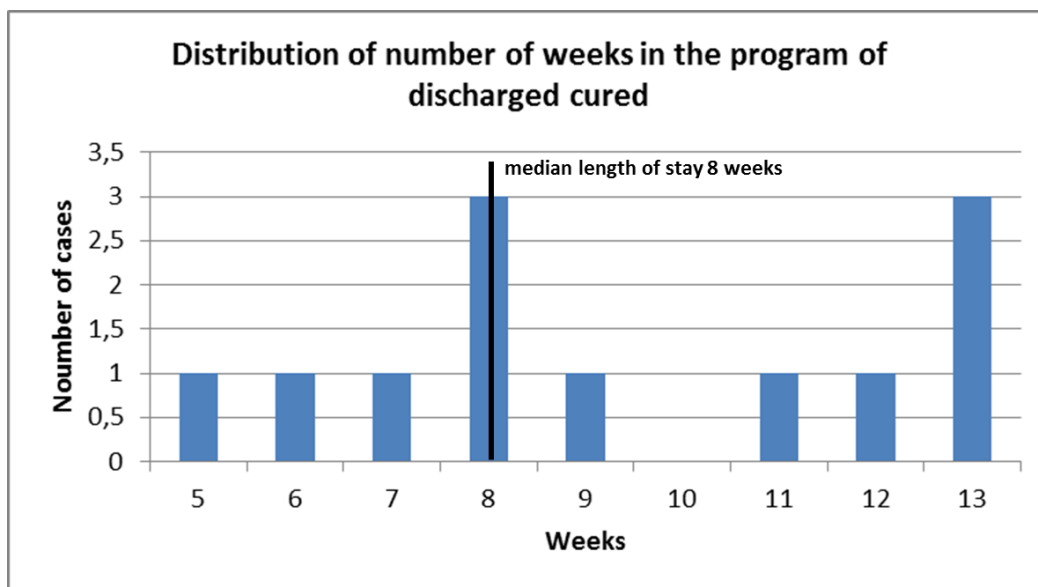


Figure 12. Number of weeks of treatment before being discharged-cure for SAM cases admitted in MHHA program (Urban zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

I. ADDITIONAL DATA

No RUTF stock shortage during the period of activities has been reported for either ACF nor MHAA programs.

Nutrition surveys: table 1 below shows the results of the two most recent anthropometric surveys conducted in the Rural zone of STW Township.

	Prevalence of acute malnutrition based on WHZ and/or oedema		Prevalence on acute malnutrition based on MUAC and/or oedema	
	GAM	SAM	GAM	SAM
SMART 2013⁶	9,5% (6,8-13,0)	0,0% (0,0-1,1)	3,4% (1,9-5,8)	0,6% (0,2-2,0)
SMART 2012⁷	14,4% (11,2-18,4)	4,5% (2,8-7,3)	9,8% (7,2-13,2)	2,1% (1,0-4,2)

Table 1. Save the Children (SCI) SMART 2012 and 2013 results for GAM and SAM based on WHZ and MUAC in the Rural zone of STW Township (Rural zone, Sittwe Township, Rakhine State, Myanmar)

⁶ Nutritional Anthropometric Assessment (Based on SMART methodology). Children aged 6 to 59 months living in IDP camps. Sittwe and Pauktaw Townships, Rakhine State – Republic of the Union of Myanmar. Save the Children, March 2014.

⁷ Nutritional anthropometric assessment (Based on SMART methodology). Children aged 6 to 59 months living in IDP camps. Sittwe Township, Rakhine State – Republic of the Union of Myanmar. Save the Children, January 2013.

Nutrition surveys: table 2 below shows the results of the two most recent anthropometric surveys conducted in the Urban zone of STW Township.

	Prevalence of acute malnutrition based on WHZ and/or oedema		Prevalence on acute malnutrition based on MUAC and/or oedema	
	GAM	SAM	GAM	SAM
SMART 2013⁸	10,7% (7-16,2)	1,1% (0,3-4,0)	2,2% (0,9-5,5)	0,0% (0,0-2,1)
SMART 2012⁹	3,1% (1,3-7,1)	0,4% (0,1-3,5)	5,2% (2,9-9,1)	1,3% (0,4-1,2)

Table 2. SMART 2012 and 2013 results for GAM and SAM based on WHZ and MUAC in the Urban zone of STW Township (Urban zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

II. Analysis of qualitative data

The qualitative data was collected in 18 (9 in Rural zone, 9 in Urban Zone) locations, both IDP camps and villages, spread throughout the catchment area. Annex 2 and 7 show specific information about triangulation by source and method for each of the factors identified and the tables below describe main boosters and barriers to access found. The methods and sources of information used were those described in the methodology section and findings were triangulated using the BBQ on a daily basis. Table 3 below describes main boosters and barriers to access found through the completion of qualitative work in the field and the subsequent triangulation and analysis of information. Interestingly, the main barriers and boosters remain very similar for Urban and Rural Zones, albeit socio-cultural differences in their manifestation.

BOOSTERS	
Awareness about malnutrition and no stigma	Although among men and some authority leaders malnutrition causes have been related to “bad sprits” or blood diseases, there is a general awareness about malnutrition among the community, specifically about the causes and signs of Marasmus. Oedema is rarely associated with, which is not surprising due to the low number of cases of Kwashiorkor (from total program admissions, only 1,3% had oedema). Globally, no negative perception or stigma on being malnourished has been reported.

⁸ Nutritional Anthropometric Assessment (Based on SMART methodology). Children aged 6 to 59 months living in IDP camps. Sittwe and Pauktaw Townships, Rakhine State – Republic of the Union of Myanmar. Save the Children, March 2014.

⁹ Nutritional anthropometric assessment (Based on SMART methodology). Children aged 6 to 59 months living in IDP camps. Sittwe Township, Rakhine State – Republic of the Union of Myanmar. Save the Children, January 2013.

Awareness about the program and gratuity of service	There is also awareness about the existence of a program for malnourished children and OTPs are well known with particular exceptions such as distant villages from OTP or villages that are not aware about the closest OTP due to recent opening. Among the Muslim community, MUAC tapes and RUTF are recognized and their use is mostly known. Gratuity of the service-not having to pay for treatment- is a well-known factor and appreciated by the community.
Health seeking behavior	Although several alternatives such as self-treatment and traditional health practitioners have been identified, mainly in villages, as the first options when seeking for health care (usually closer, easier to get, advice comes from someone from the community), caregivers are very fond to go to medical or nutrition facilities when needed – presentation is relatively early which positively influences on program coverage.
Active screening at community level and home visits	According to all sources of information interviewed in the Rural zone, case-finding activities take place in their villages and camps on a regular basis. SCI volunteers and MHAA/ACF staff are known and recognized in the communities. Community has confirmed that home visits are done in case of absence (to avoid defaulting) and abandon of treatment by program staff.
Opinion about the program and peer-to-peer influence	Although waiting times have been reported to be long by some beneficiaries, there is an overall good opinion about the program and OTP staff – in fact some positive initiatives have been mentioned by beneficiaries such as being given priority to be attended when coming from distant locations. Program is appreciated by beneficiaries and this perception of trust and respect is passed on to other members of the community leading to an important positive impact on coverage: many cases of caretakers of beneficiaries and women of the community informing others about the program/referring thin children have been found during qualitative field research. No RUTF stock shortage has been brought up.
BARRIERS	
Distance and transportation	Distance from home to OTP has been reported as a major barrier to access by all the stakeholders interviewed (including the mothers of defaulter cases), being mainly those living in villages. 1 hour of trip is considered as a long distance. With this regard, the economic barrier due to the need to pay transportation fees to arrive to the OTP has been frequently reported by the majority of sources. In some cases, even the difficulty to find a mean of transport or security concerns for women due to the length of the trip.
Cost-opportunity	Caregivers being busy with domestic activities or other children at home have been reported by a number of sources of information to represent a constraint for beneficiaries to respect the weekly visits to the OTP.
Mother sick	Since women are usually the caretakers of children, when they become sick (or pregnant) and they are not able to attend to the OTP, children miss their treatment and become on high risk of defaulting – this situation was found in the field through the case study of a defaulter.

No trust on RUTF	Although the efficacy of RUTF has been recognized and celebrated by diverse stakeholders encountered including beneficiaries or former beneficiaries, frequent negative beliefs around the consequences of eating RUTF with an adverse effect on program coverage have been found: cause of diarrhea, skin diseases and even death of children.
RUTF sharing/selling	Sharing RUTF at home between the children of the same family or even with the parents is frequent and has been reported not only by OTP staff and volunteers but also by members of the community and even siblings of current beneficiaries. RUTF is frequently found in local markets, having been sold by beneficiaries.
Husband refusal	Previously mentioned beliefs about RUTF are frequently motivated/increased by husbands leading to prohibition of attending to OTP. In other cases husband do not allow women to go to the OTP on a weekly basis for different reasons such as time spent out of the house, being alone, encountering other men.
Referrals of SAM cases with medical complications	Lack of ACF team follow up of SAM cases with medical complications that are referred for further treatment has a high negative impact on coverage: risk of transfer refusal, risk of defaulting increases and at last, risk of death due to the severity of the condition.
Lack of community engagement	Despite the program is overall known and appreciated by the community there is a lack of implication of key community members such as community leaders (local authorities and religious leaders) and community health stakeholders (traditional health practitioners, TBA) in the program, both on awareness activities and screening/referral. Any kind of involvement found was only an informal and voluntary initiative.
Insufficient communication among partners	Communication among ACF and partners working in the rural zone (SCI screening in camps; MHAA working on SFP both in camps and villages) is not enough at field level. Lack of feedback from OTP staff about the cases referred by volunteers was reported decreasing their motivation. Also, difficulties to timely refer SAM cases found during screening due to the lack of referral slip (having to wait for ACF staff to come to be able to do it).

Table 3. Boosters and barriers to access emerged from the qualitative research (Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

BOOSTERS	BARRIERS
Positive health seeking behavior	Lack of awareness about the program
Active screening at community level	Distance and transportation costs
Home visits for absent children	Access in camps during rainy season
Good opinion about the program	Cost-opportunity
Peer-to-peer influence	RUTF sharing/selling

Table 4. Boosters and barriers to access emerged from the qualitative research (Urban zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

III. Triangulation of information – high and low coverage zones

The findings regarding coverage identified during the first stage of investigation allow to establish potentially high and low coverage areas and to formulate hypothesis around coverage according to the evaluation of positive and negative factors identified.

Numbers of admissions and defaulters by home location have been analyzed as part of the study of the spatial distribution of coverage. Conclusions from the analysis of quantitative and qualitative data have been combined and triangulated – for the present case, distance from home to the OTP centers appeared to be a factor influencing the coverage pattern. :

- The analysis of distribution of admissions by home location according to distance to OTP center (figure 5) reveals a likely influence of distance on program coverage.
- The qualitative research conducted by the SQUEAC team on the field has also identified distance as a factor strongly influencing access (highly reported including defaulting cases). Transportations costs, indirectly linked to distance has also been identify as a barrier (economic) to access.
- The analysis of defaulter rates by nutrition facility exhibits the greatest rate in OTP-3-B, the only one located in a village and that uniquely receives beneficiaries coming from villages. For the rest of the OTPs which are located in camps, beneficiaries coming from villages always need to travel longer distances.

It was thus decided to test the following hypothesis regarding the potential areas of high and low coverage:

Rural Zone:

- Coverage is potentially satisfactory in camp locations near the OTP centers.
- Coverage is potentially unsatisfactory in villages located far from OTP centers.

Urban zone:

The hypothesis in Urban zone is generally the same, although no specific separation between camps and villages is made:

- Coverage is potentially satisfactory locations near the OTP centers.
- Coverage is potentially unsatisfactory in locations far from the OTP centers.

STAGE 2: VERIFICATION OF HIGH AND LOW COVERAGE AREAS HYPOTHESIS – SMALL AREA SURVEY

In order to be able to confirm or reject the assumptions on areas of low or high coverage as well as the barriers to access as identified in the previous stage of analysis, a total of 6 locations per Urban and Rural Zone (3 in which coverage is potentially high or satisfactory and 3 in which coverage is potentially low or unsatisfactory – see table 5 and 6 below) were

selected according to the criteria identified to test the hypothesis according to the triangulation of information so far:

	Location	Criteria	
		Type of location	Distance to OTP
Satisfactory coverage area	Ohn Daw Gyi Baw Du Pha That Kay Pyin	IDP camp	Near
Unsatisfactory coverage area	Thin Ga Net Ko Song Thin Ga Net Done Pyin North	Village	Far

Table 5. Villages in potentially satisfactory and unsatisfactory coverage areas according to the selected criteria (*Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014*)

	Location	Criteria : Distance to OTP
Satisfactory coverage area	Sat Yoe Kya camp Sat Yone Su camp 1 Sat Yone Su camp 2	Near
Unsatisfactory coverage area	Aung Daing Pa Lin Pyin Oo Yay Phyaw	Far

Table 6. Locations in potentially satisfactory and unsatisfactory coverage areas according to the selected criteria (*Urban zone, Sittwe Township, Rakhine State, Myanmar, October 2014*)

Results from the case-finding of the small-area survey are presented in table 7 and analysis of it in table 8:

Satisfactory coverage area	Total number of SAM cases	3
	Covered SAM cases	2
	Non-covered SAM cases	1
	Recovering cases	2
Unsatisfactory coverage area	Total number of SAM cases	4
	Covered SAM cases	3
	Non-covered SAM cases	1
	Recovering cases	3

Table 7. Results from Rural Zone case-finding - small-area survey (*Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014*)

Satisfactory coverage area	Total number of SAM cases	0
	Recovering cases	0
Unsatisfactory coverage area	Total number of SAM cases	2
	Covered SAM cases	0
	Non-covered SAM cases	2
	Recovering cases	0

Table 8. Results from Urban Zone case-finding - small-area survey (Urban zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

Calculation of decision rule/results		Deductions
Satisfactory coverage area	Target coverage	70%
	n	5
	Decision rule (d)	$= n * (70/100)$
	d	$= 5 * 0.70$
	d	$= 3,5$
	d	$= 3$
	SAM covered cases and recovering cases	$2 + 2 = 4$
		Number of covered cases (4) > decision rule (3)
		Period coverage > 70%
		Satisfactory coverage hypothesis CONFIRMED
Unsatisfactory coverage area	Target coverage	70%
	n	7
	Decision rule (d)	$= n * (70/100)$
	d	$= 7 * 0.70$
	d	$= 4.9$
	d	$= 4$
	SAM covered cases and recovering cases	$3 + 3 = 6$
		Number of covered cases (6) < decision rule (4)
		Period coverage > 70%
		Unsatisfactory coverage hypothesis NON CONFIRMED

Table 9. Analysis of Rural Zone survey results of the small-area survey – Classification of coverage (Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

Calculation of decision rule/results		Deductions
Satisfactory coverage area	Target coverage	70%
	n	0
	Decision rule (d)	$= n * (70/100)$
	d	$= 0 * 0.70$
	d	$= 0$
SAM covered cases and recovering cases		0
Target coverage		70%
Unsatisfactory coverage area	n	2
	Decision rule (d)	$= 2 * (70/100)$
	d	$= 2 * 0.70$
	d	$= 1.4$
	d	$= 1$
SAM covered cases and recovering cases		0

Decision rule non applicable (d = 0)

Number of covered cases (0) < decision rule (1)

Period coverage < 70%

Unsatisfactory coverage hypothesis CONFIRMED

Table 10. Analysis of Urban Zone survey results of the small-area survey – Classification of coverage (Urban zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

Rural Zone:

The hypothesis of heterogeneity was not fully confirmed (only for the satisfactory coverage area) suggesting distance and living in a camp or a village are factors that do not have such an important influence in the spatial distribution of coverage. Results also suggest coverage is globally high (only 2 cases non-covered found in total) and relatively homogeneous throughout the area of intervention. However, it must be noted that the caretaker of the only non-covered SAM case found in the potentially low/unsatisfactory coverage area, reported living far from the OTP as the main reason for the child not being in the program (also being sick). Therefore, although the distance barrier may not have such as significant impact on coverage, it is still the main barrier identified in these areas.

The second non-covered SAM child was in fact a case enrolled in the Follow-Up phase of the program after being discharged that relapsed into malnutrition – the mother was not aware the child needed to be re-admitted in the OTP.

From the total 10 cases found to be currently enrolled in the ACF program (SAM covered or recovering cases), 5 of them became again SAM after being discharged from the program rather as cured (2) or non-responders (3). Out of these 5 cases, 4 reported to have previously been in the program 2 times and 1 reported to had been discharged as NR 4 times (the maximum number of readmissions for NR is supposed to be 2 times). Regarding how these children arrived to the program, 50% of them were referred by ACF's ACS team and 50% went

spontaneously to the OTP, the latter advised by a fellow or just by themselves because they thought their child was malnourished or heard positively about the program.

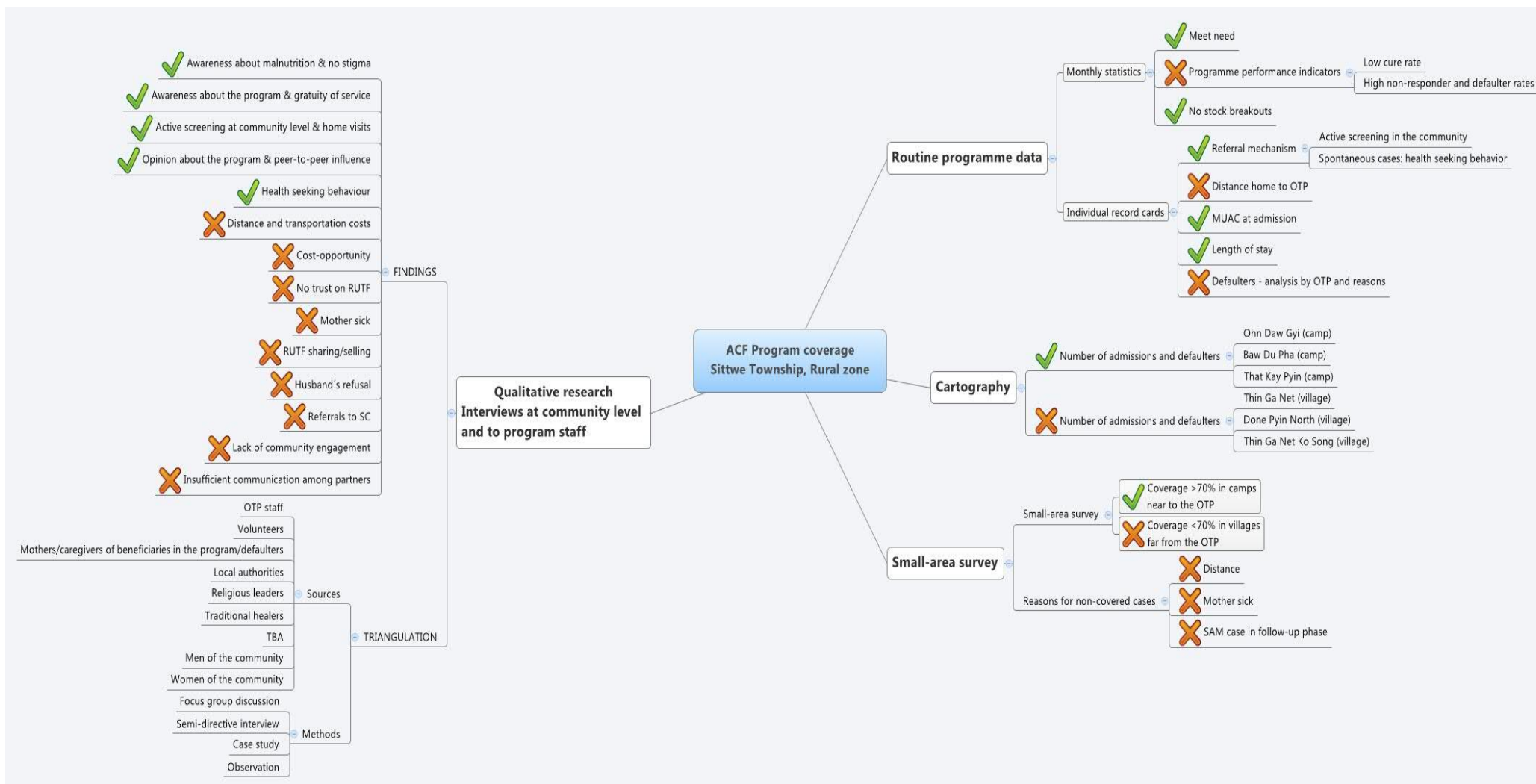
Urban Zone:

The hypothesis of heterogeneity could not be fully tested due to the lack of cases in the potentially satisfactory coverage area – which confirms the low caseload of SAM in the urban area. However, the hypotheses was confirmed in the unsatisfactory coverage area revealing **that distance is a barrier to access** and has an influence in the spatial distribution of coverage.

Regarding the reasons for the 2 SAM cases found not to be covered, 1 of the caretakers reported in fact distance and the other lack of awareness about MHAA program.

The conclusion from the results of the small-area survey as well as the information obtained through the questionnaires answered by the caretakers of the cases found once triangulated with the barriers and boosters previously identified, allowed to confirm some information as well as to give more weight to specific barriers (mother sick, relapse, non-responders) or boosters found (awareness about malnutrition, awareness about the program, active screening in the community, health seeking behavior, good opinion about the program, peer-to-peer influence), less to others (distance) and to identify some that had not been previously taken into account (such as problems during follow-up phase).

The Mind Map of figure 13 and 14 shows the triangulation process and conclusions of stages 1 and 2 of the investigation.



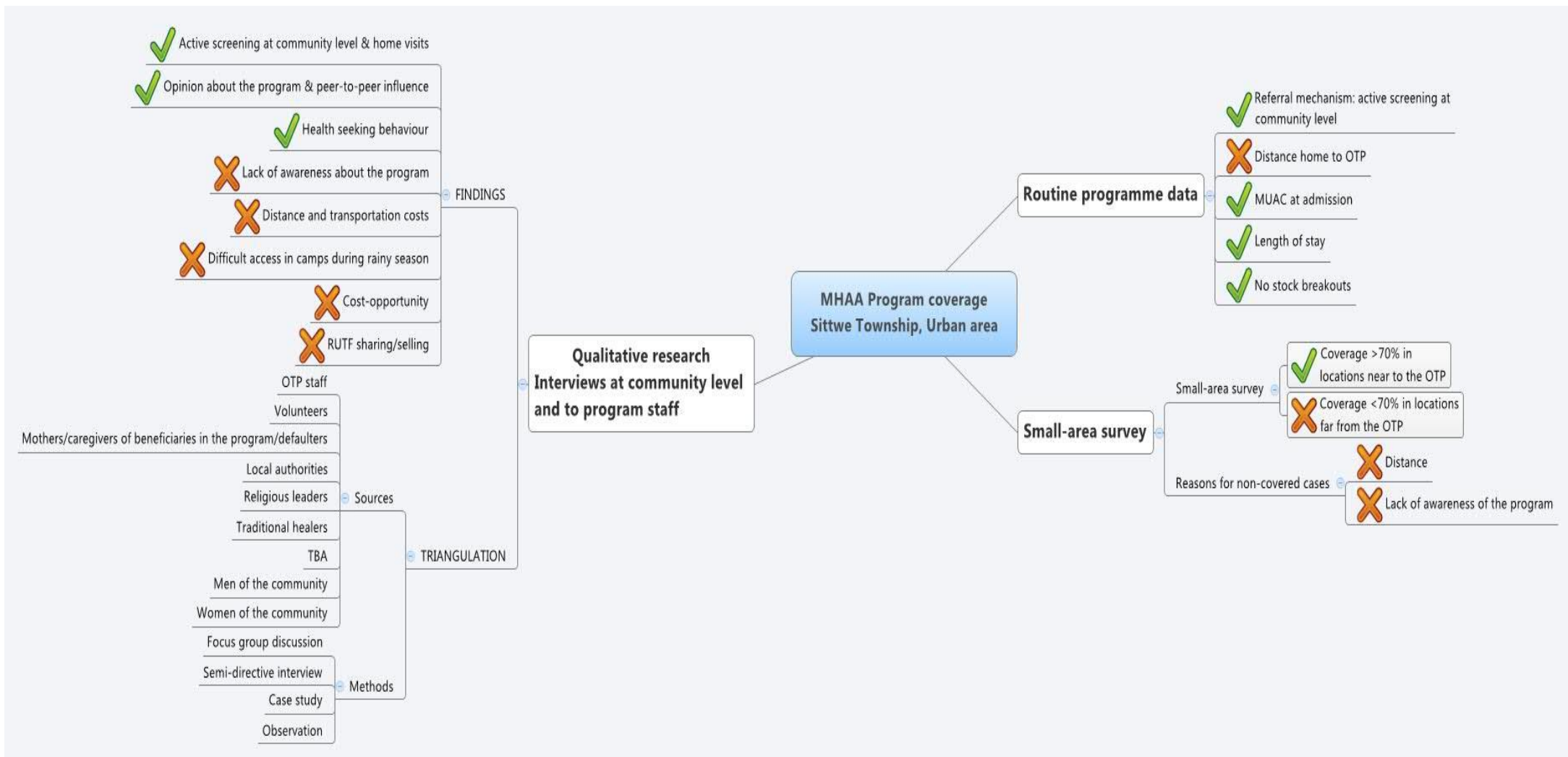


Figure 13 & 14 . Mind Maps of the findings of the first two stages of the SQUEAC investigation (Rural and Urban zones, Sittwe Township, Rakhine State, Myanmar, October 2014)

STAGE 3: ESTIMATION OF OVERALL COVERAGE

The objective of this third stage of the evaluation is to provide an estimate of the program coverage by applying Bayesian theory of probabilities.

Stage 3 was not conducted for the Urban Zone in this investigation due to the very low prevalence of severe acute malnutrition [1, 1% [95% IC 0, 3-4, 0] resulting to a low caseload and thus, an estimate of the overall coverage in could not be established. The prevalence of SAM is indirectly related to the number of villages that need to be assessed during the wide-area survey of stage 3 needed to build the *Likelihood* curve to determine the overall level of program coverage as explained in the methodology. In this case, the amount of villages required (n) to reach the minimum number of children required (N) was not manageable and thus stage 3 was infeasible and non-pertinent. As such, the results detailed in this following section focus on the ACF program in Rural Zone.

I. Developing Prior Probability

A *Prior Probability* is developed: a statistical representation of the "belief" about the level of coverage that the evaluation team was able to develop based on the findings from the previous stages. As explained in the methodology section, *Prior Probability* results using the method of "Barriers and Boosters weighted". The final result of the *Prior Probability* is 75% - table X below shows the weight given to each barrier and booster:

Positive factors	VALUE		Negative factors	
Community level				
Awareness about malnutrition	8	5	Distance	
No reported stigma	5	4	Economic barrier / transportation costs	
Awareness about the program	6	4	Cost-opportunity	
Gratuity of service	10	3	Mother sick	
Health seeking behavior	9	6	No trust on RUTF	
Active screening	9	5	RUTF sharing / selling	
Good opinion about the program	10	3	Husband refusal	
Peer-to-peer influence	10			
Service delivery				
Admissions over time	8	5	Problems during follow-up (including complicated cases)	
Lack of stock breakouts	5			
Home visits for absences and defaulters	9			
Length of stay	8			
Coordination/collaboration				
		6	Lack of community engagement	
		6	Insufficient communication	among

partners			
Points to add to minimum coverage (0%)	97	47	Points to subtract from maximum coverage (100%)
Prior Probability (75%)			
α value	30,9	10,3	β value

Table 11. Positive and negative factors to program coverage and *Prior Probability* calculation (Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

The distribution of Prior Probability was described as a curve using the Bayes calculator software: the mode (75%) and the distribution ($\alpha = 30, 9$, $\beta = 10,3$) of *Prior Probability* are represented by curve showed in Figure 8. The parameters of the shape (α and β) of *Prior Probability* curve were calculated through the formulas previously presented.

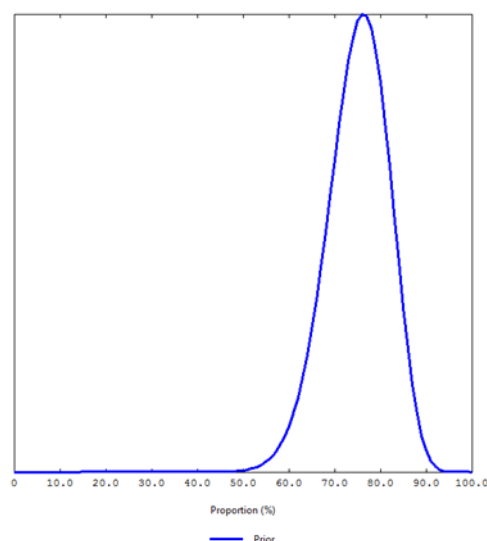


Figure 15. Graphical representation of *Prior Probability* (Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

II. Building the *Likelihood*: wide-area survey

In addition to the analysis of quantitative and qualitative data, a survey in the whole program catchment area was conducted using again both screening door-to-door and active and adaptive case-finding methods. According to the results of applying the formulas previously described in the methodology section and the parameters used (see below), the target sample size was 11 children and the number of locations, both camps and villages, to visit 24.

- mode: the value of *Prior Probability* expressed as a proportion (0.75).
- α et β : values defining Prior Probability distribution ($\alpha = 30,9$ and $\beta = 10,3$).
- Precision: desired precision. Precision used for the calculations of the minimum number of children was 12% (0.12). However, the number of cases found (higher than

the minimum number required for this precision) allows providing the final result of global estimate of coverage at a precision of 10%.

- Mean population by location: the mean population by location was estimated at 500 according to the population by sub-section of the camps (100 households, 5 members by household on average) – the amount of households to possible screen by one team in one day by means of door-to-door method.
- Population 6-59 months: 15% of children between 6-59 months based on the most reliable program data.
- SAM prevalence (by MUAC and/or oedema): 0, 6% (0, 6% [IC95%0,2-2,0]) according to the results found in the most recent SMART survey carried out by Save the children during the same period of the year as the present study.

A map containing all locations in the catchment area was divided into 20 quadrats of the same size (2x2 km) (see annex 6) in order to randomly select the 24 locations, villages and camps, spread across program catchment area. Within camps, sub-sections of 100 households were randomly selected. The main results from field work are presented in Table 12 below:

Type of case	Number of cases
Total number of SAM cases	25
Number of covered SAM cases	13
Number of non-covered SAM cases	12
Number of recovering cases	9

Table 12. Results from the wide-area survey (*Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014*)

Out of the total of 22 cases found to be covered by the program, 7 of them (32%) had already been in the program a number of times ranging from 2 to 4. Relapse into malnutrition accounts for 4 children while the other 3 were returned defaulters. As identified in previous stages of the evaluation, a high proportion (59%) of beneficiaries were referred by ACF's ACS team (13 children out of 22) as well as arrived spontaneously to OTP centers (32%- 7 children out of 22) as self-referrals or being advised by other community member. One case was referred by OTP staff while doing home visits in the village and another one by an MHAA volunteer during screening activities.

The analysis of the reasons reported by the caretakers of non-covered SAM children found during the wide-area survey brings light to the global understanding of the main barriers to access in the Rural zone of STW Township (see figure 16 below).

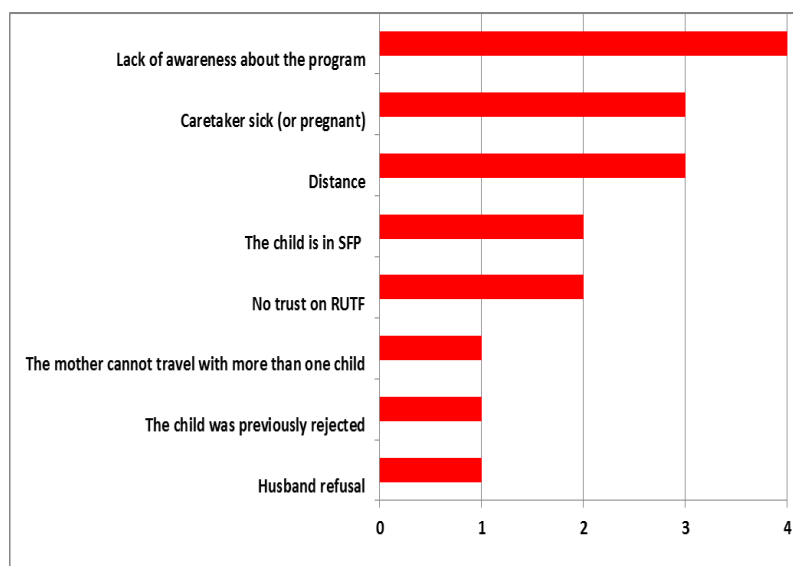


Figure 16. Non-covered cases – Barriers to access to treatment (*Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014*)

Out of the 12 non-covered cases, 4 of them were former beneficiaries that abandoned the program. Not being aware about the existence of the program surprisingly emerged as a reason for not being in the program reported in 4 occasions. The caretaker being sick or pregnant and distance barrier followed as the more reported reasons (3 times each). In two cases SAM children were found to be in the SFP, also a lack of trust towards RUTF was reported twice. Finally, husband refusal, previous rejection and not being able to travel with more than one child were mentioned one time.

III. Estimation of overall coverage: Posteriori

Global coverage is the *Posterior Probability* which represents the combination of the *Prior Probability*, enriched by the wide-area survey data (*Likelihood*).

As part of this investigation, the insight provided by the quantitative and qualitative data on program performance justifies the use of Period Coverage as the most appropriate indicator to reflect the overall program coverage. The early recruitment of cases and the short length of stay have been the program's characteristics suggesting the use of Period Coverage as estimation of overall coverage.

Therefore, the calculation of the Likelihood uses the wide-area survey data according to the following formula:

$$\frac{\text{Number of SAM cases in the program} + \text{Number of recovering cases}}{\text{Total number of SAM cases (covered and non-covered)} + \text{Number of recovering cases}}$$

The numerator (22) and the denominator (34) are entered into the Bayes calculator to achieve the estimate of Period Coverage and based on the *Prior* and these wide-area survey data

(*Likelihood*), Period Coverage is estimated to be at **70,9% [95% CI: 59,5% - 79,9%]**¹⁰. The graphical representation of period coverage is presented in the following graph (Figure 10).

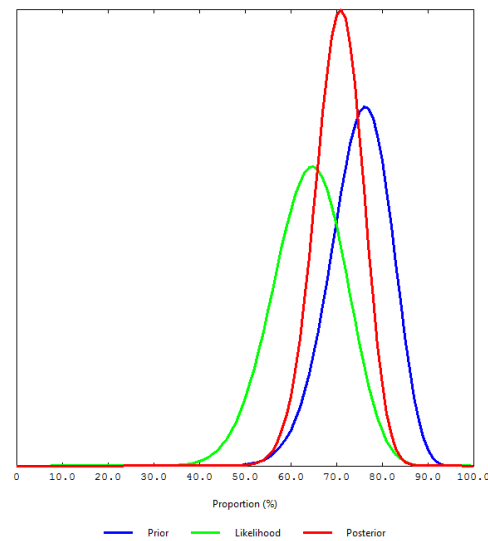


Figure 17. Graphical representation of Period Coverage – Prior, Likelihood and Posterior
(Rural zone, Sittwe Township, Rakhine State, Myanmar, October 2014)

¹⁰ The p-value of the Z-test ($Z = 1,09$) performed by the Bayes Calculator is 0.2771 which reflects the absence of conflict between the Prior and the Likelihood and therefore, the reliability of the study.

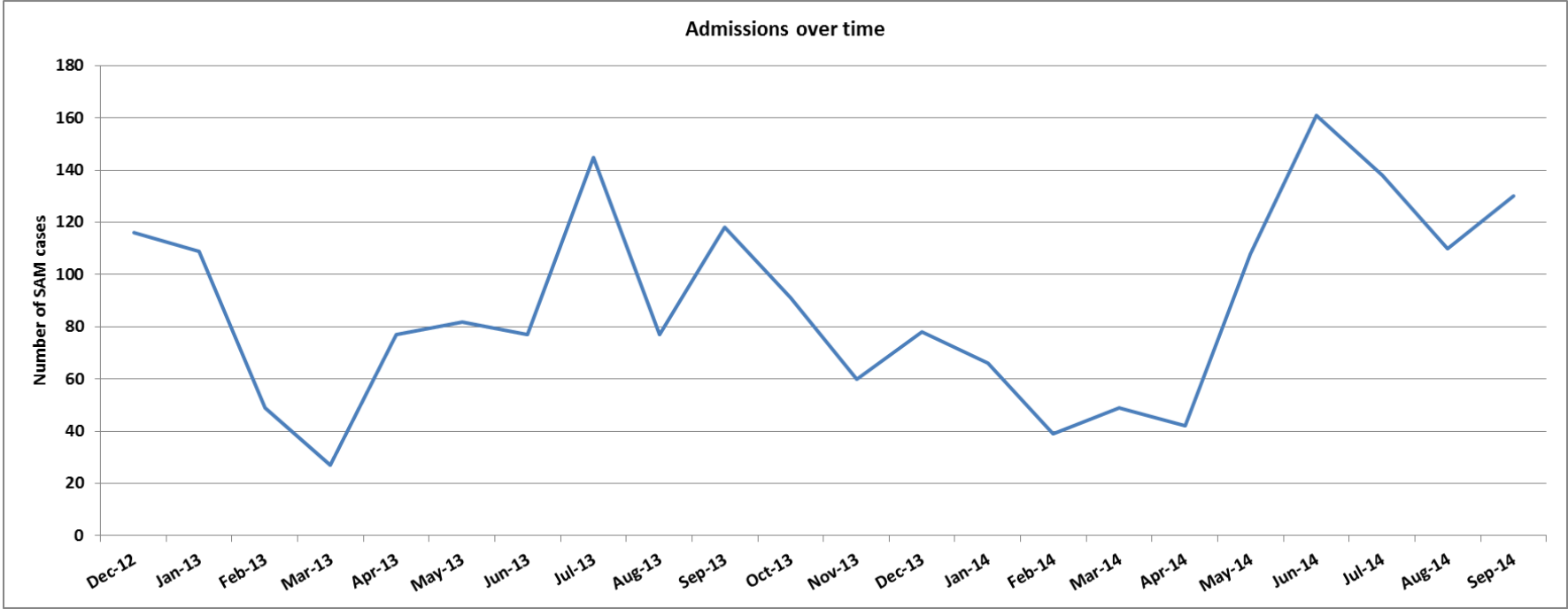
CONCLUSIONS AND RECOMMENDATIONS

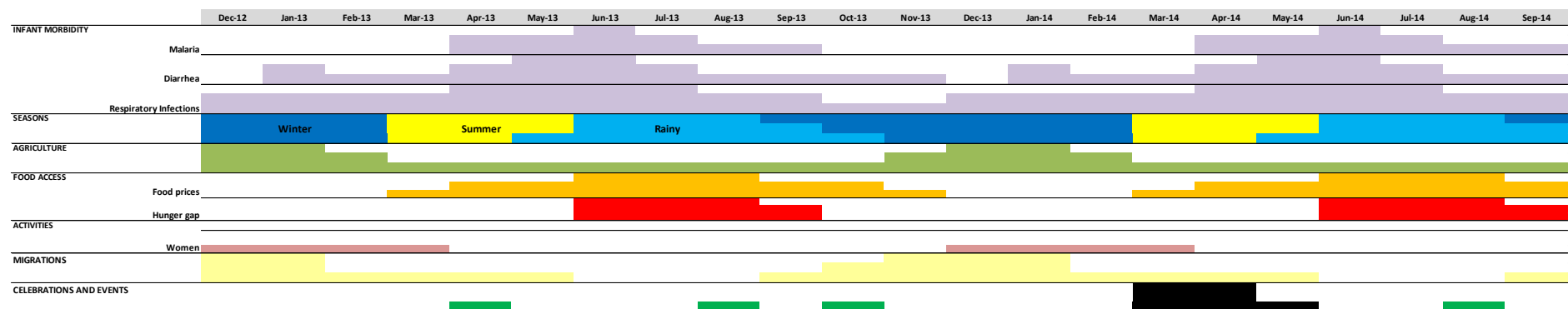
- The results of the SQUEAC coverage assessment reflect an estimate of period coverage of 70, 9% [95% CI: 59,5% - 79,9%] of ACF program in the Rural zone of STW Township. Coverage is globally high and quite homogeneous throughout the area of intervention. Period estimate tends to be more representative of the coverage program performance as analysis showed adequate self-referral and timeliness of treatment. In the Urban area of the Township, an estimate of overall coverage could not be established due to the very low prevalence of SAM, 1,1% [95% CI 0,3-4,0] as such stage 3 was not relevant. However, general findings from the SQUEAC assessment suggest a high coverage for MHAA's program.
- Awareness about malnutrition and about the program is rather good in the Rural zone of the Township but should be strengthened especially in villages which are distant from nutrition facilities. A particular area for focus is the catchment area of OTP-3-B (Mee Zee le Gone) which was the last of the OTP centers to open and is therefore not so well known.
- Overall there is a positive opinion about the program which is trusted and respected by the community. Nevertheless, negative beliefs around RUTF are frequent among the population which leads to poor levels of compliance to treatment that may partially explain high rates of non-responder and defaulting. Working with key community figures such as local authorities and religious leaders as well as with community health actors (THP, TBA) in this regard would improve overall program perception and acceptance of treatment (including the ration provided during Follow-Up phase). The issue of RUTF sharing and selling, which has also been found to happen extendedly, could also be targeted in this joint approach of sensitization with respected community members.
- Distance to travel as well as other related factors including transportation costs and security remain important barriers to access, however the motivation of caregivers to overcome this barrier has been found to be determinant with this regard. Initiatives that already take place in some OTP centers like giving priority service to those beneficiaries coming from far locations should be promoted and implemented in all facilities.
- Despite the small caseload in the Urban area of the Township, MHAA activities should continue to target all SAM cases, paying special attention to those villages which are far from the OTP centers.– Coordination with ACF in this areas should be reinforced.
- Cultural barriers related to gender inequality such as husband refusal, mother not being fit to travel (sick or pregnant) and cost-opportunity due to load of domestic work and family responsibilities, have been identified to have an important impact on program coverage. A gender approach would be highly desirable to be included within the community awareness strategy in order to overcome these context specific factors. At OTP level, increasing the number of female staff would probably be highly appreciated by beneficiaries and partially mitigate the refusal of husbands to attend the centers.
- Screening activities in the community and home visits have been identified as key factors contributing to satisfactory coverage and should continue to take place on a

regular basis in the communities. However, activities at field level should be more coordinated with other partners participating (MHAA and SCI volunteers) to ensure timely recruitment of identified cases and adequate monitoring of referrals.

- Follow up of SAM cases with medical complications by ACF team at hospital level is limited – the opening of a Stabilization Center would have a positive impact on program coverage. However, this option needs to be carefully considered as it may also indirectly result in a negative impact on program indicators (i.e. death rate): given the limited capacities in terms of human resources of the organization and the inability to treat any kind of complications, it would be currently difficult for ACF to ensure the required quality of care in SC which could easily increase the refusal of transfers. Another option would be to evaluate the possibility to ACF team to follow up the beneficiaries at hospital level in order to mitigate the referral challenges and the defaulter risk, and explore collaboration and coordination opportunities with service expansion at Rural Health Clinics.
- To conduct another SQUEAC survey in two years' time during the same season to evaluate coverage and the impact of the implemented recommendations presented here. Meanwhile, integrate active data analysis of reliable indicators on program coverage as a monitoring tool to identify possible barriers and potential opportunities on a regular basis:
 - Admissions and defaulters:
 - Link with seasonal calendar to assess the capacity of the program to meet needs and readapt quickly to the needs of the context in each moment.
 - By nutrition facility.
 - By home location.
 - Median MUAC at admission.
 - Reasons for absences and defaulters.
 - Organize qualitative research sessions with the communities (focus group discussions and semi-structured interviews with different key figures, beneficiaries and lay people) to complement and better understand the indicators and possible failures to program access.
- Strengthen MHAA program data management and monitoring and integrate active data analysis as a monitoring tool of the program by developing a strategy for periodic availability of reliable indicators.

ANNEX 1: Seasonal calendar





Trend of admissions in the 5 OTP centers of ACF in the rural area of Sittwe Township and confrontation to seasonal calendar (*Rural area, Sittwe Township, Rakhine State, Myanmar, October 2014*)

ANNEX 2: Qualitative research in STW/Rural zone – boosters and barriers to access and triangulation by source and method

LEGEND			
SOURCES		METHODS	
OTP staff	1	Focus Group Discussion	FG
Volunteers	2	Semi-structured Interview	SI
Caregivers of children in the program	3	Case study	CS
Caregivers of defaulters	3D	Observation	O
Local authorities	4		
Religious leaders	5		
Traditional healers	6		
Traditional Birth Attendants (TBA)	7		
Men of the community	8		
Women of the community	9		

BOOSTERS	SOURCE	METHOD
Awareness about malnutrition	4, 5, 6, 7, 8, 9	FG, SI
Awareness about the program	4, 5, 7, 8, 9	FG, SI
Gratuity of service	4, 5, 6, 8	FG, SI
Health seeking behavior	1, 2, 5, 8, 9	FG, SI
Active screening at community level	2, 3, 4, 6, 7, 8, 9	FG, SI, CS
Home visits for absences and defaulters	1, 2	SI
Good opinion about the program	1, 2, 3, 3D, 4, 5, 6, 7, 8, 9	
Peer-to-peer influence	3, 3D, 9	FG, CS

BARRIERS	SOURCE	METHOD
Distance / transportation costs	1, 2, 3, 3D, 4, 5, 7, 8, 9	FG, SI, CS
Cost-opportunity	1, 2, 3, 4, 7, 9	FG, SI, CS
Mother sick	3, 3D	CS
No trust on RUTF	1, 2, 3D, 9	FG, SI, CS
RUTF sharing/selling	2, 3, 4, 5, 7, 8, 9	FG, SI, CS, O
Husband refusal	1, 2	SI
Referrals to SC	7	SI
Insufficient communication/community engagement	1, 2, 4	SI

ANNEX 3: Case finding form

SQUEAC: Data collection form

Area: Rural/Urban

Team: _____

Date:

OTP: _____
section: _____

Village/Camp name: _____

Sub-

Child's name and surnam e	Age (months)	MUA C (mm)	Oedem a (+, ++, +++)	SA M case			Recoverin g child	Verification : RUTF
					SAM case Non- covered	SAM case Covered (in the		
								☐ RUTF
								☐ RUTF
								☐ RUTF
								☐ RUTF
								☐ RUTF
								☐ RUTF
								☐ RUTF
								☐ RUTF
								☐ RUTF
								☐ RUTF
								☐ RUTF
TOTAL								

ANNEX 4: Questionnaire for non-covered cases

Questionnaire for caretakers of SAM cases NOT in the program (NON-COVERED cases)

Area: Urban/Rural OTP: _____ Village/Camp name:

Sub-section: _____ Name and surname of the child:

1. DO YOU THINK THAT THIS CHILD IS SICK?

☐ YES

☐ NO ➡ **STOP!**

2. DO YOU THINK THAT THIS CHILD IS MALNOURISHED?

☐ YES

☐ NO ➡ **STOP!**

3. DO YOU KNOW A PROGRAM/PLACE THAT CAN TREAT MALNOURISHED CHILDREN?

☐ IF YES

☐ IF NO ➡ **STOP!**

4. WHAT IS THE NAME/WHERE IS THIS PROGRAM? _____

5. WHY THIS CHILD IS NOT IN THE PROGRAM?

☐ Too far ➡ What distance do you have to walk? _____ How many hours? _____

☐ No time/too busy to attend de program ➡ Which activity keeps the caregiver busy? _____

☐ _____

The caregiver is sick

☐ The caregiver cannot travel with more than one child

☐ The caregiver is ashamed to attend the program

☐ Security problems

☐ No other person in the family can take care of the other children

☐ The amount of RUTF given is not enough

☐ The child has previously been rejected ➡ When? (approximate period) _____

☐ The child has previously in the program but did not get cured

☐ Other people's child has been rejected

☐ The husband has refused

☐ The caregiver though the child needed to be intern in the hospital

☐ The caregiver does not believes that the program can help the child (prefers traditional healers, etc.)

☐ Other reasons: _____

6. HAS THE CHILD ALREADY BEEN IN A PROGRAM FOR THE TREATMENT OF MALNUTRITION?

☐

☐

YES

NO ➡ STOP!

If yes, why the child is not enrolled currently?

- ☐ Defaulter, when? _____ Why? _____
- ☐ Cured and discharged ➡ When? _____
- ☐ Discharged because there no cured ➡ When? _____
- ☐ Others: _____

ANNEX 5: Questionnaire for covered cases

Questionnaire for caretakers of SAM cases in the program (COVERED cases)

Area: Urban/Rural OTP: _____ Village/Camp name: _____

Sub-section: _____ Name and surname of the child: _____

1. IS THIS THE FIRST TIME YOUR CHILD HAS BEEN ADMITTED TO THE PROGRAMME?

☐ NO ☐ YES ➡ Q5!

2. HOW MANY TIMES THE CHILD HAS BEEN IN THE PROGRAMME BEFORE? _____

3. WHY DO YOU THINK THE CHILD HAS BEEN RE-ADMITTED TO THE PROGRAM?

- ☐ a) Returned defaulter
- ☐ b) Relapsed into severe malnutrition

4. WHAT IS THE REASON FOR a OR b ABOVE? _____

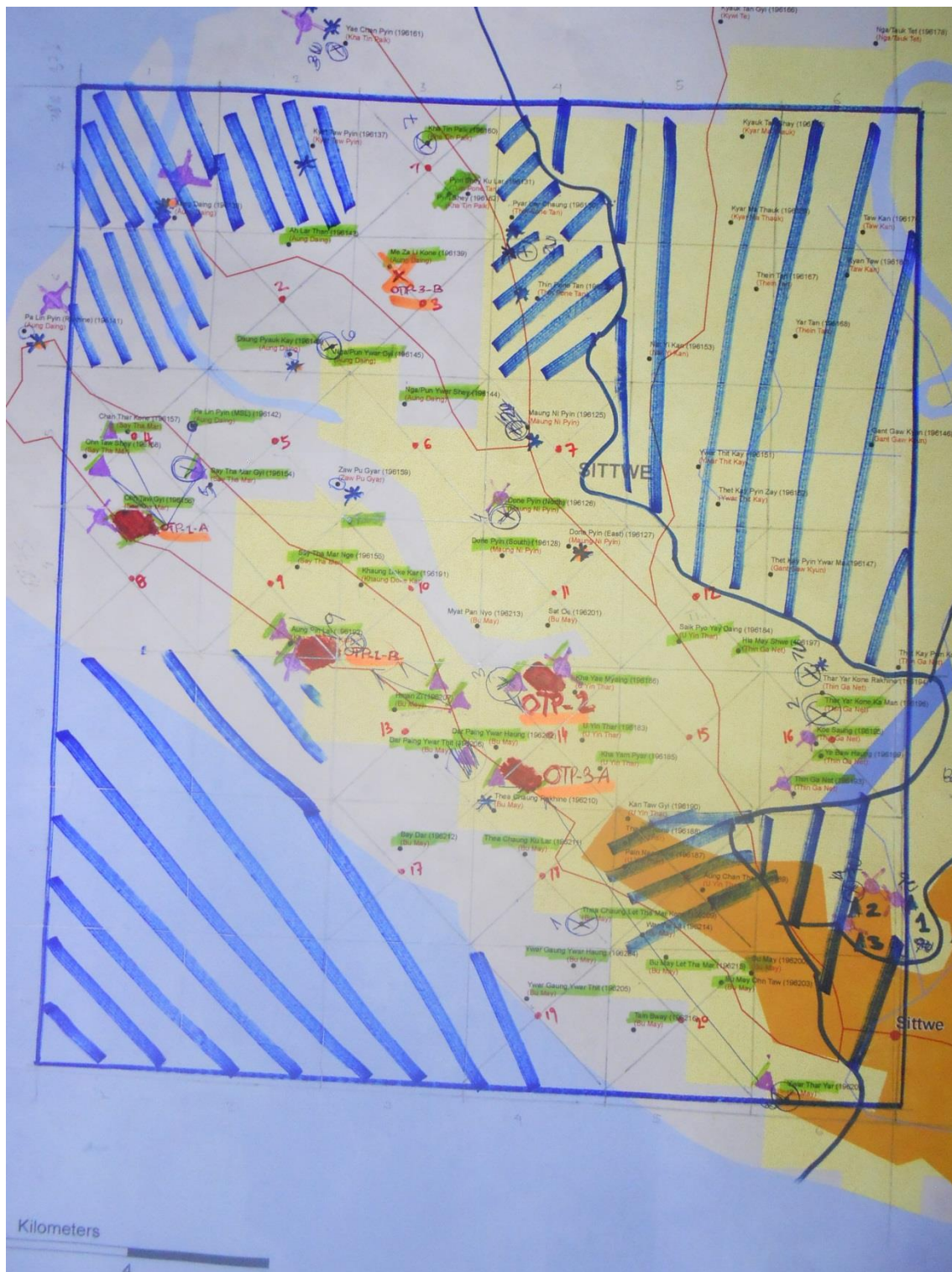
5. DO YOU HAVE ANY OTHER CHILDREN ENROLLED IN THE PROGRAMME?

☐ NO ☐ YES ➡ HOW MANY? _____

6. WHAT MADE YOU COME TO THE OTP? _____

Thank the caregiver

ANNEX 6: Map of sampling areas of wide-area survey



ANNEX 7: Qualitative research in STW/Urban zone – boosters and barriers to access and triangulation by source and method

LEGEND			
SOURCES		METHODS	
OTP staff	1	Focus Group Discussion	FG
Volunteers	2	Semi-structured Interview	SI
Caregivers of children in the program	3	Case study	CS
Caregivers of defaulters	3D	Observation	O
Local authorities	4		
Religious leaders	5		
Traditional healers	6		
Traditional Birth Attendants (TBA)	7		
Men of the community	8		
Women of the community	9		

BOOSTERS	SOURCE	METHOD
Health seeking behavior	1, 2, 3, 4, 5, 7, 8, 9	FG, SI, CS
Active screening at community level	1, 2, 3, 4, 5, 7, 8, 9	FG, SI, CS
Home visits for absences and defaulters	1, 2	FG, SI
Good opinion about the program	2, 3, 9	FG, SI
Peer-to-peer influence	3	CS

BARRIERS	SOURCE	METHOD
Lack of awareness about the program	1, 2, 4, 5, 7, 8, 9	FG, SI
Distance / transportation costs	1, 2, 3	FG, SI, CS
Transportation costs	2, 3, 9	FG, CS
Access in camps during rainy season	1, 2, 3	FG, SI, CS
Cost-opportunity	1, 2, 3, 4, 8	FG, SI, CS
RUTF sharing/selling	1, 2, 3, 7, 9	FG, SI, CS